

# EDUCACIÓN

# XX1

**2024**

**Volume 27 • Number 2**

**UNIVERSIDAD NACIONAL DE EDUCACIÓN A DISTANCIA  
MADRID, ESPAÑA**

**UNED**

*Educación XX1* is an international scientific journal edited by the Faculty of Education of the Universidad Nacional de Educación a Distancia (UNED, Spain), which contribute to the dissemination of advances in educational research and innovation in all its aspects.

This publication is published every six months.

*Educación XX1* is managed through the Open Journal System (OJS), a platform for the management and dissemination of open journals.

*Educación XX1* is not responsible for the ideas and opinions expressed in the published works. The full responsibility belongs to the authors of these.

### **ASSESSMENT OF THE SCIENTIFIC COUNCIL**

All articles received are reviewed, firstly, by the Technical Team, who will check that the article meets the formal criteria required by the journal. Secondly, the articles are reviewed by the Editorial Team, which will ensure that the articles comply with the journal's standards, as well as the relevance, rigour and originality of the research. Articles that have passed the two previous reviews will be evaluated by the double-blind system. According to the external reviewers' report, the article may be accepted, proposed for modification, or rejected for publication in *Education XX1*. The result of the review of those articles that are evaluated by the double-blind system is communicated within approximately 3 months.

### **INDEXING EDUCACIÓN XX1**

**Databases:** EBSCO Education Source, Educational Research Abstracts, Fuente Académica Plus, Dianet, Scopus y Social Sciences Citation Index.

**Scientific journal evaluation tools:** CARHUS Plus+ 2018, CIRC, DOAJ, ERIHPlus, JCR, Latindex, MIAR, SJR, Sello de calidad FECYT y REDIB.

### **© UNIVERSIDAD NACIONAL DE EDUCACIÓN A DISTANCIA**

Madrid, 2024

All rights reserved and its total or partial reproduction is prohibited.

ISSN: 1139-613X

Legal Deposit: M. 31468-1998

Printed in Spain

Prepress and printing: Masquelibros, S.L.

### **SALE**

Library UNED - Bravo Murillo, 38 - 28015 Madrid

Price/copy 12.00 €



## EDITOR OF THE MAGAZINE

Mario Pena Garrido • UNED, España.

## EDITORIAL TEAM

### EDITOR IN CHIEF

Esther López Martín • UNED, España.

### ASSOCIATE EDITORS

Diego Ardura Martínez • UNED, España.

Elvira Carpintero Molina • Universidad Complutense de Madrid, España.

Belén Gutiérrez de Rozas Guijarro • UNED, España.

María Magdalena Isac • Katholieke Universiteit Leuven, Bélgica.

Ángel de Juanas Oliva • UNED, España.

Ernesto López Gómez • UNED, España.

Fernando Martínez Abad • Universidad de Salamanca, España.

Julio Navío Marco • UNED, España.

Andrés Sandoval • University of Bath, Reino Unido.

Bianca Thoilliez • Universidad Autónoma de Madrid, España.

### SCIENTIFIC COMMITTEE

Víctor Benito Álvarez Rojo • Universidad de Sevilla, España.

Antonio Bernal Guerrero • Universidad de Sevilla, España.

Rafael Bisquerra Alzina • Universidad de Barcelona, España.

José Joaquín Brunner • Universidad Diego Portales, Chile, Chile.

Leonor Buendía Eisman • Universidad de Granada, España.

María Cristina Cardona-Moltó • Universidad de Alicante, España.

José Antonio Caride Gómez • Universidad de Santiago de Compostela, España.

María Castro Morera • Universidad Complutense de Madrid, España.

Fátima Cunha Ferreira • Fundação Cesgranrio, Brasil.

Tatyana Dronzina • Universidad de Sofía, Bulgaria.

Inmaculada Egido Gálvez • Universidad Complutense de Madrid, España.

Joaquín Gairín Sallán • Universidad Autónoma de Barcelona, España.

Ana García Valcárcel Muñoz-Repiso • Universidad de Salamanca, España.

Bernardo Gargallo López • Universidad de Valencia, España.

Cecilia Garrido • The Open University, Reino Unido.

José Luis Gaviría Soto • Universidad Complutense de Madrid, España.

M<sup>a</sup> Ángeles Gervilla Castillo • Universidad de Málaga, España.

Suzy Harris • University of Roehampton, Reino Unido.

Fuensanta Hernández Pina • Universidad de Murcia, España.

Anna Hirsch Adler • Universidad Autónoma de México, México.

José Antonio Ibáñez-Martín Mellado • Universidad Complutense de Madrid, España.

Carmen Jiménez Fernández • UNED, España.

Dolores Limón Domínguez • Universidad de Sevilla, España.  
Miguel Martínez Martín • Universidad de Barcelona, España.  
M<sup>ª</sup> Cristina Martínez Pineda • Universidad Pedagógica Nacional de Colombia.  
Francesc Pedró García • UNESCO, Venezuela.  
Miguel Pérez Ferra • Universidad de Jaén, España.  
Ángel Serafín Porto Ucha • Universidad de Santiago de Compostela, España.  
Richard Pring • Universidad de Oxford, Reino Unido.  
Claudio Rama • IESAL/UNESCO, Venezuela.  
Rosario Repáraz Abaitua • Universidad de Navarra, España.  
Marta Ruiz Corbella • UNED, España.  
Auxiliadora Sales • Universitat Jaume I, España.  
Miguel Ángel Santos Rego • Universidad de Santiago de Compostela, España.  
Bern Schorb • Universidad de Leipzig, Alemania.  
Christine Sleeter • California State University Monterey Bay, Estados Unidos.  
Dieter Spanhel • Universidad de Nürnberg, Alemania.  
José Manuel Touriñán López • Universidad de Santiago de Compostela, España.  
Javier Tourón Figueroa • Universidad Internacional de La Rioja (UNIR), España.  
Gerard Tulodziecki • Universidad de Paderborn, Alemania.  
François Vallaëys • Pontificia Universidad Católica del Perú, Perú.  
Conrad Vilanou Torrano • Universidad de Barcelona, España.

#### ADMINISTRATIVE SECRETARY

Carmen Vélix Olivera • UNED, España.

#### OJS SUPPORT AND DIGITAL PUBLISHING

Servicio Publicación y Difusión Digital • Biblioteca, UNED, España.

# Content

EDITORIAL.....	9
STUDIES .....	17
1. Actions for gender equality in scientific-technical areas in Spanish universities IRENE EPIFANIO Y ENCINA CALVO-IGLESIAS .....	19
2. Digital training in university teaching induction programmes in Spain: a comparative analysis based on DigComp and DigCompEdu SARA BUILS, VIRGINIA VIÑALES-COSENTINO, FRANCESC M. ESTEVE-MON Y LUCÍA SÁNCHEZ-TARAZAGA .....	37
3. University guidance actions linked to student diversity YAIZA VIÑUELA, DIEGO GONZÁLEZ-RODRÍGUEZ Y JAVIER VIDAL .....	65
4. The role of virtuality in learning strategies and stress prevention in higher education RAMÓN CHACÓN-CUBEROS, MARIANA PÉREZ-MÁRMOL, EDUARDO GARCÍA-MÁRMOL, EVA MARÍA OLMEDO-MORENO, JORGE EXPÓSITO-LÓPEZ Y MANUEL CASTRO-SÁNCHEZ .....	89
5. Educational research and school practice: unraveling a complex relationship from the perspective of management teams MARÍA CARMEN LÓPEZ-LÓPEZ, MARIANA ALTOPIEDI, MARÍA JOSÉ LEÓN-GUERRERO Y REYES HERNÁNDEZ-CASTILLA .....	115
6. Truancy in secondary education: prevalence and profiles of students including characteristics of family environment and links with school RAMÓN MENDOZA-BERJANO, DIEGO GÓMEZ-BAYA, ANNA JEAN GRASMEIJER, MACARENA LORENZO-FERNÁNDEZ, ESTHER LÓPEZ-BERMÚDEZ Y ANTONIA RUBIO-GONZÁLEZ .....	141

7. Formative evaluation and quality of feedback: design and validation of scales for school teachers JUAN ROMEO DÁVILA RAMÍREZ Y JUAN ANTONIO HUERTAS MARTÍNEZ.....	167
8. Discriminant analysis of positive classroom interpersonal relationships and academic performance in Chilean students at school OLGA CUADROS Y BENITO LEÓN-DEL BARCO .....	195
9. School effectiveness and high reading achievement of spanish students in PISA 2018: a machine learning approach DELIA ARROYO RESINO, ALEXANDER CONSTANTE-AMORES, MARÍA CASTRO Y ENRIQUE NAVARRO.....	223
10. Construction and validation of the emotional development on early primary education scale (EDEPES-28) MARÍA PRIEGO-OJEDA, ÈLIA LÓPEZ-CASSÀ, NÚRIA PÉREZ-ESCODA Y GEMMA FILELLA-GUIU .....	253
11. An examination of the relationship between an intervention with emotional competences and violence. The role of anxiety AGNÈS ROS MORENTE, RAQUEL GOMIS, MARÍA PRIEGO-OJEDA Y GEMMA FILELLA .....	283
12. Impact of a service-learning and sport education program on social competence and learning JUAN-GREGORIO FERNÁNDEZ-BUSTOS, LUIS MIGUEL GARCÍA LÓPEZ, DAVID GUTIÉRREZ, IRENE GONZÁLEZ-MARTÍ Y JORGE ABELLÁN .....	301
13. Analysis of the schooling programs of 2-3 years old students in Primary and Childhood Education schools in Spain DANIEL TURIENZO Y NURIA MANZANO-SOTO .....	341
14. Sex education and coeducation in adolescence: perspective of families, teachers, and adolescents ENRIQUE BONILLA-ALGOVIA, CONCEPCIÓN CARRASCO-CARPIO Y ESTHER RIVAS-RIVERO .....	363

# Editorial





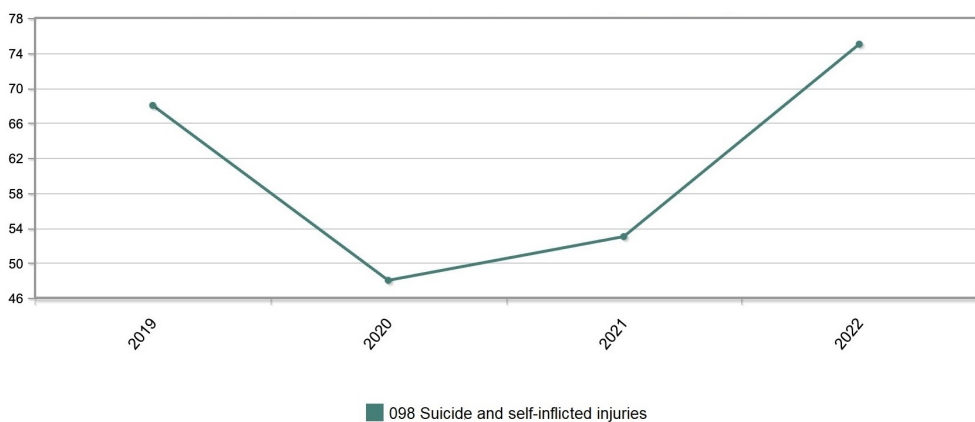
## Mental health, violence, and emotional competencies in adolescents

Adolescence is a time of significant changes at all levels—physical, psychological, and in terms of values. If this period is accompanied by a lack of family, social, and/or educational support, or a lack of resources and/or personal strengths, young people may find themselves vulnerable to stressful situations or aggression, whether physical, verbal, or virtual. This can result in poor mental health and, in more severe cases, lead to suicidal thoughts.

In Spain, the incidence of mental health problems among adolescents is estimated to be between 5% and 20%, as reported in some epidemiological studies in recent years (Ortuño-Sierra et al., 2017).

Perhaps for this reason, raising awareness in society has become necessary, with events such as World Adolescent Mental Wellness Day (March 2) and World Suicide Prevention Day (September 10). These dates gain special significance in light of the devastating statistics provided by the National Institute of Statistics (INE); the number of deaths per year due to causes such as suicide and self-inflicted injuries among young people aged 15 to 19 has risen to levels higher than during the pandemic. Since 2021, suicide has become the leading cause of death among young people aged 15 to 29 (Falcó, 2023).

**Figure 1**  
*Deaths according to causes (short list) by sex and age.*



Source. Instituto Nacional de Estadística. Death Statistics by cause of death - Suicide and self-inflicted injuries - Total - Ages 15 to 19.

Moreover, the “Growing Up Healthy(ly)” report on mental health in childhood and adolescence by Save the Children (2022) establishes the relationship between bullying, cyberbullying, and suicide: minors who are victims of bullying are 2.23 times more likely to experience suicidal thoughts and 2.55 times more likely to attempt suicide.

When the violence is sexual, the psychological consequences for girls and adolescent victims include sudden behavioral changes (23.5%), psychological problems (20.8%) such as anxiety, fear, shame, guilt, depression, sleep problems, and self-harm or suicidal ideation (9.1%), among others (II Study of Sexual Aggression in Girls and Adolescents, 2019-2023).

In response to this situation, in February, the Ministry of Health approved the Specific Actions Plan Against Suicide, which proposes improving the assistance provided by the 024 hotline, analyzing the social determinants and causes of suicide, and developing a youth-focused approach. Additionally, the Ministry proposed a State Pact for Mental Health.

The severity of these issues has led the scientific community to investigate protective and preventive factors against mental health threats. Within this context, emotional competencies stand out as personal resources that can be trained and improved in educational settings to ensure personal well-being. Falcó, Marzo, & Piqueras (2020) propose the covitality model, which includes 15 strengths, among which are emotional competence (empathy, self-control, and emotional regulation), life engagement (gratitude, enthusiasm, and optimism), self-belief (self-efficacy, self-knowledge, and persistence), and belief in others (school support, family support, and peer support). These authors consider that if we globally assess the effect of these socio-emotional competencies, we can see the benefits they have as protective factors against stressful events that risk mental health. Furthermore, Falcó (2023) has provided evidence on the influence of the covitality model as a protective factor against suicidal thoughts in young people.

One of the emotional intelligence (EI) models that has received the most attention from researchers is that of Mayer & Salovey (1997); they conceive EI as the ability to accurately perceive and express emotions, use emotions to facilitate thinking, understand emotions, and regulate emotions.

Various studies have focused on analyzing the relationships between emotional competencies and bullying and their impact on adolescent mental health, some of which we summarize below.

## **PERCEPTION AND BULLYING**

Students involved in bullying, whether as victims or perpetrators, report higher scores in the ability to attend to their emotions and lower scores in emotional

regulation strategies compared to those not involved in such acts (Gómez-Ortiz et al., 2017). Contrary to what one might think, high scores in emotional perception are negative; for victims, this may mean that excessive attention to their emotions and how they feel in a bullying situation leads to rumination, continuously thinking about why this is happening to them, blaming themselves for not being able to cope, leading to negative mood states such as anxiety and stress (Pena & Losada, 2017), which may result in suicidal thoughts when they see the situation as unbearable.

For adolescent aggressors, high levels of emotional attention, such as constantly worrying about what others think of them, can lead to rumination that makes them focus on wanting to project an image of strength and dominance, leading them to commit acts of violence and aggression.

Considering these findings, guidance and training in school contexts are necessary to help adolescents achieve appropriate levels of attention to their feelings. This training should ensure that self-reflection does not degenerate into rumination but rather becomes a serene, reflective process that helps them weigh what is said to them, distinguishing between what is true and what is false, resulting in higher levels of well-being and mental health (Pena & Losada, 2017).

Additionally, one of the most effective emotional regulation measures is response modulation. This means that once an emotion is experienced, individuals should learn to detect the physical, cognitive, and behavioral symptoms accompanying it. Victims experiencing anxiety should recognize physical symptoms like sweating, rapid heartbeat, gastrointestinal discomfort, and trembling legs, along with negative thoughts (e.g., “I won’t be able to face this,” “What will they say about me,” “I’m worthless”) and compulsive behaviors (e.g., smoking, eating). At this moment, they can apply relaxation techniques, breath control, or other methods to calm down and make the right decision (e.g., seeking help). For aggressors, they must learn to detect anger symptoms (muscle tension, rapid and strong heartbeat, rapid breathing), cognitive symptoms (thought confusion, exaggerating the importance of an event, devaluing the other person), and behavioral symptoms (threatening, shouting, clenching fists). Once aware of these symptoms, they can use the “time-out” technique, leaving the situation until they calm down, preventing aggressive behaviors.

## UNDERSTANDING AND BULLYING

The ability to understand others’ emotions or empathy is a crucial competency for victims. Conversely, scientific literature has highlighted that this is a significant deficit among aggressors, who have great difficulty being affected by others’ emotions (Jolliffe & Farrington, 2011; Kokkinos & Kipritsi, 2012).

This phenomenon can be explained by what Gómez-Ortiz, Romera, & Ortega-Ruiz (2017) describe as a mechanism of moral disengagement. Adolescents who engage in violent behaviors express feelings like pride or indifference when committing such acts, whereas other students report feelings of shame or guilt when asked how they think they would feel if they committed violent actions against others: “The explanation for this result is based on the mechanism of moral disengagement, which refers to the justifications or arguments used by individuals to free themselves from personal responsibility and discomfort that arise when acting against reference values.”

Educational guidance and training should aim to make adolescents aware of how the other person feels when being physically or verbally attacked, whether in person or virtually. They should consider how they themselves would feel if they were the target of such actions. Emotional understanding also involves knowing why we and others feel a certain way; in other words, understanding the reasons behind emotional states. Making explicit the motives behind bullies’ actions can help them realize the maladaptive nature of their behavior and its negative effects on others and themselves.

## EMOTIONAL REGULATION

What process or variable influences the moment when an adolescent experiences aggressive thought and the act of putting them into practice? Research indicates that there is a moderating variable that mediates and explains the relationship between thoughts and violent behaviors: the degree of control/regulation of the thoughts and emotions that determine aggression (Roos et al., 2016). Students who can generate positive emotions and minimize negative ones in adverse circumstances will exhibit more adaptive behaviors and fewer violent behaviors, benefiting themselves and others in terms of well-being, social acceptance, and mental health.

Gender differences in emotional regulation show that girls with fewer emotional regulation strategies report higher levels of cybervictimization (Rey et al., 2018).

Therefore, acquiring emotional regulation strategies is crucial for good mental health. Developing and enhancing appropriate emotional competencies, particularly emotional regulation, allows adolescents to cope with complex and high-stress situations, reducing anxiety and violent behaviors. This, in turn, reduces the likelihood of students engaging in violent or cyberbullying behaviors (Chamizo-Nieto & Rey, 2022).

What emotional regulation strategies should be emphasized in an educational training and guidance program for adolescents? Key strategies include those highlighted by Gong et al. (2013): response modulation, situation selection, situation modification, attention focus, and cognitive restructuring. Additionally, strategies

involving positive reinterpretation of the situation (problem-solving, emotional regulation, emotional expression, positive thinking, cognitive restructuring, distraction, and acceptance) have proven effective in adolescents by reducing anxiety, increasing self-satisfaction, and improving personal relationships (Pascual, Conejero & Etxebarria, 2016). These same authors identify less adaptive strategies that are less effective (avoidance, denial, rumination, inaction).

## **CURRENT NUMBER OF EDUCACIÓN XX1**

This issue of Educación XX1 includes two articles related to the themes discussed in this editorial. Specifically, Ros-Morente et al. (2024) investigates the relationship and intervention between emotional competencies and school violence, while Ojeda et al. (2024) focus on validating an emotional competency questionnaire for early primary education.

Ros-Morente et al. (2024) conducted an intervention with a sample of children aged 8 to 12 to study the influence of emotional competencies on personal well-being and violence in educational contexts. They highlight the link between violence and a negative classroom climate, lower student well-being, and poor academic performance. These authors explore the role of emotional variables as a factor in preventing violence in educational contexts, concluding that higher acquisition of emotional skills results in fewer violent behaviors in school, less anxiety symptoms, and improved mental health.

Ojeda et al. (2024) provide significant contributions by validating an Emotional Development Scale for children aged 5 to 8 in primary education. This scale allows teachers to assess children's emotional competencies, focusing on four competencies: emotional awareness, emotional regulation, emotional autonomy, and social competence, as well as evaluating overall emotional competence. This study increases knowledge about the benefits of emotional skills at an early age, showing improvements in academic performance and reduced anxiety levels.

## **CONCLUSION**

In conclusion, based on the above discussion, it is important to implement emotional training programs among adolescents to enhance emotional competencies, thereby reducing the relationship between victimization, loneliness, and suicidal thoughts in young people who have experienced violence in school contexts (Quintana-Orts et al., 2021). Furthermore, students' mental health should be a priority in education, with policies designed to promote mental health plans and prevent bullying to avoid resulting in suicidal thoughts and behaviors. This

should also involve training and equipping teachers for educational intervention in mental health, as it has been shown that teachers' emotional instruction and regulation improve students' mental well-being (Gong, Chai et al., 2013).

Mario Pena Garrido  
*Educación XX1 Headmaster*

## REFERENCES

- Chamizo-Nieto, M. T., & Rey, L. (2022). Estrategias cognitivas para afrontar situaciones de acoso/ciberacoso: diferencias entre chicos y chicas. *Escritos de Psicología (Internet)*, 15(1), 29-39.
- Falcó, R., Marzo, J.C., & Piqueras, J. A. (2020). La covitalidad como factor protector ante problemas interiorizados y exteriorizados en adolescentes españoles. *Psicología Conductual*, 28(3), 393-413.
- Falcó, R. (2023). Fortalezas psicosociales para la prevención del suicidio en adolescentes. Primera evidencia sobre el alcance del modelo de covitalidad como estrategia de actuación multinivel (Tesis doctoral inédita).
- Fundación ANAR (2024). *II Estudio de agresión sexual en niñas y adolescentes según su testimonio. Evolución en España (2019-2023)*. Recuperado de [https://www.anar.org/wpcontent/uploads/2024/04/Resumen\\_Ejecutivo\\_Estudio\\_ANAR\\_Agresion\\_Sexual\\_19-23.pdf](https://www.anar.org/wpcontent/uploads/2024/04/Resumen_Ejecutivo_Estudio_ANAR_Agresion_Sexual_19-23.pdf)
- Gómez-Ortiz, Romera, & Ortega-Ruiz (2017). *Revista Interuniversitaria de Formación del Profesorado* 88, 27-38.
- Gong, S., Chai, X., Duan, T., Zhong, L., & Jiao, Y. (2013). Chinese teachers' emotion regulation goals and strategies. *Psychology*, 4(11), 870.
- Jolliffe, D., & Farrington, D. P. (2011). Is low empathy related to bullying after controlling for individual and social background variables? *Journal of adolescence*, 34(1), 59-71.
- Kokkinos, C. M., & Kipritsi, E. (2012). The relationship between bullying, victimization, trait emotional intelligence, self-efficacy and empathy among preadolescents. *Social psychology of education*, 15, 41-58.
- Lea, R. G., Qualter, P., Davis, S. K., Pérez-González, J. C., & Bangee, M. (2018). Trait emotional intelligence and attentional bias for positive emotion: An eye tracking study. *Personality and Individual Differences*, 128, 88-93.
- Mayer, J.D., & Salovey, P. (1997). *What is emotional intelligence?* In P. Salovey & D. J. Sluyter (Eds.), *Emotional Development and Emotional Intelligence: Educational Implications*. New York: Basic Books, pp. 3-27.
- Ortuño-Sierra, J., Fonseca-Pedrero, E., Sastre i Riba, S. & Muñiz, J. (2017). Patterns of behavioral and emotional difficulties through adolescence: the influence of prosocial skills. *Anales de Psicología*, 33, 48-56
- Pascual, A., Conejero, S., & Etxebarria, I. (2016). Coping strategies and emotion regulation in adolescents: Adequacy and gender differences. *Ansiedad y Estrés*, 22(1), 1-4.
- Pena, M., & Losada, L. (2017). Test anxiety in Spanish adolescents: Examining the role of emotional attention, and ruminative self-focus and regulation. *Frontiers in psychology*, 8, 286242.

- Priego-Ojeda, M., López-Cassá, È, Pérez-Escoda, N., & Filella-Guio, G. (2024). Construcción y validación de la escala de Desarrollo emocional en Educación Primaria Inicial (EDEEPI-28). *Educación XX1*, 27 (2), xx-xx. <https://doi.org/10.5944/educxx1.38358>
- Quintana-Orts, C., Rey, L., & Neto, F. (2021). *Psychosocial Intervention*, 30(2), 67-74.
- Rey, L., Quintana-Orts, C., Mérida-López, S., & Extremera, N. (2018). Emotional intelligence and peer cybervictimisation in adolescents: Gender as moderator. *Comunicar*, 56, 09-18. <https://doi.org/10.3916/C56-2018-01>
- Roos, S., Hodges, Peets, K., & Salmivalli, C. (2016). Anger and effortful control moderate aggressogenic thought-behaviour associations. *Cognition and emotion*, 30(5), 1008-1016.
- Ros-Morente, A., Gomis, R., Priego, M., & Filella, G. (2024). Análisis de la relación e intervención entre las Competencias emocionales y la violencia. El papel de la ansiedad. *Educación XX1*, 27(2), xx-xx. <https://doi.org/10.5944/educxx1.35828>



# Studies



# Actions for gender equality in scientific-technical areas in Spanish universities

## *Acciones para la igualdad de género en las áreas científico-técnicas de las universidades españolas*

Irene Epifanio <sup>1\*</sup>   
Encina Calvo-Iglesias <sup>2</sup> 

<sup>1</sup> Universitat Jaume I, Spain

<sup>2</sup> Universidad de Santiago de Compostela, Spain

\* Corresponding author. E-mail: [epifanio@uji.es](mailto:epifanio@uji.es)

### Cómo referenciar este artículo/ How to reference this article:

Epifanio, I., & Calvo-Iglesias, E. (2024). Actions for gender equality in scientific-technical areas in Spanish universities. *Educación XX1*, 27(2), 19-36. <https://doi.org/10.5944/educxx1.38279>

**Date received:** 07/09/2023

**Date accepted:** 19/03/2024

**Published online:** 28/06/2024

### ABSTRACT

This article analyses the actions carried out in Spanish universities to achieve gender equality in scientific-technical disciplines, where women are still under-represented and there is a low level of gender mainstreaming that can affect research and innovation. In order to diagnose the situation, a survey was carried out aimed at the equality units that form part of the Network of Gender Equality Units for University Excellence (RUIGEU). The survey consisted of thirteen questions relating to: actions to favour the access and permanence of women in the PECS areas (Physics, Engineering, Computer, Science), the recognition of student work carried out with a gender perspective, the valuation of teaching and research with a gender perspective, the visibility and recognition of female researchers and actions for effective equality. This survey was anonymous and was answered by 28 units. From the answers obtained, we can extract a low level of involvement of the universities in promoting equality in this area. Furthermore, the analysis of archetypes shows that only five of the universities

that participated in this study are committed to equality in the scientific-technical field and carry out actions to achieve it. These results show, on the one hand, that it is possible to implement actions to promote equality in the scientific and technical field. On the other hand, the collaboration of other institutions (Ministry of Universities, National Agency for the Evaluation of Accreditation (ANECA) and Conference of Rectors of the Spanish University (Crue)) is necessary to promote equality in all universities.

**Keywords:** gender equality, gender stereotypes, gender bias, STEM education, research training, women scientists

## RESUMEN

En este artículo se analizan las acciones llevadas a cabo en las universidades españolas para alcanzar la igualdad de género en las disciplinas científico-técnicas, donde las mujeres siguen estando infrarrepresentadas y existe una baja transversalización de la perspectiva de género que puede afectar a la investigación y a la innovación. Para realizar un diagnóstico de la situación se elaboró una encuesta dirigida a las unidades de igualdad que forman parte de la Red de Unidades de Igualdad de Género para la Excelencia Universitaria (RUIGEU). La encuesta estaba formada por trece preguntas relativas a las acciones para favorecer el acceso y permanencia de las mujeres en las áreas PECS (Physics, Engineering, Computer, Science), el reconocimiento de trabajos de estudiantes realizados con perspectiva de género, la valoración de la docencia e investigación con perspectiva de género, la visibilización y reconocimiento de investigadoras y las acciones para la igualdad efectiva. Esta encuesta era anónima y fue respondida por veintiocho unidades. De las respuestas obtenidas podemos extraer una baja implicación de las universidades para impulsar la igualdad en este ámbito. Además, el análisis de arquetipos nos muestra que sólo cinco de las universidades que participaron en este estudio están comprometidas con la igualdad en el ámbito científico-técnico y llevan a cabo acciones para conseguirlo. Estos resultados ponen de manifiesto, por un lado, que es posible implementar acciones para la igualdad en este ámbito y, por otro lado, que necesitamos de la colaboración de otras instituciones (Ministerio de Universidades, Agencia Nacional para la Evaluación de la Acreditación (ANECA) y Conferencia de Rectores de la Universidad Española (Crue)) para impulsar la igualdad en todas las universidades.

**Palabras clave:** igualdad de género, estereotipos de género, sesgos de género, educación STEM, Formación en investigación, científicas

## INTRODUCTION

In Spain, female students are in the majority in university classrooms, but there is still a significant horizontal segregation by degree, with a lower presence of women in some disciplines linked to STEM (Science, Technology, Engineering and Mathematics) or PECS (Physics, Engineering, Computer, Science) areas. This

last acronym is used to emphasize that it is in these areas where women are less represented (Cimpian et al., 2020; Sáinz, 2017). Approximately three out of every four students in undergraduate and first and second cycle studies in Health Sciences are women, i.e. 71.8% of students in these disciplines, while in Engineering and Architecture the percentage of women drops to 26.5%, as shown in the report *Científicas en Cifras 2023* (Unidad de Mujer y Ciencia, 2023).

This situation is not new in Spanish universities or in the Western context, since almost sixty years ago Alice Rossi (1965) asked the question: why so few women? Since then, numerous studies have been carried out that show the influence of multiple social and cultural factors in the gender gap that exists in certain careers in the scientific-technical field and the need to continue our efforts to reduce this gap (Verdugo-Castro, 2022). Thanks to this research, we now know that the low representation of women in university careers related to PECS disciplines is not related to girls' performance or skills in these fields, but to the gender stereotypes that condition their choices at school (Bian et al., 2017; Couso, 2023). These stereotypes affect girls from an early age: at the age of six, girls already believe they are less bright than boys (Bian et al., 2017) and in primary school they perceive themselves to be less competent in mathematics and show greater anxiety before mathematics exams (Ayuso et al., 2021). Moreover, taking into account that students' interest in science decreases as they get older (Martín et al., 2023), action should be taken in the early stages of education to promote more vocations in the STEM field; without forgetting the stereotypes and expectations that teachers have and that they can transmit to students (Couso, 2023), and that we must combat by providing gender training to active teachers and future teachers so that they can educate in equality.

The participation of women scientists and researchers in the celebration of the International Day of Women and Girls in Science has been fundamental in providing students with female references in PECS areas, helping girls to see these careers as a possible career option. This promotion of scientific-technological vocations in girls and young women is an equality measure successfully implemented in 2022 (Women and Science Unit, 2023), although it seems to be carried out primarily in secondary education. Given the importance of these promotional activities, the participation of female researchers and professors should be recognised and prevented from becoming an increase in women's "academic housework" at university (Heijstra et al., 2017), as they devote more hours than their male colleagues to these tasks of care and service to the students (Cabero et al., 2023).

But it is not only a matter of increasing the number of female students in these degrees, we also have to take into account that "when scientific-technical areas are a socio-economic scenario of high employability and excellent salaries for qualified people, men move to occupy these socio-economic centres and women remain

on the margins” (Samper-Gras, 2022, p. 209), which could explain the changes in enrolment in the mathematics degree in recent years. We should also be able to retain our female students (González-Pérez et al., 2022) and researchers (González, 2018) and end the dynamics that push them out of the system, including harassment (Yang & Wright, 2018; Bernardo, 2021), which has remained silenced in Spanish universities (Valls et al., 2016) and the criminalisation of motherhood (Gallardo, 2021; Powell, 2021). Not forgetting that there are gender biases in the scientific evaluation system (Moss-Racusin, 2012) and that women are systematically denied publications and citations, hindering their professional promotion (Sugimoto & Larivière, 2023), which favours vertical segregation or the so-called scissors effect that still persists in universities and public research organisations (Women and Science Unit, 2023) and contributes to a 12.7% pay gap in universities (De la Cal, 2023). This scissors effect also affects other more feminised areas, such as biomedicine, and to overcome this inequality “it is necessary to distribute women’s and men’s time fairly, favouring conciliation; and that equality policies between women and men are implemented effectively, not only by limiting themselves to establishing recommendations but also by taking concrete action and sanctioning non-compliance” (Segovia et al., 2023, p. 408). Otherwise, we will continue with this low female representation in the field of science and technology, which, in addition to reducing work opportunities and women’s participation in future advances and decisions, also affects the quality of science, since “the presence of women in science (like other groups) is not a sufficient condition for better science, but it is necessary” (García Dauder & Pérez Sedeño, 2017, p. 9). On the other hand, Schiebinger and Klinge (2020) show us the importance of including sex and gender in research and innovation, and the consequences of not doing so (harm to people, delay of innovations...).

The involvement of universities is of great importance in order to solve the problems listed in the previous paragraphs. To this end, they should promote the incorporation of the gender perspective in the teaching of disciplines related to PECS (Calvo-Iglesias, 2022a), and teach students to introduce the sex/gender approach in research (Calvo-Iglesias, 2022b), thus complying with the laws in force at both European and national level. Universities should also train future pre-school, primary and secondary school teachers to promote coeducation and to support a non-stereotypical choice of university studies. All of this would contribute to achieving Goal 5 “Achieve gender equality and empower all women and girls” of the Sustainable Development Goals (SDGs) set by the United Nations. And we must not forget that, although “we currently find ourselves in a favourable context in which new educational laws allow us to rethink the development of teacher training in which coeducation becomes an essential element” (García-Lastra, 2022, p. 33), for now the integration of the gender perspective in university teaching is

scarce, as stated in Miralles-Cardona (2020). Although important steps have been taken towards this, such as the collection of guides published by the Xarxa Vives d'Universitats (Calvo-Iglesias et al., 2022), which already has thirty-eight guides, twelve of them belong to the field of science and engineering, and the provision of training courses on gender perspective among teaching and research staff, but male participation in these courses is very low (Unidad Mujer y Ciencia, 2023). To understand this situation, we must take into account the resistance to implementing gender equality initiatives in Spanish universities (Castaño & Vázquez-Cupeiro, 2023) and the neoliberal context that has been implemented in the university and which directs teaching and research staff to promote their research activity (Saura & Caballero, 2020) in order to climb positions in the rankings. This evaluation policy based on rankings is beginning to be questioned after the recent scandals (Galán, 2023) and it is not going to help us achieve gender equality, as shown by the study carried out by Reverter-Bañón (2020) on the Times Higher Education ranking.

Based on the report prepared by the Network of Gender Equality Units for University Excellence (RUIGEU), which shows the diagnosis of the mainstreaming of the gender perspective in teaching and research, the measures for prevention and action against harassment, and the measures for joint responsibility and work-life balance in the public and private universities that make up the network (RUIGEU, 2022), we have prepared and analysed a survey to carry out a diagnosis of the situation of the actions to promote gender equality in STEM areas carried out in Spanish universities. This survey has been addressed to the equality units because, as stated in the Organic Law 2/2023 of 22 March on the University System (23 March, 2023), they are “responsible for advising, coordinating and evaluating the mainstreaming of equality between women and men in the development of university policies, as well as for including the gender perspective in all the activities and functions of the university”. This is the first time that this diagnosis has been carried out and, therefore, it complements the RUIGEU report (2022). The purpose of this survey is to find out about the implementation of measures to favour the presence of women in STEM or PECS areas, which should be implemented at all stages of education, from infant education to the recognition of women in PECS disciplines in appointments as Honorary Doctorates, showing that we are not just guests, but that women have made and continue to make important contributions to science and technology.

## METHOD

### Participants

The Network of Gender Equality Units for University Excellence (RUIGEU) includes the equality units of all Spanish public universities and those of private universities that have applied for membership. In 2023, the RUIGEU is made up of the units of 54 universities (RUIGEU, 2022).

To collect information about each university, a survey was sent out with questions about the initiatives and policies carried out in their university on gender equality with emphasis on the PECS field. The survey was sent to the 54 RUIGEU units during December 2022 and January 2023 on three occasions (two reminders), in order to collect more responses. A total of 28 units responded, i.e. 52% of the units.

### Survey

The survey was elaborated with Google forms and consisted of 13 questions so that it did not take long to answer and was easy to answer. The answers were given with several options and there was always a section for others, so that they could optionally write if they wished to clarify their answer. The full questionnaire is available at <https://bit.ly/3v8IdiY> and the questions are also specified in the Results section. However, they can be grouped into several areas: a) actions to fight against gender stereotypes before access to university (questions 1 to 3); b) actions to favour access and permanence in the PECS areas (questions 4 and 5); c) recognition of students' work carried out with a gender perspective (questions 6 and 7); d) valuation of teaching and research with a gender perspective (questions 8 to 10); e) visibility and maximum recognition of female researchers in the STEM area (question 11); f) actions for effective equality (questions 12 and 13).

### Limitations

Since not all units responded, the information comes from a self-selected sample. Therefore, the study is exploratory, only descriptive statistics will be used, not inferential statistics.

The survey did not deal with personal data, but with data from the institutions. However, in order to avoid possible non-response to hide a low involvement in gender equality on the part of some universities, the survey was anonymous. It could be answered without specifying information about the institution. In any case,



a response rate of 52% is much higher than the usual response rates for university staff, which range between 25 and 35% (Cabero & Epifanio, 2021). Moreover, according to Menachemi (2011) it seems that in online surveys conducted in universities, response bias is undetectable.

On the possible bias of non-response, Armstrong and Overton (1977) suggest three approaches. The first would be to compare with known values in the population. However, this is not possible in our case because we do not collect data from the responding universities and trying to find the answers to the survey questions on the websites of the 54 universities is an arduous and complicated mission, in addition to the fact that such information is not always available on the websites. It is precisely for this reason that we designed the survey. The second approach would be to consider subjective estimates of non-response. It is assumed that those people most involved in the issue will respond. So, in our case, the non-responses could correspond to those universities with a lower degree of involvement in equality policies, especially in the STEM field. The third approach would be based on comparing the responses of the different waves of respondents. Here it is assumed that the respondents after the last reminder are more similar to the non-respondents. In the last reminder, 5 universities responded, which is a small number to draw conclusions from. In any case, their responses are not out of line with those obtained previously, although there are perhaps slightly more negative responses and unknown answers.

Despite these limitations, this study provides a snapshot of the situation of equality policies focused on the STEM field in Spanish universities, which has not been carried out to date. Therefore, although it is possible that it reports statistics that might overestimate to some extent the equality policies in STEM currently in place, if indeed the universities most involved responded in greater proportion, this study offers a novel and important contribution to pointing out avenues for improvement in relation to equality in STEM.

## RESULTS

As each question had different possible answers and all of them are categorical, the results of each question are presented and analyzed separately.

Regarding the first question: “at your university, is there any programme or initiative to bring STEM careers to primary school girls?”, 15 units (54%) stated that no such programme existed at their university.

The second question “If your university offers teaching or primary and early childhood education degrees, in the subjects dedicated to mathematics didactics, is there any topic dedicated to coeducation in mathematics?” reported the following results: in six of the 28 universities those degrees are not taught, three of those where it is taught were unaware of it, and in only three cases the answer was affirmative, while in 16 cases the answer was negative. Consequently, of those universities with teaching degrees, according to the data available to the equality units, only 16% have a topic dedicated to coeducation in mathematics.

The third question “If your university offers a Master’s degree in teacher training in the subjects of science (physics and chemistry), technology and/or mathematics, is there a topic dedicated to coeducation in these disciplines?” Therefore, of the universities that offer such a Master’s degree, according to the data provided by the equality offices, only 5% of the universities that do offer such a Master’s degree devote a topic to coeducation in these scientific-technical disciplines.

In reference to the fourth question “In your university, is there any action to favor the incorporation of female undergraduate students in PECS (Physics, Engineering, Computer Science)?”, 14 universities (50%) indicated that there was no action. Among those that did and indicated what they consisted of, the most repeated actions were campaigns and scholarships.

Regarding the fifth question “In your university, is there any positive action to favor the permanence of women in pre- and post-doctoral stages in PECS areas?”, one did not know the answer, while 21 units (78%) answered that there was none. Of those who answered in the affirmative, three corresponded to the undergraduate stage, and four to the doctoral and postdoctoral stage. One of these initiatives was a mentoring programme.

The sixth question “At your university, are there any specific awards for dissertations and theses in mathematics-intensive areas, such as PECS, to assess gender mainstreaming in these areas?” yields the following data: six universities do not offer awards in any area; 19 units offer awards, but not specific to these areas, while three universities do offer specific awards in different fields.

The information obtained from the seventh question “In your university, do any of the criteria for awarding extraordinary doctoral prizes consider that the thesis incorporates the gender perspective?” is shown below: four units do not know,

two universities (8%) answer affirmatively, one of them indicates that only a few doctoral programmes, while 22 units indicate that it is not considered.

Regarding the eighth question “if your university has a programme for assessing teaching, such as the DOCENTIA programme or similar, for example, for the recognition of five-year periods, do you get extra points if you teach with a gender perspective or training in equality, as a specific section?”, one unit does not know, 22 universities (81%) answer in the negative, three units indicate that teaching with a gender perspective is valued and two universities value training in equality as a specific section.

The responses to the ninth question “If your university has a programme to fund educational innovation projects, are extra points awarded for projects that integrate the gender perspective?” are as follows: one unit does not know; the programme does not exist in four universities; it is not valued in 17 universities (74%), while it is valued in six universities.

In reference to the tenth question “If your university has a programme to finance research projects, is equality valued in the projects? “Again, one unit does not know; the programme does not exist in six universities; it is not valued in 16 universities (76%); and among the five universities that do value it, it is valued in the following way: in one university extra points are given if the project is directed by a female researcher; in another extra points are given if the team is an equal-gender team; and on another occasion extra points are given for the two previous conditions; and finally, in two universities it is valued that the project integrates the gender perspective.

The eleventh question asks whether “in your university, is there an Honorary Doctorate in STEM disciplines?”, with the result that two units do not know, and in 11 cases the answer is negative (42%).

The information collected in the twelfth question “in your university, do people who have suffered a break or reduction in research, either due to situations recognised by leaves of absence, or due to other situations, such as care in the COVID crisis, have the possibility of reducing their teaching in order to recover research, if they so wish, by means of a specific programme for this purpose? “The answer is summarized as follows: two units do not know; in 18 universities there is no programme at all (69%); in five of the universities only for maternity leave; while in three of them, in addition to leave, there is also leave for caregiving. None of them consider situations not recognized as leave situations.

In the thirteenth question “In your university, in the event that a student suffers inappropriate behavior or even harassment, are there mechanisms in place so that this person can immediately change university (by paying for the transfer) or research group if they wish to do so? “The following answers were obtained: one of the units does not know; 19 units (70%) answer in the negative; in the affirmative

cases, the answers are very heterogeneous, in some cases only indicating a change of research group within the same university or on different campuses; while in others it is explicitly stated that the transfer is paid for.

## Archetype analysis

In order to analyze the responses in a multivariate way and thus to discover the joint behavior of the universities, archetype analysis with missing data is used (Epifanio et al., 2020). Using this statistical technique that is similar to cluster analysis, but with important differences (see Cabero et al. 2023 for a discussion of archetype analysis in education), the archetypal universities, those with the most extreme responses, are found and the rest of the universities are expressed as percentage mixtures of these archetypal universities. This helps the interpretation of the results. Three archetypal universities are considered in order to facilitate the visualization and analysis of the results. Table 1 presents the responses to the 13 questions, denoted by P, for the three archetypal universities obtained, where 0 indicates a negative response and 1 a positive response. In the sixth question, 0.5 indicates that awards are given for TFG and TFM with a gender perspective, but not by field. Missing data are denoted by NA (“not available”). The data and the code to reproduce the results are available at <http://www3.uji.es/~epifanio/RESEARCH/datoscodigo.zip>.

**Table 1**  
*Responses from the three archetypal universities.*

	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13
A1	0	NA	NA	1	0	0	0	0	NA	0	0	0	0
A2	0	0	0	0	0	0.5	0	0	NA	NA	1	NA	NA
A3	1	1	1	1	1	0.5	NA	1	1	1	NA	0	1

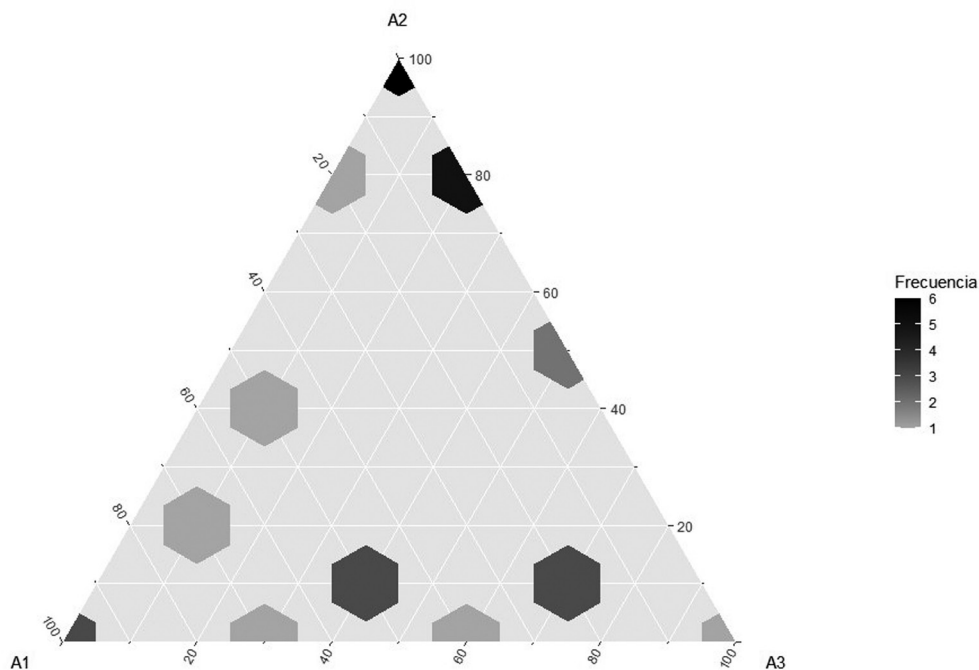
Almost all responses from both A1 and A2 universities are negative, i.e. they are universities with few equality initiatives in the STEM field. Both A1 and A2 were universities that responded after the last reminder. In contrast, almost all the responses from university A3 are positive, i.e. it is a university that is highly involved in implementing equality policies in the STEM field. Universities A1 and A2 would represent the archetype of a university with low involvement, while university A3 represents the opposite archetype.

To visualize the behavior of the universities in the survey, Figure 1 shows a ternary diagram, whose vertices corresponds to the three archetypal universities and the

rest of the universities are represented as a percentage mix of these universities. Only five of 28 universities (18%) are similar to A3, with percentages above 50% in Figure 1. Consequently, the vast majority of universities are more similar to A1 and A2 universities, with low involvement in STEM equality policies.

**Figure 1**

*Ternary diagram of the universities' responses to the three archetypes.*



## DISCUSSION AND CONCLUSIONS

Although in recent years there have been various legislative reforms to introduce gender equality in education in the university system (Calvo et al., 2022), the results of the survey show that the necessary actions to achieve equality in the STEM field have not been carried out.

If we compare the survey responses to questions 1-3, on actions to favor access and permanence in the PECS areas, with those found in the literature, we can see that most of the actions are aimed at secondary education, although there are also specific initiatives in primary education, such as that described by Ayuso et al

(2021). These initiatives are not without resistance, since, as Castaño and Vázquez-Cupeiro (2023) report, some universities opposed them with arguments associated with the supposed discrimination of men. For example, Resa's study (2023), after analyzing the teaching guides for subjects in the Primary Education degree at 38 universities in the 2019-20 academic year, shows that only 6% of the guides contain content related to gender equality. In addition, the study by Miralles-Cardona et al. (2020) notes:

greater receptiveness to equality training among students of the undergraduate degrees in early childhood and primary education than among students of the master's degree in secondary education, as well as a much more favorable perception of gender training among female students. (p. 247)

Therefore, it is still necessary to promote coeducation in kinder and primary education and in the master's degree in secondary education, as can be deduced both from the survey data and from the studies by Miralles-Cardona (2020) and Resa (2023) mentioned in the previous paragraph. Furthermore, "the emphasis given by the LOMLOE to gender equality must undoubtedly be reflected in the training of students in the faculties of education, i.e. the future teachers responsible for putting these regulations into practice" (García-Lastra, 2022, p. 35). Therefore, it would be important to carry out actions to try to involve especially the male students who are studying for a Master's degree in secondary education and come from the PECS areas.

In relation to questions 4 and 5, on actions to favor access and permanence in the PECS areas, we observe that actions to favor access are more important than those to favor permanence. Although we can find publications on mentoring programmes such as the one promoted by the Royal Academy of Engineering of Spain which has been carried out in different universities (Calvo-Iglesias, 2022a). When promoting university degrees, it would be interesting that universities would consider that the motivations of men and women are different. For example, for women, social utility seems to be an important factor (Sáinz et al., 2020). The changes made by universities such as Carnegie Mellon University and Harvey Mudd College in the USA to adapt the academic culture to women should also be analyzed in order to move from 10%-15% of female students enrolled in computer science degrees, as is currently the case in Spain, to 50% (Díaz, 2021).

The lack of recognition of students' work carried out with a gender perspective, as shown in the answers to questions 6 and 7, is in line with the results of a recent review of the TFGs awarded for integrating the gender perspective in disciplines related to the STEM field in different universities (Calvo-Iglesias, 2022b). Even so, we would like to highlight that more and more universities are implementing these awards and giving them visibility through repositories, so we can find TFGs that

incorporate this perspective in degrees such as Physics, or engineering degrees such as Computer Science (Calvo-Iglesias, 2022b).

There is also no recognition of teaching and research with a gender perspective (questions 8 to 10). Different investigations show that both educational innovation projects in the field of PECS and publications on teaching experiences or research projects with a gender perspective are still insufficient (Calvo-Iglesias, 2022a; Unidad Mujer y Ciencia, 2023), although there have been important projects such as that of the Polytechnic University of Catalonia (Calvo et al., 2022). And to reverse this situation, mandatory training should be provided to teaching and research staff and institutional incentives should be created (Lombardo et al., 2021). For example, including the assessment of teaching with a gender perspective or attendance at gender training courses could help the involvement of teachers, especially male teachers whose participation in gender training courses is reduced (Unit of Women and Science, 2023). This involvement of male teachers in PECS areas is fundamental since they are masculinized and therefore more focus should be placed on their role as allies to achieve equality. As recent research highlights, it is essential to know what men's motivations are to become allies and plan strategies to involve them in equity issues, showing them that their efforts are important (Nash et al., 2021).

The answers to question 11 show that there is still much to do in recognizing women as honorary doctors (RUIGEU, 2022; García, 2023), although there are universities that have chosen women from PECS fields such as Wendy Hall, Margaret Hamilton, Lisa Randall, Jocelyn Bell or Inmaculada Paz Andrade.

And finally, we want to comment that the little involvement of universities in response to the effect of the pandemic on the careers of researchers is striking, taking into account that there are studies that prove the stoppage in scientific production that they experienced during this period (Izquierdo- Useros et al., 2022). Furthermore, to combat harassment it is necessary to take measures and it would be advisable that they be the same throughout the university system, as is already done in the Catalan university system (Generalitat de Catalunya, 2023).

All these responses show us, as we have commented at the beginning of this section, that there is a low involvement of universities in equality policies. Furthermore, it is striking that in numerous cases the response reflected a lack of knowledge of the situation on the part of the equality unit, which may be due to changes in management and the lack of stable personnel, for example, an equality technician. We want to highlight that it is not enough to have a gender equality unit, but rather it is necessary to provide it with the necessary means, both in human and economic resources, to give visibility to the actions and support them without resistance. In this sense, we highlight the opposition to using inclusive language, for example, School of Engineering instead of School of (male in Spanish) Engineers (Castaño & Vázquez Cupeiro, 2023).

The analysis of archetypes confirms this low involvement and shows us that only five of the universities that participated in this study are committed to equality in the scientific-technical field and carry out actions to achieve it. We hope that soon more universities will join these actions following the example of the most committed ones and to do so it is necessary for the Ministry of Universities, the Conference of Rectors of the Spanish University System or the National Accreditation Agency to take appropriate measures, incentives and sanctions, not just recommendations, so that equality is a priority. A clear example of action would be for ANECA and other quality agencies to establish that to accredit degrees or DOCENTIA programs, the gender dimension must be considered, following the line undertaken by the Agency for the Quality of the University System of Catalonia (AQU). Likewise, the focus of action should be changed, which is highly directed at women, and think about actions to involve male teachers and students of these degrees so that they participate in equality actions.

## ACKNOWLEDGMENTS

We acknowledge to all the equality units of the Spanish university system that responded to the survey and who, with their collaboration, made this study possible. We hope that our work helps them continue promoting equality in the scientific-technical field.

Work partially supported by the Research grant TRANSUJI/2023/6 from Jaume I University.

## REFERENCES

- Armstrong, J. S., & Overton, T. S. (1977). Estimating nonresponse bias in mail surveys. *Journal of Marketing Research*, 14(3), 396-402. <https://doi.org/10.2307/3150783>
- Ayuso, N., Fillola, E., Masia, B., Murillo, A. C., Trillo-Lado, R., Baldassarri, S., Cerezo, E., Ruberte, L., Mariscal, D., & Villarroya-Gaudó, M. (2021). Gender gap in STEM: a cross-sectional study of primary school students' self-perception and test anxiety in mathematics. *IEEE Transactions on Education*, 64(1), 40-49. <http://dx.doi.org/10.1109/TE.2020.3004075>
- Bernardo Álvarez, A. (2021). *Acoso. #MeToo en la ciencia española*. Next Door Publishers.
- Bian, L., Leslie, S., & Cimpian, A. (2017). Gender stereotypes about intellectual ability emerge early and influence children's interests. *Science*, 355(6323), 389-391. <https://bit.ly/49spk7>



- Cabero, I., & Epifanio, I. (2021). A data science analysis of academic staff workload profiles in Spanish universities: gender gap laid bare. *Education Sciences*, 11(7), 317. <https://doi.org/10.3390/educsci11070317>
- Cabero I, Epifanio, I., & Gual-Arnau, X. (2023). Analysis of archetypes to determine time use and workload profiles of Spanish university professors. *Education Sciences*, 13(3), 295. <https://doi.org/10.3390/educsci13030295>
- Calvo-Iglesias, E., Epifanio, I., Estrade, S., & Mas de les Valls, E. (2022). Gender perspective in STEM disciplines in Spain universities. In R. Huang, Kinshuk, M. Jemni, N. -S. Chen, & J. M. Spector (Eds.), *Women in STEM in higher education: good practices of attraction, access and retainment in higher education* (pp. 165-179). Springer Nature Singapore. <https://bit.ly/3PUTudF>
- Calvo Iglesias, E. (2022a). Perspectiva de género en la docencia universitaria de las materias STEM, una revisión. In L. Molina García, D. Cobos Sanchiz, E. López Meneses, A. Jaén Martínez, & A. H. Martín Padilla (Eds.), *Educación y sociedad: pensamiento e innovación para la transformación social* (pp. 807-815). Dykinson. <https://bit.ly/3vxiLnt>
- Calvo Iglesias, E. (2022b). Premios a los Trabajos de Fin de Grado con perspectiva de género en las disciplinas CTIM, una revisión. In J. M. Esteve Faubel, A. Fernández Sogorb, R. Martínez Roig, & J. F. Álvarez Herrero (Eds.), *Transformando la educación a través del conocimiento* (pp. 191-200). Octaedro. <https://bit.ly/3U2HE3A>
- Castaño Collado, C., & Vázquez-Cupeiro, S. (2023). Resistance and counter-resistance to gender equality policies in Spanish universities. *Papers. Revista de Sociologia*, 108(2), Artículo e3105. <https://doi.org/10.5565/rev/papers.3105>
- Cimpian, J. R., Kim, T. H., & McDermott, Z. T. (2020). Understanding persistent gender gaps in STEM. *Science*, 368(6497), 1317-1319. <https://bit.ly/3vleWvz>
- Couso, D. (2023). *Investigación educativa con perspectiva de género: ¿de qué estamos hablando?* [Vídeo]. YouTube. <https://bit.ly/3U4D70x>
- De la Cal, M.L., Etxezarreta, A., Galbete, A., & Martinez, E. (2023). *Estudio brecha salarial de género en las universidades públicas españolas*. <https://bit.ly/3TtEh4e>
- Díaz, C. (2021). *Cuando las informáticas rompen el techo de cristal*. [Webinar]. Tv USC. <https://bit.ly/49n4R4Z>
- Epifanio, I., Ibáñez, M. V., & Simó, A. (2020). Archetypal analysis with missing data: see all samples by looking at a few based on extreme profiles. *The American Statistician*, 74(2), 169-183. <https://doi.org/10.1080/00031305.2018.1545700>
- Galán, A. (2023). Tiempos convulsos para la ética en la ciencia y en el uso de las métricas. *Educación XX1*, 26(2), 9-14. <https://doi.org/10.5944/educxx1.37562>
- Gallardo, M. (2021). Does maternity affect women's careers? Perceptions of working mothers in academia. *Educación XX1*, 24(1), 405-428. <http://dx.doi.org/10.5944/educXX1.26714>

- García, C. (2023, 7 marzo). La brecha de género persiste en la universidad: el abismo de los honoris causa. *elDiario.es*. <https://bit.ly/3IJf9RY>
- García-Dauder, S., & Pérez-Sedeño, E. (2017). *Las "mentiras" científicas sobre las mujeres*. Catarata.
- García-Lastra, M. (2022). Coeducación y formación del profesorado: una (nueva) oportunidad para repensar la práctica educativa. In N. Morales (Ed.), *Igualdad y coeducación. Retos para las escuelas del siglo XXI* (pp. 33-45). Ediciones Universidad de Salamanca. <https://doi.org/10.14201/OAQ0336>
- Generalitat de Catalunya (2023). *Protocol guia d'àmbit universitari per prevenir i reparar amb diligència deguda les situacions de violència masclista, assetjament sexual i assetjament per raó de sexe, orientació sexual, identitat de gènere o expressió de gènere*. <https://bit.ly/49Xqil2>
- González-Pérez, S., Martínez-Martínez, M., Rey-Paredes, V., & Cifre, E. (2022). I am done with this! Women dropping out of engineering majors. *Frontiers in Psychology, 13*, Artículo 918439. <https://doi.org/10.3389/fpsyg.2022.918439>
- González Ramos, A. M. (2018). ¿Por qué abandonan las mujeres? En A. M. González Ramos (Ed.) *Mujeres en la ciencia contemporánea: la aguja y el camello* (pp. 39-66). Icaria.
- Heijstra, T. M., Steinhorsdóttir, F. S., & Einarsdóttir, T. (2017). Academic career making and the double-edged role of academic housework. *Gender and Education, 29*(6), 764-780. <https://doi.org/10.1080/09540253.2016.1171825>
- Izquierdo-Useros, N., Marin Lopez, M. A., Monguió-Tortajada, M., Muñoz-Moreno, J. A., Agusti Benito, C., Morón-López, S., Evans, H., Gualdrón-López, M., Müller, J., & Prado, J. G. (2022). Impact of COVID-19 lockdown in a biomedical research campus: a gender perspective analysis. *Frontiers in Psychology, 13*, Artículo 906072. <https://doi.org/10.3389/fpsyg.2022.906072>
- Ley Orgánica 2/2023, de 22 de marzo, del Sistema Universitario. *Boletín Oficial del Estado núm. 70*, de 23 de marzo de 2023. <https://bit.ly/4amSmrA>
- Lombardo, E., Bustelo, M., Alonso, A., Verge, T., Elizondo, A., Tildesley, R., Diz I., & La Barbera, M. C. (2021). *Igualdad e interseccionalidad en las universidades. Recomendaciones*. <https://bit.ly/4cLKUHZ>
- Martín Carrasquilla, O., Muñoz San Roque, I., & Santaolalla Pascual, E. (2023). Actitudes hacia la ciencia en la educación STEM: desarrollo de una escala para la detección y fomento de vocaciones tempranas. *Revista Española de Orientación y Psicopedagogía, 34*(1), 122-140. <https://doi.org/10.5944/reop.vol.34.num.1.2023.37421>
- Menachemi, N. (2011). Assessing response bias in a web survey at a university faculty. *Evaluation & Research in Education, 24*(1), 5-15. <https://doi.org/10.1080/09500790.2010.526205>

- Miralles-Cardona, C., Cardona-Moltó, M. -C., & Chiner, E. (2020). La perspectiva de género en la formación inicial docente: estudio descriptivo de las percepciones del alumnado. *Educación XX1*, 23(2), 231-257. <https://doi.org/10.5944/educxx1.23899>
- Moss-Racusin, C., Dovidio, J. F., Brescoll, V. L., Graham, M. J., & Handelsman, J. (2012). Science faculty's subtle gender biases favor male students. *PNAS*, 109(41), 16474-16479. <https://doi.org/10.1073/pnas.1211286109>
- Nash, M., Grant, R., Moore, R., & Winzenberg, T. (2021). Male allyship in institutional STEM gender equity initiatives. *Plos One*, 16(3), Artículo e0248373. <https://doi.org/10.1371/journal.pone.0248373>
- Powell, K. (2021). The parenting penalties faced by scientist mothers. *Nature*, 595(7868), 611-613. <https://doi.org/10.1038/d41586-021-01993-x>
- Red de Unidades de Igualdad de Género para la Excelencia Universitaria (2022). *Las políticas de igualdad universitarias: XV Encuentro RUIGEU 2022: diagnóstico de los grupos de trabajo*. <https://bit.ly/49rhpZI>
- Resa, A. (2023). Igualdad de género y formación inicial del profesorado en España: entre la utopía y la realidad. *Profesorado, Revista de Currículum y Formación del Profesorado*, 27(1), 255-275. <https://doi.org/10.30827/profesorado.v27i1.21192>
- Reverter-Bañón, S. (2021). La igualdad de género en la universidad. Capitalismo académico y rankings globales. *Investigaciones Feministas*, 12(2), 271-281. <https://doi.org/10.5209/infe.72331>
- Rossi, A. S. (1965). Women in science: why so few? Social and psychological influences restrict women's choice and pursuit of careers in science. *Science*, 148(3674), 1196-1202. <https://bit.ly/3xgWzyb>
- Sáinz, M. (2017). *¿Por qué no hay más mujeres STEM? Se buscan ingenieras, físicas y tecnólogas*. Ariel y Fundación Telefónica.
- Sáinz, M., Fàbregues, S., Rodó-de-Zárate, M., Martínez-Cantos, J. -L., Arroyo, L., & Romano, M. -J. (2020). Gendered motivations to pursue male-dominated STEM careers among Spanish young people: a qualitative study. *Journal of Career Development*, 47(4), 408-423. <https://doi.org/10.1177/0894845318801101>
- Samper-Gras, T. (2022). A lo importante, ya van ellos. Una propuesta contextual desde los nuevos materialismos para comprender por qué hay tan pocas mujeres en ciencias técnicas. *Cuestiones de Género: de la Igualdad y la Diferencia*, 17, 209-231. <https://doi.org/10.18002/cg.i17.7248>
- Saura, G., & Caballero, K. (2020). Capitalismo académico digital. *Revista Española de Educación Comparada*, 37, 192. <https://doi.org/10.5944/reec.37.2021.27797>
- Schiebinger, L., & Klinge, I. (2020). *Gendered innovations 2: how inclusive analysis contributes to research and innovation*. Publications Office of the European Union.

- Segovia Saiz, C., Briones Vozmediano, E., Tomás Mateos, J., González María, E., & Gea Sánchez, M. (2023). El techo de cristal de las mujeres investigadoras en ciencias de la salud en España. *Feminismo/s*, 42, 385-412. <https://doi.org/10.14198/fem.2023.42.14>
- Sugimoto, C. R., & Larivière, V. (2023). *Equity for women in science: dismantling systemic barriers to advancement*. Harvard University Press.
- Unidad de Mujer y Ciencia (2023). *Científicas en Cifras 2023*. <https://bit.ly/3JdtMx7>
- Valls, R., Puigvert, L., Melgar, P., & Garcia-Yeste, C. (2016). Breaking the silence at Spanish universities: findings from the first study of violence against women on campuses in Spain. *Violence Against Women*, 22(13), 1519-1539. <https://doi.org/10.1177/1077801215627511>
- Verdugo-Castro, S. (2022). *La brecha de género en los estudios universitarios del sector STEM en el espacio español de educación*. [Tesis doctoral, Universidad de Salamanca]. GRIAL Repositorio documental Universidad de Salamanca. <https://bit.ly/3AqxPTH>
- Yang, Y., & D. Wright Carroll. (2018). Gendered microaggressions in Science, Technology, Engineering, and Mathematics. *Leadership and Research in Education* 4, 28-45. <https://bit.ly/3PPixii>

# Digital training in university teaching induction programmes in Spain: a comparative analysis based on DigComp and DigCompEdu

*La formación digital en los programas de iniciación a la docencia universitaria en España: Un análisis comparativo a partir del DigComp y DigCompEdu*

Sara Buils <sup>1\*</sup> 

Virginia Viñoles-Cosentino <sup>1</sup> 

Francesc M. Esteve-Mon <sup>1</sup> 

Lucía Sánchez-Tarazaga <sup>1</sup> 

<sup>1</sup> Universitat Jaume I, Spain

\* Corresponding author. E-mail: [sbuils@uji.es](mailto:sbuils@uji.es)

## Cómo referenciar este artículo/ How to reference this article:

Buils, S., Viñoles-Cosentino, V., Esteve-Mon, F. M., & Sánchez-Tarazaga, L. (2024). Digital training in university teaching induction programmes in Spain: A comparative analysis based on DigComp and DigCompEdu. *Educación XX1*, 27(2), 37-64. <https://doi.org/10.5944/educxx1.38652>

**Date received:** 15/10/2023

**Date accepted:** 29/02/2024

**Published online:** 28/06/2024

## ABSTRACT

The mass and accelerated digitisation of education in recent decades has led to the need for digitally competent teachers, especially in higher education. In this regard, a number of professional frameworks have been developed in an attempt to define and conceptualise teaching digital competence. However, most research studies and frameworks have focused on pre-university stages. Approaching novice training from a digital perspective is also a challenge that needs to be addressed at the initial stage, when fundamental habits and knowledge are established and consolidated. The general objective of this study is therefore to analyse lecturer training in digital competence within the training proposals for initiation to teaching in Spanish universities, according to the European models DigComp and DigCompEdu. This is a pioneering work because, to date, no similar study has encompassed the entire Spanish university system. Specifically, it is an exploratory–descriptive research study in which deductive documentary and content analysis is carried out on 46 introductory university teaching programmes in Spain. Analysis of the DigComp competences covers the most frequently identified areas: Communication and Collaboration, followed by Information and Data Literacy, while the least frequently detected area is Safety. For DigCompEdu, the most frequently identified areas are Professional Engagement, Digital Resources and Teaching and Learning. The results of this paper may provide useful information for developing training plans for new university teaching staff which include the different areas of digital competence and teaching digital competence, thus ultimately contributing to the improvement of the quality of higher education in Spain.

**Keywords:** teaching training, higher education, teaching digital competence, professional development, teaching induction, content analysis

## RESUMEN

La digitalización masiva y acelerada en el ámbito educativo de las últimas décadas ha acarreado la necesidad de contar con docentes digitalmente competentes, especialmente en la educación superior. En este sentido, se han diseñado diversos marcos profesionales que intentan definir y conceptualizar la competencia digital docente. Sin embargo, la mayoría de las investigaciones y marcos se han centrado en etapas preuniversitarias. Asimismo, abordar la formación novel bajo una perspectiva digital es un desafío que debe atenderse en la etapa inicial, pues es cuando se establecen y consolidan los hábitos y conocimientos fundamentales. Es por ello que el presente estudio tiene por objetivo general analizar la formación docente relacionada con la competencia digital dentro de las propuestas formativas de iniciación a la docencia en las universidades españolas, tomando como referencia los modelos europeos DigComp y DigCompEdu. Se trata de un trabajo pionero pues, hasta el momento, no existe una investigación similar para el conjunto del sistema universitario español. En concreto, se trata de una investigación exploratoria-descriptiva en que se realiza un análisis documental y de contenido de tipo deductivo de 46 programas de iniciación a la docencia universitaria en España. En relación con el análisis

de las competencias del DigComp, las áreas identificadas con mayor frecuencia son el área Comunicación y colaboración, seguida de Alfabetización informacional y de datos; mientras que el área detectada en menor frecuencia ha sido Seguridad. Respecto al DigCompEdu, las áreas más identificadas son Compromiso Profesional, Contenidos digitales y Enseñanza y Aprendizaje. Los resultados de este artículo pueden proporcionar información útil para el desarrollo de planes de formación para el profesorado novel universitario que incluyan las diferentes áreas de la competencia digital y competencia digital docente para así, en última instancia, contribuir a la mejora de la calidad de la educación superior en España.

**Palabras clave:** formación de docentes, educación superior, competencia digital docente, desarrollo profesional, inducción docente, análisis de contenido

## INTRODUCTION

Educational institutions are facing mass and accelerated digitisation that has occurred in higher education over the last decades, resulting in the need for digitally competent teachers (Tondeur et al., 2023). This digitisation is one of the current challenges for higher education institutions, and is a priority in European education policy, mainly supported by the NextGenerationEU economic recovery package (European Commission, 2020b). Although organisations such as the Conference of Rectors of Spanish Universities (Crue) are attempting to establish digitalisation frameworks for universities, the evidence found indicates that there is currently no uniform model for the implementation of digital technologies in Spanish public universities; this is mainly due to their idiosyncrasies, history and unique issues (Castañeda et al., 2023a).

Similarly, opportunities and challenges have emerged in the integration of digital technologies in education, highlighting the importance of digital competence in higher education (Smestad et al., 2023). Digital competence is the set of skills needed to use information and communication technology (ICT) to improve everyday effectiveness (Ferrari, 2013), as well as the safe, critical and responsible use of information society technologies at work, and in entertainment and education (European Commission, 2020a).

At the same time, another term has emerged: digital competence in teaching. Its main objectives are to facilitate student learning and to promote the acquisition of digital competence; to foster processes to improve and innovate in teaching that adapt to the demands of the digital era; and to contribute to the professional growth of teachers, in line with the changes occurring in society and academic institutions (Gairín et al., 2023). This concept involves an instrumental approach to technology, a strong pedagogical component and the development of students' competences. Digital competence in teaching is therefore a complex process and requires a strategic approach (Castañeda et al., 2023a).

In this context, several frameworks have been designed to define and conceptualise digital competence in teaching, which in turn address its assessment and development. However, most research studies and frameworks have focused on the pre-university stage, which requires further investigation (Lin and Johnson, 2021). One of the main frameworks for conceptualising digital competence in teaching at the European level is the DigCompEdu (digital competence of educators), which is based on the DigComp (digital competence of all citizens), developed by the Joint Research Centre of the European Commission (Redecker and Punie, 2017). It has also been adopted by Crue as the official framework in Spain. According to a study by Crue on the state of digital competence in teaching in higher education in Spain (Crue, 2022), teaching staff perceive themselves to be at different levels of development, with medium (B2) and high (C1 and C2) levels being predominant, according to the DigCompEdu framework. Similarly, in Latin America, they are largely perceived to be at an intermediate level (B) (Prendes-Espinosa and Carvalho, 2022).

In short, varying levels of digital competence have been detected among teaching staff, which indicates the need for specific training in technical areas, especially in the pedagogical use of technology. Therefore, more practical and experiential training should be encouraged, while the added pedagogical value of digital technologies in context should be recognised (Amhag et al., 2019; Fernández-Batanero et al., 2021).

Furthermore, addressing teacher training from a digital perspective is a challenge that needs to be met in in-service and initial training, in particular (Gairín et al., 2023). In the European context, within the framework of the European Higher Education Area, the Digital Education Action Plan (2021–2027) is worthy of note. It aims to achieve quality, inclusive and accessible digital education through appropriate teacher professional development (European Commission, 2020c), for which the promotion of innovative pedagogical approaches and the use of effective digital content are key (European Commission, 2020a). It is therefore a clear priority to ensure training in these aspects for newly recruited teachers in order to reinforce the knowledge, skills and attitudes needed to fulfil their role, especially in terms of pedagogical competence (Gast et al., 2022).

It is during this initial stage that fundamental habits and knowledge are established and consolidated. Induction is one of the most complex and critical stages (Sánchez-Tarazaga et al., 2022), as it is during this period that teaching identity is forged and socialisation into the university environment takes place (Kelchtermans, 2019). Thus, induction training or initiation to university teaching is essential to enhance teacher professional development.

Due to recent interest in improving the quality of education and thus the pedagogical training of university teachers, teacher professional development



has become one of the main focuses of new educational goals and policies (Duță and Rafailă, 2014). Careful consideration of the elements involved in this training process could enable the creation of effective strategies to promote continuous learning from initial to ongoing training. That the concept of teacher professional development may evolve over the course of a teacher's professional career must also be acknowledged.

Professional development involves a variety of mechanisms, actions and processes, shaped in turn by individual and contextual cultural and social, economic and political characteristics and conditions (Tan and Dimmock, 2014). Several countries have implemented reforms in university education through policies and initiatives aimed at improving and professionalising teaching (European Commission, 2018; Patfield et al., 2022).

At the national level, Organic Law 2/2023, of 22 March, which establishes the University System (LOSU by its Spanish acronym), sets down the requirement to provide pedagogical accreditation to newly hired faculty, while allowing the institution the autonomy to determine its design and development. However, the absence of research, systematisation and evaluation of teacher professional development in higher education has led to a paucity of empirical evidence on policies in this field (Sánchez-Tarazaga et al., 2022). It is therefore of utmost importance to analyse the characteristics of university induction training in an increasingly digital world. Moreover, to date, no study has analysed the digital perspective of training for new university teaching staff in the Spanish university system. Therefore, we consider this study to be a novel and valuable contribution to research in university education policy and, in particular, to teacher training. This article aims to provide relevant results about current training in digital competence in the training proposals for early-career university teachers in order to address the need detected in recent research (Betancur and García-Valcárcel, 2022).

## OBJECTIVE AND RESEARCH QUESTIONS

The general aim of this study is to analyse teacher training in digital competence within the training proposals for induction to university teaching at Spanish universities.

To this end, it aims to answer the following research questions:

RQ.1. How many Spanish universities include digital competence training in their training strategies for an introduction to university teaching?

Where they do include digital competence training in novice teacher training, the following research questions are pursued:

RQ.2. Which areas and competences of digital citizenship competence, in accordance with the DigComp framework, are detected in this induction training?

RQ.3. Which areas and competences of digital teacher competence, in accordance with the DigCompEdu framework, are detected in this induction training?

## METHOD

This is an exploratory–descriptive research study, in which documentary and content analysis was used as a technique (Krippendorff, 2018). This process entailed a comparative study of different Spanish university institutions (García Vargas et al., 2019).

### Sample

The sample was obtained by non-probabilistic purposive sampling. The procedure for obtaining the sample was based on the official data provided by the Spanish Ministry of Universities (2022). First, the universe of Spanish universities was identified and numbered a total of 84 institutions. Of these, 50 were public and 34 private, and 90.5% provided in-person teaching.

Based on this identification, universities offering induction training for novice university teachers were selected. Each university was a sampling unit, which resulted in a total of 41 universities offering induction training, all of which were public and provided in-person teaching, except for one.

Once the database had been compiled, a documentary analysis of the induction programmes of these 41 universities was carried out. The unit of record was comprised of the documents or web pages explaining each training proposal offered by the universities selected. In this phase, two different training programmes were found in five universities. The total number of units of analysis was 46 training programmes aimed at new teaching recruits (Table 1).

Training courses were selected according to three inclusion criteria: (1) current programmes, (2) access through official university websites and (3) primary focus on junior faculty. To guarantee the veracity of the information obtained, those responsible for the training programmes were consulted by email and telephone, in accordance with the public information of each institution. Data collection was carried out between November 2022 and February 2023.

**Table 1**

*Sample of Spanish universities that offer introductory training in university teaching*

No.	Sampling units - universities	Identification code	Registration units - induction training for university teaching
1	U. of Almería	UAL	<i>Plan de Formación del Profesorado Novel</i> (Novice lecturer training plan)
2	U. of Cádiz	UCA	<i>Iniciación a la labor docente en la universidad de Cádiz</i> (Introduction to teaching at the University of Cadiz)
3	U. of Córdoba	UCO	<i>Título de Experto en Docencia Universitaria</i> (Expert diploma in university teaching)
4	U. of Granada	UGR	<i>Curso de iniciación a la docencia universitaria</i> (Introductory course to university teaching)
5	U. of Huelva	UHU	<i>Máster en Docencia Universitaria</i> (Master's degree in university teaching)
6	U. of Málaga	UMA	<i>Curso de formación para el profesorado universitario novel -1ª Fase- y Seminario de formación docente para el profesorado universitario novel -2ª Fase-</i> (Training course for new university lecturers, 1st Phase, and Seminar on teacher training for new university lecturers, 2nd Phase)
7	U. Pablo de Olavide	UPO	<i>Formación de bienvenida para PDI de nuevo ingreso</i> (Induction training for new lecturers)
8	U. of Sevilla	US	1) <i>Programa de Creación, Desarrollo y Consolidación de Grupos de Apoyo entre Docentes</i> (Programme for the creation, development and consolidation of teacher support groups) 2) <i>Fase Preliminar del Programa FIDOP (Formación e Innovación Docente del Profesorado): Fase de iniciación - Curso General de Docencia Universitaria (CGDU)</i> (Preliminary phase of the FIDOP (Teacher training and teaching innovation) programme: Induction phase - General university teaching course)
9	U. of Zaragoza	UNIZAR	<i>Programa de Formación del Profesorado Novel</i> (Novice lecturer training programme)
10	U. of Oviedo	UNIOVI	<i>Programa de formación inicial del profesorado novel</i> (Initial teacher training programme for novice lecturers)

No.	Sampling units - universities	Identification code	Registration units - induction training for university teaching
11	U. of La Laguna	ULL-1	1) <i>Programa de Acogida y Mentorización para el Profesorado de Nuevo Ingreso en la Universidad de La Laguna</i> (ProNov-ULL) (Induction and mentoring programme for new teaching staff at the University of La Laguna)
		ULL-1	2) <i>Título de Experto Universitario en Docencia Universitaria</i> (EDU-ULL) (Expert diploma in university teaching)
12	U. of Cantabria	UNICAN	<i>Itinerario 1 del Plan de Formación: Formación para el profesorado novel</i> (Itinerary 1 of the training plan: Training for novice lecturers)
13	U. Católica de Ávila	UCAV	<i>Plan de Formación para el Profesorado Universitario Novel</i> (Training plan for new university teaching staff)
14	U. of Burgos	UBU	Plan de Formación del Profesorado Novel (PFPN) (Training plan for new lecturers)
15	U. of Salamanca	USAL	<i>Formación Inicial del Profesorado Universitario</i> (FIPU) (Initial university teacher training)
16	U. of Castilla-La Mancha	UCLM	<i>Introducción a la docencia universitaria en la UCLM</i> (Introduction to university teaching at UCLM)
17	U. Autònoma de Barcelona	UAB	<i>Formació Docent en Educació Superior</i> (FDES) (Teaching training in higher education)
18	U. of Barcelona	UB	<i>Formació per al professorat UB de nova incorporació</i> (Training for new UB teaching staff)
19	U. Politècnica de Catalunya	UPC	<i>Formació en competències docents per a becaris FPU, del Programa de Postgrau: Ensenyament Universitari en Ciències, Tecnologia, Enginyeria i Matemàtiques</i> (STEM) (Training in teaching skills for FPU (teacher training) scholarship holders on the Postgraduate programme: University Education in Science, Technology, Engineering and Mathematics)
20	U. Pompeu Fabra	UPF	<i>Formación Inicial en Docencia Universitaria</i> (FIDU) (Initial university teaching training)
21	U. of Girona	UdG	<i>Módulo formativo para profesorado de nueva incorporación</i> (Training module for new lecturers)

No.	Sampling units - universities	Identification code	Registration units - induction training for university teaching
22	U. of Alcalá	UAH	<i>Formación de Profesores Universitarios Noveles</i> (Teacher training for novice lecturers)
23	U. Antonio de Nebrija	NEBRIJA	<i>Plan específico de Acogida para personal de nueva incorporación</i> (Specific induction plan for new lecturers)
24	U. Autónoma de Madrid	UAM-1	1) <i>Título de Experto en Metodología Docente Universitaria</i> (Expert diploma in university teaching methodology)
		UAM-2	2) <i>Título de Experto en Mentoría Universitaria</i> (Expert diploma in university mentoring) (*Trainee teachers take a short, basic initial training course beforehand)
25	U. Carlos III de Madrid	UC3M	<i>Taller de Introducción a la docencia</i> (Workshop on an introduction to teaching)
26	U. Complutense de Madrid	UCM	<i>Proyecto de acogida docente y mentoría</i> (Teacher hosting and mentoring project)
27	U. Politécnica de Madrid	UPM	<i>Programa de Formación Inicial para la Docencia Universitaria</i> (Initial training programme for university teaching)
28	U. of Navarra	UNAV	<i>Programa DOCENS</i> (Training programme for new lecturers)
29	U. of Alicante	UA-1	1) <i>Programa de Formación del PDI Novel-13CE</i> (Training programme for new lecturers)
		UA-2	2) <i>Acogida del profesorado novel de la Universidad de Alicante</i> (Welcoming new teaching staff to the University of Alicante)
30	U. Miguel Hernández de Elche	UMH	<i>Programa de Formación Inicial en Docencia Universitaria (PFIDU)</i> (Initial training programme in university teaching)
31	U. Jaime I	UJI-1	1) <i>Programa de Formación del Profesorado Novel</i> (Training programme for new lecturers)
		UJI-2	2) <i>Formación de acogida</i> (Induction training)
32	U. Católica de Valencia San Vicente Mártir	UCV	<i>Experto Universitario en Iniciación a la Docencia Universitaria (IDU)</i> (Expert diploma: introduction to university teaching)

No.	Sampling units - universities	Identification code	Registration units - induction training for university teaching
33	U. Politècnica de València	UPV	<i>Programa de Acogida Universitario (PAU)</i> (University induction programme)
34	U. of València	UV	<i>Formación Inicial del Profesorado Universitario (FIPU)</i> (Initial training for new lecturers)
35	U. Nacional de Educación a Distancia	UNED	<i>Programa de Formación Inicial del Profesorado (FID)</i> (Initial training programme for lecturers)
36	U. of Extremadura	UNEX	<i>Plan de Formación de Profesores Noveles para la docencia Universitaria</i> (University teaching training plan for new lecturers)
37	U. of Coruña	UDC	<i>Plan de Formación Inicial (PFI)</i> (Initial training plan)
38	U. of Vigo	UVIGO	<i>Formación del profesorado universitario novel</i> (Novice university teacher training)
39	U. of La Rioja	UNIRIOJA	<i>Curso de acogida para el nuevo profesorado de la Universidad de La Rioja</i> (Induction course for new teaching staff at the University of La Rioja)
40	U. of Deusto	DEUSTO	<i>Plan de Formación del Profesorado Novel</i> (Training plan for novice lecturers)
41	U. of País Vasco / Euskal Herriko Unibertsitatea	EHU / UPV-1	1) <i>Acogida y Orientación para el Profesorado Novel</i> (irakasberri ON) (Induction and guidance for novice lecturers)
		EHU / UPV-2	2) <i>iRAKER: Programa de desarrollo de la competencia académica del profesorado de la UPV/EHU</i> (Programme for the development of academic competence for UPV/EHU teaching staff)

Source: Authors' own work

## Data analysis

Documentary content analysis was the method used to retrieve and identify the original documents via a thematic approach to the information. In addition, content analysis of the textual data enabled the formulation of reproducible and valid inferences applicable to their context (Krippendorff, 2018). Qualitative and quantitative thematic content analysis, in which the unit of meaning was words or

phrases, were combined. An Excel template was created for content cleaning and the database. This is a mixed-case analysis that combined basic univariate descriptive and frequency analyses. To count the units and indicators of the phenomena, a coding and categorisation system was established for quantification, following the rules of presence and frequency counting (Bardin, 1996).

The qualitative content analysis process was conducted using a deductive coding model based on the respective European reference frameworks, DigComp for the second research question (Table 2) and DigCompEdu for the third (Table 3).

## RESULTS

The results are presented below in a descriptive narrative, combining a quantitative approach with examples of the programmes analysed (Gibbs, 2012).

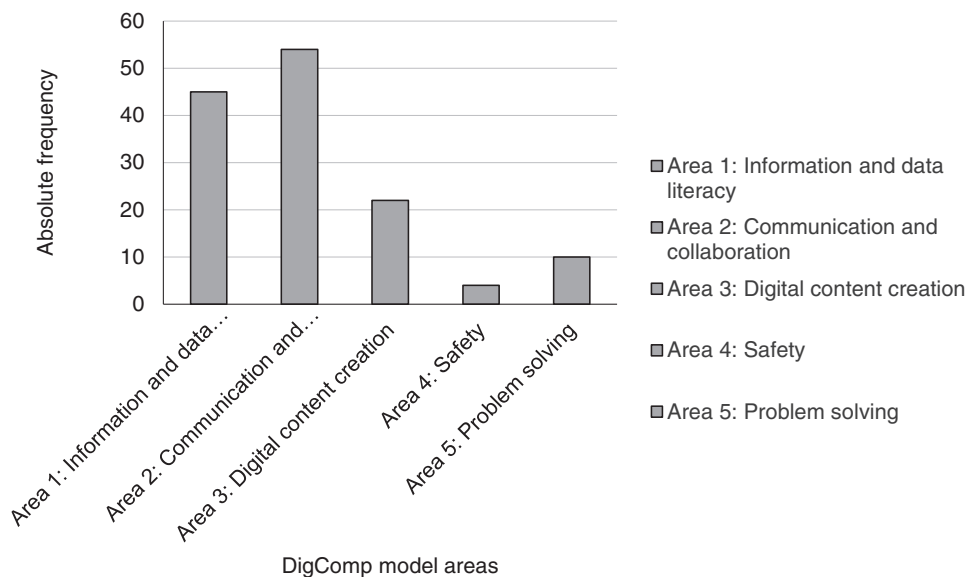
Digital competence training offered by Spanish universities forms part of the continuous professional development for all university teaching and research staff, and various courses relating specifically to the digital competence of teaching staff have been found. However, in the case of induction strategies (RQ.1), 59% include digital training. Below is a detailed outline of the areas of digital competence and digital competence in teaching covered by these training programmes.

### DigComp results

Analysis of the DigComp competences reveals that they focus particularly on area (2), Communication and collaboration ( $n = 54$ ), and (1) Information and Data literacy ( $n = 45$ ), and much less on (4) Safety ( $n = 4$ ) (Figure 1). Analysis by competences (Table 2) shows that the most repeated is Browsing, searching and filtering data, information and digital content ( $n = 25$ , 93%), followed by Interacting through digital technologies ( $n = 15$ , 66%). However, the least identified are Engaging in citizenship through digital technologies ( $n = 1$ , 4%) and Identifying needs and technological responses ( $n = 1$ , 4%), while others are not identified at all (Programming, Protecting devices, Protecting health and well-being, Protecting the environment, and Identifying digital competence gaps).

**Figure 1**

*Absolute frequency of DigComp model areas being identified*



Source. Authors' own work.

**Table 2**

*Results of DigComp model (RQ.2)*

Area	Competences	$n_i$	$f_i\%$
1. Information and data literacy	1.1. Browsing, searching and filtering data, information and digital content	25	93%
	1.2. Evaluating data, information and digital content	11	41%
	1.3. Managing data, information and digital content	9	33%
2. Communication and collaboration	2.1. Interacting through digital technologies	19	70%
	2.2. Sharing through digital technologies	15	56%
	2.3. Engaging in citizenship through digital technologies	1	4%
	2.4. Collaborating through digital technologies	7	26%
	2.4. Netiquette	3	11%
	2.6. Managing digital identity	9	33%



Area	Competences	$n_i$	$f_i\%$
3. Digital content creation	3.1. Developing digital content	10	37%
	3.2. Integrating and re-elaborating digital content	5	19%
	3.3. Copyright and licences	7	26%
	3.4. Programming	0	0%
4. Safety	4.1. Protecting devices	0	0%
	4.2. Protecting personal data and privacy	4	15%
	4.3. Protecting health and well-being	0	0%
	4.4. Protecting the environment	0	0%
5. Problem solving	5.1. Solving technical problems	4	15%
	5.2. Identifying needs and technological responses	1	4%
	5.3. Creatively using digital technologies	5	19%
	5.4. Identifying digital competence gaps	0	0%

Source. Authors' own work.

In area (1), Information and data literacy, contents relating to resources and tools for research such as software and other resources for statistical and documentary analysis (UAM) are particularly evident, as are databases and electronic journals, documentation of evidence of scientific publication quality, accreditation, author workshops, digital repository and open access (UBU). Moreover, they contain interactive digital content and other ICT resources for teaching, such as teaching resources (UVIGO), MOOCS and open educational resources (UNED). They also refer to the ability to evaluate information, data and digital content in university teaching, with tools like Stata (SUAL), to assess the possibilities of Learning and Knowledge Technologies (UPM), to analyse elements that make up the Personal Learning Environment (PLE) and its potential (UDC), and the evaluation of educational resources (UVIGO).

In area (2), Communication and collaboration, there is a greater presence of content related to managing virtual learning environments and ICT resources in the classroom (USAL, ULL), such as training in virtual university teaching and the methodological use of online platforms (UVIGO, UJI-1, UJI-2). Likewise, the inclusion of guidelines for presenting and disseminating teaching, together with other means of disseminating teaching material (UVIGO), is noteworthy. However, emphasis is placed on involving students in using social media (UNIOVI) and tools for educational innovation that encourage student collaboration (ULL). At the same time, they integrate the appropriate and responsible use of ICT in the university environment. In particular, they highlight the creation of collaborative networks at

different universities (UNIOVI) and collaboration through social networks (UNIZAR), both for internationalisation and for online collaboration between students and teaching staff (UdG). Others mention the importance of netiquette (UNIOVI) and compliance with rules and regulations in the use of digital technologies in the academic environment (UJI-2).

Analysis of digital identity management competence reveals several relevant aspects. The importance of PLE is detected (UHU, UDC) in relation to the understanding of the main elements that make up digital identity and how they affect the digital world (UDC), personal branding (UNIOVI), and improving visibility and impact through tools such as the personalised page of the virtual classroom board (UJI-2), as well as strategies to improve digital identity in research (USAL, UV).

In area (3), Digital content creation, the findings reveal that the competence Developing digital content is adopted through different contents, such as the design, creation, management and presentation of audiovisual resources (USAL, UV, UVIG), questionnaire design (USAL) or digital and printed material production (UNED), as well as their evaluation (UJI-1). Moreover, contents on the configuration of the course platform for distance and/or in-person teaching are identified (UJI-2, UDC). Finally, competence in Copyright and licences in the digital environment (USAL, UAM), and management and conditions of use of classroom resources are detected (UVIGO). Information relating to Protecting personal data and privacy, which belongs to the fourth area, is rarely found here.

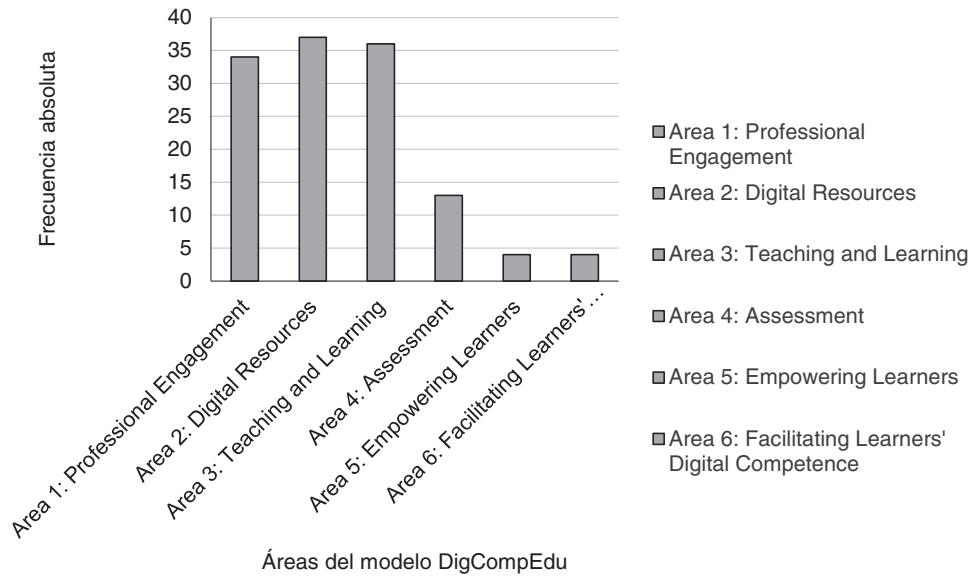
Finally, Creatively using digital technologies is included in area (5), Problem solving. This competence is related to the development of innovative methodologies (UNIZAR) and the use of various resources for the creation of textual, graphic and audiovisual materials (UDC). In addition, UAM includes the DigComp framework in its initial teacher training on digital competences.

## Results related to DigCompEdu

Figure 2 and Table 3 show the results of the analysis based on the DigCompEdu, highlighting the most identified areas: (2) Digital Resources ( $n = 37$ ), (3) Teaching and Learning ( $n = 36$ ) and (1) Professional Engagement ( $n = 34$ ). The most frequently identified competences are Teaching ( $n = 22$ , 81%), Organisational communication ( $n = 21$ , 71%) and Selecting digital resources ( $n = 17$ , 63%). The areas that are recognised to a lesser extent are (5) Empowering Learners ( $n = 4$ ) and (6) Facilitating Learners' Digital Competence ( $n = 4$ ).

**Figure 2**

*Absolute frequency of areas of the DigCompEdu model identified*



Source. Authors' own work.

**Table 3**

*Results DigCompEdu Model (RQ.3)*

Area	Competences	$n_i$	$f_i\%$
Educators' professional competences			
1. Professional Engagement	1.1. Organisational communication	21	78%
	1.2. Professional collaboration	4	15%
	1.3. Reflective practice	2	7%
	1.4. Digital continuing professional development	7	26%
Educators' pedagogic competences			
2. Digital Resources	2.1. Selecting digital resources	17	63%
	2.2. Creating and modifying digital content	15	56%
	2.3. Managing, protecting and sharing digital resources	5	19%

Area	Competences	$n_i$	$f_i\%$
3. Teaching and Learning	3.1. Teaching	22	81%
	3.2. Guidance	4	15%
	3.3. Collaborative learning	4	15%
	3.4. Self-regulated learning	6	22%
4. Assessment	4.1. Analysing evidence	12	44%
	4.2. Learning analytics	1	4%
	4.3. Feedback and planning	0	0%
5. Empowering Learners	5.1. Accessibility and inclusion	1	4%
	5.2. Differentiation and personalisation	2	7%
	5.3. Actively engaging learners	1	4%
Learners' competences			
6. Facilitating Learners' Digital Competence	6.1. Information and media literacy	2	7%
	6.2. Digital communication and collaboration	1	4%
	6.3. Digital content creation	1	4%
	6.4. Responsible use	0	0%
	6.5. Digital problem solving	0	0%

Source. Authors' own work.

Regarding area (1), Professional Engagement, Organisational communication competence covers content related to procedures and applications through the virtual campus (UNICAN), as well as guidelines for planning training actions in virtual learning environments (USAL, UPM) and the use of teaching management platforms (UBU, UV, UVIGO). Reflective practice is addressed through e-portfolios (UPF), together with content on the PLE itself, and its reflection and learning in virtual environments (UDC) that contribute to digital continuing professional development. Few training courses offer a more global approach to the digital competence of teachers. However, some, such as UNICAN, focus on the use of digital technologies in the classroom, as well as on ethical elements and aspects related to teacher professional development as part of continuing professional development.

As for area (2), Digital Content, the focus is more on Selecting digital resources, including tools for innovative communication mediated by ICT (UNIOVI, UNICAN), open educational resources (USAL) and the knowledge, use and management of support resources for research (UNED, USAL), such as repositories, databases or journals. At the same time, the competence Creating and modifying digital content, such as the design of teaching resources (UVIGO), is frequently incorporated. Courses

on the creation of podcasts (UAL), the design of interactive activities or the creation of digital exams (UGR) are included, as are the creation and editing of web pages and videos for teaching, or presentation and collaboration tools in the classroom (UNICAN, UNED). However, issues such as intellectual property and plagiarism (UNICAN) in Managing, protecting and sharing digital resources are seldom detected. In short, this area highlights the integration of ICT as digital resources to stimulate, digitalise and/or enrich teaching through the use of and interaction with digital devices, applications or platforms (UAH, UJI-1, UNED, UVIGO, UPM).

In area (3), Teaching and Learning, Teaching competence is prominent in most universities, including the UAL, which deals with gamification, creation of digital content, active methodologies or ICT tools for educational innovation. For its part, the UHU promotes the use of social networks, videoconferencing and other distance communication systems, while the USAL includes methodologies and the selection of interactive teaching media. In addition, there is a strong link between teaching contents (assessment, management of the teaching–learning process and creation of teaching materials) and technical ICT contents linked to the use of online platforms, from a techno-pedagogical approach (UJI-2). Regarding the competence of Guidance, the UNED highlights support materials and interaction forums, while at the UDC students are encouraged to work on their PLE. The UPM focuses on applying criteria for teaching aid selection, according to expressive needs (UPM). Finally, the UAL proposes ICT as a self-regulation tool, while other universities also use it to promote self-regulated learning through the inverted classroom (ULL, UNICAN, UdG, UV).

For Assessment strategies competence in area (4), Assessment, several universities have proposed various techniques, such as the use of digital rubrics for formative and quality assessment (UNICAN), questionnaire design (UPC) or the selection of tools for each type of assessment (UPM).

Regarding area (5), Empowering learners, the UAL stands out for offering a course on the protection of LGTBI rights and the fight against discrimination, while the UGR proposes content on sustainable and inclusive design. In relation to Differentiation and personalisation, the UDC proposes a digital group portfolio to support cooperative learning, which is related to area (6), Facilitating Learners' Digital Competence, which is also addressed through the use of social networks for learning (UNIOVI) and the students' PLE as a starting point for didactic design and improvement (UDC), leading to the active engagement of students in their own learning.

## DISCUSSION

Novice teacher training in the Spanish university environment presents several challenges, including the need to consider the development of competences

that allow teachers to perform adequately in increasingly digital educational environments (Builts et al., 2023; Gairín et al., 2023). This research seeks to analyze the current state of affairs of the integration of content that promotes digital competence in training courses for new teachers at Spanish universities.

One of the first points to be highlighted in this analysis is the diversity and lack of homogeneity of the training proposals offered by Spanish universities—each institution follows its own line in terms of content. The outcome is a teaching staff whose training background is highly varied, which has repercussions on subsequent professional development. Moreover, it may have implications for issues such as the assessment and certification of competences, as well as mobility between universities, among others (Betancur and García, 2022; Castañeda et al., 2023a; Crue, 2022).

Accrediting digital competence in teaching has become particularly important in recent years (Durán et al., 2019). At university level, worth noting is the Unidigital Plan, promoted in Axis 03 of the Digital Spain 2026 agenda, published by the Ministry of Economic Affairs and Digital Transformation, which is aligned with the Digital Competences of Educators (DigCompEdu) project. The DigCompEdu FyA (training and accreditation) project, which seeks to create resources for training university teachers in digital teaching competences and to establish a model for a European certificate for digital competence in teaching, arises in this context. Also proposed is the accreditation of the digital competence of university institutions. This accreditation process builds on the Framework for Digital Competence in University Teaching (MDTCU) recently developed by Castañeda et al. (2023b). At pre-university level, it is worth highlighting the Ministry of Education and Vocational Training's resolution (2022) on the certification, accreditation and recognition of digital competence in teaching, which has led to different regional developments (Marrón and Martínez-Anar, 2023).

In the Spanish context, DigCompEdu has proven to be a valuable tool. It serves as a framework that transcends the instrumental perspective in the digital transformation of education and helps institutions plan, design and organise digitisation. However, different territories cater to different visions of this transformation (Castañeda et al., 2023c).

With regard to the first research question, analysis of the specific induction plans revealed that only 59% of the proposals identified content related to teachers' digital competence. This coincides with the need to reinforce and improve policies for novice teacher education in general and digital competence in particular, highlighting the requirement for further development (Crue, 2022).

For the second research question regarding the most frequently identified areas of the DigComp framework, analysis revealed the following areas: (1) Information and Data Literacy and (2) Communication and Collaboration. In these areas, priority is mainly given to the most basic aspects required for teacher management: the

search for information and communication using digital media. The contents identified sought to promote skills associated with effective communication and access to information in the university context. This becomes clear through a comparison of the aspects that teaching staff tend to identify as best developed in their digital competence (Pérez-López and Yuste, 2023).

On the other hand, one of the least identified areas of the DigComp framework is (4) Safety. Considering the challenges of today's digital environment (such as the advance of artificial intelligence), this is an area that needs to be strengthened. Moreover, other research shows that it is one of the competences that tends to score lower in teacher evaluations (Gallego-Arrufat et al., 2019). In this sense, the civic dimension of digital competence is particularly important. However, digital competence should not be reduced to mere technical skills in the safe use of technology, but should also encompass attitudes and values, including critical thinking and ethical considerations to combat misinformation and hate speech (Gutiérrez-Martín and Tyner, 2012; Sábada and Salaverría, 2023). Media literacy to foster active and responsible citizenship is essential to develop critical thinking skills in an informed citizenry (Pérez-Rodríguez and Delgado-Ponce, 2012).

For the third research question, referring to the DigCompEdu framework, analysis revealed that the competences in which most related content is detected are Teaching, Organisational Communication and Selecting digital resources. One competence that is linked, though apparently not central to the training, is Professional Collaboration. However, it seems to be key to better teaching practice. Several studies (Kunnari et al., 2018; Liesa-Orús et al., 2020) suggest that closer teaching collaboration generates significant transformations in both teaching practice and student learning.

As regards area (2), Digital Resources, the competence Selecting digital resources is the most present, which could point to teachers requiring access to external content because they may not have the ability to create their own (Basilotta-Gómez-Pablos et al., 2022). In line with previous research, improving teachers' digital competence calls for further training in digital content creation (Jiménez-Hernández et al., 2020).

With regard to pedagogical competences, some universities include specific subjects on virtual environments and ICT resources in the classroom, digital teaching models, blended and online teaching, as well as teaching functions and tasks in digital teaching. Digital competence is also integrated across the board in the teaching of active methodologies and educational innovation. This implies a substantial improvement in the training approach, as the digital perspective is given value within the other equally important areas of teacher professional development.

The results reflect a greater interest in the development of digital competence from a techno-pedagogical perspective which does not focus only on instrumental

aspects but seeks to improve teaching and learning processes (Basilotta-Gómez-Pablos et al., 2022; Inamorato dos Santos et al., 2023). However, it would be interesting to delve deeper into training and content, to corroborate whether they are indeed aimed at improving pedagogical competences or whether they focus on the use of digital tools or methodologies without greater context (Pérez-López and Yuste, 2023).

In contrast, a review of training courses on the competence Assessment Strategies reveals that many adopt an instrumentalist perspective on digital technologies, as they focus, for example, on designing assessment questionnaires. This suggests that they may be focusing less on personalizing student learning and on encouraging active engagement with their own learning at the point of assessment. Aspects such as strengthening learners' critical digital competence and implementing formative assessment in digital environments, beyond mere marking by means of questionnaires, are also identified to a lesser extent.

Training in competences related to student empowerment and the development of students' digital competence are the least frequent, which coincides with other research that indicates the need to respond to diversity and promote inclusion (Moreira et al., 2023). This is not surprising considering the lack of agreement on the role of teachers in these aspects. These competences present a challenge in transforming the role of educators from mere transmitters of information to that of facilitators of learning and the development of competences in their students (Deumal-Guitert, 2015; Liesa-Orús et al., 2020).

## CONCLUSIONS

In the light of the findings, the following conclusions specify the practical implications of this work. One of the outstanding contributions is the evaluation of training activities, both from the DigComp (originally created for citizenship competence) and DigCompEdu (specific for educators) frameworks. Certain aspects of digital citizenship competence are not explicit in DigCompEdu, namely, the handling of security in digital media. However, they are relevant for effective teaching performance. Therefore, this civic dimension should be considered in training plans, with special attention to critical thinking and ethical implications (Gallego-Arrufat et al., 2019).

Analysis of training course contents also detected the absence of artificial intelligence, which was foreseeable, given that it did not fully emerge until 2023. As this is a topic of current interest, it would be advisable to review the contents to offer pedagogical training during the introduction to university teaching in the knowledge, use and awareness of artificial intelligence and its impact on education. The challenge of transforming teaching based on student competency-based



evidence to address the influence of artificial intelligence on academic performance is certainly being examined.

In this respect, strengthening training for the development of students' critical digital competence and their active engagement is recommended. Furthermore, training in formative and formative assessment strategies in digital environments is advisable in order to promote more participatory and learner-centered education in an increasingly digitalized environment. At the same time, more emphasis on personalization of student learning and the design of inclusive environments is pertinent.

Therefore, training programmes that view digital technologies in a broader sense, taking into account the technical, praxeological, methodological, epistemological and socio-emotional components, together with an adequate management of teaching roles in the virtual world, could be developed (Deroncele-Acosta et al., 2023). Furthermore, fostering a broader and more effective integration of digital technologies in teaching practice should be a priority.

In general, different universities approach the multiple competences of the two models analyzed in different ways, which could be explained by the absence of a reference framework of competences, particularly in induction training. It is therefore likely that *ad hoc* approaches have been developed.

These differences highlight the importance of strengthening digital skills training during the induction period at all universities, providing a more homogeneous training offer and thus contributing to equal opportunities throughout the Spanish university system. At the same time, it would be beneficial to design training that contemplated the different areas of the European DigComp and, especially, the DigCompEdu frameworks.

Furthermore, that novice teachers will not necessarily be novice in their digital skills and may have extensive experience in the use of digital technologies should be a consideration (Fernández-Morante et al., 2023). However, it is highly likely that they lack the training and experience in pedagogical aspects to apply such technology in a critical way for the improvement of educational processes. Hence, it is essential to facilitate the critical pedagogical integration of technology.

However, training plans present challenges in terms of the different levels of techno-pedagogy that teachers may master. It would be appropriate to find a balance to ensure that those with more basic knowledge can keep up, and those with more advanced competences find content of interest (Crue, 2022; Kallunki et al., 2023). In this sense, analysis and evaluation of teachers' competence levels to adjust training or provide personalized itineraries is key and in line with other studies (Pérez-López and Yuste, 2023).

Therefore, initial diagnostic assessments based on competency frameworks are necessary if training is to be adapted to institutional needs and the current

demands of higher education. In any case, based on the results and regardless of teachers' level of competence, collaborative practices among teachers in digital environments should be encouraged for collegial professional growth and the ensuing improvement in their students' education.

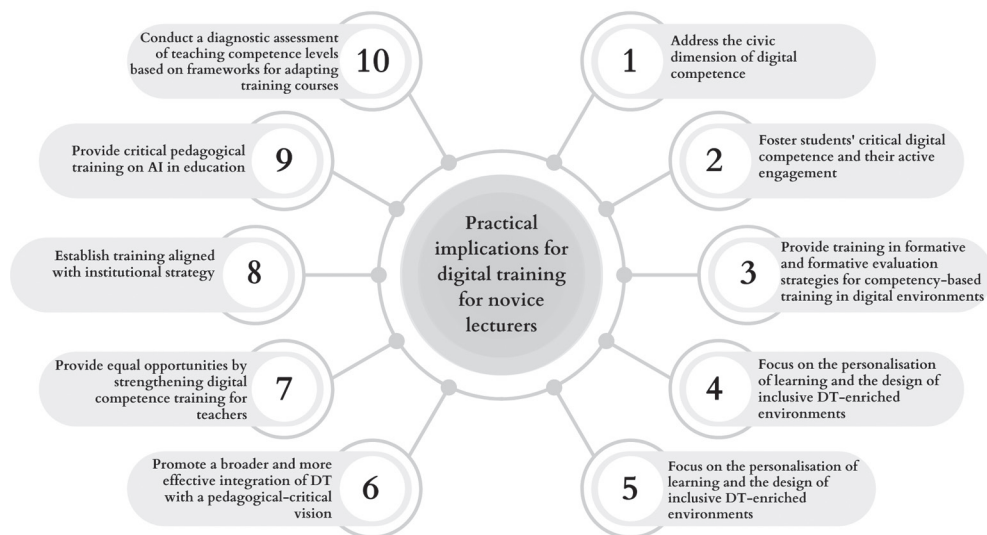
Finally, it is essential that teacher training be aligned with institutional strategy. It is therefore the responsibility of universities to establish their own framework of professional competences and to design training plans that include training their teaching staff in a digital world (Buils et al., 2022; Sánchez Caballé et al., 2023).

The results presented can provide useful information for creating training plans for novice university teaching staff that include different areas of digital competence and digital competence in teaching, thus ultimately contributing to enhancing the quality of higher education in Spain. Likewise, it is important to continue researching and sharing good practices in this area to improve university teacher education and ensure sound professional development of teachers at the induction stage.

In summary, we present the practical implications of our research in the following diagram (Figure 3).

**Figure 3**

*Practical implications of the study for the digital competence training of novice university teachers*



Source. Authors' own work.

## ACKNOWLEDGEMENTS

This work was undertaken within the framework of the i+D research project *Professional development and teaching initiation at university: Policies, teaching competences and challenges for a digital world* (Ref.: UJI-A2020-18), funded by the Spanish Ministry of Universities under grant FPU21/00298.

## REFERENCES

- Amhag, L., Hellström, L., & Stigmar, M. (2019). Teacher educators' use of digital tools and needs for digital competence in higher education. *Journal of Digital Learning in Teacher Education*, 35, 203-220. <https://doi.org/10.1080/21532974.2019.1646169>
- Buils, S., Arroyo-Ainsa, P., Sánchez-Tarazaga, L., & Esteve-Mon, F. M. (2023). Competencias docentes para el desarrollo profesional en la universidad actual. *Journal of Supranational Policies of Education*, 17, 76-102. <https://doi.org/10.15366/jospoe2023.17.005>
- Buils, S., Esteve-Mon, F. M., Sánchez-Tarazaga, L., & Arroyo-Ainsa, P. (2022). Análisis de la perspectiva digital en los marcos de competencias docentes en educación superior en España. *Revista Iberoamericana de Educación a Distancia*, 25(2), 133–152. <https://doi.org/10.5944/ried.25.2.32349>
- Bardin, L. (1996). *Análisis de contenido*. Akal Ediciones.
- Basilotta-Gómez-Pablos, V., Matarranz, M., Casado-Aranda, L. A., & Otto, A. (2022). Teachers' digital competencies in higher education: a systematic literature review. *International Journal of Educational Technology in Higher Education*, 19, Artículo 8. <https://doi.org/10.1186/s41239-021-00312-8>
- Betancur Chicué, V., & García-Valcárcel, A. (2022). Necesidades de formación y referentes de evaluación en torno a la competencia digital docente: revisión sistemática. *Fonseca, Journal of Communication*, (25), 133–147. <https://doi.org/10.14201/fjc.29603>
- Castañeda, L., Esteve-Mon, F., & Adell, J. (2023a). La universidad digital: aproximación a un análisis crítico de los planes de transformación digital de las universidades públicas españolas. *Profesorado, Revista de Currículum y Formación del Profesorado*, 27(1), 175–198. <https://doi.org/10.30827/profesorado.v27i1.23870>
- Castañeda, L., Vanaclocha, N., Velasco, J. R., Ruiz, P., Hartillo, M .I., Pereira, E., & Ruiz, A. (2023b). *Marco de competencia digital docente universitario. Creación y validación. Proyecto UNIDIGITAL DigCompEdu-FYA*. <https://bit.ly/49oQhdk>

- Castañeda, L., Viñoles-Cosentino, V., Postigo-Fuentes, A. Y., Herrero, C., & Cachia, R. (2023c). *Strategic approaches to regional transformation of digital education*. Publications Office of the European Union.
- Comisión Europea. (2018). *Modernización de la educación superior en Europa: personal académico — 2017. Eurydice Report*. Publications Office of the European Union. <https://doi.org/10.2797/9642>
- Comisión Europea. (2020a). *Plan de Acción de Educación Digital (2021-2027)*. <https://bit.ly/2HVhkUc>
- Comisión Europea. (2020b). *Plan de recuperación para Europa*. <https://bit.ly/3U6O2G7>
- Comisión Europea. (2020c). *Comunicación de la Comisión al Parlamento Europeo, al Consejo, al Comité Económico y Social Europeo y al Comité de las Regiones relativa a la consecución del Espacio Europeo de Educación de aquí a 2025*. <https://bit.ly/4cLXMOd>
- Crue Universidades Españolas. (2022). *Competencias digitales del profesorado universitario en España. Un estudio basado en los marcos europeos DigCompEdu y OpenEdu*. Publications Office of the European Union. <http://doi.org/10.2760/448078>
- Deroncele-Acosta, A., Carhuancho-Mendoza, I. M., Nolazco-Labajos, F. A., Molina-Quiñones, H., Torres-Obleas, J. E., Paredes-Díaz, S. E., & Mena, J. (2023). Digital competence, educational innovation with ICT and burnout in tertiary education Latin American professors. In F. J., García-Peñalvo, & A. García-Holgado (Eds.), *Proceedings TEEM 2022: Tenth International Conference on Technological Ecosystems for Enhancing Multiculturality*. Springer. [https://doi.org/10.1007/978-981-99-0942-1\\_106](https://doi.org/10.1007/978-981-99-0942-1_106)
- Deumal, G., & Guitert, M. (2015). Digital competence in design education. Case study of BAU Design College of Barcelona (UVic). *Revista Latinoamericana de Tecnología Educativa*, 14(2), 51-65. <https://doi.org/10.17398/1695-288X.14.2.51>
- Durán Cuartero, M., Prendes Espinosa, M. P., & Gutiérrez Porlán, I. (2019). Certificación de la competencia digital docente: propuesta para el profesorado universitario. *Revista Iberoamericana de Educación a Distancia*, 22(1), 187–205. <https://doi.org/10.5944/ried.22.1.22069>
- Duță, N., & Rafailă, E. (2014). Importance of the lifelong learning for professional development of university teachers—needs and practical implications. *Procedia-Social and Behavioral Sciences*, 127, 801-806. <https://doi.org/10.1016/j.sbspro.2014.03.358>
- Fernández-Batanero, J. M., Román-Graván, P., Montenegro-Rueda, M., López-Meneses, E., & Fernández-Cerero, J. (2021). Digital teaching competence in

- higher education: a systematic review. *Education Sciences*, 11(11), 689. <https://doi.org/10.3390/educsci11110689>
- Fernández-Morante, C., Cebreiro López, B., Casal Otero, L., & Mareque León, F. (2023). Teachers' digital competence. The case of the university system of Galicia. *Journal of New Approaches in Educational Research*, 12(1), 62-76. <https://doi.org/10.7821/naer.2023.1.1139>
- Ferrari, A. (2013). *Digcomp: a framework for developing and understanding digital competence in Europe*. Publications Office of the European Union. <https://bit.ly/3TKjeL6>
- Gairín, J., Domingo-Coscollola, M., Prats, M. À., & Simón, J. (2023). El e-portafolio profesional docente como instrumento formativo para la adquisición de la Competencia Digital Docente. *Aloma: Revista de Psicología, Ciències de l'Educació i de l'Esport*, 41(1), 15-26. <http://doi.org/10.51698/aloma.2023.41.1.15-26>
- Gallego-Arrufat, M. J., Torres-Hernández, N., & Pessoa, T. (2019). Competencia de futuros docentes en el área de seguridad digital. *Comunicar*, 27(61), 57-67. <https://doi.org/10.3916/C61-2019-05>
- García Vargas, S. M., Martínez Sánchez, I., & Ballesteros, B. (2019). Preguntas y respuestas: cuestionarios. In B. Ballesteros (Ed.), *Investigación social desde la práctica educativa*. Editorial UNED.
- Gast, I., Neelen, M., Delnoij, L., Menten, M., Mihai, A., & Grohnert, T. (2022). Supporting the well-being of new university teachers through teacher professional development. *Frontiers in Psychology*, 13, Artículo 866000. <https://doi.org/10.3389/fpsyg.2022.866000>
- Gibbs, G. (2012). *El análisis de datos cualitativos en investigación cualitativa*. Morata.
- Gutiérrez-Martín, A., & Tyner, K. (2012). Media education, media literacy and digital competence. *Comunicar*, 38, 31-39. <https://doi.org/10.3916/C38-2012-02-03>
- Heckathorn, J., & Dotger, S. (2023). Snacks, shoulders, and sleep: factors that influence teachers' professional development decision-making. *Professional Development in Education*, 1-15. <https://doi.org/10.1080/19415257.2023.2212680>
- Inamorato dos Santos, A., Chinkes, E., Carvalho, M. A. G., Solórzano, C. M. V., & Marroni, L. S. (2023). The digital competence of academics in higher education: is the glass half empty or half full? *International Journal of Educational Technology in Higher Education*, 20, Artículo 9. <https://doi.org/10.1186/s41239-022-00376-0>
- Jiménez-Hernández, D., González-Calatayud, V., Torres-Soto, A., Martínez Mayoral, A., & Morales, J. (2020). Digital competence of future secondary school teachers: differences according to gender, age, and branch of knowledge. *Sustainability*, 12(22), 9473. <https://doi.org/10.3390/su12229473>

- Kallunki, V., Katajavuori, N., Kinnunen, Anttila, H., Tuononen, T., Haarala-Muhonen, A., Pyörälä, E., & Myrsky, L. (2023). Comparison of voluntary and forced digital leaps in higher education – Teachers’ experiences of the added value of using digital tools in teaching and learning. *Education and Information Technologies*, 28, 10005–100030. <https://doi.org/10.1007/s10639-022-11559-7>
- Krippendorff, K. (2018). *Content analysis: an introduction to its methodology*. SAGE.
- Kelchtermans, G. (2019). Early career teachers and their need for support: Thinking again. In A.M. Sullivan, B. Johnson, & M. Simons (Eds.), *Attracting and keeping the best teachers: issues and opportunities* (pp. 83-98). Springer.
- Kunnari, I., Ilomäki, L., & Toom, A. (2018). Successful teacher teams in change: the role of collective efficacy and resilience. *International Journal of Teaching and Learning in Higher Education*, 30(1), 111-126. <http://hdl.handle.net/10138/235308>
- Ley Orgánica 2/2023, de 22 de marzo, del Sistema Universitario. *Boletín Oficial del Estado*, núm. 70, de 23 de marzo de 2023. <https://www.boe.es/eli/es/lo/2023/03/22/2/con>
- Liesa-Orús, M., Latorre-Coscolluela, C., Vázquez-Toledo, S., & Sierra-Sánchez, V. (2020). The technological challenge facing higher education professors: perceptions of ICT Tools for developing 21st century skills. *Sustainability*, 12(13), Artículo 5339. <https://doi.org/10.3390/su12135339>
- Lin, L., & Johnson, T. (2021). Shifting to digital: informing the rapid development, deployment, and future of teaching and learning. *Educational Technology Research and Development*, 69(1), 1–5. <https://doi.org/10.1007/s11423-021-09960-z>
- Marrón, Y., & Martínez-Aznar, M. M. (2023). Características de la acreditación de la competencia digital docente. Relaciones con la competencia digital del alumnado. *EduTec. Revista Electrónica de Tecnología Educativa*, (86), 184-202. <https://doi.org/10.21556/edutec.2023.86.2943>
- Ministerio de Educación y Formación Profesional. (2022). *Resolución de 1 de julio de 2022, de la Dirección General de Evaluación y Cooperación Territorial, por la que se publica el Acuerdo de la Conferencia Sectorial de Educación sobre la certificación, acreditación y reconocimiento de la competencia digital docente*. *Boletín Oficial del Estado*, núm 166. <https://bit.ly/443v5Iz>
- Moreira, M. A., Rumbo, B., Gómez, G., Bermejo, R., Ruiz Melero, M. J., Brito, N., Aparecida, V., & Almeida, M. E. (2023). Teachers’ pedagogical competences in higher education: a systematic literature review. *Journal of University Teaching & Learning Practice*, 20(1), 90-123. <https://doi.org/10.53761/1.20.01.07>
- Patfield, S., Gore, J., Prieto, E., Fray, L., & Sincock, K. (2022). Towards quality teaching in higher education: pedagogy-focused academic development for enhancing

- practice. *International Journal for Academic Development*, 27(1). <https://doi.org/10.1080/1360144X.2022.2103561>
- Pérez-López, E., & Yuste, R. (2023). La competencia digital del profesorado universitario durante la transición a la enseñanza remota de emergencia. *Revista de Educación a Distancia*, 72(23). <http://dx.doi.org/10.6018/red.540121>
- Pérez-Rodríguez, A., & Delgado-Ponce, Á. (2012). De la competencia digital y audiovisual a la competencia mediática: dimensiones e indicadores. *Comunicar*, 39, 25-34. <https://doi.org/10.3916/C39-2012-02-02>
- Pöntinen, S., & Rätty-Záborszky, S. (2020). Pedagogical aspects to support students' evolving digital competence at school. *European Early Childhood Education Research Journal*, 28, 182 - 196. <https://doi.org/10.1080/1350293X.2020.1735736>
- Prendes-Espinosa, M. P., & Carvalho, M. A. G. (2022). *Los retos de la competencia digital del profesorado iberoamericano de educación superior. Informe 2021*. MetaRed TIC. <https://bit.ly/4cLNSMD>
- Redecker, C., & Punie, Y. (2017). *European Framework for the Digital Competence of Educators*. DigCompEdu. JRC Science Hub. European Commission.
- Sádaba, C., & Salaverría, R. (2023). Combatir la desinformación con alfabetización mediática: análisis de las tendencias en la Unión Europea. *Revista Latina de Comunicación Social*, 81, 1-17. <https://doi.org/10.4185/RLCS-2023-1552>
- Sánchez Caballé, A., Llopis, M. Á., Buils, S., & Esteve, E. (2023). El desarrollo profesional docente en un mundo digital: el caso de las universidades valencianas. In L. Sánchez-Tarazaga, & F. Esteve (Eds.), *El profesorado novel en la universidad. Oportunidades para su formación inicial y desarrollo profesional docente* (pp. 149-162). Narcea. <https://bit.ly/3xyD9F5>
- Sánchez-Tarazaga, L., Ruiz-Bernardo, P., Viñoles Consentino, V., & Esteve-Mon, F. M. (2022). University teaching induction programmes. A systematic literature review. *Professional Development in Education*, 50(2), 279-295. <https://doi.org/10.1080/19415257.2022.2147577>
- Smestad, B., Hatlevik, O. E., Johannesen, M., & Øgrim, L. (2023). Examining dimensions of teachers' digital competence: a systematic review pre-and during COVID-19. *Heliyon*, 9, Artículo e.16677. <https://doi.org/10.1016/j.heliyon.2023.e16677>
- Subdirección General de Actividad Universitaria Investigadora de la Secretaría General de Universidades. (2022). *Datos y cifras del Sistema Universitario español. Publicación 2021-2022*. Ministerio de Universidades.
- Tan, C. Y., & Dimmock, C. (2014). How a 'top-performing' Asian school system formulates and implements policy: the case of Singapore. *Educational Management Administration & Leadership*, 42(5), 743-763.

Tondeur, J., Howard, S., Van Zanten, M., Gorissen, P., Van der Neut, I., Uerz, D., & Kral, M. (2023). The HeDiCom framework: higher education teachers' digital competencies for the future. *Educational Technology Research and Development*, 71, 33–53. <https://doi.org/10.1007/s11423-023-10193-5>



# University guidance actions linked to student diversity

## *Actuaciones de orientación universitaria vinculadas a la diversidad del estudiantado*

Yaiza Viñuela <sup>1\*</sup> 

Diego González-Rodríguez <sup>1</sup> 

Javier Vidal <sup>1</sup> 

<sup>1</sup> Universidad de León, Spain

\* Corresponding author. E-mail: [yaiza.vinuela.blazquez@unileon.es](mailto:yaiza.vinuela.blazquez@unileon.es)

### Cómo referenciar este artículo/ How to reference this article:

Viñuela, Y., González-Rodríguez, D., & Vidal, J. (2024). University guidance actions linked to student diversity. *Educación XX1*, 27(2), 65-87. <https://doi.org/10.5944/educxx1.38613>

**Date received:** 13/10/2023

**Date accepted:** 12/02/2024

**Published online:** 28/06/2024

### ABSTRACT

University guidance services have become increasingly important due to legislative changes and the need to address an increasingly diverse student profile. Universities must provide individualised attention to promote academic success and student well-being. These actions are crucial for addressing students with diverse needs, such as disabilities or disorders, who need specialized personnel. The objective of this study was to understand individualised attention in Spanish public universities. To achieve this, a content analysis was conducted, selecting the sample through a multistage sampling method. The final sample for this study consisted of a total of 34 interviews with 41 experts from guidance services, 5 conducted jointly because there was more than one expert in the service, and 29 individual interviews, from n=26 public universities. The information collection technique was semi-structured interviews, which were analysed using the MAXQDA 2022 program. The results show that individual guidance interventions were mainly carried out through specific services, such as psychological counselling. The widespread use of tutoring as an institutional initiative to individually support students was also emphasized, with the teacher-tutor playing a crucial role. Universities have expanded actions aimed at addressing student diversity through

interviews and non-significant adaptations. Spanish public universities conduct support and guidance for students on an individualised basis, following a counselling-oriented guidance model focused on the comprehensive development of the student. Attention to students with disabilities or neurodevelopmental disorders is more widespread in comparison to other student diversities, and it may be appropriate to advance further in the development of these actions.

**Keywords:** counselling, university, guidance service, mentoring, tutoring, individual characteristics, mental health, ICT

## RESUMEN

Los servicios de orientación universitaria han ganado importancia debido a las transformaciones que se han producido a nivel legislativo y la necesidad de atender a un perfil de estudiante cada vez más diverso. Las universidades deben proporcionar atención individual para promover éxito académico y bienestar estudiantil. Estas actuaciones son fundamentales para atender a estudiantes de atención a la diversidad, como discapacidad o trastornos, siendo necesario la intervención de personal especializado. El objetivo de este estudio ha sido conocer las iniciativas de atención individual que se realizan en las universidades públicas españolas. Para ello, se ha realizado un análisis de contenido, seleccionándose la muestra mediante un muestreo polietápico. La muestra final de este estudio ha sido un total de 34 entrevistas a 41 expertos de los servicios de orientación, 5 realizadas de forma conjunta porque había más de un experto en el servicio, y 29 individuales, de n=26 universidades públicas. La técnica de recogida de información fue la entrevista semiestructurada, que se analizaron con el programa MAXQDA 2022. Los resultados muestran que las intervenciones de orientación individual se desarrollan principalmente mediante servicios específicos, como los de atención psicológica. También se destaca la generalización de la tutoría como iniciativa institucional para atender individualmente a los estudiantes, en la que el profesor-tutor tiene un papel fundamental. Se han extendido en las universidades las actuaciones destinadas a la atención del estudiantado de atención a la diversidad mediante entrevistas o adaptaciones no significativas. Las universidades públicas españolas realizan actuaciones de apoyo y orientación al estudiantado de forma individualizada, siendo un modelo de orientación centrado en el desarrollo integral del estudiante basado en el modelo de orientación *counselling*. La atención a estudiantes con discapacidad o trastornos del neurodesarrollo están más extendidas frente a otra diversidad estudiantil, pudiendo ser adecuado avanzar en el desarrollo de estas actuaciones.

**Palabras clave:** orientación, universidad, servicio de orientación, mentoría, tutoría, características individuales, salud mental, TIC

## INTRODUCTION

In the current European context, educational guidance activity is in line with the recommendations outlined in the European Higher Education Area (EHEA) training model (Ehlers, 2020; Kindelan, 2021). This has led to reorganization of degree programs and changes in the teaching-learning process, granting students a more active, autonomous role by incorporating innovative methodologies that can engender new learning strategies from the students (Biasi et al., 2017; Sanagavarapu & Abraham, 2020; Tuero et al., 2018).

These changes are also linked to transformations in the university guidance process. Guidance is the activity undertaken to provide students with continuous, systematic, planned, organised assistance, considering the three dimensions: academic, professional and personal (Güvendir, 2018; Pantoja-Vallejo et al., 2020). Guidance Services play a fundamental role in supporting students who need help planning their academic and professional endeavors (Biasi et al., 2017; Garzuzi, 2019).

European universities have specific services to address the three guidance dimensions, as outlined by the European Commission (2022). The academic dimension is addressed through tutorials tailored to meet students' individual needs (Álvarez-Pérez et al., 2023; *Ley Orgánica 2/2023, de 22 de marzo, del Sistema Universitario* [LOSU], 2023); Martínez Clares et al., 2019), as well as by providing new students with services to help them adapt. The professional dimension is addressed through professional Guidance Services responsible for advising on degree choices and job-seeking on graduation. The personal dimension is generally dealt with through provision of psychological support services, catering to students with personal issues or specific needs.

In Spain, this activity is regulated by legislation. *Article 3* of the University System Act [LOSU] stipulates that the academic dimension must be addressed through tutorials. *Articles 22* and *43* specify that universities must have specific services to address the professional dimension. *Article 43* also states that universities must provide students with psychological and psycho-pedagogical support, as well as mental and emotional health care. In addition, the decree law—Real Decreto 1791/2010—approving the University Student Statute outlines in *Chapter II, Article 4*, and *Chapter V*, that all student needs must be met, including the right to tutoring as a measure for helping the transition to university.

With the changes brought about by the LOSU (2023), guidance actions must be updated in order to promote students' academic and professional success. Technological resources are key to the transformation of universities (Clancey & Hoffman, 2021). This is because they promote accessibility to services and make it easier to adapt to individual student needs (Clancey & Hoffman, 2021; Inglis &

Cart, 2018). The most commonly used resources are email, intelligent tutoring using intelligence, and social networks such as Facebook and WhatsApp (Clancey & Hoffman, 2021; Inglis & Cart, 2018; Suárez Lantarón et al., 2021).

In order to promote individual academic success, universities should offer individualized guidance, understood providing actions that are tailored to each student's need during their university career (Infenthaler & Yau, 2020). In this regard, activity focused on the personal dimension to enhance student well-being could lead to improvements in the individual's progress at university, as personal factors affect academic performance (Mason, 2021; Sanagavarapu & Abraham, 2020; Martínez Clares et al., 2019). Therefore, it is worth highlighting counselling as a guidance model, as it provides support and guidance for overall student development from Guidance Services (Hyun et al., 2007; López-Gómez et al., 2020).

Any individualized attention should address the whole range of student diversity, paying special attention to those with a disability, pathology, or specific problem. For students with disabilities, there is a focus on mentoring and attention aimed at the development of academic skills, such as learning strategies (Alulima & Chiluisa, 2022; Stanwood & Mittiga, 2022). In contrast, students with pathologies need attention focused on interpersonal counselling—in addition to academic support—to help them achieve greater educational success (Cardinot & Flynn, 2022; Davis et al., 2021). This means that universities need to have staff with specialized training that enables them to address both student needs and the challenges students may encounter during their academic careers (Bishop, 2016).

In summary, Guidance Services have become more important at universities thanks to changes in higher education policies. The need to adapt to new student demands sometimes requires personalized attention to ensure that students succeed (Sanagavarapu & Abraham, 2020; Zorec et al., 2022). All of this has led to a need for constant change and improvement to meet current demands. Furthermore, incorporating technological resources has improved the system by facilitating access to guidance interventions (Clancey & Hoffman, 2021; Kettunen et al., 2020).

Considering this, the general objective of this study is to understand the individual support initiatives undertaken in Spanish public universities. The interesting lies in the necessity for effective Student Support and Outreach Offices (Guidance Services) to provide individualized attention to promote students' academic success (Infenthaler & Yau, 2020). This overarching goal is pursued via four specific objectives linked to research questions: a) to use Guidance Services to analyze the concerns and needs of diverse student profiles, what concerns do students have?; b) to identify existing interventions aimed at individualized attention for any student profiles, do Guidance Services provide individualized interventions?;

c) to understand how Guidance Services use technological resources, do they use technological resources for individual guidance?; and d) to understand what those in charge of Guidance Services see as the future of individualized attention.

## METHOD

A qualitative study was carried out using content analysis, which is one of the main analyses used in this type of design (Cohen et al., 2018).

### Population and sample

The population was n=50 public universities identified through the Spanish Government's register of universities (RUCT). The distance learning Universidad Nacional de Educación a Distancia (UNED) was excluded, as it does not offer in-person courses, as were Universidad Menéndez Pelayo and Universidad Internacional de Andalucía, because they do not offer degrees. The final population was n=47 Spanish public universities. The study did not include private universities because they have different characteristics (Klafke et al., 2020).

The sample was selected by cluster sampling. In the first stage, we contacted Guidance Services experts via email through the "*Servicios de Información y Orientación de las universidades españolas*" [*Spanish University Information and Guidance Services*] (SIUO) working group. This produced a sample of n=4 universities, resulting in a total of 6 interviews and 10 participants. In the second stage, we contacted remaining universities' Vice-Rectorates for Students by e-mail. This produced a sample of n=22 universities, with a total of 28 interviews and 31 participants. That meant a total sample of 34 interviews, involving 41 experts from Guidance Services and diversity services/units/offices and equivalents (SSD), from n=26 Spanish public universities. Between one and five experts from each university participated.

The socio-demographic profile of the 41 participants by gender was 68% female and 32% male. Their experience ranged from 1 to 10 years (34%), 10 to 20 years (42%), 20 to 30 years (22%), and 30 to 40 years (2%). Their academic background by area was: educational psychology (54%), social and legal sciences (22%), humanities (17%), and other areas (7%). Finally, participants' affiliations with the university were Technical, Management, Administration, and Services (71%), Teaching and Research (27%), and staff from outside the university (2%).

## Procedure

The following information was recorded in Excel: a) university, b) university acronyms; c) Guidance Services; d) expert data; and e) email address. This information was used to contact participants via email and request an interview, outlining the relevant aspects of interest:

1. Individualized support interventions aimed at students.
2. Individualized support interventions aimed at students with diverse needs.

Interviews were conducted between January and July 2023. They lasted from 30 to 50 minutes and were conducted online. Three researchers with expertise in the topic conducted the interviews. To ensure validity and reliability, the criteria from Cohen et al. (2018) were considered: a) joint training of researchers in initial interviews; b) consistent follow-up of the interview process and sequence; and c) audio recording and note-taking for subsequent transcription.

The interviews were conducted in two phases. In the first phase, six interviews were conducted with experts in university guidance belonging to Guidance Services to obtain an overview of the topic of interest. This stage helped outline the central theme of the interviews: individualized guidance. In the second phase, 28 experts were interviewed. Five of the 34 interviews were group interviews, while 29 were individual interviews. Group interviews were conducted when the service had more than one expert on the topic to be discussed.

## Instrument

Data was collected using the semi-structured interview technique. The interview script was created in three stages. The first stage involved reviewing official reports, legislation, and scientific articles to narrow down the topic. Based on that documentation, in the second stage, the needs were identified and the interview script was developed. In the third stage, the interview script was reviewed by two experts to ensure its suitability. Based on their recommendations, we refined and clarified the questions in the initial script, especially those related to students with diverse needs. Consequently, the initial script was restructured, and the initial 19 topics in five blocks was reduced to six topics in four blocks (Table 1). The interview questions were organized starting with general topics and gradually introducing more specific issues (Cohen et al., 2018). The aim of the interviews was to gather information on individual support interventions for all students, specifically those aimed at students with diverse needs.

**Table 1***Interview script*

<b>Block</b>	<b>Content</b>
1. Needs	1. Students' concerns or needs.
2. Individual guidance	2. Performances for providing personalized guidance for whole students
	3. University programs or services to address specific needs: <ul style="list-style-type: none"> <li>— Students with neurodevelopmental disorders.</li> <li>— Students with physical or sensory disabilities.</li> <li>— Students with high abilities.</li> <li>— Students with socio-economic/personal circumstances.</li> </ul>
3. Technological resources in guidance	4. Process for students with diverse needs when there is a diagnosis, and when there is no diagnosis.
4. Future vision	5. What technological resources are used for guidance?
	6. What is necessary to improve individual guidance?

Block One, linked to student needs, was designed to introduce the topic of interest to the interviewees. Block two focused on personalized guidance. It was created following consultation of previous research that mentions a heterogeneous intake profile in universities, such as students with educational support needs or socio-educational disadvantages (Davis et al., 2021; Stanwood & Mittiga, 2022). In the present study, diversity was understood as any student profile requiring specific attention tailored to the individual's temporary or permanent needs, adhering to the principles of inclusion in current legislation (LOSU, 2023). Within this diversity, there are also profiles of students starting university with a pre-existing diagnosis, such as dyslexia or Attention Deficit Hyperactivity Disorder (ADHD).

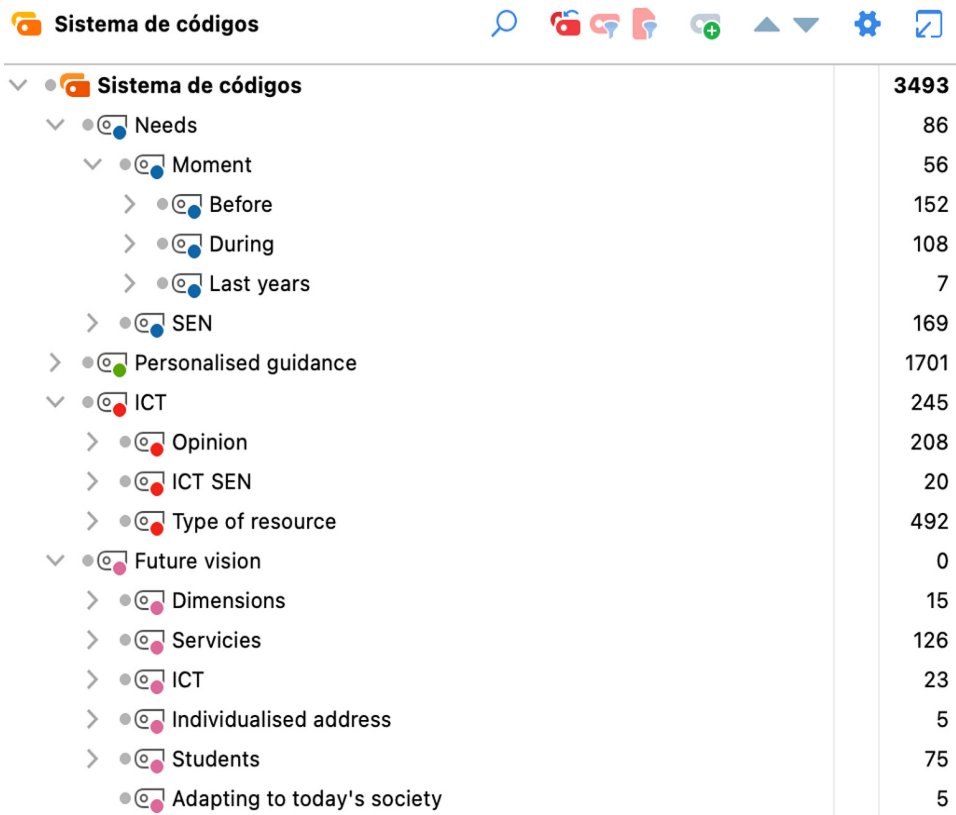
Block Three focused on technological resources for guidance. It was created with reference to previous research to understand the resources implemented in Guidance Services (Clancey & Hoffman, 2021; Inglis & Cart, 2018; Suárez Lantarón et al., 2021). These resources were classified based on the resource-centric model and the relationship-centric model established by Watts (2001). The resource-centric model is linked to the characteristics and functions of technological resources to provide access to information, services, and tools for the guidance process (Watts, 2001). The relationship-centric model notes technological resources as facilitators of interaction among the parties involved in the guidance process (Watts, 2001).

Lastly, Block Four addresses future perspectives, tackling aspects such as the needs from different Guidance Services to improve personalized attention interventions and where guidance should be heading to promote student success.

## Analysis

MAXQDA 2022 software was used to analyse the interviews by creating categories and codes through content analysis. Categories were created based on the interview blocks, using a horizontal coding strategy—analysing the same question comprehensively across all interviews. This was done to maximise result homogeneity for each item. A total of 4 general categories and 685 codes were created, encoding a total of 3,493 segments (Figure 1).

**Figure 1**  
*Categories*



Sistema de códigos		
▼	●  Sistema de códigos	3493
▼	●  Needs	86
▼	●  Moment	56
>	●  Before	152
>	●  During	108
>	●  Last years	7
>	●  SEN	169
>	●  Personalised guidance	1701
▼	●  ICT	245
>	●  Opinion	208
>	●  ICT SEN	20
>	●  Type of resource	492
▼	●  Future vision	0
>	●  Dimensions	15
>	●  Servicios	126
>	●  ICT	23
>	●  Individualised address	5
>	●  Students	75
	●  Adapting to today's society	5



After content analysis, the frequency of occurrence of the different codes was calculated.

## RESULTS

The analysis of the results is structured into four sections: 1) student concerns or needs; 2) individual support interventions and who intervenes; 3) technological resources for individual guidance; and 4) future perspectives. The results presented below are those mentioned in five or more interviews ( $n \geq 5$ ) to ensure representativeness of the sample. The description of the tables will focus on aspects mentioned in at least four interviews in the collected subcategories.

### Students concerns or needs

From the Guidance Service, the students' concerns or needs were presented according to their area of work, and the following types of students were mentioned: a) pre-university students ( $n=16$ ), b) first years ( $n=12$ ); and c) student with diverse needs ( $n=25$ ) (Table 3).

**Table 3**  
*Student concerns*

Type of student	Concerns category	n	Subcategory of concerns	n
Pre-university students	Choice	9	Vocational choice	8
			Career prospects	4
			Subjects	2
			Vocational training or university	1
			Combining programme degrees	1
	Administrative	9		
	Access	8		
First years	Programme degree	7	Failure	6
			Subjects	1
	University functioning	5	Administrative	4
Student with diverse needs	How will they be dealt with	12		
	Academic	11		
	Psychological	9		
	Integration	6		

Firstly, the identified needs of pre-university students focus on three aspects: 1) choice (n=9), primarily highlighting vocational choice (n=8) and career prospects (n=4); 2) administrative matters (n=9), related to pre-registration or enrolment; and 3) access concerns (n=8), such as cut-off grades for specific degrees and enquiries about the university entrance exam.

Secondly, students in the first years of their courses have concerns that are more closely linked to aspects related to their degree program (n=7). There is notable concern about failure (n=6), understood as the fear of having chosen the wrong degree or having to change their degree course. This is generally associated with administrative aspects such as transferring academic records, meaning: “...they want to know if they make a mistake in choosing their course, what possibilities there are to change” (ID06).

Another concern is the functioning of the university (n=5), such as whether there are services to help find accommodation or how to access university services.

Thirdly, the concerns of students requiring diverse support focus on the nature of their support at university (n=12), i.e., “...if they will be supported, if they will have guidance” (ID07); and academic questions (n=11) for example, about

methodological adaptations such as “Attention in the classroom by teachers, how they will feel inside the classroom” (ID29), scholarships, and choice of courses. Other concerns detected by the support services include psychological needs (n=9), sometimes due to specific events, and integration needs (n=6) with their university peer group.

### Individualised attention activity

The interviewees mentioned Guidance Services’ individual attention activities aimed at all students (n=33) and specific actions for students requiring diversity support (n=33). All of them are voluntary in nature (Table 4).

**Table 4**  
*Individualized attention activity*

Activity	n	Activity Category	n	Subcategory	n	Service	
Generals	33	Tutoring	24	Specific tutoring for students with diverse needs	5		
		Mentoring	21	Specific mentoring for students with diverse needs	12		
Specific actions for diversity support	33	With diagnosis	31	Non-significant adaptations	24		
				Follow-up	14		
		Without diagnosis	26	Guidance	15		
				Advising on minor non-significant adaptations	7		
		Interview/counselling sessions	29	Psychological care interview/counselling sessions	29	Referral	22
				Interview from GGSS	20	Clinic	7
Referral	23						
Specific programmes	12						

Both tutorials and mentorships serve as general actions for all students. Tutorials (n=24) aim to provide personalized attention, with the level of teacher-tutor involvement being crucial. Some faculties offer specific tutorials for students requiring diverse support (n=5) with assigned tutors: *“In some faculties, there is a specific tutor for students with specific educational needs or disabilities, who provides follow-up and acts as a mediator with the service”* (ID28). Mentorships (n=21) are conducted by senior students to guide new students, with the implementation of this strategy varying between different parts of the university. Mentors receive training and guidance *“...to apply it in their functions”* (ID33), as well as support from the teacher-tutor, who may oversee *“seven to eight mentor students”* (ID29). Some universities have implemented specific mentorships for students requiring diverse support (n=12). In these cases, *“The mentor can be a good role model to follow because they usually connect the new student with someone who has a similar profile to theirs”* (ID23), which can have a positive impact on the new student’s self-concept.

There are also specific actions (n=33) to support students requiring diverse support. There are non-significant adaptations (n=24) to assist those with a diagnosis (n=31), such as visual impairment or ADHD, among others. These are proposed by SSD or by the psycho-pedagogical guidance service, considering reasonable personalised adjustments in the academic dimension based on student needs: *“... someone with ADHD for teaching guidelines, Final Degree Project...”* (ID17). The teaching staff play a crucial role as *“...they are responsible for implementing these adaptations in the classroom”* (ID15). Additionally, students requiring diverse support (n=14) are monitored by relevant Guidance Services, such as the SSD, and by the teacher-tutor from the university. This allows evaluation of adaptations and provides continuous support in specific cases because sometimes *“...they need more intensive support and weekly supervision is carried out”* (ID20), as in the case of students with physical or sensory disabilities. Students without a diagnosis (n=26) receive guidance (n=15) on where to seek assistance and minor non-significant methodological adaptations (n=7): *“In the case of elite athletes or foreign students, adaptations are made, such as changing the exam date”* (ID29).

To address both student profiles (with and without a diagnosis), interviews are conducted as a technique for gathering information (n=29). These are carried out by Guidance Services, especially the SSD. Any student can request an interview, but the purpose varies depending on the student’s profile. For those with a diagnosis, it serves to plan the support they will need throughout their academic career. However, for students who do not have a diagnosis, *“The personal interview is very important for identifying needs...”* (ID21). Therefore, in both cases, the interview serves to support and guide the student, as well as to refer them (n=23) to specific services or to public health services for diagnosis.

In addition, interviews—as well as counselling sessions—are used to address student mental health, as the incidence of mental health issues has increased according to the psychological support service (n=29). This support is provided in two ways: 1) some universities assess students' needs from the service and refer them to external offices they have agreements with or to the public health system (n=22) so that *"...they receive treatment"* (ID26); 2) other universities have on-campus clinics (n=7) that diagnose, provide treatment, and offer counselling, such as *"In the case of students without a diagnosis, if the issue is emotional or psychological, they are referred to the psychological care clinic where they undergo therapy..."* (ID28).

Some universities have specific programs (n=12) aimed at the entire student population without the need for a medical diagnosis, only requiring enrolment. These are general in nature and not only provide guidance on administrative aspects such as partial enrolment or scholarships, but also support students with specific socio-economic or personal circumstances, without a possible diagnosis, such as those combining study and work or facing financial problems. Therefore, *"It is important that they exist because if this program were to close, there would be people left unattended"* (ID34).

### Technological resources for individual guidance

All of those interviewed mentioned the use of technological resources to inform and guide students. In some cases merely describing it, in other cases giving their opinion of it. In the latter case, they indicated that technological resources were a suitable complement to face-to-face guidance because it allows remote guidance in cases where it is not possible for students to attend the service or when the campus is very large (n=16): *"Technological resources can be an appropriate tool to complement guidance in a face-to-face manner, as there are times when it cannot be done otherwise"* (ID29).

However, in 11 interviews, face-to-face guidance was described as more appropriate than using technological resources: *"To carry out personalized work, it is better to work face-to-face than with technological resources"* (ID18). This is because individual guidance requires interaction between the expert and the student to establish bonds, as well as an atmosphere of trust and closeness that facilitates communication between both parties.

Additionally, technological resources allow Guidance Services to be visible (n=17) and promote communication (n=5), both for coordination between different services and for communication with students. In all the interviews, technological resources for disseminating information were mentioned, and 2 of the interviews indicated that they are more suitable only as a means of information.

Technological resources allow students to access information (n=9) and Guidance Services (n=5). However, it can lead to problems such as anxiety (n=4) or frustration (n=3), because *"...they are accustomed to the immediacy provided by digital technologies"* (ID19), often resorting to multiple contact channels to get instant responses from the same service.

Looking at the technological resources used by Guidance Services (Table 5), framed by the resource-centred model, what stand out are the use of websites (n=11), platforms (n=11), video (n=6), and apps (n=5). From the relationship-centred model, email (n=21) is included, with the observation that students do not commonly use it (n=13): *"Its use still exists, but what happens with this medium is that students don't read it"* (ID08). This might, among other factors, be because students do not have the habit of using email, or because they are suffering information overload.

Another commonly-used resource is social media (n=21), with Instagram (n=12), Twitter (n=10), and Facebook (n=7) being the most prominent, particularly for disseminating information. Students also use these platforms to communicate with Guidance Services, who respond to their queries or refer them to specific services when necessary. For instance: *"Through Twitter, questions are answered within 24 hours. There's a team that handles responding to tweets, and everything gets answered"* (ID04).

Guidance Services guide students using video conferencing (n=12) for interviews and follow-ups: *"Ultimately, with video conferencing, the face-to-face interaction is still maintained for conducting interviews"* (ID27). Finally, student guidance also involves telephone assistance (n=10) as a means of information and guidance, as well as chatbots (n=8) to provide information, particularly administrative information.

**Table 5**  
*Technological resources for information and guidance*

Model	Resource category	n	Resource subcategory	n
Resource-centred	Website	11		
	Platform	11		
	Videos	6		
	App	5		
Relationshipio-centred	Instant messaging system	21	E-mail	21
			Telegram	1
	Social media	21	Instagram	12
			Twitter	10
			Facebook	7
			WhatsApp	3
			TikTok	2
			LinkedIn	1
	Videoconference	12		
	Telephone	10		
Chatbots	8			

### Future perspectives on individual guidance

When the interviews addressed the future of individual guidance, what came up were aspects concerning services (n=31), students (n=25), and technological resources (n=12) (Table 6).

**Table 6**  
*Perspective for the future of personalised guidance*

Aspect	n	Improvement category	n	Improvement subcategory	n
Services	31	Resources	24	Human	21
				Economic	11
		Coordination	15		
Students	25	Diverse student	18	Advancing diversity	11
				Psychological care	6
				Training	5
		Generic	10	Communication and engagement	10
Technological resources	12	Adapting to current society	11		

Firstly, interviewees noted that more resources are required (n=24), both in terms of human (n=21) and financial resources (n=11), to enhance the quality and individualized attention Guidance Services provides to students. Increasing these resources would enable more awareness and prevention initiatives. Additionally, there needs to be improved coordination (n=15) between services through “*common spaces or platforms to ensure that services are interconnected*” (ID22).

Secondly, interviewees also noted aspects for improvement related to the different student profiles. On one hand, for students with diverse needs (n=18), there is a need to improve diversity (n=11) and psychological support (n=6). This requires better individualised attention and a more visible profile of the diverse student population at university to “*identify and implement necessary plans*” (ID30). There is also a need for more teacher and student training (n=5) so they can address various student profiles and normalize diversity: “*Teacher training should focus on more specific attention in the classrooms*” (ID24). In addition, more generally, interviewees noted (n=10) that there needs to be better communication with students and engagement from Guidance Services (n=10) to create a bond of trust between the two parties and encourage students to seek services when needed.

Thirdly, there is a need to improve the use of technological resources (n=11). This means using the resources that students already use (n=12), giving them an active role and ensuring human intervention. Interviewees noted that using technological



resources allows for *“the detection of needs through the use of social networks in which students are the ones who generate content”* (ID01).

## DISCUSSION AND CONCLUSIONS

The results of our study highlight that the main needs of students are in the academic and personal dimensions. The needs in the academic dimension are around choosing a course and the support available during their university career. In the personal dimension, the needs are around integration and psychological issues. These results are consistent with Tindle et al. (2023), who reported that student concerns were linked to academic aspects, such as support in university progression, and personal aspects, such as mental health.

We found that universities undertake individualised support interventions through initiatives addressing both the academic and personal dimensions. Tutorials and mentorships stand out among these initiatives as key forms of student support, while interviews were also highlighted, although they focus more on diagnosis and support planning.

Tutorials are widespread interventions and essential for providing individualised attention based on each student’s specific needs. This requires a high level of involvement from the tutor and the student to help overcome potential obstacles at university (Klug & Peralta, 2019; Martínez Clares et al., 2019). Along these lines, mentorship programmes are being developed as additional support that fosters creation of trust and bonds between students, which means it is considered good practice (Dunajeva, 2023; Radlick & Mevatne, 2023). Although tutorials and mentorships specifically for students with diverse needs are not widespread, they should be considered for two reasons. Firstly, because tutors would have specific tools and training to address the needs of diverse students (European Commission, 2022; Lorenzo-Lledó et al., 2017; Maldonado, 2018). And secondly, because the presence of trained mentors would encourage realistic academic goals and promote the inclusion of students with diverse needs (Cardinot & Flynn, 2022; Locke et al., 2023).

Interviews are a widespread intervention in Guidance Services, especially within Student Diversity and psychological support services. In Student Diversity Services, they are primarily used to tailor non-significant adaptations, with teaching staff playing a key role in implementation (Cotán et al., 2021). Interviews are also used in psychological support services for prevention or referral to other services for treatment, and are essential for addressing mental health issues, especially given the increasing prevalence in universities (Dessauvagie et al., 2022; Jang et al., 2019).

In a more general sense, we found that universities had better developed interventions aimed at students with diverse needs—particularly those with physical or sensory disabilities or neurodevelopmental/psychological disorders—than interventions aimed at students with challenging socio-economic/personal circumstances or high abilities. Although universities are taking action for undiagnosed students, there is a need for more because these students face more personal challenges that affect their academic performance (Manson, 2021; Sanagavarapu & Abraham, 2020).

Furthermore, our results underscore the need for new ways for Guidance Services to provide guidance and information to students, moving towards digitisation through the use of visual tools. This way, students will be able to use these resources according to their specific needs at any given moment (Clancey & Hoffman, 2021). All of this means that more human and financial resources are needed as a key action to promote the provision of individualised attention. Increasing these resources would have a positive impact on the quality of guidance because it would allow staff to dedicate more time to each student and perform more interventions that are tailored to each student's reality, fostering the development of an inclusive university (Álvarez-Pérez et al., 2023; Infenthaler & Yau, 2020; Sanagavarapu & Abraham, 2020; Zorec et al., 2022).

In conclusion, university support and guidance systems are implementing personalised support interventions for all students, particularly focused on the academic and personal dimensions. However, the professional dimension is also taken into consideration when providing guidance to students regarding their choice of university degree. Moreover, by identifying the diverse needs of students, including those in the realm of diversity support, it will be possible to better tailor guidance actions to each student and enhance academic success.

Guidance Services are essential in the provision of individualised guidance for identifying and addressing student needs. They are responsible for planning the academic itinerary on a personalised basis, with the interventions for diagnosed students being more advanced. Individualised support is progressing in line with LOSU (2023), which places special emphasis on student diversity. Additionally, through the implementation of tutorials and mentorships, individual support is offered in both the academic and personal dimensions, promoting integration within the university environment. This counselling-oriented guidance approach enhances students' academic and personal well-being, improving their self-esteem and academic performance.

The use of technological resources is widespread for providing information and guidance to students. However, it is necessary to strike a balance between using technology and face-to-face interaction in the guidance process. Therefore, implementation of any technological resources should consider both the advantages,

such as enhancing accessibility to services, and disadvantages, such as the lack of an appropriate environment for fostering individual attention.

Improving individualised support interventions needs more resources to cover more activity, especially preventive action, and to ensure that all student diversity is addressed. Therefore, it is crucial to continue progressing in these actions in order to achieve an inclusive university.

The main limitation of this study is that students were not interviewed to determine whether the individualised guidance interventions mentioned by Guidance Services met their actual needs. Therefore, one future line of research will be to examine students' needs to determine whether they are addressed by the interventions Guidance Services provide.

## **ACKNOWLEDGEMENTS**

This research was funded by the Teacher Training University Professorship (FPU) Grant, awarded by the Ministry of Universities (Order of November 15, 2021).

Special thanks to the SIOU working group, the Spanish public universities, and the staff in the guidance and diversity support services (and equivalents) who participated in the interviews.

## REFERENCES

- Álvarez-Pérez, P. R., González-Benítez, N., & López-Aguilar, D. (2023). Perspectivas y retos de una universidad inclusiva desde un enfoque psicopedagógico. *Revista Costarricense de Orientación*, 2(2). <https://doi.org/10.54413/rco.v2i2.34>
- Alulima, M. S. L. D., & Chiluisa, L. M. M. (2022). Intellectual disability students' learning in higher education. *Journal of Positive Psychology and Wellbeing*, 6(1), 1788-1797
- Biasi, V., Patrizi, N., De Vincenzo, C., & Mosca, M. (2017). I colloqui di orientamento per facilitare il successo accademico: una indagine sperimentale. *Journal of Educational, Cultural and Psychological Studies*, 1(15), 215-228. <http://dx.doi.org/10.7358/ecps-2017-015-bias>
- Bishop, J. B. (2016). A wish list for the advancement of university and college counseling centers. *Journal of College Student Psychotherapy*, 30(1), 15-22. <https://doi.org/10.1080/87568225.2016.1105651>
- Cardinot, A., & Flynn, P. (2022). Rapid evidence assessment: mentoring interventions for/by students with disabilities at third-level education. *Education Sciences*, 12(6), 384. <https://doi.org/10.3390/educsci12060384>
- Clancey, W. J., & Hoffman, R. R. (2021). Methods and standards for research on explainable artificial intelligence: lessons from intelligent tutoring systems. *Applied AI Letters*, 2(4), 1-8. <https://doi.org/10.1002/ail2.53>
- Cohen, L., Lawrence, M., & Morrison, K. (2018). *Research Methods in Education*. Routledge.
- Cotán, A., Aguirre, A., Morgado, B., & Melero, N. (2021). Methodological strategies of faculty members: moving toward inclusive pedagogy in higher education. *Sustainability*, 13(6), Artículo 3031. <https://doi.org/10.3390/su13063031>
- Davis, M. T., Watts, G. W., & López, E. J. (2021). A systematic review of firsthand experiences and supports for students with autism spectrum disorder in higher education. *Research in Autism Spectrum Disorders*, 84, Artículo 101769. <https://doi.org/10.1016/j.rasd.2021.101769>
- Dessauvage, A. S., Dang, H. M., Nguyen, T. A. T., & Groen, G. (2022). Mental health of university students in southeastern Asia: a systematic review. *Asia Pacific Journal of Public Health*, 34(2-3), 172-181. <https://doi.org/10.1177/10105395211055545>
- Dunajeva, J. (2023). University mentoring programs during the pandemic: case study of Hungarian Roma university students. *Social Sciences*, 12(3), 111. <https://doi.org/10.3390/socsci12030111>

- Ehlers, U. -D. (2020). Future skills for a European higher education. In S. Noorda, P. Scoot & M. Vukasovic (Eds.), *Bologna Process Beyond* (pp. 311-324). Bononia University Press.
- European Commission (2 de febrero de 2022). *Eurydice*. <https://bit.ly/4ahYCAL>
- Garzuzi, V. (2019). La orientación educativa universitaria: desafíos actuales en la Educación Superior. *En la Mira. La Educación Superior en Debate*, 1(1), 11-25. <https://bit.ly/49aqt4A>
- Güvendir, M. A. (2018). The relation of an international student center's orientation training sessions with international students' achievement and integration to university. *Journal of International Students*, 8(2), 843-860. <https://dx.doi.org/10.5281/zenodo.1250385>
- Hyun, J., Quinn, B., Madon, T., & Lustig, S. (2007). Mental health need, awareness, and use of counseling services among international graduate students. *Journal of American College Health*, 56(2), 109-118.
- Infenthaler, D., & Yau, J. Y. K. (2020). Utilising learning analytics to support study success in higher education: a systematic review. *Educational Technology Research and Development*, 1-30. <https://doi.org/10.1007/s11423-020-09788-z>
- Inglis, B., & Cathcart, K. (2018). Online counselling in Australian and New Zealand and noordand universities. *JANZSSA-Journal of the Australian and New Zealand Student Services Association*, 26(2), 99-112.
- Jang, K., Canggra, B. B., Moradi, S., Riordan, B. C., Chan, J., Hunter, J., & Scarf, D. (2019). Mental health at university: a social identity approach. In D. Esteves, D. Scarf, P. Pinheiro, H. Arahanga-Doyle, & J. Hunter (Eds.), *Global perspectives on university students* (pp. 27-46). Nova Science Pub Inc.
- Kettune, J., Lindberg, M., Nygaard, E., & Kárdal, J. (2020). Enhancing career practitioners' understanding and use of ICT in guidance and counselling. In E. Hagaseth, T. Hooley, J., Kettunen, & R. Thomsen (Eds.), *Career and career guidance in the Nordic Countries* (pp. 163-175). [https://doi.org/10.1163/9789004428096\\_011](https://doi.org/10.1163/9789004428096_011)
- Kindelan, P. (2021). Coming to grips with Bologna: change and student empowerment in transforming classes into an effective learning environment. *Review of European Studies*, 13(3), 43. <https://doi.org/10.5539/res.v13n3p43>
- Klafke, R., de Oliveira, M. C. V., & Ferreira, J. M. (2020). The good professor: a comparison between public and private universities. *Journal of Education*, 200(1), 62-70. <https://doi.org/10.1177/0022057419875124>
- Klug, M. A., & Peralta, N. S. (2019). Tutorías universitarias. Percepciones de estudiantes y personal tutor sobre su uso y funcionamiento. *Revista Electrónica Educare*, 23(1), 319-341. <http://dx.doi.org/10.15359/ree.23-1.16>
- Ley Orgánica 2/2023, de 22 de marzo, del Sistema Universitario. Boletín Oficial del Estado, 70, de 23 de marzo de 2023. <https://bit.ly/3vswR9z>

- Locke, J., Osuna, A., Myrvold, R. J., & Closson, J. S. (2023). Supporting autistic college students: examining the Mentoring, Organization and Social Support for Autism Inclusion on Campus (MOSSAIC) Program. *Journal of Autism and Developmental Disorders*, 1-14. <https://doi.org/10.1007/s10803-023-05969-w>
- López-Gómez, E., Leví-Orta, G., Medina Rivilla, A., & Ramos-Méndez, E. (2020). Dimensions of university tutoring: a psychometric study. *Journal of Further and Higher Education*, 44(5), 609-627. <https://doi.org/10.1080/0309877X.2019.1571174>
- Lorenzo-Lledó, G., Carreres, A. L., Lledó, A. L., & Vera, G. A. (2017). La acción tutorial como acompañamiento en el alumnado universitario con discapacidad: hacia una educación inclusiva. *Revista INFAD de Psicología. International Journal of Developmental and Educational Psychology*, 4(1), 137-144. <https://doi.org/10.17060/ijodaep.2017.n1.v4.1036>
- Maldonado, E. P. (2018). Competencias del profesorado universitario para la atención a la diversidad en la educación superior. *Revista Latinoamericana de Educación Inclusiva*, 12(2), 115-131. <http://dx.doi.org/10.4067/S0718-73782018000200115>
- Manson, H. D. (2021) Grit and its relation to well-being among first year South African university students. *Journal of Psychology in Africa*, 31(3), 226-231. <https://doi.org/10.1080/14330237.2021.1903157>
- Martínez Clares, P., Pérez Cusó, F. J., & González Morga, N. (2019). ¿Qué necesita el alumnado de la tutoría universitaria? Validación de un instrumento de medida a través de un análisis multivariante. *Educación XX1*, 22(1), 189-213. <https://doi.org/10.5944/educxx1.21302>
- Pantoja-Vallejo, A., Molero, D., Molina-Jaén, M. D., & Colmenero-Ruiz, M. J. (2020). Valoración de la práctica orientadora y tutorial en la universidad: validación de una escala para el alumnado. *Educación XX1*, 23(2), 119-143. <https://doi.org/10.5944/educXX1.25632>
- Radlick, R. L., & Mevatne, M. (2023). Mentoring for inclusion: a scoping review of the literature. *Nordisk Välfärdsforskning| Nordic Welfare Research*, 8(1), 65-79. <https://doi.org/10.18261/nwr.8.1.6>
- Real Decreto 1791/2010, por el que se aprueba el Estatuto del Estudiante Universitario. Boletín Oficial del Estado, 318, de 1 de enero de 2011. <https://bit.ly/4aelz0j>
- Sanagavarapu, P., & Abraham, J. (2020). Validating the relationship between beginning students' transitional challenges, well-being, help-seeking, and their adjustments in an Australian university. *Journal of Further and Higher Education*, 45(5), 616-628. <https://doi.org/10.1080/0309877X.2020.1804537>







- Stanwood, J., & Mittiga, A. (2022). Faculty attitudes toward inclusive instruction: then and now. *New Directions for Teaching and Learning*, 2022(172), 79-92. <https://doi.org/10.1002/tl.20527>
- Suárez Lantarón, B., Castillo Reche, I. S., & López Medialdea, A. (2021). Tutoría académica universitaria apoyada mediante WhatsApp: conocer sus ventajas y salvar sus desventajas. *Revista Electrónica Interuniversitaria de Formación del Profesorado*, 24(1), 189-203. <https://doi.org/10.6018/reifop.394631>
- Tindle, R., Castillo, P., Doring, N., Grant, L., & Willis, R. (2022). Developing and validating a university needs instrument to measure the psychosocial needs of university students. *British Journal of Educational Psychology*, 92(4), 1550-1570. <https://doi.org/10.1111/bjep.12515>
- Tuero, E., Cervero, A., Esteban, M., & Bernardo, A. (2018). ¿Por qué abandonan los alumnos universitarios? Variables de influencia en el planteamiento y consolidación del abandono. *Educación XX1*, 21(2), 131-154. <https://dx.doi.org/10.5944/educXX1.20066>
- Watts, A. G. (2001). *The role of information and communication technologies in an integrated career information and guidance system*. Organization for Economic Co-operation and Development.
- Zorec, K., Desmond, D., Boland, T., McNicholl, A., O'Connor, A., Stafford, G., & Gallagher, P. (2022). A whole-campus approach to technology and inclusion of students with disabilities in higher education in Ireland. *Disability & Society*, 1-26. <https://doi.org/10.1080/09687599.2022.2114885>





# The role of virtuality in learning strategies and stress prevention in higher education

## *El papel de la virtualidad en las estrategias de aprendizaje y la prevención del estrés en educación superior*

Ramón Chacón-Cuberos <sup>1</sup>   
Mariana Pérez-Mármol <sup>2\*</sup>   
Eduardo García-Mármol <sup>1</sup>   
Eva María Olmedo-Moreno <sup>1</sup>   
Jorge Expósito-López <sup>1</sup>   
Manuel Castro-Sánchez <sup>1</sup> 

<sup>1</sup> Universidad de Granada, Spain

<sup>2</sup> Universidad Internacional de La Rioja, Spain

\* Corresponding author. E-mail: [mariana.perez@unir.net](mailto:mariana.perez@unir.net)

### Cómo referenciar este artículo/ How to reference this article:

Chacón-Cuberos, R., Pérez-Mármol, M., García-Mármol, E., Olmedo-Moreno, E. M., Expósito-López, J., & Castro-Sánchez, M. (2024). The role of virtuality in learning strategies and stress prevention in higher education. *Educación XX1*, 27(2), 89-113. <https://doi.org/10.5944/educxx1.35855>

**Date received:** 14/10/2022

**Date accepted:** 03/10/2023

**Published online:** 28/06/2024

## ABSTRACT

Higher education has become a setting that increasingly demands hybrid learning models based on face-to-face and virtual methods. Concretely, this educational stage takes place during a complex period for the emerging adult, for which learning strategies must be developed in order to avoid academic stress. This study presents a quantitative, descriptive, ex post facto and cross-sectional design with a measurement in a single group. The objective was to contrast a structural equations model that integrates learning strategies, academic stress and multidimensional self-concept in a sample made up of 2736 university students [men = 33.8% (n=924); women = 66.2% (n=1812)] with a mean age of 23.33±5.77 years, using as main instruments the MLSQ-SF, AF-5 test and the academic stress at the university questionnaire. Statistical analysis was performed with IBM SPSS® v.23.0 and IBM Amos® v.23.0 software. Results show better developed learning strategies in virtual learning modalities. Critical thinking was configured as being more dependent on the development of learning strategies in face-to-face modalities, whilst studying habits were more strongly associated with the self-regulation of effort in online approaches. Further, motivation was a stronger determinant of critical thinking and the time spent studying when this modality was used. In conclusion, self-concept was negatively associated with stress, obtaining stronger regression weights when distance learning methods were used, thus suggesting it to be preventive in nature. It can be concluded that virtual approaches favour greater interdependence between learning strategies, time spent studying and motivation. This could decrease stress and favour academic performance in a social context that increasingly demands hybrid learning models.

**Keywords:** learning strategies, anxiety, motivation, self-concept, teaching methods, structural equation models

## RESUMEN

La educación superior se ha convertido en un escenario que demanda, cada vez más, modelos híbridos de aprendizaje basados en la enseñanza presencial y virtual. Concretamente, esta etapa educativa parte de un periodo de complejidad para el adulto emergente, el cual debe desarrollar estrategias de aprendizaje para evitar el estrés académico. Este estudio presenta un diseño cuantitativo, de carácter descriptivo, ex post facto y corte transversal con una medición en un único grupo. El objetivo fue contrastar un modelo de ecuaciones estructurales que integra estrategias de aprendizaje, estrés académico y autoconcepto multidimensional en una muestra constituida por 2736 estudiantes universitarios [hombres = 33.8% (n=924); mujeres = 66.2% (n=1812)] con una edad media de 23.33±5.77 años, empleando como instrumentos los test MLSQ-SF, AF-5 y la escala de estrés académico en la universidad. El análisis estadístico se realizó con el software IBM SPSS® v.23.0 e IBM Amos® v.23.0. Los resultados muestran un mayor desarrollo de estrategias de aprendizaje en las modalidades de enseñanza virtual. El pensamiento crítico se configuró como más dependiente del desarrollo de estrategias de aprendizaje en modalidades presenciales, mientras que

los hábitos de estudio estuvieron más asociados con la autorregulación del esfuerzo en modalidades online. Además, la motivación fue más determinante para el pensamiento crítico y el tiempo de estudio en esta modalidad. Para finalizar, el autoconcepto se asoció negativamente con el estrés, obteniendo mayores pesos de regresión en las modalidades a distancia, revelando su carácter preventivo. Puede concluirse que las modalidades virtuales favorecen una mayor interdependencia de estrategias de aprendizaje, tiempo de estudio y motivación, lo cual podría disminuir el estrés y favorecer el desempeño académico en un contexto social que demanda, cada vez más, modelos híbridos de aprendizaje.

**Palabras clave:** estrategias de aprendizaje, ansiedad, motivación, autoconcepto, métodos de enseñanza, modelo de ecuaciones estructurales

## INTRODUCTION

The university period represents an academic stage during which young people undertake higher studies with the aim of achieving a qualification which will equip them with the professional skills needed to find work and insert themselves into the job market (Nice & Joseph, 2023; O'Connor, 2022). This stage is particularly complex given that the emerging adult begins to abandon the adolescent stage, is forced to take on significant roles implicit in adult life, and become autonomous and skilled in self-management. At the same time, they must also become self-sufficient financially, in many cases abandoning the family home (Chacón-Cuberos et al., 2021). Arnett (2016) defines this period as emerging adulthood, and is characterized by the exploration by the young person of their own identity, instability, egocentrism, the general feeling of being situated between two stages, and the exploration of possibilities. All of this, produces a situation that is somewhat unstable for the young adult. This can generate stress and interpersonal problems, with academic, personal and work-related difficulties being some of the strongest to emerge (Castro-Sánchez et al., 2022).

Given this perspective, different online teaching systems have emerged in the university context which seek to provide answers to the complex reality faced by university students (Crawford et al., 2020). Concretely, it is estimated that 15% of university students are registered on online teaching courses in the Spanish context. This perspective grows each year and will be even higher when new needs for virtual learning are considered, generated by the spread of COVID-19 and resultant paralysis of face-to-face teaching (Almarzooq et al., 2020; Crawford, 2020). These approaches bring into play new methods for following up on subject delivery and the development of the learning process. These include employing videoconference streaming systems, using platforms to register these systems and view them on a daily basis, continuous online evaluation systems, and virtual tutoring methods, amongst others (Broadbent & Poon, 2015; Yadegaridehkordi et al., 2019).

In response to this, attempts have been made to elaborate profiles for university students who undertake their studies whilst also developing their family and working life. Nevertheless, not all students adapt appropriately to these methodologies and resources and this profile may be associated with problematically high levels of stress and poor academic results (Pérez-Pérez et al., 2019). Therefore, it is necessary to study how virtual teachings affect the way of learning of university students. It is also important to know the type of learning strategies that they develop and how students manage academic stress situations during this process (Bruggeman et al., 2022).

## LITERATURE REVIEW

Academic stress can be defined as tense and defensive responses which are generated when faced with situations linked to training and educational contexts (García-Ros et al., 2012). Concretely, a series of events and situations which take place during the general teaching-learning process and that all implicated individuals must overcome. In this way, in cases in which implicated agents -teachers and students- perceive these aforementioned situations as threatening, or they themselves perceive themselves to lack the ability to overcome the situation, perceptions will be generated about the implicated academic situation in which students see themselves as unable to deal with them (Teixeira et al., 2022).

As a response, academic stress will generate a series of physiological effects that are associated with wellbeing and even academic performance. This depends on two basic elements as academic stressors and students' experiences (Castro-Sánchez et al., 2022). Amongst the first we find, adaptation of the student, evaluation methods, feelings of ambiguity in relation to the teaching-learning process and inability to take control. In fact, many of these elements will be associated with the teaching modality, being a modulating factor of stressors (Broadbent & Poon, 2015). In addition, students' subjective experiences such as cognitive evaluations of stress, lived experiences, the capacity for emotional regulation or metacognitive strategies have an extremely strong influence (Nice & Joseph, 2023; Willis & Burnett, 2016). In this sense, Heo & Han (2018) highlight the importance of developing diverse strategies to prevent stressful academic situations. Within these, the development of learning strategies must take up a main position.

The present study focuses on learning strategies developed by Pintrich et al. (1993). These provide some of the main exponents in the educational context and within the development of strategies based on the constructivist paradigm. The present authors establish students as active information processors, with their beliefs and cognitions acting as mediators in their learning (El Refae et al., 2021; Kizilcec et al., 2017). In this way, Kizilcec et al. (2017) identify the importance

of resource management, meta-cognition and cognition to the educational process, which will allow a greater academic performance and control adversity situations.

Pintrich et al. (1993) and Sabogal et al. (2011) indicate that two basic elements exist within learning processes. The first of these refers to learning strategies, within which we find the strategies of elaboration, organisation, self-regulation of effort and meta-cognition, critical thinking, and time spent studying. The second element relates to a motivational component, which is comprised of anxiety generated by the learning context, task value, and intrinsically and extrinsically orientated goals. In this line, Cho & Heron (2015) and Verde & Valero (2021) have shown that these elements are dependent on the teaching methodology. For this reason, any educational process must consider the different factors that can influence learning, such as the type of content, technological resources or the type of evaluation.

In this sense, diversity exists amongst recent studies which have examined the way in which learning strategies are developed in the university context, their implications depending on the study approach used and how they link to academic performance and wellbeing. In an experimental study, De la Fuente-Arias et al. (2018) demonstrated that students who presented greater mastery of cognitive learning strategies showed lower stress levels. Another example comes from a study conducted by Jones (2017) who approached motivational differences between students undertaking online and face-to-face courses. This author observed that students enrolled at distance-learning universities presented greater levels of interest, success, perceived usefulness and empowerment. Finally, we underline work conducted by Broadbent & Poon (2015). This work demonstrated through a systematic review that time management, meta-cognition, effort regulation and critical thinking predicted the grades achieved by students undertaking online learning. Nevertheless, these effects were slightly weaker than those undertaking face-to-face learning.

Thus, the present study poses the following objectives: (a) develop a theoretical model that allows knowing the mediating relationship between different learning strategies in higher education and their influence on stress and self-concept of university students as dependent variables; (b) validate this explanatory model using structural equations analysis, adjusting it until good fit indices will be obtained; (c) use multi-group analysis in the structural equation model in order to determine differences in the described variables using as a grouping variable the modality of teaching (virtual and face-to-face-). In this way, the following hypotheses are posed: (H<sub>1</sub>) Different learning strategies will be positively associated, with higher values being reported by university students enrolled on distance-learning courses; (H<sub>2</sub>) Self-concept will be positively associated with intrinsically oriented goals

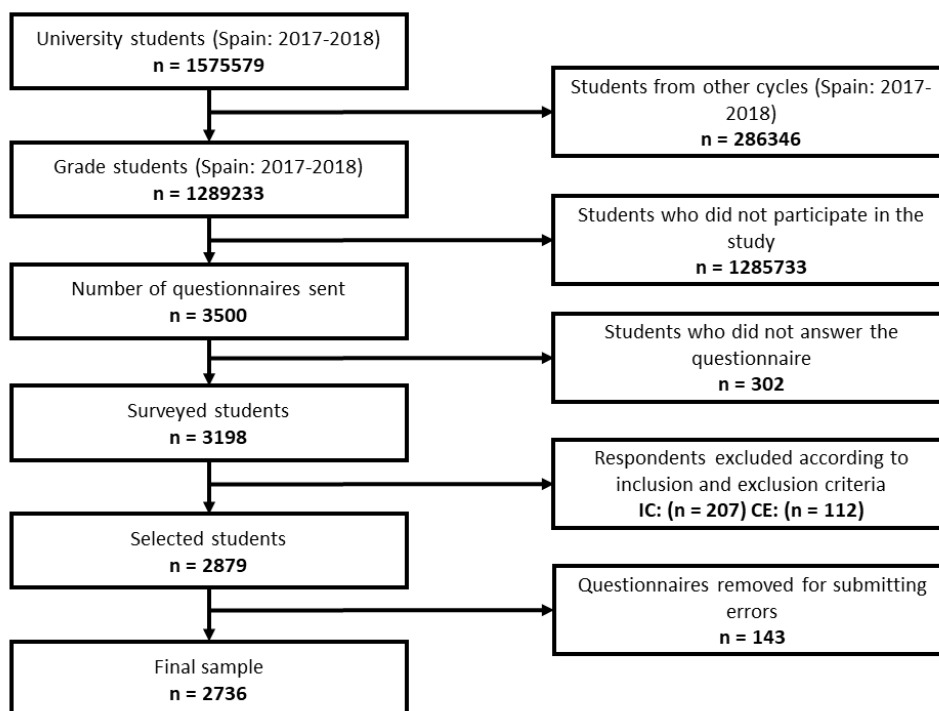
and inversely associated with anxiety, whilst stress will be inversely related with motivation and self-concept. Greater regression weights will be seen in students studying via distance-based approaches.

## METHOD

### Design and participants

The present study incorporates a non-experimental, quantitative, exploratory-descriptive, cross-sectional and ex post-facto design with measurements being taken from a single group. The population universe of the present work constitutes university students enrolled at Spanish universities during the 2017/2018 academic year, with a total of 1.289.233 students being registered to study university degrees. According to criteria established by Bartlett et al. (2001) and the population universe obtained, a total of 3.500 students were considered for inclusion with the aim of obtaining a representative sample. Finally, a final sample of 2.736 university students was obtained with self-reported ages of between 18 and 35 years old ( $M = 23.33$ ;  $SD = 5.77$ ). This sample was reached following application of inclusion and exclusion criteria [(a) participants must have registered for at least 60% of the credits that make up the academic course; (b) participants must not have already achieved more than 50% of these credits in the previous academic year] (Figure 1). With regards to representativeness, a final sampling error was obtained of 0.017, or, in other words, a margin of error of 1.7%, assuming 95% confidence intervals. The sample was distributed according to 66.2% ( $n=1.812$ ) females and 33.8% ( $n=924$ ) males. Participating students belonged to 19 Spanish universities, with these being distributed between 11 different autonomous communities, although in a non-homogenous way. Likewise, 66.6% ( $n=1822$ ) of the sample was made up of social sciences students and 33.4% ( $n=914$ ) were health sciences students. Similarly, it was found that 87.4% ( $n=2392$ ) of participants were studying via face-to-face methods, whilst 12.6% ( $n=344$ ) were doing so online. This shows a similar distribution to that seen to exist in the overall Spanish university context.

**Figure 1**  
Study sample



## Instruments

The present study employed the following instruments:

Motivation and learning strategies questionnaire – short form (MLSQ-SF) which was validated by Pintrich et al. (1993) in its original version of 81 items. It was adapted into its Spanish version and a short 40-item version by Sabogal et al (2011). It comprises 40 questions that are rated according to a 5-point Likert scale (1 = never and 5 = always); e.g. “I push myself academically even when I don’t like what I do”. Items are grouped into 8 dimensions with the following distribution of items and reliability: task value [TV] (items 20, 26 and 39;  $\alpha=0.506$ ;  $\omega=0.508$ ), anxiety [ANX] (items 3, 12, 21 and 29;  $\alpha=0.738$ ;  $\omega=0.702$ ), elaboration strategies [E-S] (items 4, 5, 22, 24 and 25;  $\alpha=0.702$ ;  $\omega=0.693$ ), organisational strategies [O-S] (items 13, 14, 23 and 40;  $\alpha=0.741$ ;  $\omega=0.733$ ), critical thinking [CT-S] (items 1, 6 and 15;  $\alpha=0.521$ ;  $\omega=0.514$ ), self-regulation of meta-cognition [SM-S] (items 16, 30,

31, 32, 34, 35 and 36;  $\alpha=0.759$ ;  $\omega=0.756$ ), study habits and time [ST-S] (items 2, 8, 17, 18, 33 and 38;  $\alpha=0.714$ ;  $\omega=0.714$ ), self-regulation of effort [SE-S] (items 7, 9, 11, 19, 27 and 28;  $\alpha=0.730$ ;  $\omega=0.724$ ) and intrinsically oriented goals [IOG] (items 10 and 37;  $\alpha=0.437$ ;  $\omega=$  Not available). This instrument obtained a global internal consistency value of  $\alpha=0.883$ .

Evaluation scale of academic stress in university students (SASU) validated by García-Ros et al. (2012). This questionnaire rates academic stress levels through 21 items (e.g. "1. Sitting exams") rated on a 5-point Likert scale (1 = not stressful at all; 5 = highly stressful). According to this instrument, stress is grouped into four dimensions, with these being: Academic obligations (questionnaire items 1, 5, 7, 9, 10, 14 and 15;  $\alpha=0.829$ ;  $\omega=0.828$ ), academic record and prospective future (items 16, 17, 18, 19, 20 y 21;  $\alpha=0.770$ ;  $\omega=0.767$ ), interpersonal problems (items 8, 12 and 13;  $\alpha=0.753$ ;  $\omega=0.706$ ), and expression and communication of one's own ideas (items 2, 3 and 4;  $\alpha=0.753$ ;  $\omega=0.724$ ). Global internal consistency of the present instrument was acceptable with a value of  $\alpha=0.889$ .

Self-concept form-5 (SCF-5) was elaborated by García & Musitu (2001). It is composed of 30 items (e.g. "1. I do good academic work") which are rated via a 5-option Likert type scale, where 1 is "never" and 5 is "always". According to this instrument, self-concept is grouped into five dimensions, with these being: Academic self-concept (items 1, 6, 11, 16, 21 and 26;  $\alpha=0.824$ ;  $\omega=0.820$ ), social self-concept (items 2, 7, 12, 17, 22 and 27;  $\alpha=0.835$ ;  $\omega=0.828$ ), emotional self-concept (items 3, 8, 13, 18, 23 and 28;  $\alpha=0.816$ ;  $\omega=0.813$ ), family self-concept (items 4, 9, 14, 19, 24 and 29;  $\alpha=0.847$ ;  $\omega=0.851$ ) and physical self-concept (items 5, 10, 15, 20, 25 and 30;  $\alpha=0.793$ ;  $\omega=0.788$ ). A study conducted by García & Musitu (1999) established a global reliability value determined through Cronbach's alpha coefficient of  $\alpha=0.810$ . This value is lower than that detected in the present research work ( $\alpha=0.872$ ).

## Procedure

Firstly, it is important to indicate that all relevant permissions were requested. This process was carried out via an information pack developed by the Department of Musical, Artistic and Corporal Expression of the University of Jaen. This pack detailed the nature of the study alongside its aims, the research instruments to be used and the way in which data would be handled. It was stated that data would be handled confidentially, maintaining the anonymity of all participants. In addition, this document was used to obtain written informed consent from all study participants.

This document was given out to all study participants alongside the questionnaire. In this way, each potential participant was freely able to decide whether or not to participate after reading the enclosed information. In cases where an affirmative



response was provided – and given that all participants were of adult age as they were registered at a university – we proceeded to administer all of the previously described scales. Time required to complete the questionnaire ranged between 10 and 15 minutes.

At this point, researchers proceeded to collect study data, counting on the participation of 19 Spanish universities, with these being a mixture of public and private institutions. Scale completion was performed throughout the months of March and April during the 2018/2019 academic year. All responses were provided online and via direct contact with the student. Instruments were administered through a digital survey, using the “Lime Survey” platform. Once survey completion was concluded, students were thanked for their participation and their scores were sent out to them via the same application. The aim of this was to provide a form of positive feedback.

Following this, researchers moved on to data handling. The first action was to eliminate all questionnaires which were incomplete, had incorrectly answered questions or lacked reliability due to random responding. Once this had been examined, the database was cleaned and transferred to the IBM SPSS® 22.0 (IBM Corp, Armonk, NY, USA) software package in order to create the data matrix. The review and transcription process was carried out at all times by the principal researcher with the aim of ensuring correct statistical handling, in addition to avoiding errors of omission or commission.

Finally, it is important to highlight that the present research work abides by the Declaration of Helsinki (2008 modification), in addition to national legislation for clinical trials (Royal Decree 223/2004 from the 6th of February) and biomedical research (Law 14/2007 from the 3rd of July). Likewise, rights of participants to confidentiality (Law 15/1999 of the 13th of December) were respected at all times.

## Data analysis

The statistical packages IBM SPSS® 23.0 (IBM Corp, Armonk, NY, USA) and IBM AMOS® 23.0 (IBM Corp, Armonk, NY, USA) were used to analyse the data. Frequencies, means and correlations were employed for analysis of basic descriptive statistics and T-test for mean comparison. Normality of the data was checked by examining the kurtosis and asymmetry values for each questionnaire item, with values lower than 2 being required. Internal reliability of the instruments employed was evaluated according to the Cronbach alpha and McDonald’s Omega, with the reliability index being determined at 95%. Finally, the theoretical models were compared via structural equation analysis and multi-group analysis. To check the fit of the model, the following indices were used: Comparative Fit Index (CFI), Increased Fit Index (IFI) and Normalized Fit Index (NFI), which must obtain values

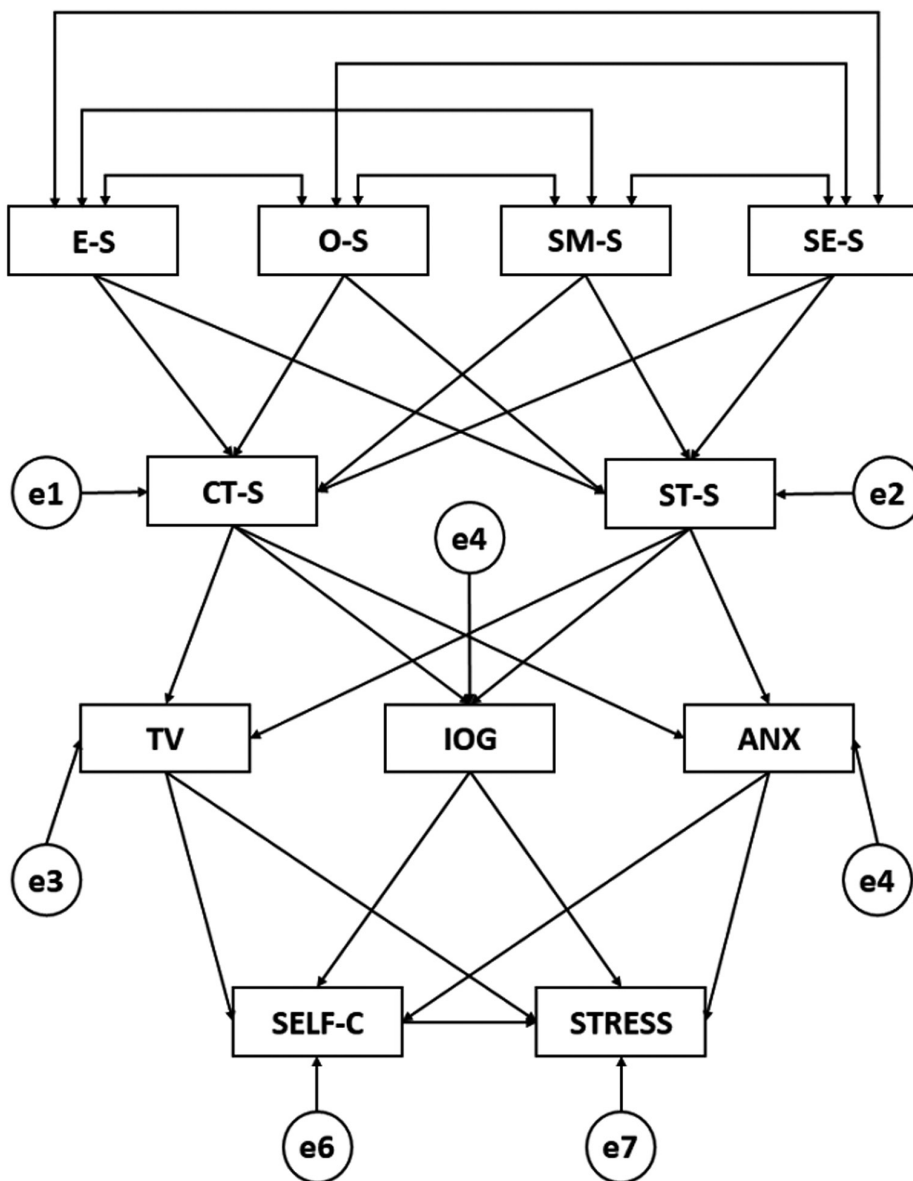
greater than 0.90 to present an acceptable fit. The Root Mean of the Squared Error of Approximation (RMSEA) is also used, which will determine acceptable adjustment values below 0.08.

Figure 2 presents the theoretical model, with this determining the associations between learning strategies, variables associated with motivation such as intrinsically oriented goals, anxiety and task value, in addition to self-concept and academic stress. Further, the developed structural equation model will be analysed via multi-group analysis according to teaching type (face-to-face and online). This will enable existing differences to be uncovered in relation to the associations between each category of variables included in the theoretical model.

The structural model is constituted by eleven observed variables. These variables are represented by squares and use an error term (circle) when they receive the effect of another variable. In this way, the model reports information on the relationship patterns between them. Bidirectional relationships (correlations and covariances) are represented as vectors with an arrow at each end. On the other hand, any structural effect is represented as a straight arrow, whose origin is the predictor variable and whose end, where the arrowhead is located, is the dependent variable.

In this way, the top of the model shows four learning strategies: Elaboration strategies (E-S), organisational strategies (O-S), self-regulation of meta-cognition (SM-S) and self-regulation of effort (SE-S); these variables are related by means of correlations without having an associated error term and being exogenous variables. Following this, another two learning strategies were included as observed variables, with these being critical thinking (CT-S) and study habits and time (ST-S); these variables receive the effect of the previous four through unidirectional arrows being endogenous mediators. In addition, the remaining observed variables are presented. Amongst these, we find task value (TV), anxiety (ANX) and intrinsically oriented goals (IOG) as motivational variables related with learning strategies and being endogenous mediators. It is important to note that the variables described are continuous and were obtained from the mean value of the items of each dimension of the scale. Finally, self-concept (SELF-C) and academic stress (STRESS) are included in the lowest part of the structural model, with these representing two inter-related observed variables that are also linked to task value (TV), anxiety (ANX) and intrinsically oriented goals (IOG). The variables dependent variables (STRESS) and (SELF-C) are also continuous, but these are calculated through the total score of the scale by summation. In this case, the variable is not split into dimensions.

**Figure 2**  
Theoretical model



Note<sup>1</sup>: SELF-C, Self-concept; E-S, Elaboration strategies; O-S, Organisational strategies; CT-S, Critical thinking; SM-S, Self-regulation of meta-cognition; ST-S, Study habits and time; SE-S, Self-regulation of effort; ANX, Anxiety; TV, Task value; IOG, Intrinsically oriented goals

## RESULTS

Tables 1 and 2 show the descriptive information of the variables under study in order to deepen their knowledge before carrying out the structural equation model. Specifically, Table 1 shows the mean values of each dimension according to the modality of teaching, revealing information of interest (statistically significant differences were obtained in all the variables except critical thinking, study time, motivation and self-concept), showing that the type of teaching can act as a modulating factor in many of them. In addition, Table 2 shows the correlations between all the variables, showing significance in almost all of them. Specifically, variables such as motivation or self-concept, which did not show significance in the T-test, show significant correlations with all the variables. For all these reasons, the interest in developing a structural model that studies the relationships between the variables described is evident.

**Table 1.**  
*Descriptive data of the variables under study*

	MOD	M	SD	Levene-test		T-test		Cohen-D	R-size
				F	Sig.	T	Sig.		
E-S	FTF	3.97	0.57	0.146	0.703	-3.282	0.001	-0.196	-0.097
	DIS	4.09	0.65						
O-S	FTF	3.96	0.74	7.252	0.007	2.821	0.005	0.178	0.088
	DIS	3.82	0.83						
SM-S	FTF	3.56	0.56	3.689	0.055	-3.937	0.000	-0.218	-0.108
	DIS	3.69	0.63						
SE-S	FTF	3.95	0.55	11.887	0.001	-2.967	0.003	-0.187	-0.093
	DIS	4.07	0.72						
CT-S	FTF	3.50	0.65	2.542	0.111	-0.962	0.336	-0.059	-0.029
	DIS	3.54	0.70						
ST-S	FTF	3.75	0.62	2.686	0.101	0.148	0.883	0.000	0.000
	DIS	3.75	0.71						
TV	FTF	2.43	0.80	0.796	0.372	3.975	0.000	0.230	0.114
	DIS	2.25	0.76						
ANX	FTF	3.39	0.84	0.072	0.789	2.816	0.005	0.164	0.082
	DIS	3.25	0.86						

	MOD	M	SD	Levene-test		T-test		Cohen-D	R-size
				F	Sig.	T	Sig.		
IOG	FTF	3.91	0.65	13.903	0.000	-0.115	0.908	-0.013	-0.006
	DIS	3.92	0.78						
STRESS	FTF	3.30	0.67	4.607	0.032	5.263	0.000	0.325	0.160
	DIS	3.07	0.74						
SELF-C	FTF	3.69	0.46	3.973	0.046	0.002	0.998	0.020	0.010
	DIS	3.68	0.52						

Note<sup>1</sup>-SELF-C, Self-concept; E-S, Elaboration strategies; O-S, Organisational strategies; CT-S, Critical thinking; SM-S, Self-regulation of meta-cognition; ST-S, Study habits and time; SE-S, Self-regulation of effort; ANX, Anxiety; TV, Task value; IOG, Intrinsically oriented goals; FTF, Face-to-face studies; DIS; Distance studies.

**Table 2.**

*Matrix of correlations of the variables under study in the estructural model*

	O-S	SM-S	SE-S	CT-S	ST-S	TV	ANX	IOG	STRESS	SELF-C
E-S	0.573**	0.628**	0.653**	0.516**	0.535**	-0.150**	0.164**	0.439**	0.072**	0.209**
O-S	1	0.423**	0.511**	0.368**	0.535**	-0.195**	0.157**	0.334**	0.096**	0.186**
SM-S		1	0.599**	0.551**	0.524**	-0.087**	0.062**	0.411**	-0.019	0.286**
SE-S			1	0.429**	0.611**	-0.241**	0.187**	0.398**	0.075**	0.211**
CT-S				1	0.397**	-0.018	0.129**	0.373**	0.042*	0.164**
ST-S					1	-0.287**	0.154**	0.323**	0.101**	0.237**
TV						1	0.167**	-0.083**	0.169**	-0.210**
ANX							1	0.086**	0.512**	-0.295**
IOG								1	0.035	0.133**
STRESS									1	-0.403**

Note<sup>1</sup>-SELF-C, Self-concept; E-S, Elaboration strategies; O-S, Organisational strategies; CT-S, Critical thinking; SM-S, Self-regulation of meta-cognition; ST-S, Study habits and time; SE-S, Self-regulation of effort; ANX, Anxiety; TV, Task value; IOG, Intrinsically oriented goals.

Note<sup>2</sup> \*, p<0.05; \*\*, p<0.01.

A structural equation model was elaborated that included learning strategies, students' academic stress and global self-concept. First, the fit indices of the baseline model were as follows ( $\chi^2= 1013.89$ ;  $df=56$ ;  $p<0.001$ ;  $NFI=0.91$ ;  $IFI=0.91$ ;  $CFI=0.91$ ;  $RMSEA=0.79$ ). Acceptable values can be observed for all of them, proceeding to carry out the multigroup (the RMSEA value was at the limit, although it was decided to run the model because of the rest of the fit indices obtained appropriate

values). Likewise, multi-group analysis was conducted of the model with the aim of comparing potential differences between the relationships established between variables, as a function of the teaching method being used to deliver university courses: face-to-face or online study. The structural model developed showed good fit indices for the multi-group analysis. The Chi-squared test revealed a statistically significant value ( $\chi^2= 1013.89$ ;  $df=56$ ;  $p<0.001$ ). Given the sensitivity to sample size presented by this statistic, Byrne (2016) indicates the importance of using other standardised fit indices. In this way, a value of 0.91 was obtained for the NFI, a value of 0.91 for the IFI and a value of 0.91 for the CFI, with all of these being acceptable. Likewise, a value of 0.079 was obtained for the RMSEA, with this also being adequate and demonstrating satisfactory fit of the SEM.

Figure 3 present the regression weights and standardised regression weights of the SEM developed for students undertaking their university studies via face-to-face approaches (left) and students undertaking distance learning (right). This enables relationships to be determined between learning strategies, self-concept and stress. Taking into account the model on the left (students who study face-to-face), in the first level of the model, statistically significant associations are shown ( $p<0.005$ ) between the four basic learning strategies, with positive relationships being reflected in all cases. In the case of elaboration strategies, a greater regression weight is seen for the following dimensions: self-regulation of effort ( $b=0.622$ ), self-regulation of meta-cognition ( $b=0.603$ ) and organisational strategies ( $b=0.582$ ). In the case of organisational strategies, positive associations are observed with both the self-regulation of effort ( $b=0.582$ ) and the self-regulation of meta-cognition ( $b=0.429$ ). Finally, self-regulation of meta-cognition and self-regulation of effort were positively related ( $b=0.579$ ).

In the next level of the model, concrete associations emerge between the aforementioned learning strategies, critical thinking and time spent studying. When reviewing the variable of critical thinking, significant and positive associations can be observed with all learning strategies except for the self-regulation of effort ( $p=0.570$ ). In this way, the regression weights load as follows, from highest to lowest: Self-regulation of meta-cognition ( $p<0.005$ ;  $b=0.363$ ), elaboration strategies ( $p<0.005$ ;  $b=0.214$ ) and organisational strategies ( $p<0.005$ ;  $b=0.085$ ). On the other hand, when the time spent studying is considered, statistically significant differences and positive associations are observed in relation to all learning strategies, taking the following order according to their regression weights: self-regulation of effort ( $p<0.005$ ;  $b=0.316$ ), organisational strategies ( $p<0.005$ ;  $b=0.257$ ), self-regulation of meta-cognition ( $p<0.005$ ;  $b=0.181$ ) and elaboration strategies ( $p<0.01$ ;  $b=0.067$ ).

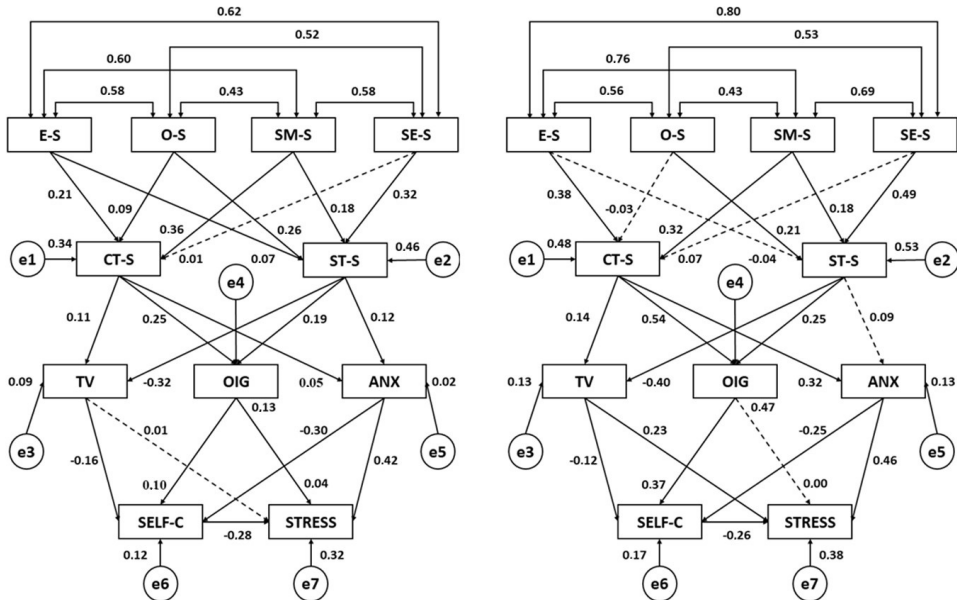
At the third level, associations are specified in relation to three relevant cognitive elements – task value, intrinsically oriented goals and anxiety – and critical thinking, study habits and time. It can be determined that critical thinking reflects positive

associations with these three elements, as follows: Intrinsically oriented goals ( $p < 0.005$ ;  $b = 0.247$ ), task value ( $p < 0.005$ ;  $b = 0.113$ ) and anxiety ( $p < 0.05$ ;  $b = 0.047$ ). In contrast, when reviewing study habits and time, a negative association was determined with task value ( $p < 0.005$ ;  $b = -0.324$ ), and a positive association with intrinsically oriented goals ( $p < 0.005$ ;  $b = 0.193$ ) and anxiety ( $p < 0.005$ ;  $b = 0.121$ ).

In conclusion, associations were established between the three aforementioned cognitive components, multi-dimensional self-concept and academic stress. Specifically, intrinsically oriented goals were positively associated with multi-dimensional self-concept ( $p < 0.005$ ;  $b = 0.102$ ) and academic stress ( $p < 0.05$ ;  $b = 0.043$ ). In a similar fashion to that already discussed, task value showed a negative association with multi-dimensional self-concept ( $p < 0.005$ ;  $b = -0.162$ ), with no relationship being found with academic stress ( $p = 0.529$ ). Thus, anxiety was positively associated with academic stress ( $p < 0.005$ ;  $b = 0.419$ ) and negatively related with multi-dimensional self-concept ( $p < 0.005$ ;  $b = -0.296$ ). Finally, the structural equation model uncovered a statistically significant negative/inverse association between academic stress and multi-dimensional self-concept in university students ( $p < 0.005$ ;  $b = -0.280$ ).

**Figure 3**

SEM for students who study via face-to-face approaches (left) and students undertaking distance learning (right)



Note <sup>1</sup>. SELF-C, Self-concept; E-S, Elaboration strategies; O-S, Organisational strategies; CT-S, Critical thinking; SM-S, Self-regulation of meta-cognition; ST-S, Study habits and time; SE-S, Self-regulation of effort; ANX, Anxiety; TV, Task value; OIG, Intrinsically oriented goals.

Note <sup>2</sup>. Arrows show statistically significant differences. Arrows with dotted lines show the absence of statistically significant differences.

On the other hand, the part on the right shows the structural model for distance learning students (Figure 3). At the first level of the model, statistically significant associations ( $p < 0.005$ ) are shown between the four basic learning strategies, with all of these being seen to be positive. In the case of elaboration strategies, regression weights were observed as follows, running from the strongest to the weakest: Self-regulation of effort ( $b = 0.799$ ), self-regulation of meta-cognition ( $b = 0.755$ ) and organisational strategies ( $b = 0.559$ ). With regards to organisational strategies, similar positive associations were observed with the self-regulation of effort ( $b = 0.529$ ) and the self-regulation of meta-cognition ( $b = 0.432$ ). Finally, self-regulation of meta-cognition and self-regulation of effort were positively associated ( $b = 0.686$ ).

At the next level of the model, associations were specified between the aforementioned learning strategies, critical thinking and the time spent studying.



When reviewing the variable of critical thinking, significant associations can be observed in relation to all learning strategies, apart from the self-regulation of effort ( $p=0.282$ ) and organisational strategies ( $p=0.507$ ). In this way, regression weights from highest to lowest are as follows: Elaboration strategies ( $p<0.005$ ;  $b=0.377$ ) and self-regulation of meta-cognition ( $p<0.005$ ;  $b=0.317$ ). On the other hand, when the time spent studying is considered, statistically significant positive associations are observed with all learning strategies apart from elaboration strategies ( $p=0.600$ ). Thus, regression weights are presented as follows, from strongest to weakest: Self-regulation of effort ( $p<0.005$ ;  $b=0.491$ ), organisational strategies ( $p<0.005$ ;  $b=0.209$ ) and self-regulation of meta-cognition ( $p<0.005$ ;  $b=0.179$ ).

At the third level, associations are specified between the three relevant cognitive elements – task value, intrinsically oriented goals and anxiety – and critical thinking, study habits and time. It can be determined that critical thinking is positively related with these three elements, with weights ordered as follows: Intrinsically oriented goals ( $p<0.005$ ;  $b=0.536$ ), task value ( $p<0.05$ ;  $b=0.139$ ) and anxiety ( $p<0.005$ ;  $b=0.317$ ). In contrast, when reviewing the time spent studying and study habits, a negative association was determined with task value ( $p<0.005$ ;  $b=-0.401$ ), and a positive association was found with intrinsically oriented goals ( $p<0.005$ ;  $b=0.251$ ). Statistically significant associations did not emerge in relation to anxiety ( $p=0.116$ ).

Finally, associations were determined between the three aforementioned cognitive components, self-concept and stress. Specifically, intrinsic goals were positively associated with self-concept ( $p<0.005$ ;  $b=0.370$ ) but not with stress ( $p=0.945$ ). Task value demonstrated a negative association with self-concept ( $p<0.05$ ;  $b=-0.117$ ) and a positive association with stress ( $p<0.005$ ;  $b=0.229$ ). Anxiety was positively related with stress ( $p<0.005$ ;  $b=0.458$ ) and negatively related with self-concept ( $p<0.005$ ;  $b=-0.246$ ). Finally, stress and self-concept were inversely associated ( $p<0.005$ ;  $b=-0.262$ ).

After analyzing the significant relationships for each structural model specifically, Table 3 reports the significant p-values for each pair of regression weights according to the teaching modality (comparison of the relationship vectors of the two models).

**Table 3.***Z values and p-values between pairs of regression weights according to the teaching modality*

Relationship			Face-to-face	Distance	Z	P-value
CT-S	←	E-S	0.21	0.38	-3.22	<0.001
CT-S	←	O-S	0.09	-0.03	2.07	<0.050
ST-S	←	SE-S	0.32	0.49	-3.53	<0.001
ST-S	←	SM-S	0.18	0.18	0.00	NS
CT-S	←	SM-S	0.36	0.32	0.78	NS
CT-S	←	SE-S	0.01	0.07	-1.03	NS
ST-S	←	E-S	0.07	-0.04	1.90	<0.050
ST-S	←	O-S	0.26	0.21	0.91	NS
TV	←	CT-S	0.11	0.14	-0.52	NS
ANX	←	CT-S	0.05	0.32	-4.86	<0.001
ANX	←	ST-S	0.12	0.09	0.52	NS
TV	←	ST-S	-0.32	-0.40	1.58	NS
OIG	←	ST-S	0.19	0.25	-1.08	NS
OIG	←	CT-S	0.25	0.54	-6.02	<0.001
SELF-C	←	TV	-0.16	-0.12	-0.70	NS
SELF-C	←	OIG	0.10	0.37	-4.97	<0.001
SELF-C	←	ANX	-0.30	-0.25	-0.93	NS
STRESS	←	OIG	0.04	0.00	0.69	NS
STRESS	←	ANX	0.42	0.46	-0.85	NS
STRESS	←	TV	0.01	0.23	-3.87	<0.001
STRESS	←	SELF-C	-0.28	-0.26	-0.37	NS
E-S	↔	SE-S	0.62	0.80	-6.45	<0.001
E-S	↔	SM-S	0.60	0.76	-5.23	<0.001
E-S	↔	O-S	0.58	0.56	0.51	NS
O-S	↔	SM-S	0.43	0.43	0.00	NS
O-S	↔	SE-S	0.52	0.53	-0.23	NS
SE-S	↔	SM-S	0.58	0.69	-3.20	<0.001

Note <sup>1</sup>. SELF-C, Self-concept; E-S, Elaboration strategies; O-S, Organisational strategies; CT-S, Critical thinking; SM-S, Self-regulation of meta-cognition; ST-S, Study habits and time; SE-S, Self-regulation of effort; ANX, Anxiety; TV, Task value; OIG, Intrinsically oriented goals; NS, Not Significant.

## DISCUSSION AND CONCLUSIONS

The structural model analysed the relationships between learning strategies, stress and self-concept as a function of study methods during the university stage. The model considered differences in relation to face-to-face and distance approaches to learning. In this way, it could be observed that some learning strategies such as elaboration, meta-cognition and effort strategies were positively related. Despite this, associations acquired greater strength when they pertained to students taking online courses. Broadbent & Poon (2015) explain these findings, arguing that students undertaking distance-learning studies are obliged to develop greater autonomy in relation to their learning and put specific strategies into practice which ensure the mastery of content and good academic performance (Cho & Heron, 2015).

Along these lines, a positive relationship was determined between all learning strategies and the critical thinking of students enrolled on courses with face-to-face teaching methods. The only exception was seen in relation to the self-regulation of effort. When explaining these findings, McPeck (2016) argue that critical thinking is based on the ability to analyse, understand, evaluate and interpret knowledge. For this reason, this skill largely runs in parallel with the majority of learning strategies, involving knowledge and the control of mental processes or the establishment of structural relationships between knowledge sources (Pintrich & Garcia, 2012; Sabogal et al., 2011). Along these lines, students engaged in distance learning were observed to demonstrate stronger relationships, with no relationships being uncovered between organisational strategies and effort.

The stronger relationship between critical thinking and learning strategies in students undertaking distance-based learning may be explained by characteristics of the teaching-learning process which pertain specifically to this teaching method. This suggests that students are encouraged to develop critical skills when exposed to new information, in addition to analysis and interpretation skills, and novel and adaptive thinking (Cortázar et al., 2021; Kong, 2014). Likewise, Pintrich & Garcia (2012) argue that the regulation of effort represents a learning strategy that imposes a greater load on students. This may be because it is linked with the ability to manage the level of commitment one gives to a task, although it is less tightly linked with the mental processes associated with the integration of new knowledge. For this reason, no association was found with critical thinking.

In consideration of study habits and time, stronger relationships were observed between the self-regulation of effort and organisational strategies when examined in relation to those engaged in face-to-face studying methods. This seems logical given that students who plan better for different academic tasks will possess better study habits and reach academic aims more effectively (Khat et al., 2017; Rashid

& Asghar, 2016). In the case of distance-based approaches, self-regulation of effort was most strongly associated with the time spent studying. Concretely, Broadbent & Poon (2015) and Saks & Leijen (2014) state that one of the basic characteristics of distance-learning is students' ability to control and regulate their own learning. This is evident given that they will have to face up to the studying process and completion of work tasks in a more autonomous way, with less teaching supervision and without the help of other course mates. These premises will help to explain the relevance of the self-regulation of effort in relation to the time spent studying and study habits. This characteristic is typically higher in courses delivered online, due to the reduced amount of teacher follow-up, as a result of the absence of face-to-face classes or tutorials (El Refae et al., 2021).

Intrinsically oriented goals emerged as stronger determinants of critical thinking and the time spent studying in online teaching, a finding which may appear contradictory. On the other hand, it can be concluded that, generally speaking, students undertaking university studies via face-to-face methods tend to present more self-determined motivations. This is because the elements that characterise this type of teaching favour the development of autonomous motivation via group working, continuous feedback provision and closer contact between teachers and students (Bruggeman et al., 2022; Cho & Heron, 2015).

Nonetheless, Darling-Aduana et al. (2022) and Pérez-Contreras et al. (2018) distinguished a profile for students undertaking distance learning courses and established that economic and employment-related reasons tended to determine the choice of this modality. However, the acquisition of training was also important, which, in many cases, was interesting to students at a vocational level and filled a gap in their prior learning. Further, this type of teaching uses technological resources which favour motivation. This brings together both extrinsic and intrinsic motivational types, strengthening overall motivation and the relationship it is seen to have with the time spent studying and critical thinking (Mahande & Akram, 2021).

In line with that presented, anxiety was not related with critical thinking when face-to-face teaching methods were considered, however, it was positively related when distance learning was contemplated. This seems intuitive given that distance-learning students count on fewer resources to help them deal with academic tasks, causing stressful situations to arise (Heo & Han, 2018; Saks & Leijen, 2014). Further, anxiety was positively related with the time spent studying in face-to-face approaches. This may be a result of the heavier workload implied by these courses, as students must attend theoretical sessions as well as having to complete work in the way that is done online (Broadbent & Poon, 2015; Firat, 2016). On the other hand, task value was negatively associated with the time spent studying in online studies, with a stronger relationship being evident. In explaining these findings, Sabogal et al. (2011) and Pintrich & García (2012) argue that task value may have a

negative connotation in that it may be related with underestimating the workload associated with an academic task. This may explain the increase seen in time spent studying when a task is perceived as being important.

The lower section of the model shows the relationships present in relation to stress and self-concept. These were both negatively related with task value, anxiety and stress, with stronger regression weights being obtained for distance-learning approaches. In this way, it can be established that those students who possess a more positive self-concept develop lower levels of anxiety and stress, and hold task value perceptions that are better-adjusted to reality, enabling better academic results to be achieved (Willis & Burnett 2016). Further, this is particularly evident in young people studying on distance-learning courses as they possess better learning strategies and can better manage stressful situations (Heo & Han, 2018). In this way, it serves to highlight that stress is directly associated with anxiety and task value. This is made evident through its relationship with students' perceptions of being unable to successfully tackle academic demands (Chacón-Cuberos et al., 2021).

Finally, it is essential to point out the main limitations of this study. First, to indicate that some dimensions of the scales used have shown low internal consistency, since they were only made up of two or three items. However, it is important to point out that all the scales obtained adequate values of global reliability. A second limitation is associated with the value obtained for the RMSEA, which is at the limit of acceptance -this limit value can be explained by the high number of variables included in the model-. Furthermore, because the rest of the indices obtained a good fit value, the model was accepted. Another limitation is linked to the study design, since cross-sectional designs do not allow establishing causal relationships between the variables under study. Finally, it should be highlighted the duration of the data collection process, which lasted several months due to the size of the sample. This could generate certain biases in variables such as stress, since this is dependent on the time of the school year.

## CONCLUSIONS

The theoretical model developed, and the multi-group analysis conducted, according to teaching methods, revealed better learning strategy development in relation to virtual teaching methods. Critical thinking was seen to be more dependent on the development of learning strategies when face-to-face approaches were used, whilst study habits were more strongly related with the self-regulation of effort when online methods were opted for. Of particular interest, intrinsically oriented goals were stronger determinants of critical thinking and the time spent studying in online teaching, highlighting the importance of this type of teaching approach. In addition, anxiety was positively related with the time spent studying in

face-to-face teaching approaches. In conclusion, it is indicated that self-concept was negatively associated with task value, anxiety and stress, with stronger regression weights being obtained in relation to distance-learning approaches. In this way, it can be concluded that the study hypotheses were entirely fulfilled, producing some highly relevant findings. Concretely, specific characteristics of the face-to-face learning approach were observed with regards to learning strategies, including the need to improve the development of organisational strategies. Nonetheless, it appears that distance approaches favour greater inter-dependence between learning strategies, time spent studying and motivation. This could favour better academic performance of university students in a social context that increasingly demands hybrid learning models.

## REFERENCES

- Almarzooq, Z., Lopes, M., & Kochar, A. (2020). Virtual learning during the COVID-19 pandemic: a disruptive technology in graduate medical education. *Journal of the American College of Cardiology*, 75(2), 2635-2638. <https://doi.org/10.1016/j.jacc.2020.04.015>
- Arnett, J. J. (2016). Does emerging adulthood theory apply across social classes? National data on a persistent question. *Emerging Adulthood*, 4(4), 227-235. <https://doi.org/10.1177/2167696815613000>
- Bartlett, J. E., Kotrlik, J. W., & Higgins, C. C. (2001). Organizational research: determining appropriate sample size in survey research appropriate sample size in survey research. *Information Technology, Learning, and Performance Journal*, 19(1), 43-50. *The Internet and Higher Education*, 27, 1-13. <https://doi.org/10.1016/j.iheduc.2015.04.007>
- Bruggeman, B., Garone, A., Struyven, K., Pynoo, B., & Tondeur, J. (2022). Exploring university teachers' online education during COVID-19: tensions between enthusiasm and stress. *Computers and Education Open*, 3, Artículo 100095. <https://doi.org/10.1016/j.caeo.2022.100095>
- Byrne, B. M. (2016). *Structural equation modelling with AMOS: Basic concepts, applications, and programming*. Routledge.
- Castro-Sánchez, M., Ramiro-Sánchez, T., García-Mármol, E., & Chacón-Cuberos, R. (2022). The association of trait emotional intelligence with the levels of anxiety, stress and physical activity engagement of adolescents. *Revista Latinoamericana de Psicología*, 54, 130-139. <https://doi.org/10.14349/rlp.2022.v54.15>
- Chacón-Cuberos, R., Olmedo-Moreno, E. M., Lara-Sánchez, A. J., Zurita-Ortega, F., & Castro-Sánchez, M. (2021). Basic psychological needs, emotional regulation and academic stress in university students: a structural model according to branch

- of knowledge. *Studies in Higher Education*, 46(7), 1421-1435. <https://doi.org/10.1080/03075079.2019.1686610>
- Cho, M. H. & Heron, M. L. (2015). Self-regulated learning: the role of motivation, emotion, and use of learning strategies in students' learning experiences in a self-paced online mathematics course. *Distance Education*, 36(1), 80-99. <https://doi.org/10.1080/01587919.2015.1019963>
- Cortázar, C., Nussbaum, M., Harcha, J., Alvares, D., López, F., Goñi, J., & Cabezas, V. (2021). Promoting critical thinking in an online, project-based course. *Computers in Human Behavior*, 119, Artículo 106705. <https://doi.org/10.1016/j.chb.2021.106705>
- Crawford, J., Butler-Henderson, K., Rudolph, J., & Glowatz, M. (2020). COVID-19: 20 countries' higher education intra-period digital pedagogy responses. *Journal of Applied Teaching and Learning*, 3(1). <https://doi.org/10.37074/jalt.2020.3.1.7>
- Darling-Aduana, J., Woodyard, H. T., Sass, T. R., & Barry, S. S. (2022). Learning-mode choice, student engagement, and achievement growth during the COVID-19 pandemic. *AERA Open*, 8. <https://doi.org/10.1177/23328584221128035>
- De la Fuente-Arias, J., Amate-Romera, J., & Sander, P. (2018). Relationships between cognitive strategies, motivational strategies and academic stress in professional examination candidates. *Electronic Journal of Research in Educational Psychology*, 16(2), 345-365.
- El Refae, G. A., Kaba, A., & Eletter, S. (2021). Distance learning during COVID-19 pandemic: satisfaction, opportunities and challenges as perceived by faculty members and students. *Interactive Technology and Smart Education*, 18(3), 298-318. <https://doi.org/10.1108/itse-08-2020-0128>
- Firat, M. (2016). Measuring the e-learning autonomy of distance education students. *Open Praxis*, 8(3), 191-201. <https://doi.org/10.5944/openpraxis.8.3.310>
- García, F., & Musitu, G. (2001). *Manual AF5 Autoconcepto*. TEA Ediciones.
- García-Ros, R., Pérez-González, F., Pérez-Blasco, J., & Natividad, L. A. (2012). Evaluación del estrés académico en estudiantes de nueva incorporación a la universidad. *Revista Latinoamericana de Psicología*, 44(2), 143-154.
- Heo, J., & Han, S. (2018). Effects of motivation, academic stress and age in predicting self-directed learning readiness (SDLR): focused on online college students. *Education and Information Technologies*, 23(1), 61-71. <https://doi.org/10.1007/s10639-017-9585-2>
- Jones, B. D. (2017). Estudio de componentes de un modelo de motivación en la enseñanza presencial y online. *Electronic Journal of Research in Educational Psychology*, 8(22), 915-944.
- Khiat, H. (2017). Academic performance and the practice of self-directed learning: the adult student perspective. *Journal of further and Higher Education*, 41(1), 44-59. <https://doi.org/10.1080/0309877X.2015.1062849>

- Kizilcec, R. F., Pérez-Sanagustín, M., & Maldonado, J. J. (2017). Self-regulated learning strategies predict learner behavior and goal attainment in Massive Open Online Courses. *Computers & Education*, 104, 18-33. <https://doi.org/10.1016/j.compedu.2016.10.001>
- Kong, S. C. (2014). Developing information literacy and critical thinking skills through domain knowledge learning in digital classrooms: an experience of practicing flipped classroom strategy. *Computers & Education*, 78, 160-173. <https://doi.org/10.1016/j.compedu.2014.05.009>
- Mahande, R. D., & Akram, A. (2021). Motivational factors underlying the use of online learning system in higher education: an analysis of measurement model. *Turkish Online Journal of Distance Education*, 22(1), 89-105. <https://doi.org/10.17718/tojde.849888>
- McPeck, J. E. (2016). *Critical thinking and education*. Routledge. <https://doi.org/10.4324/9781315463698>
- Nice, M. L., & Joseph, M. (2023). The features of emerging adulthood and individuation: relations and differences by college-going status, age, and living situation. *Emerging Adulthood*, 11(2), 271-287. <https://doi.org/10.1177/21676968221116545>
- O'Connor, K. (2022). Constructivism, curriculum and the knowledge question: tensions and challenges for higher education. *Studies in Higher Education*, 47(2), 412-422. <https://doi.org/10.1080/03075079.2020.1750585>
- Pérez-Contreras, B., González-Otero, K., & Polo-Bolaño, Y. (2018). Perfil sociodemográfico y económico de estudiantes universitarios. *Búsqueda*, 5(20), 48-62. *RELIEVE - Revista Electrónica de Investigación y Evaluación Educativa*, 25(2). <https://doi.org/10.7203/relieve.25.2.15029>
- Pintrich, P. R., & Garcia, T. (2012). Self-regulated learning in college students: knowledge, strategies, and motivation. In P. R. Pintrich, D. R. Brown, & C. E. Weinstein (Eds.), *Student motivation, cognition, and learning* (pp. 129-150). Routledge. <https://doi.org/10.4324/9780203052754>
- Pintrich, P. R., Smith, D. A., Garcia, T., & McKeachie, W. J. (1993). Reliability and predictive validity of the Motivated Strategies for Learning Questionnaire (MSLQ). *Educational and Psychological Measurement*, 53(3), 801-813.
- Rashid, T., & Asghar, H. M. (2016). Technology use, self-directed learning, student engagement and academic performance: examining the interrelations. *Computers in Human Behavior*, 63, 604-612. <https://doi.org/10.1016/j.chb.2016.05.084>
- Sabogal, L. F., Barraza, E., Hern, A., & Zapata, L. (2011). Validación del cuestionario de motivación y estrategias de aprendizaje forma corta – MSLQ SF, en estudiantes universitarios de una institución pública-Santa Marta. *Psicogente*, 14(25), 36-50.



- Saks, K., & Leijen, Ä. (2014). Distinguishing self-directed and self-regulated learning and measuring them in the e-learning context. *Procedia-Social and Behavioral Sciences*, 112, 190-198. <https://doi.org/10.1016/j.sbspro.2014.01.1155>
- Teixeira, R. J., Brandão, T., & Dores, A. R. (2022). Academic stress, coping, emotion regulation, affect and psychosomatic symptoms in higher education. *Current Psychology*, 41(11), 7618-7627. <https://doi.org/10.1007/s12144-020-01304-z>
- Willis, K. D. & Burnett, H. J. (2016). The power of stress: perceived stress and its relationship with rumination, self-concept clarity, and resilience. *North American Journal of Psychology*, 18(3), 483-498.
- Yadegaridehkordi, E., Shuib, L., Nilashi, M., & Asadi, S. (2019). Decision to adopt online collaborative learning tools in higher education: a case of top Malaysian universities. *Education and Information Technologies*, 24(1), 79-102. <https://doi.org/10.1007/s10639-018-9761-z>



# Educational research and school practice: unraveling a complex relationship from the perspective of management teams

*Investigación y práctica educativa: desentramando una relación compleja desde la mirada de los equipos directivos*

María Carmen López-López <sup>1\*</sup> 

Mariana Altopiedi <sup>2</sup> 

María José León-Guerrero <sup>1</sup> 

Reyes Hernández-Castilla <sup>3</sup> 

<sup>1</sup> Universidad de Granada, Spain

<sup>2</sup> Universidad de Sevilla, Spain

<sup>3</sup> Universidad Autónoma de Madrid, Spain

\* Corresponding author. E-mail: [mclopez@ugr.es](mailto:mclopez@ugr.es)

## Cómo referenciar este artículo/ How to reference this article:

López-López, M. C., Altopiedi, M., León-Guerrero, M. J., & Hernández-Castilla, R. (2024). Educational research and school practice: unraveling a complex relationship from the perspective of management teams. *Educación XX1*, 27(2), 115-139. <https://doi.org/10.5944/educxx1.36752>

**Date received:** 29/01/2023

**Date accepted:** 19/09/2023

**Published online:** 28/06/2024

## ABSTRACT

Although the impact of educational research on improving teaching and learning processes in schools is recognised, the transfer of the results of scientific studies into educational practice is neither frequent nor always effective. Factors concerning the nature of the research, the organisational cultures of schools and the professional characteristics of teachers and

school management teams seem to influence these processes. The aim of this study is to analyse the views of school leaders on the value and ways of using research in educational action. The results presented here are from a qualitative study involving 15 members of school management teams from six Spanish provinces. Information was collected through semi-structured interviews. The data were analysed using a system of categories inductively developed and negotiated by the members of the research team. The results confirm the limited use of scientific knowledge in school practice, as well as some factors that facilitate or hinder it. The need for a change in the topics studied, the forms of research and the way in which the results are presented is underlined. It is also emphasised the key role that school management can play in bringing research closer to practice, offering support or establishing conditions which promote analysis and reflection on research, its meaning and the applicability of its results.

**Keywords:** evidence-based pedagogy, educational research, school improvement, educational leadership, school management

## RESUMEN

Aunque se reconoce el efecto de la investigación educativa en la mejora de los procesos de enseñanza y de aprendizaje en las escuelas, la traslación de los resultados de estudios científicos a la práctica educativa no es frecuente ni siempre efectiva. Factores relativos a la naturaleza de las investigaciones, las culturas organizativas de los centros escolares y las características profesionales del profesorado y los equipos directivos parecen influir en estos procesos. Este artículo tiene como objetivo analizar la visión de los directivos acerca del valor y formas de uso de la investigación en la acción educativa. Los resultados presentados provienen de un estudio cualitativo en el que participaron 15 miembros de equipos directivos escolares pertenecientes a seis provincias españolas. La recogida de información se llevó a cabo a través de entrevistas semiestructuradas. El análisis se realizó empleando un sistema de categorías generado de forma inductiva y negociado por los miembros del equipo de investigación. Los resultados confirman el limitado empleo de conocimiento científico en la práctica escolar, así como algunos factores que lo facilitan o dificultan. Se subraya la necesidad de dar un giro en las temáticas de estudio, las formas de investigar y la manera de mostrar los resultados. Se enfatiza, asimismo, el papel clave que pueden jugar las direcciones escolares en el acercamiento de la investigación a la práctica, ofreciendo apoyos o generando condiciones que promuevan el análisis y reflexión sobre la investigación, su sentido y la aplicabilidad de sus resultados.

**Palabras clave:** pedagogía basada en la evidencia, investigación educativa, mejora escolar, liderazgo educativo, dirección escolar

## INTRODUCTION

### Educational research and school practice: a complex relationship

It is now accepted that educational action must be grounded in research, as it provides 'true knowledge' (Farley-Ripple, 2012). As Kaur et al. (2020) highlight, evidence-based pedagogy is advocated, as knowledge of 'what works' improves teachers' teaching skills and student outcomes (Cain & Allan, 2017). According to Brown and Zhang (2016), there is growing correlational evidence that the use of research, as part of initial and ongoing teacher education to address improvement priorities, has a positive influence on teachers, schools and system performance (Godfrey, 2014). Likewise, the experience of 'research-engaged' schools, which adopt a strategic and agreed approach to this area, is generally positive. This is because it helps them move from an instrumental model of improvement, based on 'best advice', to a culture of learning where they work together to understand what works, when and why (Godfrey, 2014; Hemsley-Brown & Sharp, 2003). This aspect is indeed the one most valued by teachers participating in the study by Ion et al. (2021), as it allows them to identify which elements of their practice need to be improved.

Nevertheless, research seems to have limited influence on practice and the definition of education policies (Levin, 2013; Galindo-Domínguez et al., 2022). Even when efforts are made by the administration, educational institutions or universities to promote research-based practices, most schools do not implement them (Ion et al., 2021). The literature identifies four interrelated problems marking the relationship between research and educational practice (Vanderlinde & Van Braak, 2010):

1. The research does not provide conclusive, valid and reliable results.
2. The research provides results with poor practical applicability.
3. Educational research is not meaningful for teachers.
4. The 'practical ones' lack the training to use the knowledge derived from the research.

According to Watling et al. (2019), educators doubt about the relevance of research for the school environment and its ability to improve educational outcomes. This is influenced by the closeness of the topics addressed in the studies to everyday work, as it favors the recognition of their usefulness, as well as the understanding of their meaning. It also influences that their use can be:

- a) Instrumental, when participants are able to cite and document ways of using research results, which is appreciated quite occasionally;

- b) Conceptual, shaping the perspectives from which decisions are made, which is observed when participants point out how research should be used, or use studies as general references;
- c) Political, difficult to identify insofar as intentions are not explicit, when data are manipulated for some benefit;
- d) Symbolic, by referencing studies to legitimize one's own discourse (Tan & Gilbert, 2014; Farley-Ripple, 2012).

According to these authors, the instrumental and conceptual uses of research prevail, focusing on studies which provide teaching tools or a better understanding of processes.

In short, the gap between research and practice in education persists (Malouf & Taymans, 2016; Neal, et al., 2015) and is a more complex phenomenon than is often portrayed in the literature. In the view of these authors, and in order to overcome this split, it is necessary to identify the factors that influence this fact. In addition, different actors express different opinions, both about its extent and its very nature (Vanderlinde & Van Braak, 2010). For example, teachers consider the gap to be wider than other groups and are sceptical about the value of educational research, as they consider the questions posed by researchers to be of minor relevance. School leaders express a more moderate stance, arguing that they read research reports and try to incorporate their results into daily practice. They acknowledge, however, the presence of an overly complex technical language in research reports. On the other hand, educational administrators do not see the research-practice gap as a problem, as they try to bring the results of the former closer to the developers of the latter.

### **Factors conditioning the use of evidence as a basis for educational practice: the role of school leaders**

An obvious condition for the use of research results in practice is their accessibility, which is not only limited to the availability of sources, but also to their proximity to practice (Farley-Ripple, 2012; Galindo-Domínguez et al., 2022), their compatibility with experiences and the possibility of experimenting with them in order to demonstrate the advantages of research over experience or intuition (Watling et al., 2019). This requires knowing which research topics are valued by teachers, taking into account their need to immediately link evidence to their daily work. This would be helped by teacher involvement in defining what and how to research.

While, in the educational field, researchers are often the sole producers of evidence, in practice-associated research (Penuel et al., 2017) and action research (Carr & Kemmis, 1988), educators are also involved in the co-production or

production of evidence. Bringing these voices on board – e.g. in the framework of professional learning communities (Brown & Zang, 2016) – can facilitate the use of research results in practice. This possibility is conditioned by the policies which organize teachers' work and must be accompanied by support from the administration and school management. A key factor in the use of research, among other issues, is the time available (Farley-Ripple, 2012; Galindo-Domínguez et al., 2022). The nature of research methodologies and findings; policy orientations; teacher attitudes, perceptions and skills; and school leadership practices condition the use of educational research (Brown & Zhang, 2016; Cain, 2015; Levin, 2013). To the factors mentioned above, Cordingley (2008) adds the drive to change arising from dissatisfaction with the situation, ways of understanding, ideas or actions. This drive for improvement can be promoted by school leaders, given their ability to influence teachers' motivation, behavior and professional development. It is school leaders who can shape environments favorable to innovation and organizational learning, which are essential to increase the school's professional capital and successfully respond to educational challenges (Khaola & Oni, 2020; Daniëls et al., 2021). The aim is therefore for school leaders to exercise transformational leadership oriented towards learning and coexistence (Villa, 2019) which prioritizes school improvement. This involves addressing four factors: (1) ensuring the capacity of teachers to engage in the use of data; (2) creating attunement between school culture and the use of research; (3) promoting the use of research in the context of improving learning; (4) creating effective structures, systems and mechanisms to facilitate the use and sharing of best practice (Earl & Fullan, 2003; Brown & Zhang, 2016). In this sense, belonging to a school where one experiences a supportive climate and has the trust of leaders and colleagues facilitates the use of research to support teaching practice (Ion et al., 2022).

It is also necessary to make research-derived information perceived as useful, promoting frameworks for discussion and knowledge building. Thus, according to Brown and Zhang (2016), in professional learning communities, engagement with research is more likely to emerge from the development of experiences that link practice and research (Brown, 2017). This would amount to making research a cultural norm, an institutionally embedded activity. This would require the educational leader, whatever position he or she holds in the formal structure, to promote a vision of improvement around a common, jointly developed project which provides the necessary resources and empowers teachers to respond to the diversity of needs and the optimization of results (Earl & Fullan, 2003). In this sense, it is school leaders who are most likely to play this mobilizing role. This is reflected in the results of the study conducted by Gairín (2023), which verifies that 'the unanimity given to the role of school managers as moral support for change, but also as dynamisers of a process of change' (p. 134).

Concordantly, Malin et al. (2020) point to the need to create coherent systems in which teachers and managers can integrate research-based knowledge with other forms of knowledge, especially with the knowledge constructed in their daily practices, making consistent educational decisions. School leaders can encourage a committed vision on research culture by promoting the involvement of the school community in research as part of a 'culture of learning.' Key to this is supporting teachers' commitment to research and developing opportunities to foster attitudes favorable to participation in research activities and the use of scientific knowledge as a basis for educational practices (Ion et al., 2022). Thus, engaging in research within and between schools will require 'transformational' and 'learning-centered' leadership (Villa, 2019) aimed at providing contexts in which to work with evidence (Brown, 2017).

In the light of the above, this paper focuses on the views of school leaders on the value and ways of using educational research in educational practice.

## METHOD

This study is part of a broader, descriptive and qualitative research project (Ref. EDU2017-90606-REDT) funded by the Spanish Ministry of Economy, Industry and Competitiveness and carried out within the framework of the RILME network of excellence. The overall purpose of this study was to determine the needs and uses of educational research by state education policy makers, teachers and school leaders in relation to educational improvement. This article focuses specifically on the views of the management team obtained through interviews.

The interview, as a qualitative technique, allows a large amount of information to be collected directly between the researcher and the research subject on a direct, day-to-day basis (Mayorga, 2004; Sierra, 1998). In this case, a semi-structured interview was chosen. The script used was agreed upon by the members of the research group, in accordance with the proposed objectives. It was made up of thirteen questions distributed in two blocks: I. Use of research (1. Do you use the results of educational research for decision making in your professional practice? And for your professional development? 2. On what issues do you use educational research for decision-making? 3. How do you apply the results of educational research in your professional practice? 4. For your professional development, what research topics are you interested in? 5. How do you usually access the results of the educational research you tell me about?) and II. Research needs (1. Do you think that there is enough good quality educational research available for your professional use? 2. What issues do you think need to be developed further? 3. If there were better and more accessible research, would you use the research results more? 4. What specifically do you think research would need to improve in order for you to



use more of its results in your practice? 5. If so, on what topics would you like to have research available for decision making or for your professional development? 6. And especially for school improvement? 7. And for school leadership? 8. In what format would you like the research results to be made available?) The interview script also included a set of questions designed to determine the interviewee's identification data. Interviews were conducted on a confidential and anonymous basis and lasted between one and one and a half hours.

Once completed and transcribed, the interviews were coded according to the common category system developed inductively by the members of the research team. The process of constructing this system began with several members of the team independently reading six randomly selected interviews to extract categories and subcategories for analysis. This process resulted in a first coding system, which was reviewed and completed on a consensus basis by the rest of the team members.

The category system was made up of 8 categories and 55 subcategories.

The following table shows the categories and some examples of subcategories.

**Table1**  
*Categories and examples of subcategories*

Categories	Examples of subcategories
Issues in which research results are used	<ul style="list-style-type: none"> <li>— Teaching methodologies;</li> <li>— Attention to diversity;</li> <li>— Educational resources.</li> </ul>
Factors facilitating access to research results	<ul style="list-style-type: none"> <li>— Management teams;</li> <li>— Colleagues;</li> <li>— Networks;</li> <li>— Teacher training centers.</li> </ul>
Access routes to research	<ul style="list-style-type: none"> <li>— Online;</li> <li>— Bibliographical material;</li> <li>— Scientific meetings.</li> </ul>
Ways of transferring research results into practice	<ul style="list-style-type: none"> <li>— Adaptation agreed with colleagues or other professionals;</li> <li>— Reproduction for personal use.</li> </ul>
Topics of interest for personal, professional and institutional development	<ul style="list-style-type: none"> <li>— Emotional intelligence;</li> <li>— Personal relationships;</li> <li>— Leadership;</li> <li>— Community relations.</li> </ul>
Topics of interest of a curricular nature	<ul style="list-style-type: none"> <li>— Methodology;</li> <li>— Attention to diversity;</li> <li>— Assessment.</li> </ul>

Categories	Examples of subcategories
Conditions favouring the use of research results	<ul style="list-style-type: none"> <li>— Format and language;</li> <li>— Commitment of the organization.</li> </ul>
Conditions hindering the use of research results	<ul style="list-style-type: none"> <li>— Lack of training;</li> <li>— Time constraints.</li> </ul>

The content analysis (Miles, et al., 2014) of the interviews allowed us to extract frequencies of the different subcategories, as well as those paragraphs that we considered significant or relevant to highlight the vision of the management teams regarding educational research and their role in dynamizing its link to practice.

## Participants

Out of the 20 members of the management teams of Infant and Primary Education Schools (IPES) and Secondary Education Schools (SES), which were to be selected intentionally, by criteria (4 for each of the five participating Autonomous Communities), only 15 took part in the study. They were from six Spanish provinces (Granada, Huelva, Madrid, Murcia, Seville and Tarragona), 10 were men and 5 were women. They are teachers with extensive experience in the field ( $X= 23$ , between 10 and 35 years), although with wide differences in the length of time they have held managerial positions (from 1 to 30 years). Of these, 12 are members of IPES management teams and 3 are from SES. Most of these teachers are trained in Education, in different specializations, although there are also graduates in Pedagogy, Psycho-pedagogy, Hispanic Philology and Political Science.

## RESULTS

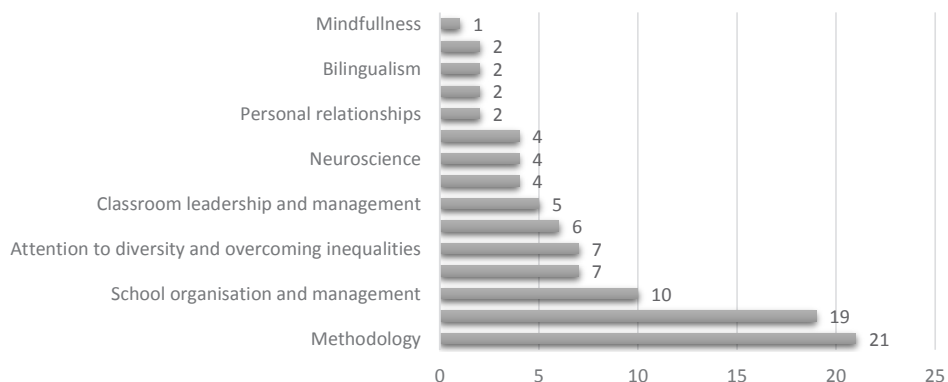
In accordance with what was stated in the introduction, we start from the consideration that school leaders can play a fundamental role in the way in which teachers approach and link their practice with the results of educational research. This occurs when they exercise forms of leadership that favor its use, as well as the configuration of cultures oriented to change and to base decisions on the exploration of reality (Gairín, 2023). Below, we present the vision of the school leaders interviewed according to three dimensions which bring together all the categories extracted. These dimensions are: research topics that are being used in educational practice, as well as those that should be researched; ways in which teachers access research results and how they are transferred to their practice; and factors which influence the development of both processes.

## Research topics: usage and interest

As shown in Graph 1, according to the school leaders consulted, the results of educational research are used in schools in a variety of areas. The most frequently mentioned topic refers to teaching methodologies (12) and clearly related to this, teaching resources (4) and attention to diversity (3).

**Figure1**

*Topics in which the results are used*



We can assert that the issues on which scientific studies seem to be used the most are those related to teaching practice, as the following testimony reflects:

‘For example, another place we have looked at – although I don’t know how strongly this is supported by international research – but, a few years ago, the whole school decided to change the method of teaching mathematics to the ABN method’ (EDS2).

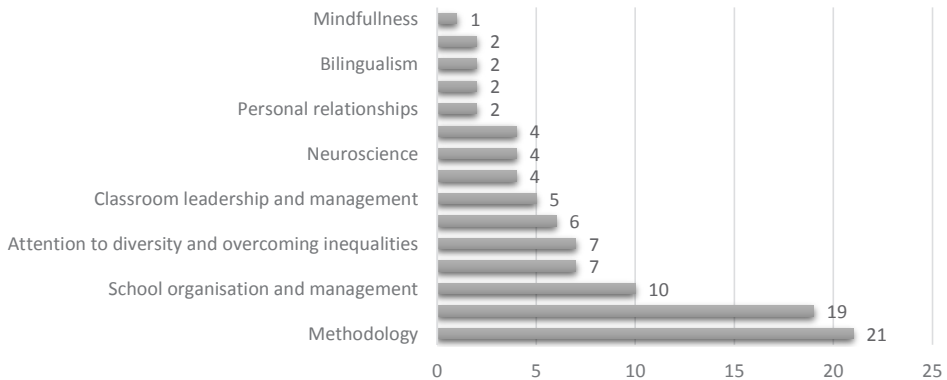
Paradoxically, assessment systems are scarcely mentioned (2) as topics in which research results are considered. With similar frequency are school organization (3), detection of gaps in training (2), professional development (2) and bilingualism (2).

As Graph 2 shows, the topics of most interest are teaching methodology (21) and leadership (19). Since the participants are school leaders, the responses are in line with interests about their practice in both educational leadership and classroom management.

‘Well, we do use, above all, things that we see that work, such as all this service-learning, cooperative learning, and so on. We also read what results are being

achieved. We try to put it into practice. Of course, taking into account the characteristics that we have here, things that are being done or which we see that we can use to work with our kids. Cooperative, BPL (EDMA2).

**Figure 2**  
*Topics of interest*



The topics whose frequency is ranked in third place are those related to how to organize the school and its management (10). Once again, this shows their interest in issues directly related to their management practice, such as attention to diversity and openness to the community (with a frequency of 7 in both cases).

'About human groups, complexity, how to encourage and excite them. How to motivate them, it is difficult to motivate teachers. It is difficult when everybody is a bit discouraged because there is not a very good environment for state education. To make them more innovative' (EDMA2).

Other topics directly related to the classroom, such as classroom management (5), curricular content (6) or assessment (4), are also deemed to be of interest. Finally, there is an area of great diversity which could be linked to personal issues such as the use of leisure time (2), personal relationships (2), or Mindfulness (1) which appear with a clearly lower frequency. Interestingly, this group also includes school counselling (2), which appears as an issue of residual interest among the research topics mentioned.

### Access to and transfer of research results: pathways and facilitating agents

Among the heterogeneous ways of accessing research results, the Internet stands out in different formats (forums, websites, blogs), both those of general use (22) and those provided by the public administration (6).

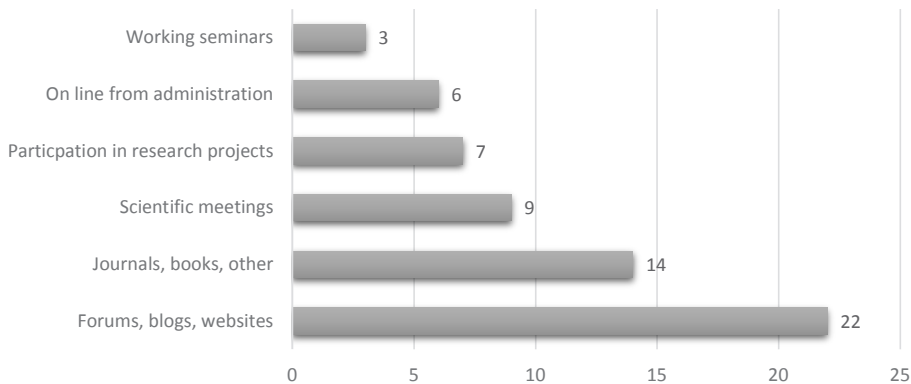
‘Yes, on Twitter, for example. You can access information very quickly and, moreover, of course, we are in a world in which we are flooded with information, and the difficulty lies in finding relevant information that might be of interest to you. So on Twitter you make your own social network of what interests you’ (EDT1).

‘At the school we subscribe to different journals which publish on educational research results’ (EDT4).

‘Through reading professional journals’ (EDT4).

As can be seen in Graph 3, traditional formats such as journals, books, etc. are used to a lesser extent (14). Attendance at conferences and scientific meetings is another way of access reported by respondents (9), as well as participation in research projects (7) and working seminars (3).

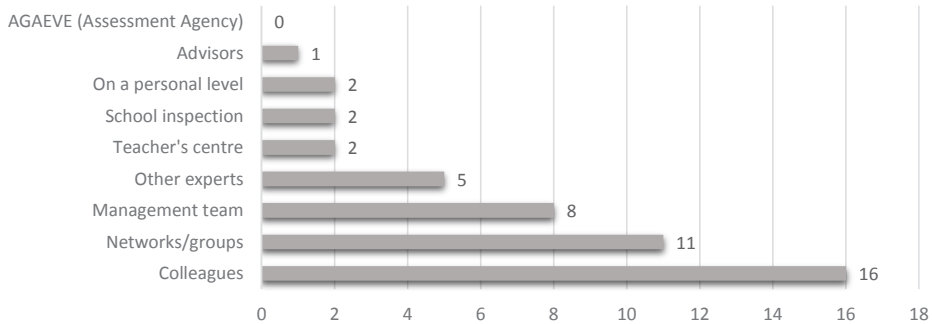
**Figure 3**  
*Pathways to results*



Regarding the agents which facilitate access to research results (Graph 4), colleagues (16) and networks or groups (11) stand out, followed by the management team (8).

'... also share it with other people, for example, as we were saying, tutors. To say to them: "hey, look at this paper, it is very interesting for your daily practice in the classroom"' (EDT4)

**Figure 4**  
*Agents facilitating access to research results*



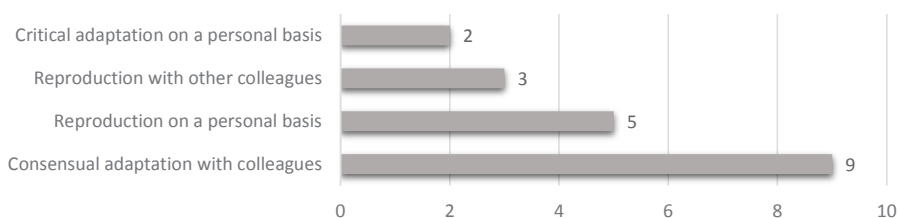
Channels external to schools are less frequently mentioned, such as experts (5), teachers' centers (2) and inspectors or advisors (1). Interestingly, the Evaluation Agency AGAEVE is not considered as a facilitating agent.

'What we sometimes do is to contact a school to see how they work with projects, how they work with robotics, and so on, because if I read a book about robotics or how to implement it, it is not going to solve the problems that I am going to have on a day-to-day basis' (EDT1).

Figure 5 shows the pathways in which, according to the managers interviewed, research results are transferred into educational practice. The most common way is the consensual adaptation of research results together with other colleagues (9), although it is also done on a personal basis, out of self-interest. In this second case, contrary to when the adoption of the results is collective, the more or less linear reproduction of what is contained in the research reports consulted seems to predominate (5) over their critical adaptation (2).

**Figure 5**

*Translation of results*



The possibility of dialogue and discussion among colleagues probably provides greater security when adapting research results to the context, whereas in individual transfer there is a tendency to reproduce and not introduce modifications.

‘We do these kinds of activities because we have read about these issues and because we see the need for those moments during breaks, when children have to rest but also have to be active’ (EDM4).

### Conditioning factors for the applicability of research results

Regarding the conditions most conducive to the use of research and its results, the link between research and practice (12) and the accessibility of information (11) confirm the previous comments. Also, although with a somewhat lower frequency, the visibility of actions (8) and the involvement of teachers (8) are emphasized as issues that favor the use of research results.

Building on the above, it is likely that this teaching commitment is promoted by other factors such as group work (8) and institutional commitment (7). A manifestation of the latter could be represented by school-based training, which is also a noteworthy element (6), as is collaborative training or research (4).

‘A leadership that pulls forward so that colleagues can be colleagues like them and that they see us as teachers like them, to whom we ask for help when we need it and who give us ideas to get things done; a management team that pulls forward with their colleagues, respects ideas and carries out a task that I think is fundamental’ (EDM4).

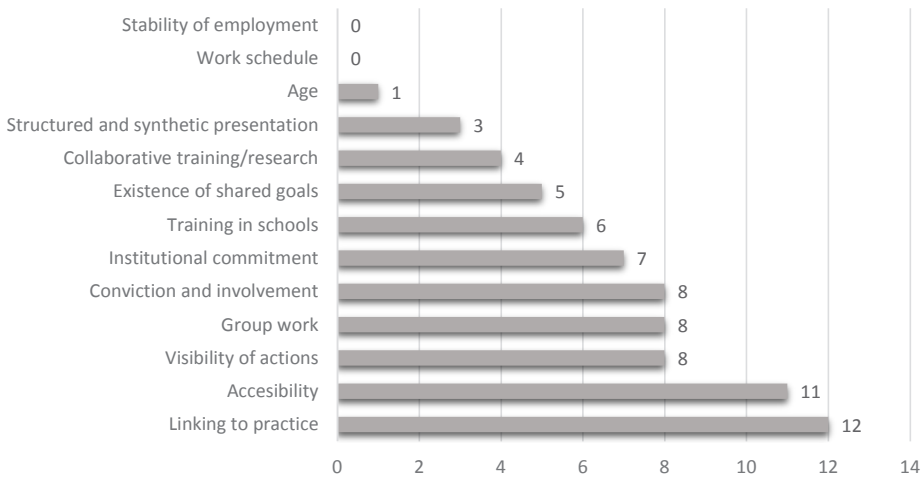
As reflected in this quote, the role of the educational leader is pivotal in the use of research-derived information in schools.

The way in which information is presented is also mentioned, albeit less frequently (3).

'It should be improved... we should also talk more with teachers to find out what their weaknesses are, what problems they are facing in order to help them... if we want a direct implementation in a school, we also need to know what problems can be found in a school on a daily basis so that these investigations can have an impact' (EDM2).

'Universities are the source par excellence of research, there are wonderful professionals... but many times there is a certain disconnection between schools and universities... it would be important that you convey this to us in some way, also by holding... well, I don't know, some kind of symposium, conferences, colloquiums, to call us and also say that, where the new research is going nowadays' (EDM2).

**Figure 6**  
*Conditions favoring*



However, it does not seem that issues such as job stability, age, or the characteristics of the space are seen as facilitators for the use of scientific studies.

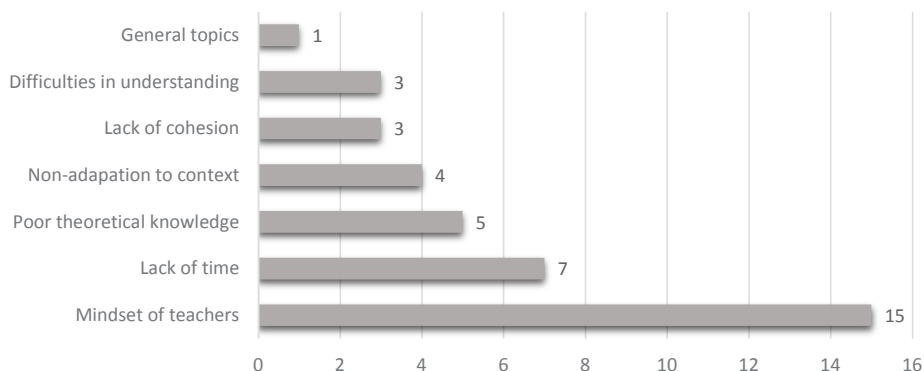
In contrast, if we focus on the factors that hinder the use of educational research results (Graph 7), we find the highest frequency (15) in the mindset of the teachers.

'... sometimes teachers do not apply the new trends or the conclusions reached by research because the teachers themselves do not give them credibility [...] They think that the research done at the university is theory and they do not really know our work. It's as if they don't quite believe it' (EDT3).



Concerning the teaching staff, the management teams participating in the study identified lack of time (7), poor theoretical knowledge (5), difficulties in understanding research reports (3) and lack of cohesion (3) as factors hindering the use of research results in practice.

**Figure 7**  
*Conditions hindering use*



Other issues that hinder the use of research, linked to its nature, are: the general nature of the topics addressed in scientific studies (1) and the consequent need for contextualization involved in its implementation in practice (4).

## DISCUSION AND CONCLUSIONS

The analysis of the data reveals that, from the perspective of the participants in the study, the two areas in which the results of educational research are most used are those related to the incorporation of active methodologies into teaching-learning processes (cooperative learning, problem-based learning, etc.) and the use of ICTs. Interest in these subjects would be linked to the methodological change driven by the adoption of the competence-based approach to education and the growing incorporation of ICTs in teaching, reinforced by the situation generated by COVID-19. Both of these factors have contributed to the concentration of much of the innovation processes in educational institutions on these aspects (Villa et al., 2015; Trujillo et al., 2020). Contributions from school managements teams point out that the use of research is essentially instrumental, as it is especially aimed

at providing tools applicable to teaching to solve a specific problem or make a particular decision (Tan & Gilbert, 2014; Farley-Ripple, 2012). This is consistent with the findings of Ion et al. (2021) about teachers' appreciation of the possibility of identifying in scientific studies those strategies that work to know which aspects of practice need to be strengthened.

It is also striking that the interest shown in methodological transformation does not extend to a topic as important as the assessment system. From an optimistic perspective, it might be thought that this is because the assessment systems adopted in schools amply cover the needs and interests of teachers. However, it is also possible that, as has been the case at university level, the methodological progress made with the adoption of the competence-based approach to learning has not been coupled with a redefinition of assessment systems (Cano, 2008; Ión & Cano, 2012). This would lead to an assessment developed independently of the methodological action, which could result in significant gaps and inconsistencies in the training processes (López et al., 2018). It would be interesting, in this sense, to develop research processes that, focused on the analysis of educational practice, could help to clarify this question.

School managers also emphasize leadership as a research topic of special interest, in addition to the teaching-learning methodology. They speak of a leadership which is projected not only in their role as administrators and managers of an educational institution, but also in their commitment to openness to the community, the improvement of curricular aspects linked to the improvement of educational practice (methodology, contents, etc.), and others linked to personal development. This diversification of interests is proof of the complex and multifaceted nature of educational leadership (Johnson et al., 2020). It requires the performance of bureaucratic and administrative duties, as well as other tasks of a social, pedagogical or personal growth nature, particularly in 'an increasingly rapidly changing context that increases the complexity of governance and management' (Gairín, 2023, p. 134).

It is striking how little prominence is given to topics such as attention to diversity, counseling and school dropout. This fact seems to confirm, as already pointed out by Cardno et al. (2018), that diversity does not have high priority among school managers. This finding invites to pay more attention to the training of school management teams and their commitment to inclusion and equity in schools (DeMatthews et al., 2021, Harris, et al., 2017). Nowadays, and in the Spanish case, the political commitment to this issue is both insufficient and contradictory (López-López et al., 2021). The Spanish Organic Law 3/2020 on Education, in its article 135.4, establishes, for the performance of the managerial function, the need to present a non-discriminatory management project, aimed at achieving school success for all students and committed to equality between women and men. However, the

training proposal for the performance of the managerial function, published by the Ministry of Education, Culture and Sport (Royal Decree 894/2014), does not include any mention to diversity, inclusion or equity in the competences and content blocks covered, which is nonetheless paradoxical.

Among the agents that facilitate access to research, priority is given to colleagues, other groups or networks of professionals outside the school, and the management teams themselves. Colleagues and management teams become key factors for accessing new information, exchanging experiences and materials, clearing up doubts, receiving support and creating working groups committed to innovation and improvement. They are key agents in bringing research closer to practice, enabling its use to achieve shared goals, fostering learning and empowerment of those involved, and increasing their professionalism in the workplace itself (Cain, 2015; Brown & Zhang, 2016). This would strengthen, according to Ion et al. (2022), favorable attitudes towards educational research and its use in daily practice.

For Khaola and Oni (2020) and Daniëls et al. (2021), school managers who act as leaders can play an important pedagogical role in guiding teachers' learning, in their motivation and work behaviour, providing the means, setting the conditions for innovation and developing organizational learning climates based on trust in leaders and fellow teachers (Ion et al., 2022). All these aspects are essential to increase the school's professional capital and respond effectively to challenges.

The most frequently used means of access to research, according to school management teams, is the virtual one, followed by bibliographical documentation and scientific meetings. It is confirmed that the accessibility to information and the rapid visibility of research results offered by the Internet favour the use of educational research (Cain, 2015; Cordingley, 2008; Farley-Ripple, 2012; Watling et al., 2019). However, for Cordingley (2008) this accessibility of research documents should not only be understood as rapid retrieval (physical accessibility), but also in terms of the ability to understand their content (cognitive accessibility). School management teams can contribute to improving this cognitive accessibility by creating professional learning communities which analyse and reflect on research, the meaning of research, its feasibility, and its application possibilities (Farley-Ripple, 2012; Brown & Zang, 2016; Daniëls et al., 2021). This should be done on the basis of a clear identification of the aspects to be emphasised in day-to-day activity (Ion et al., 2021).

The transfer of research results to educational practice is, in the participants' opinion, mainly done through consensual and negotiated adaptations. In these processes, findings and discoveries are shared, conditions for joint work are created, and agreements are reached on what works, what should be changed, why, how and when (Godfrey, 2014; Hemsley-Brown & Sharp, 2003).

Tellingly, there are few or no references to the contribution of researchers to this type of process aimed at facilitating access to research results or their transfer to practice. This absence reflects the need to strengthen the theory-practice relationship, to foster the transfer of knowledge, and to increase the commitment of research to improving educational practice and schools. The traditional disengagement between the two contexts is a factor in the limited impact that research has had on improving educational practice (Levin, 2013). In addition, although Tan and Gilbert (2014) and Watling et al. (2019) have expressed doubts about the impact of mere access to research-derived knowledge in improving classroom practices, many authors emphasise the need to strengthen the school-university relationship in order to enhance the theory-practice connection and increase the applicability of research results (Vanderlinde & Van Braak, 2010, Malouf & Taymans, 2016; Brown & Zhang, 2016). From this perspective, it is recommended to promote research that is close to practice and open to the participation of the educational community (Carr & Kemmis, 1988; Brown & Zang, 2016; Coburn, et al., 2013; Penuel et al., 2017).

According to the interviewees, the appropriate use of the results of educational research is conditioned by factors that could be considered intrinsic to the research itself, such as: that the content of the research is linked to practice, the possibility of easy access to its results, its clear exposition and the visibility of the actions developed in the studies, and that the practitioners have participated in them in a collegiate way (Cordingley, 2008 o Farley-Ripple 2012). They also identify other conditioning factors affecting teachers (lack of theoretical training, difficulties in understanding research reports, lack of cohesion, etc.), and schools (lack of group work, lack of time, lack of institutional commitment, etc.).

The first conditioning factors should lead researchers to consider a shift in the topics of study, as well as in the ways of researching and showing what is researched. Research must be concerned with the worries and priorities of practice, if it is to be considered by teachers in their decisions to improve their teaching practice (Galindo-Domínguez et al., 2022). The pathway and the way studies and their results are shown should also be analysed, as suggested by Cordingley (2008) and Farley-Ripple (2012). These authors differentiate between physical accessibility to the studies (access route) and understanding accessibility due to the complexity of the reports themselves and their length. This is an aspect that, although to a lesser extent, has also been highlighted by the study managers.

To overcome the second group of factors which hinder the use of research in practice, school management teams need to establish times and dynamics in schools that allow teachers to reflect collaboratively on the studies that the needs analysis has identified as necessary to improve their practice (Brown & Zhang, 2016). But, above all, they are urged to encourage the involvement of school members in

the design and development of these studies. The aim is to bring diverse voices and practitioners themselves into the research processes, in order to facilitate a shift from a transmission model of improvement – based on ‘best advice’ – to one focused on the culture of learning, in which school staff jointly question the what and why of changes (Hemsley-Brown & Sharp, 2003). This shift is a priority condition if the implementation of research results in practice is to be guaranteed (Brown & Zang, 2016). But it is also a priority for school management teams to support teachers when they engage in action research (Carr & Kemmis, 1988) or participatory research projects (Díez-Gutiérrez, 2020; Pereda & Prada, 2014), or when they are interested in analysing studies which allow them to improve their practice (Cain, 2015). Group work, institutional commitment, as well as in-school training of teachers to carry out research processes linked to practice, are tasks that must be encouraged by school leaders if they wish to promote a school culture based on enquiry and focused on improving learning (Brown & Zhang, 2016; Cain, 2015; Levin, 2013). Likewise, it seems imperative to promote a climate of trust and mutual support which facilitates the undertaking of research activities and the use of scientific knowledge as a foundation for practices (Ion et al., 2022). This could lead to educational decisions based on the integration of academic knowledge and knowledge produced in other ways (Malin et al., 2020).

These actions, led by school management teams, could help to overcome several of the obstacles that, according to school leaders, hinder the use of research results in schools. Thus, teachers’ mindsets, attitudes and perceptions – which are the most prominent determinants of the lack of applicability of research in practice – together with their limited theoretical training – which prevent them from having adequate capacities or skills to generate, understand (Cordingley, 2008) and use research results (Brown & Zhang, 2016; Cain, 2015) – could be diminished through school-based training processes led by school management teams. It is therefore recognised that it is essential to build a culture focused on change, a change based on researching reality and collecting data to substantiate decisions. In this way, organisations would be able to respond adaptively to changes in context (Gairín, 2023).

Another problem that has been highlighted is the lack of time, an aspect that has been validated by studies such as those of Farley-Ripple (2012), Cain (2015) and Galindo-Domínguez et al. (2022). These studies underline the need for teachers and management teams to have time during the school day to investigate and analyse research reports. The autonomy of school management teams in organisational and time-related aspects facilitates the creation of these spaces and times to approach research.

## Theoretical contributions

From a theoretical perspective, this study contributes to increasing existing knowledge about the value and ways of using research in educational practice. It does so by focusing on the perspectives of management teams, which is unusual despite the key role they play in the improvement processes of educational institutions, their influence on teachers, and their ability to overcome many of the obstacles to the use of research in educational practice (Gairín, 2023; Godfrey, 2014).

## Implications

The results of this study have different implications. Firstly, they reveal the need to undertake useful educational research, linked to practice, which responds to the specific interests and needs of schools and teachers, and which provides knowledge that can be used by teachers to improve their practice (Ion et al., 2021; Galindo-Domínguez et al., 2022). This type of research can also be extremely helpful in clarifying the imbalances and inconsistencies that may exist in educational action (Ión & Cano, 2012; López et al., 2018).

Secondly, the results show the convenience of having school cultures and climates which foster collaboration, learning and empowering of school members to question practice, make decisions, and actively engage in improvement processes (Hemsley-Brown & Sharp, 2003). The aim should be to provide favourable conditions in schools for collaborative learning and to reach agreements and consensus on what to change, why and how to do it, as suggested by Daniëls et al. (2021) and Godfrey (2014).

Third and finally, this study highlights the relevance of leadership and the important role that school management teams can play in facilitating the use of and access to research results, by creating enabling conditions in schools which foster joint reflection on educational research and its feasibility in their particular context, and by supporting the collaborative work of teachers and their commitment to the improvement of practice (Daniëls et al., 2021; Gairín 2023). Any progress in this direction requires attention to the training of school leaders and the analysis of the actions undertaken by them in the performance of their functions as transformational leaders committed to an educational practice based on research into reality (Cardno et al., 2018; Johnson et al., 2020; Khaola & Oni, 2020).

## Limitations and future research

The main limitation of this study is of a methodological nature and lies in the small number of participants. It would be advisable to further explore the value and forms of use of research on educational action by increasing the number of participants, including larger and more representative samples. It would also be interesting to carry out studies that analyse the situation in other countries, or comparative studies which offer a more global and contrasted perspective on the matter addressed in this paper.

## REFERENCES

- Brown, C. (2017). Further exploring the rationality of evidence informed practice: a semiotic analysis of the perspectives of a school federation. *International Journal of Educational Research*, 82, 28-39.
- Brown, C., & Zhang, D. (2016). Is engaging in evidence-informed practice in education rational? What accounts for discrepancies in teachers' attitudes towards evidence use and actual instances of evidence use in schools? *British Educational Research Journal*, 45(5), 780-801. <https://doi.org/10.1002/berj.3239>
- Cain, T. (2015). Teachers' engagement with research texts: beyond instrumental, conceptual or strategic use. *Journal of Education for Teaching*, 41(5), 478-492. <https://doi.org/10.1080/02607476.2015.1105536>
- Cain, T., & Allan, D. (2017). The invisible impact of educational research. *Oxford Review of Education*, 43(6), 718-732. <https://doi.org/10.1080/03054985.2017.1316252>
- Cano, M. E. (2008). La evaluación de competencias en la educación superior. *Profesorado. Revista de Currículum y Formación del Profesorado*, 12(3), 1-16.
- Cardno C., Handjani M., & Howse J. (2018). Leadership practices and challenges in managing diversity to achieve ethnic inclusion in two New Zealand Secondary Schools. *New Zealand Journal of Educational Studies*, 53, 101-117. <https://doi.org/10.1007/s40841-017-0096-x>
- Carr, W., & Kemmis, S. (1988). *Teoría crítica de la enseñanza. La investigación-acción en la formación del profesorado*. Martínez Roca.
- Coburn, C. E., Penuel, W. R., & Geil, K. E. (2013). *Research-practice partnerships: a strategy for leveraging research for educational improvement in school districts*. William T. Grant Foundation.

- Cordingley, P. (2008). Research and evidence-informed practice: focusing on practice and practitioners. *Cambridge Journal of Education* 38(1), 37-52. <https://doi.org/10.1080/03057640801889964>
- Daniëls, E., Muyters, G., & Hondeghem, A. (2021). Leadership training and organizational learning climate: measuring influences based on a field experiment in education. *International Journal of Training and Development*, 25, 43-59. <https://doi.org/10.1111/ijtd.12206>
- DeMatthews, D. E., Serafini, A., & Watson, T. N. (2021). Leading inclusive schools: principal perceptions, practices, and challenges to meaningful change. *Educational Administration Quarterly*, 57(1), 3-48. <https://doi.org/10.1177/0013161X20913897>
- Díez-Gutiérrez, E. J. (2020). Otra investigación educativa posible: investigación-acción participativa dialógica e inclusiva. *Márgenes, Revista de Educación de la Universidad de Málaga*, 1(1), 115-128. <http://dx.doi.org/10.24310/mgnmar.v1i1.7154>
- Earl, L., & Fullan, M. (2003). Using data in leadership for learning. *Cambridge Journal of Education*, 33(3), 383-394, <https://doi.org/10.1080/0305764032000122023>
- Farley-Ripple, E. N. (2012). Research use in school district central office decision making: a case study. *Educational Management Administration & Leadership* 40(6), 786-806. <https://doi.org/10.1177/1741143212456912>
- Gairín, J. (2023). Práctica profesional basada en evidencias y organizaciones que aprenden. *Perfiles Educativos*, 45(180), 122- 138. <https://doi.org/10.22201/iissue.24486167e.2023.180.60983>
- Galindo-Domínguez, H., Perines, H., Verde Trabada, A., & Valero Esteban, J. M. (2022). Entendiendo la brecha pedagógica entre la investigación educativa y la realidad del profesorado: un análisis de las barreras y propuestas. *Educación XX1*, 25(2), 173-200. <https://doi.org/10.5944/educxx1.29877>
- Godfrey, D. (2014). Leadership of schools as research-led organizations in the English educational environment: cultivating a research-engaged school culture. *Education Management Administration & Leadership*, 44(2), 1-21. <https://doi.org/10.1177/1741143213508294>
- Harris, J., Carrington, S., & Ainscow, M. (2017). *Promoting equity in schools. Collaboration, inquiry and ethical leadership*. Routledge.
- Hemsley-Brown, J., & Sharp, C. (2003). The use of research to improve professional practice: a systematic review of the literature. *Oxford Review of Education*, 29(4), 449-471.
- Ion, G., & Cano, E. (2012). La formación del profesorado universitario para la implementación de la evaluación por competencias. *Educación XX1*, 15(2), 249-270. <https://doi.org/10.5944/educxx1.15.2.141>



- Ion, G., Suárez, C. I., & Vicario, A. D. (2021). Evidence-informed educational practice in Catalan education: from public agenda to teachers' practice. *Center for Educational Policy Studies Journal*, 11(2), 37–57. <https://doi.org/10.26529/cepsj.1062>
- Ion, G., Brown, C., & López E. (2022). Achieving research-informed practice amongst teachers in Madrid and Catalonia: findings from a quantitative analysis. *International Journal of Education Policy & Leadership*, 18(2), 80-98. <http://doi.org/10.22230/ijep.2022v18n2a1123>
- Johnson, A. D., Clegorne, N., Croft, S. J., & Ford, A. Y. (2020). The professional learning needs of school principals. *Journal of Research on Leadership Education*, 16(4), 305-338. <https://doi.org/10.1177/1942775120933933>
- Kaur, A., Nur, A. H. B., Purnomo, Y. W., Zailani, M., Yusof, M., & Suswandari (2020). Educational researchers in Malaysia – who they conduct their research for? *Pertanika Journal of Social Science and Humanities*, 28(2), 1083-1104.
- Khaola, P. P., & Oni, F. A. (2020). The influence of school principals' leadership behavior and act of fairness on innovative work behaviors amongst teachers. *SA Journal of Human Resource Management*, 18(0), Artículo a1417. <https://doi.org/10.4102/sajhrm.v18i0.1417>
- Levin, B. (2013). To know is not enough: research knowledge and its use. *Review of Education*, 1(1), 2-31. <https://doi.org/10.1002/rev3.3001>
- Ley Orgánica 3/2020, de 29 de diciembre, por la que se modifica la Ley Orgánica 2/2006, de 3 de mayo, de Educación. Boletín Oficial del Estado nº 340 de 30 de diciembre de 2020.
- López, M. C., León, M. J., & Pérez, P. (2018). El enfoque por competencias en el contexto universitario español. La visión del profesorado. *Revista de Investigación Educativa*, 36(2), 529-545. <http://dx.doi.org/10.6018/rie.36.2.314351>
- López-López, M. C., León-Guerrero, M. J., & Romero-López, M. A. (2021). La dirección escolar en España y su compromiso con la inclusión. Una asignatura pendiente de evaluación. In I. Aznar, J.A. López., M. P. Cáceres., C. De Barros., & F. J. Hinojo (2021). *Desempeño docente y formación en competencia digital en la era SARS COV 2* (pp.163-175). Dykinson.
- Malin, J. R., Brown, C., Ion, G., Van Ackeren, I., Bremm, N., Luzmore, R., Flood, J., & Rind, G.M. (2020). World-wide barriers and enablers to achieving evidence-informed practice in education: what can be learnt from Spain, England, the United States, and Germany? *Humanities and Social Sciences Communications*, 7, 99. <https://doi.org/10.1057/s41599-020-00587-8>
- Malouf, D. B., & Taymans, J. M. (2016). Anatomy of an evidence base. *Educational Researcher*, 45(8), 454-459. <https://doi.org/10.3102/0013189X16678417>

- Mayorga, M. J. (2004). La entrevista cualitativa como técnica de la evaluación de la docencia universitaria. *RELIEVE - Revista Electrónica De Investigación Y Evaluación Educativa*, 10(1), 23-39.
- Miles, M., Huberman, A., & Saldaña, J. (2014). *Qualitative data analysis (3ª ed.)*. SAGE.
- Neal, J. W., Neal, Z. P., Kornbluh, M., Mills, K. J., & Lawlor, J. A. (2015). Brokering the research-practice gap: a typology. *American Journal of Community Psychology*, 56, 422-435. <https://doi.org/10.1007/s10464-015-9745-8>
- Penuel, W., Allen, A., & Finnigan, K. S. (2017). *How research-practice partnerships can support ESSA implementation for educational improvement and equity: a guide for school districts, state education leaders, and researchers*. <https://bit.ly/3IYQGbo>
- Pereda, C., & Prada, M. Á. de. (2014). Investigación-acción participativa y perspectiva dialéctica. *Arxius de Sociologia*, 31, 57-68.
- Real Decreto 894/2014 por el que se desarrollan las características del curso de formación sobre el desarrollo de la función directiva establecido en el artículo 134.1.c) de la Ley Orgánica 2/2006. Boletín Oficial del Estado nº 270. <https://bit.ly/4cuuzHH>
- Sierra, F. (1998). Función y sentido de la entrevista cualitativa en la investigación social. In J. Galindo (Ed.) *Técnicas de investigación en sociedad, cultura y comunicación* (pp. 277-354). Pearson Educación.
- Tan, K. C. D., & Gilbert, J. K. (2014). Chemistry teaching: impact of educational research on the practices of chemistry teachers in Singapore. *Chemistry Education Research and Practice*, 15(2), 207-218. <https://doi.org/10.1039/C3RP00158J>
- Trujillo, F., Segura, A., & González, A. (2020). Claves de la innovación educativa en España desde la perspectiva de los centros innovadores: una investigación cualitativa. *Participación Educativa*, 7(10), 49-60. <https://bit.ly/3VVuOFZ>
- Vanderlinde, R., & Van Braak, J. (2010). The gap between educational research and practice: views of teachers, school leaders, intermediaries and researchers. *British Educational Research Journal*, 36(2), 299-316. <https://doi.org/10.1080/01411920902919257>
- Villa, A., Arranz, S., Campo, L., & Villa, O. (2015). Percepción del profesorado y responsables académicos sobre el proceso de implantación del Espacio Europeo de Educación Superior en diversas titulaciones de educación. *Profesorado. Revista de currículum y formación del profesorado*, 19(2), 245-264.
- Villa, A. (2019). Liderazgo: una clave para la innovación y el cambio educativo. *Revista de Investigación Educativa*, 37(2), 301-326. <http://dx.doi.org/10.6018/rie.37.2.365461>

Watling, J., Mills, K., McAllindon, K., Neal, Z., & Lawlor, J. (2019). Multiple audiences for encouraging research use: uncovering a typology of educators. *Educational Administration Quarterly*, 55(1) 154–181. <https://doi.org/10.1177/0013161X18785867>



# Truancy in secondary education: prevalence and profiles of students including characteristics of family environment and links with school

*El absentismo en educación secundaria: prevalencia y perfiles del alumnado incluyendo características del contexto familiar y de la vinculación con el centro*

Ramón Mendoza-Berjano <sup>1\*</sup> 

Diego Gómez-Baya <sup>1</sup> 

Anna Jean Grasmeyer <sup>1</sup> 

Macarena Lorenzo-Fernández <sup>1</sup> 

Esther López-Bermúdez <sup>1</sup> 

Antonia Rubio-González <sup>1</sup> 

<sup>1</sup> Universidad de Huelva, Spain

\* Corresponding author. E-mail: [ramon@dpsi.uhu.es](mailto:ramon@dpsi.uhu.es)

## Cómo referenciar este artículo/ How to reference this article:

Mendoza-Berjano, R., Gómez-Baya, D., Grasmeyer, A. J., Lorenzo-Fernández, M., López-Bermúdez, E., & Rubio-González, A. (2024). Truancy in secondary education: prevalence and profiles of students including characteristics of family environment and links with school. *Educación XX1*, 27(2), 141-166. <https://doi.org/10.5944/educxx1.38573>

**Date received:** 10/10/2023

**Date accepted:** 19/01/2024

**Published online:** 28/06/2024

## ABSTRACT

Truancy is a widespread phenomenon in the world with serious consequences. This study aims to: 1) assess the prevalence of truancy among the population of schoolchildren between 12 and 16 years of age in a Spanish city (Huelva); 2) describe its sociodemographic variability; and 3) establish a typology of student profiles in relation to this problem, considering the level of truancy, the characteristics of the family environment and links with the school. A random, representative sample of schoolchildren in mandatory secondary education in the city (n= 1036; 49.7% female, average age 14.2 years) completed an anonymous questionnaire in class or online. The data were analysed by means of bivariate analysis and using an exploratory multivariate technique (Multiple Correspondence Analysis). A total of 32% of the sample revealed that they had practised truancy to some degree in the previous 30 days, and 24.1% reported having missed at least one full day of school without a good excuse in those previous 30 days. The prevalence of truancy is higher among pupils whose parents have a low level of education and immigrant-origin children, as well as those with relatively high amounts of pocket money. The study concludes with a typological classification of the children into five different profiles. The results suggest that truancy is a complex phenomenon, with subtle and probably unstable differences between truants and non-truants, so the key to preventing it would not lie in focusing on those cases of pronounced truancy, but rather in taking intersectoral action to tackle the range of factors that contribute to truancy.

**Keywords:** truancy, secondary education, prevalence, correlates, profiles

## RESUMEN

El absentismo escolar es un fenómeno extendido en el mundo y de graves consecuencias. Este estudio pretende: 1) estimar la prevalencia del absentismo en la población escolarizada de 12 a 16 años de edad en una ciudad española (Huelva); 2) describir su variabilidad sociodemográfica; y 3) establecer una tipología de perfiles del alumnado en relación con este problema teniendo en cuenta el nivel de absentismo practicado, las características del entorno familiar y la vinculación con el centro docente. Una muestra aleatoria y representativa del alumnado de Educación Secundaria Obligatoria de la ciudad (n= 1036; 49.7% mujeres, de 14.2 años de edad media) cumplimentó un cuestionario anónimo en las aulas o vía online. Los datos han sido analizados mediante análisis bivariado y con una técnica multivariable exploratoria (Análisis de Correspondencias Múltiples). El 32% de la muestra practicó algún grado de absentismo escolar en los 30 días anteriores. El 24.1% manifestó haber faltado a clase al menos un día completo en los 30 días previos sin razón justificada. La prevalencia del absentismo escolar es más alta entre el alumnado con progenitores con un bajo nivel de estudios y entre el de origen inmigrante, así como entre quienes manejan cantidades relativamente altas de dinero de bolsillo. Se concluye el trabajo con una clasificación tipológica del alumnado en cinco perfiles diferenciados. Los resultados sugieren que el absentismo es un fenómeno complejo, con diferencias sutiles y probablemente inestables

entre estudiantes absentistas y no absentistas, por lo que su prevención no estribaría en actuar focalizadamente con los casos que presentan un absentismo acusado, sino más bien en abordar intersectorialmente el abanico de factores que lo favorecen.

**Palabras clave:** absentismo escolar, educación secundaria, prevalencia, correlatos, perfiles

## INTRODUCTION

Truancy is a globally widespread phenomenon. According to the 2022 PISA assessment, carried out in 81 countries, 19.8% of fifteen-year-old students in OECD countries had skipped at least a full school day without a valid reason in the fifteen-day period prior to the PISA test. The percentage for those reporting to have skipped one or several classes in the same two-week period was slightly higher (22.5%) (OECD, 2023).

The prevalence of truancy varies greatly across countries. In some, the rate of students having skipped at least a full school day was below 5% in 2022 (this was the case in Korea, Japan, China Taipei, Viet Nam, the Chinese regions of Hong Kong and Macau and Portugal). Some European countries, in addition to Portugal, had rates below 10% (the Netherlands, Hungary, Iceland, the Slovak Republic, Belgium, Croatia, Sweden and Switzerland). By contrast, in some other countries such as Italy, Turkey, the Dominican Republic, Kosovo and Paraguay, the rate of students that had missed at least one full day of school in the previous two weeks was over 50%. Whereas in Spain, the rate for this level of truancy stood at 28.3%, which was above the average rate for OECD countries (OECD, 2023).

The individual and collective consequences derived from truancy are serious. Severe truancy hinders learning and diminishes academic performance (Aucejo & Romano, 2016; Gershenson et al., 2017), but it also might foreshadow early drop-outs and low professional skills in adult life together with correlating low wages, poorer health and shorter life expectancy (Allen et al., 2018; García & Razeto, 2019). It is also linked to an increased risk of mortality from injury (unintentional, homicide or suicide) (Bailey et al., 2015).

In addition, several longitudinal studies point to truancy as a relevant factor favouring the use of alcohol, tobacco or cannabis and the escalation of drug use (Henry & Huizinga, 2007; Henry & Thornberry, 2010). It may also promote delinquency (Dembo et al., 2014; Kearney et al., 2020) and violent behaviour (Herrenkohl et al., 2012). School absenteeism at an early age (in primary school) tends to be a steady feature throughout the school years of the individual and predicts absenteeism at age 15, which results in worse school grades and is linked with social-behavioural difficulties (Ansari & Pianta, 2019).

Additionally, cross-sectional studies show that truancy has other correlates such as a markedly lower performance in mathematics (OECD, 2023), higher probability for risky behaviour regarding sexually transmitted diseases (Houck et al., 2012), teenage pregnancy (Houck et al., 2012; Zhou et al., 2015), fights (Maynard et al., 2017) and other externalising behaviours (Vaughn et al., 2013). However, as these studies have a cross-sectional design, it is not easy to determine whether some correlates are derived from truancy, or rather favour it, or whether truancy and its correlates may be increased by third variables, such as, for example, the shortcomings of the educational system in welcoming and motivating students who come from disadvantaged social backgrounds or are of immigrant origin (Martin et al., 2020a; 2020b), or the absence of an effective system to support students changing schools in their transition from primary to secondary education (García & Razeto, 2019).

In any case, given that truancy is widespread in many countries and the seriousness of its potential consequences (both individual and collective), it seems clear that greater research and prevention efforts are needed (Cruz, 2020; Henry & Huizinga, 2007).

However, effective prevention always requires an adequate etiological analysis. It is beyond doubt that longitudinal designs have greater potential than cross-sectional ones when it comes to identifying factors contributing to a given problem -truancy in our case. However, cross-sectional studies can be fruitful in the search for etiological hypotheses if samples are relatively large and representative of a given school population, and importantly, if suitable multivariate statistical techniques are used in the analysis of the data so that the interrelation of the variables at play can be captured as a whole. In this sense, when data are collected by means of a questionnaire that basically contains categorical variables, using Multiple Correspondence Analysis may be particularly convenient. This exploratory multivariate technique, created by Lebart et al. (1982), allows both the synthesis of the interrelation of the variables and the subsequent classification of the subjects according to the similarity of their answers. The above may help to better understand the heterogeneous realities of students vis-à-vis truancy and serve as a starting point for preventive intervention strategies that are partially differentiated to suit students with different profiles.

Specifically, this study aims to: 1) Estimate the prevalence of truancy among the population of mandatory secondary education students (typically aged 12 to 16 years) in a city in the south of Europe (Huelva); 2) Analyse its variability according to sociodemographic variables; and 3) Establish a typology of student profiles in terms of the variables considered in the study (school, family, sociodemographic variables) which allows to apprehend the students' heterogeneous realities, in relation to this problem, in a synthetic way.



The study is based on three hypotheses: 1) The prevalence of truancy is higher among pupils whose parents have a lower level of education; 2) Truancy is more prevalent among pupils with characteristics that denote school maladjustment; 3) The characteristics of the family environment, in addition to those related to school life, play a relevant role in the configuration of differentiated profiles of pupils in relation to truancy.

## **METHOD**

### **General design of the study**

This is a descriptive cross-sectional study. A representative sample of mandatory secondary education students in the city of Huelva were surveyed by means of an anonymous self-administered questionnaire which they completed in paper or online.

### **Participants and sampling system**

To obtain a representative sample of local secondary school students (typically aged 12-16 years), a probabilistic stratified random multi-stage sampling was used. Firstly, the schools were divided into strata considering location (city districts) and type of school (state schools or private-publicly subsidised schools). It was intended to survey one class in each of the four years of mandatory secondary education in a total of 14 schools. For this purpose, in each stratum a number of schools was randomly selected. That number was proportional to the school population in that stratum. School management teams were invited to take part and informed about the characteristics of the study and its procedure in case of acceptance. When a school declined to participate in the study, the proposal was made to another school in the same sampling stratum. Subsequently, in every participating school, one classroom was randomly selected in each of the four years of mandatory secondary education so that, after parental acceptance and that of the students themselves, the data could be collected on a day agreed with the management team. The schools decided on how to administer the anonymous questionnaire: on paper (in the classroom) or online (in the classroom or from home).

The final sample consisted of 1036 students in 14 schools (7 state schools and 7 private-publicly subsidised schools).

## Instrument and variables

The anonymous self-administered questionnaire was specifically designed for this study and contained the following groups of variables.

*Socio-demographic variables:* gender; age; academic year; parents' level of education (ten-choice item, later categorised into five values: no education, basic education, secondary education, university education, does not know); parents' employment situation (eight-choice item: has a permanent job; has their own business; does occasional jobs; is unemployed; is retired, early retired, pensioner or on permanent leave; does housework; does not know; has no father/mother); country of birth (for the student and their parents, categorised into two values: Spain, another country); family composition, that is, with whom they live at home (nine dichotomous variables; mother, father, siblings, step-siblings, grandmother, grandfather, other relatives, other); considering themselves a believer in any religion (not specified), with four response categories (believer and practising, non-practising believer, no, does not know); for girls whether or not they had already had their first period and age of first menstruation. These socio-demographic items were taken from the questionnaires in the WHO study "Health Behaviour among School-aged Children" (HBSC) (Mendoza et al., 1994) and in the EVAE study (Mendoza, 2004; Mendoza et al., 2005).

*Pocket money.* Participants were surveyed on the amount of available pocket money they usually had for personal expenses (in euros). This item had previously been used in the HBSC study questionnaire (Mendoza et al., 1994). The variable was broken down into three values according to age and the curve distribution for pocket money at each age (small, medium and large amounts).

*Truancy.* The question, adapted from the EVAE study (Mendoza et al., 2014) was worded as follows: How many days have you skipped classes in the last 30 days without being sick or having some other valid reason? Five choices were provided (none; a few hours, but not a whole day; one day; two or three days; four or more days).

*Indicators for school adjustment:* having repeated a grade and self-perceived academic performance, items from the HBSC questionnaire (Mendoza et al., 1994); perceived value of school learnings for the future, item adapted from the Pennsylvania Youth Survey (2021); wish to change school and sense of pride in their school, items adapted from the Sense of Belonging to School Scale (Akar-Vural et al., 2013); satisfaction with personal performance in class work, item from the Positive Youth Development Scale-short form (Geldhof et al., 2014; Gómez-Baya et al., 2019); difficulty in paying attention in class (variable newly created for this questionnaire); certainty that they would still attend school even if it was not compulsory (newly created variable).

*Indicators for quality or tension in school relationships:* feeling that classmates generally get on well; feeling confident to discuss personal issues with peers (newly created variables); perceived peers' concern when they are absent, item taken from the Simple School Belonging Scale (Whiting et al., 2017); frequency of being excluded by peers; frequency of being bullied at school; frequency of bullying others at school, items from the 1994 HBSC questionnaire (Wold et al., 1994).

*Indicators for perceived support from teachers:* perceived support at school; feeling that teachers encourage them to do their best, items from the Positive Youth Development Scale-short form (Geldhof et al., 2014; Gómez-Baya et al., 2019); being able to reach teachers for help when they have a problem; perceived fair treatment of students by teachers (newly created items).

*Indicators for participation in school life:* hours spent in a typical week giving advice to classmates or friends; hours spent in a typical week participating in school committees, assemblies or school boards, items from the Spanish adaptation of the Social Contribution Scale (Gómez-Baya et al., 2019).

*Family dynamics:* satisfaction with their relationship with their mother; satisfaction with the relationship with their father, items from the 2019 ESPAD study questionnaire (ESPAD Group, 2020); satisfaction with conversations with parents; feeling they are an useful and important member of their family, items from the Positive Youth Development Scale-short form (Geldhof et al., 2014; Gómez-Baya et al., 2019); frequency of helping with the household chores; frequency of joint family activities at the weekend; frequency of discussing their day at home, items from the EVAE study (Mendoza et al., 2006; Mendoza-Berjano, 2003).

*Type of school.* In addition to the questionnaire, information concerning the type of school (state or subsidised) and size (up to 400 students, between 401 and 800; more than 800) was also collected.

The questionnaire was pilot tested with a sample of students from all grades of compulsory secondary education (n=95) in order to verify the adequacy of the newly created items and the feasibility of the instrument as a whole.

## Data collection

The fieldwork was carried out in Autumn 2020. Almost all respondents completed the anonymous questionnaire individually in their classrooms, either on paper (65.7%) or online (30.5%). The rest (3.8%) completed the online questionnaire from home. In 81% of cases, a member of the research team was present in the classroom regardless of the questionnaire version (paper or online). In 15.2% of cases, the subjects individually completed the online questionnaire from the classroom without the presence of any member of the research team but accompanied by a teacher who had been given prior guidance by said team.

A total of 12.6% of the students in the surveyed classrooms did not attend class on the day the questionnaire was administered. Of those present, 2.2% did not complete the questionnaire, either because they refused to do so (in approximately half of these cases) or for other reasons, such as not understanding the Spanish language or having a broken electronic device (personal computer or similar). The average time to complete the questionnaire was 39 minutes. The number of missing values in the responses was generally very low (around 1% for those items related to truancy or school life).

## Data analysis

A descriptive analysis for the frequency of each variable was carried out. This was followed by chi-square test bivariate analyses for the categorical variables and variance analysis (ANOVA) to investigate the association between continuous dependent variables and categorical independent variables. Subsequently, the Multiple Correspondence Analysis (MCA) technique was applied. This allows an overall synthetic vision in terms of variable interdependence in the case of questionnaires with categorical variables (Batista-Foguet & Sureda, 1998; Greenacre, 1993; Lebart et al., 1995). For this purpose, the variables with categorical content (32 variables) were considered to be active variables (those for which the response categories could potentially form the axes or factors derived from the MCA). Socio-demographic and continuous variables were considered as illustrative. Finally, the subjects in the study were classified based on similarity in questionnaire responses through the use of cluster analysis and SPAD software.

## Ethical considerations

The study protocol was approved by the Andalusian Biomedical Research Ethics Committee. Parents and legal guardians were adequately informed and their consent was requested prior to the data collection process. Students participated on a voluntary basis. The questionnaire was anonymous. The principles established by the Helsinki Declaration were respected.

## RESULT

### Sociodemographic profile of the sample

The sample consists of 1036 students (49.7% female, with an average age of 14.2). Table 1 shows the parents' level of education and their employment situation (according to the answers given by the respondents) and some other sociodemographic variables. A total of 95.3% of the students surveyed reported to have been born in Spain and 87.5% said that all their family members were Spanish nationals.

**Table 1**

*Characteristics of the sample according to socio-demographic variables*

Variables	Categories	No	%
Gender	Boy	518	50.3
	Girl	512	49.7
Age (average 14.17 years of age)	12 years of age	220	22.0
	13 years of age	241	24.1
	14 years of age	242	24.2
	15 years of age	229	22.9
	16 or more years of age	69	6.9
Has parents	Has a father and a mother	980	94.6
	Does not have a father	48	4.6
	Does not have a mother	5	0.5
	Is an orphan	3	0.3
Father's level of education	No education	103	10.3
	Basic education	226	22.6
	Secondary education	130	13.0
	University education	237	23.7
	Does not know	303	30.3
Mother's level of education	No education	91	8.9
	Basic education	240	23.6
	Secondary education	160	15.7
	University education	289	28.4
	Does not know	237	23.3

Variables		Categories	No	%
Father's employment situation		Has steady employment	769	77.1
		Has unstable employment	114	11.4
		Is retired or on permanent leave	36	3.6
		Housework	9	0.9
		Does not know	69	6.9
Mother's employment situation		Has steady employment	614	60.1
		Has unstable employment	181	17.7
		Is retired or on permanent leave	13	1.3
		Housework	159	15.6
		Does not know	54	5.3
Country of birth		Spain	977	95.3
		Another country	48	4.7
Country of family origin		All family members are from Spain	881	87.5
		Mother is a foreigner	33	3.3
		Father is a foreigner	30	3.0
		Both parents are foreigners	24	2.4
		All family members are foreigners	39	3.9
			<b>Mean</b>	<b>Sd</b>
Pocket money (weekly amount)	All		14.00	21.88
	Boys		14.49	21.92
	Girls		13.50	22.65
<b>Total number of individuals in the sample</b>			1.036	

The sample was evenly distributed across the four grades of compulsory secondary education. A total of 38.7% of students were enrolled in state schools, the rest in subsidised schools (religious and non-religious) (Table 2).

**Table 2**

*Characteristics of the sample according to school-related variables*

Variables	Categories	No	%
School grade	First grade of secondary education	264	25.5
	Second grade of secondary education	268	25.9
	Third grade of secondary education	272	26.3
	Fourth grade of secondary education	232	22.4
Type of school	State school	401	38.7
	Private school with public funding	635	61.3
School size	Up to 400 students	377	36.4
	401 to 800 students	328	31.7
	Over 800 students	331	31.9

### Prevalence of truancy

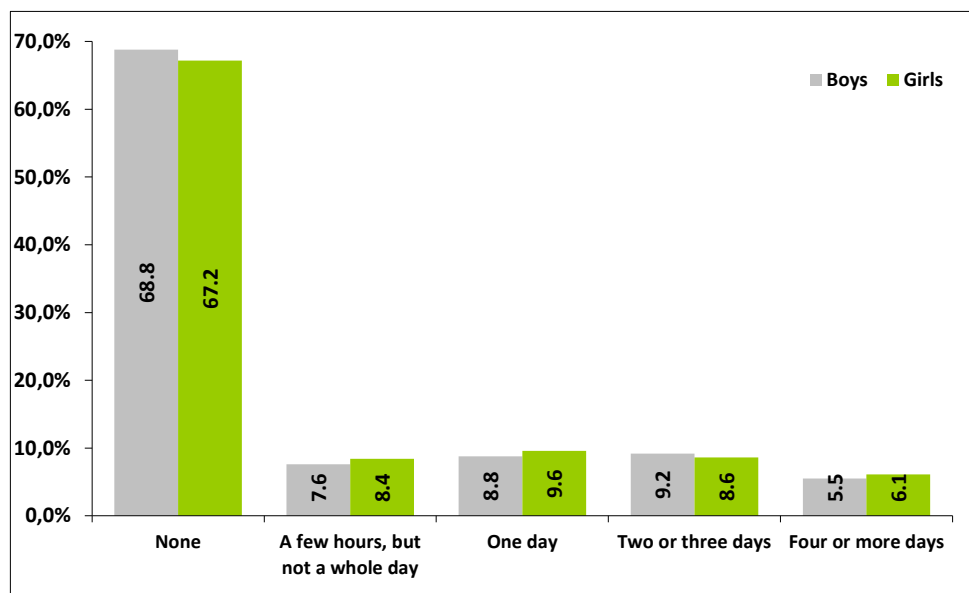
Slightly more than two thirds of the students surveyed (68%) said that in the 30 days prior to the survey they had not skipped classes without being sick or having some other justified reason. The rest reported to have skipped only a few hours (8%), a full day (9.3%), two or three days (9%) or four days or more (5.8%). A total of 24.1% reported having skipped at least one full day without a valid reason in the last 30 days.

### Socio-demographic variability of truancy

No relevant gender differences were observed in this respect (Figure 1). Nor were there significant differences according to the grade or educational cycle, or the type of school (state or subsidised). However, there were differences according to age, in the sense that a lower prevalence of truancy was found at 12 years of age and a higher prevalence at 16 years of age or older, compared to the 13-15 age groups ( $p < .01$ ). In addition, differences according to school size were also observed, with the overall prevalence of truancy (including only a few hours of unexcused absence) being higher in medium-sized schools (38.3%) than in those with more students (25.8%) ( $p < .001$ ).

**Figure 1**

*Days of unexcused absence from class in the last 30 days among students enrolled in Compulsory Secondary Education in Huelva (Spain), according to gender (in percentages)*



The parental level of education introduced marked differences in this phenomenon, with a much higher prevalence of some type of truancy among students whose father had no school education or went to school for only a few years (54.9%) than among those whose father had a university education (21.5%) ( $p < .00001$ ;  $V = 0.195$ ; moderate effect size). The same is true for the mother's educational level (57.3% and 20.2%, respectively) ( $p < .00001$ ;  $V = 0.216$ ; moderate effect size). In turn, among pupils whose father or mother had no school education or only attended school for a few years, the prevalence of skipping more than a full day of classes was significantly higher (more than twice as high) than among the rest of the pupils. On the other hand, when the father worked occasionally, the overall rate of truancy was particularly high (46.3%) ( $p < .05$ ;  $V = 0.091$ ; small effect size), as well as when the mother worked occasionally (43.1%) ( $p < .05$ ;  $V = 0.090$ ; small effect size). In addition, the prevalence of truancy was higher when the student was not born in Spain ( $p < .001$ ;  $V = 0.133$ ; small effect size).



## Typological classification of students

After carrying out the MCA following the procedure described above, by means of cluster analysis, groups of subjects that were homogeneous in their answers to the items on the questionnaire were identified, if they were located in neighbouring areas when projected onto the poly-dimensional space formed by all the factors or axes resulting from the MCA. Analysing the resulting dendrogram or classification tree, a classification into 7 differentiated profiles was selected. Two of them contained a very small percentage of subjects (3.6% adding the two classes together) and were basically characterised by omissions in certain questions, which is why their description is not included here. Table 3 consecutively presents the 15 responses that most characterised the members of each of the five remaining classes.

### ***Class 1. Students with difficulties at school, isolated in the family, sporadically bullied and not practising truancy (12.5% of the sample)***

This class was defined by responses showing a feeling of not being supported at school and a lack of pride in belonging to it, as well as mistrust of classmates and a frequent feeling of being excluded by them. Also, some other answers showing dissatisfaction about the communication with their parents and not feeling at all like a useful member of the family were particularly frequent in this class. There were some other defining characteristics (though less markedly) in this class: being occasionally bullied at school, a family that hardly ever engages in joint activities at the weekend, always having difficulties to pay attention in class and perceiving that their own school performance is below average. Similarly, some other answers appeared in descending order of importance: not having skipped any classes in the last 30 days and having no more than €5 per week of pocket money.

### ***Class 2. Students with intense truancy, aged 16 or over, handling high amounts of pocket money, with parents of low educational level and having repeated several years (11.2%)***

The responses that characterised this group the most were frequent truancy, having repeated two or more grades, being 16 or older, handling more than 40 euros a week of pocket money (or between 20 and 40) and that the mother or father has no school education or had only attended school for a few years. Indifference to how they are doing in class and whether they are satisfied with the dialogues with their parents also appeared. Two other particularly frequent responses in this class

were that the family is of foreign origin and that the grandmother lives at home. Also included were responses indicative of having difficulty paying attention in class on a regular basis.

***Class 3. Students with slight truancy, with lack of trust in classmates, who would choose another school, and without good communication at home (13.6%)***

This group was mainly characterised by a low level of truancy (no more than one day of unexcused absences in the last 30 days) and a lack of trust in peers to discuss personal issues. They were also characterised by sometimes having difficulties in paying attention in class and agreeing that they would choose another school if they could, as well as rating their school performance as average. Other characteristic answers were: “rarely bothering other classmates willingly” and “feeling left out by other students very frequently”. Some other defining answers were those that show indifference towards feeling supported by the school, feeling satisfied about their relationship with their father or feeling like a useful member of the family. Answers showing disagreement with having good conversations with their parents were also found in this class.

***Class 4. Students with no truancy, moderately satisfied with their communication with their parents, with some connection to the school, a moderately good school career and parents with university studies (34.9 %)***

This group was mainly characterised by having no truancy. Also, for reporting being “in agreement” (and not “in full agreement”) with being able to have good conversations with their parents, being a useful member of the family, teachers treating students fairly and taking pride in their school. Another defining feature was showing agreement with receiving support and encouragement from teachers and with the fact that their classmates would worry if they were absent from class. Never having repeated a grade, considering their own school performance as good and spending two hours a week helping at home were also (albeit to a lesser extent) characteristic responses in this class. The same applied to a parent having a university education and handling medium amounts of pocket money.

***Class 5. Students who perceive clear support from teachers, with a strong connection to the school, highly satisfied with the relationship with their parents, with very good school performance and no truancy (24.3%)***

In contrast to the previous class, this one was mainly characterised by “strong agreement” with responses that denote optimal teacher support, a good communication climate with parents, feeling like a useful member of the family and enjoying a good classroom climate with peers. It was also defined by rating one’s own school performance as very good and never having difficulty in paying attention in class. It also included spending six or more hours a week helping the family and practising no truancy. In a less prominent place, answers stating that the family always carries out joint activities at the weekend, as well as having dinner every day with the father, mother or another adult in the family were also characteristic of this class. Likewise, never feeling excluded by peers and never bullying peers were answer categories common among students of this class.

**Table 3**

*Typological classification of Compulsory Secondary Education students into five different profiles*

	Response category	Test value	P value	Percentage	
				GRP/CAT	CAT/GRP
	Not feeling supported at school	12.04	.000	77.97	35.66
	Not being able to tell personal things to classmates	11.30	.000	43.83	55.04
	Not being able to turn to teachers for help	10.78	.000	47.66	47.29
	Classmates do not worry if they miss classes	10.19	.000	47.46	43.41
<b>CLASS 1 (12.5%)</b>	Not having good conversations with their parents	9.48	.000	75.61	24.03
	Quite often other students do not want to be with them and they end up alone	9.41	.000	70.21	25.58
	Not being proud of the school	9.37	.000	59.09	30.23
	Not feeling like a useful and important member of the family	9.22	.000	72.09	24.03
	Feeling little support at school	8.34	.000	46.59	31.78

	Response category	Test value	P value	Percentage	
				GRP/CAT	CAT/GRP
<b>CLASS 1 (12.5%)</b>	What they learn at school will be of no use to them in the future	8.14	.000	46.99	30.23
	Believing that teachers do not treat them fairly at all	7.92	.000	52.38	25.58
	Choosing to go to another school	7.84	.000	38.66	35.66
	Feeling like an unimportant member of the family	7.78	.000	55.56	23.26
	Not taking time to help their family	7.39	.000	56.25	20.93
	Never discussing at home what happened during the day	7.36	.000	50.85	23.26
<b>CLASS 2 (11.2%)</b>	More than one day of truancy in the last month	21.99	.000	73.51	95.69
	Having skipped 2 or 3 days of school in the last month without being sick or having another justified reason	15.66	.000	75.00	59.48
	Having skipped 4 or more days of school in the last month without being sick or having another justified reason	11.33	.000	71.19	36.21
	Having repeated a grade 2 or more times	6.07	.000	43.40	19.83
	Being 16 years of age or older	5.01	.000	33.33	19.83
	Having more than 40 euros a week	4.82	.000	35.09	17.24
	Having a mother who went to school for some years	4.71	.000	28.57	22.41
	Having a mother with no school education	4.71	.000	28.57	22.41
	Having a high amount of pocket money available	4.27	.000	18.99	42.24
	Having a father who went to school for some years	3.88	.000	24.27	21.55
	Having a father with no school education	3.88	.000	24.27	21.55
	Having repeated a grade once	3.75	.000	20.75	28.45
	Being born in a country other than Spain	3.35	.000	29.17	12.07

	Response category	Test value	P value	Percentage	
				GRP/CAT	CAT/GRP
<b>CLASS 3 (13.6%)</b>	Up to one day of truancy in the last month	24.30	.000	77.97	97.87
	Having missed a few hours of school in the last month without being sick or having another justified reason	15.43	.000	84.15	48.94
	Having missed 1 day of school in the last month without being sick or having another justified reason	14.18	.000	72.63	48.94
	Being able to tell personal things to classmates occasionally	3.18	.001	18.99	42.55
	Classmates get on well	3.16	.001	16.73	67.38
	Finding it sometimes difficult to pay attention to teachers' explanations	3.11	.001	18.02	50.35
	Hesitating to choose to go to another school	2.89	.002	21.71	23.40
	Rarely teasing or bullying others in the school environment	2.83	.002	18.75	38.30
	Thinking that their academic performance is average compared to their peers	2.77	.003	18.62	38.30
	Feeling indifferent toward school support	2.73	.003	19.18	33.33
	Feeling indifferent about their relationship with their father	2.66	.004	22.73	17.73
	Feeling indifference to valuing oneself as a useful and important family member	2.58	.005	20.11	25.53
	Having few good conversations with their parents	2.49	.006	24.05	13.48
	Rarely being teased or bullied at school	2.46	.007	17.48	43.26
	Spending 1 hour per week participating in committees, assemblies or boards of their school	2.44	.007	21.05	19.86

	Response category	Test value	P value	Percentage	
				GRP/CAT	CAT/GRP
<b>CLASS 4 (34.9%)</b>	No truancy in the last month	18.33	.000	51.44	99.17
	Not having missed school in the last month without being sick or having another justified reason	18.33	.000	51.44	99.17
	Having some good conversations with their parents	8.65	.000	53.16	51.25
	Saying that teachers sometimes treat them fairly	8.64	.000	47.59	68.42
	Being proud of the school	8.49	.000	48.07	65.65
	Feeling supported at school	8.07	.000	49.88	56.23
	Feeling like a useful and important member of the family	7.58	.000	49.74	52.63
	Being able to turn to teachers for help	7.29	.000	47.32	58.73
	Classmates get on well	7.09	.000	44.37	69.81
	Feeling that they are doing well in class work	6.35	.000	48.16	47.09
	School teachers regularly encourage students to do their best	6.13	.000	47.28	48.20
	Classmates are somewhat concerned if they are absent from class	6.12	.000	44.49	60.39
	Never having repeated a grade	5.87	.000	39.26	88.64
	Agreeing to go to school, even if it is not compulsory	5.78	.000	44.03	59.28
	Spending time with the family during the weekend from time to time	5.40	.000	50.44	31.58
<b>CLASS 5 (24.5%)</b>	Believing that teachers treat them fairly	15.05	.000	62.81	60.32
	Having many good conversations with their parents	14.98	.000	52.38	74.21
	Feeling a lot of support at school	14.34	.000	63.23	55.95
	Always being able to turn to teachers for help	14.25	.000	61.44	57.54
	Teachers at the school encourage students to do their best	14.18	.000	53.61	67.86
	Feeling like a very useful and important member of the family	14.15	.000	50.55	72.62

	Response category	Test value	P value	Percentage	
				GRP/CAT	CAT/GRP
<b>CLASS 5 (24.5%)</b>	Feeling that they are doing very well in class work	14.04	.000	66.84	50.40
	Being very proud of their school	13.87	.000	55.36	63.49
	Going to school, even if it is not compulsory, because what they learn is important	13.61	.000	60.43	55.16
	What they learn at school will serve them in the future	12.48	.000	53.26	58.33
	Classmates get on very well	11.93	.000	49.52	61.11
	Thinking that their academic performance is very good compared to their peers	11.38	.000	54.87	49.21
	Feeling very satisfied with their relationship with their father	10.52	.000	37.64	79.76
	Discussing frequently at home what happened during the day	10.46	.000	39.45	74.21
	Classmates are concerned if they are absent from class	10.10	.000	60.14	35.32

## DISCUSSION AND CONCLUSIONS

The primary objective of this study was to estimate the prevalence of truancy among the population of (compulsory secondary education) students in Huelva (Spain). The estimated prevalence of some truancy in the previous 30 days is approximately one third of the sample (32%), ranging in duration from only a few hours (8%) to four or more days of unexcused absences (5.8%). In turn, the prevalence of truancy of at least one full day is 24%, a rate that matches the one reported in the 2018 PISA study for all 15-year-old students in Spain and is somewhat lower than the estimated prevalence in the 2022 PISA study (28.3%) (OECD, 2019; 2023). However, some differences should be noted. The PISA study enquires about unexcused absences in the previous 15 days, whereas the item in this study refers to the previous 30 days. Moreover, it should not be forgotten that 12.6% of the students in the randomly selected classrooms were absent on the day when the questionnaire was completed. No data were collected regarding the nature of these absences, but it seems likely that many of them were unexcused. In this sense, the

actual prevalence of truancy may be higher than estimated in this study (or, for that matter, in any study collecting data from surveys conducted in classrooms).

The second aim of the study was to analyse the socio-demographic variability of truancy. In the sample studied, the prevalence of truancy was very similar among female and male students. Across the OECD as a whole, there are also no significant gender differences in the prevalence of truancy of at least one full day of absence in the previous two weeks (20.2% for girls and 19.4% for boys) (OECD, 2023). However, in the 2022 PISA results for Spain, there are notable gender differences in this respect, with a higher prevalence among girls (30.4%) than among boys (26.1%) (OECD, 2023).

As truancy shows large international variability (OECD, 2023), it can be said that it is basically caused by the synergy of social factors that have a stronger impact in some countries. However, the similar prevalence across both genders in the OECD (or in the city of Huelva) suggests that the bulk of these factors affect broad sections of both male and female students in a similar way.

Moreover, in the sample of students from Huelva, truancy is more prevalent when parents have no school education or only attended school for a few years than when they were able to undertake university studies. This is in line with the findings of the 2022 PISA study, both for Spain (33.8% prevalence of at least one full day of missing classes among socially disadvantaged students, compared to 22.2% among advantaged students) and for the OECD as a whole (a difference of 6.3 percentage points in the prevalence of such truancy between the two groups of students) (OECD, 2023).

The Huelva study found that the prevalence of truancy is higher among pupils of immigrant origin than among other pupils. In this respect, the results of the study highlight the need to consider an intercultural perspective in the planning, development and evaluation of public policies in the field of education, given that the presence of pupils of immigrant origin is a reality in our context, and in particular the results of this study seem to suggest that the education system is not providing a suitable response to these pupils, among which intense truancy is more prevalent.

However, it is striking that in our sample, approximately one fifth of the students whose parents have a university education were absent from school in the previous 30 days. This might suggest that the phenomenon is widespread and that it is being fuelled by social factors which are now also affecting, at least to some extent, students whose parents are university-educated. This, in turn, could lead to the interpretation that nowadays, having highly educated parents does not protect students against the risk of truancy.

The third objective of the study was to establish a typology of student profiles including, in addition to the different levels of truancy, family, school and socio-demographic variables. The typological classification following the MCA carried out,



identified differentiated groups of subjects who tend to give similar answers to a wide range of questions in the questionnaire.

In class 2, the link between high truancy, handling large amounts of pocket money, a low educational level of the parents and having repeated grades can be found. A new finding from this research is the connection between handling high amounts of pocket money and high truancy. Neither the descriptive, cross-sectional design nor the multivariable analysis technique (MCA) used in the study allows to establish causal relationships between variables, but this connection would deserve a longitudinal analysis. If handling high amounts of pocket money in preadolescence or adolescent would be found to be a predictor for truancy, the preventive implications could be clear.

In class 3, mild truancy is linked to a lack of trust in classmates, a desire to change school and a lack of good communication at home. Class 1, in turn, includes students that have difficulties at school, feel isolated in the family, are bullied occasionally, but do not skip classes. Handling small amounts of pocket money is another frequent response in this group, which might suggest that, in practice, this could have some protective effect, even if certain risk factors for truancy are present. This could also be the subject of further studies.

No truancy appears as a defining feature in both classes 4 and 5, but much more markedly so in class 4. In class 4, no truancy is found in association with moderate satisfaction with family and school as well as parents with university education. The main feature for students in class 5 is that they feel a clear support from teachers and have an excellent engagement with school and family. Nevertheless, showing no truancy is also a defining feature in this group.

The results obtained do not lend themselves to a single interpretation. These findings may suggest that truancy is a complex and dynamic phenomenon in terms of causes and evolution. There might be subtle, and probably unstable, differences between students who skip school and those without truancy. Truancy (pronounced truancy) could be the small visible part of a much more widespread problem: feeling to a greater or lesser extent disconnected from school (either from teachers, students or both), as well as from the educational pathway planned within the educational system in general. There may also be contributing factors which impact on this relatively widespread disconnection from school and trigger truancy. These include handling large amounts of pocket money and feeling isolated in the family. If this were the case, the prevention of truancy would not be a matter of targeting students with high levels of truancy –it is well known how useless it is to try to reduce the tip of an iceberg–, but rather of preventing and reducing disconnection from schools and isolation within the families. Some prevention could probably be brought about by providing, with the support of public authorities, a wide range of health and educational extracurricular activities that are attractive and accessible to

all social sectors, including the most disadvantaged. In this context, physical activity could play a particularly important role. There is strong evidence that it can enhance cognitive development, personal well-being and social integration throughout the life cycle (Mendoza-Berjano et al., 2023).

In sum, truancy is a widespread phenomenon among secondary education students, and does not affect only a specific sector of them. The results of the study suggest that truancy is associated both with disengagement from school life and with feelings of isolation within the family. In turn, it is more prevalent among pupils whose parents have a low level of education or are of immigrant origin. In Spain as a whole (although not in the city of Huelva) it is affecting girls more than boys. This poses a complex challenge for the education system in terms of preventing this problem and dealing with existing cases. Social problems caused by the synergy of different factors always require intersectoral measures for their solution. The education system, in addition to promoting research into this problem and disseminating effective preventive initiatives, could lead joint action with other social sectors with a view to significantly reducing it.

## **ACKNOWLEDGEMENTS**

The authors are grateful for the support provided by all the schools in the city of Huelva (Spain) that collaborated in the study. The study received financial support from the Huelva City Council (contract signed between the University of Huelva and the Department of Social Policies and Equality), as well as from the research group “Lifestyle development across the lifespan and health promotion” (HUM604) of the University of Huelva. The authors are also grateful for the institutional support for the development of the study provided by the Territorial Delegation of the Andalusian Department of Education and Sport in Huelva.

## REFERENCES

- Akar-Vural, R., Yılmaz-Özelçi, S., Çengel, M., & Gömleksiz, M. (2013). The development of the "sense of belonging to school" scale. *Eğitim Araştırmaları-Eurasian Journal of Educational Research*, 53, 215-230. <https://bit.ly/4axJsal>
- Allen, C. W., Diamond-Myrsten, S., & Rollins, L. K. (2018). School absenteeism in children and adolescents. *American Family Physician*, 98(12), 738-744.
- Ansari, A., & Pianta, R. C. (2019). School absenteeism in the first decade of education and outcomes in adolescence. *Journal of School Psychology*, 76, 48-61. <https://doi.org/10.1016/j.jsp.2019.07.010>
- Aucejo, E. M., & Romano, T. F. (2016). Assessing the effect of school days and absences on test score performance. *Economics of Education Review*, 55, 70-87.
- Bailey, A., Istre, G. R., Nie, C., Evans, J., Quinton, R., & Stephens-Stidham, S. (2015). Truancy and injury-related mortality. *Injury Prevention*, 21, 57-59. <https://doi.org/10.1136/injuryprev-2014-041276>
- Batista-Foguet, J. M., & Sureda, J. (1998). Análisis de correspondencias. In J. Renóm (Ed.). *Tratamiento informatizado de datos*. Masson.
- Cruz, J. I. (2020). Absentismo escolar en España. Datos y reflexiones. *Contextos Educativos. Revista de Educación*, 26, 121-135. <https://doi.org/10.18172/con.4443>
- Dembo, R., Briones-Robinson, R., Ungaro, R., Barrett, K., Gullledge, L., Winters, K. C., Belenko, S., Karas, L. M., & Wareham, J. (2014). Brief intervention for truant youth sexual risk behavior and alcohol use: a parallel process growth model analysis. *Journal of Child & Adolescent Substance Abuse*, 23(3), 155-168. <https://doi.org/10.1080/1067828X.2013.786643>
- García, M., & Razeto, A. (2019). ¿Por qué faltan los jóvenes a la escuela? *Perfiles Educativos*, 41(165), 43-61. <https://doi.org/10.22201/iissue.24486167e.2019.165.59015>
- Geldhof, G. J., Bowers, E. P., Boyd, M. J., Mueller, M. K., Napolitano, C. M., Schmid, K. L., Lerner, J. V., & Lerner, R. M. (2014). Creation of short and very short measures of the five cs of positive youth development. *Journal of Research on Adolescence*, 24(1), 163-176. <https://doi.org/10.1111/jora.12039>
- Gershenson, S., Jackowitz, A., & Brannegan, A. (2017). Are student absences worth the worry in U.S. primary schools? *Education Finance and Policy*, 12(2), 137-165, [http://dx.doi.org/10.1162/EDFP\\_a\\_00207](http://dx.doi.org/10.1162/EDFP_a_00207)
- Gómez-Baya, D., Reis, M., & Gaspar de Matos, M. (2019). Positive youth development, thriving and social engagement: an analysis of gender differences in Spanish youth. *Scandinavian Journal of Psychology*, 60(6), 559-568. <https://doi.org/10.1111/sjop.12577>

- Greenacre, M. J. (1993). *Correspondence analysis in practice*. Academic Press.
- Henry, K. L., & Huizinga, D. H. (2007). Truancy's effect on the onset of drug use among urban adolescents placed at risk. *Journal of Adolescent Health, 40*(4), Artículo 358.e9-358.e17. <https://doi.org/10.1016/j.jadohealth.2006.11.138>
- Henry, K. L., & Thornberry, T. P. (2010). Truancy and escalation of substance use during adolescence. *Journal of Studies on Alcohol and Drugs, 71*(1), 115-124. <https://doi.org/10.15288/jsad.2010.71.115>
- Herrenkohl, T. I., Lee, J., & Hawkins, J. D. (2012). Risk versus direct protective factors and youth violence: Seattle social development project. *American Journal of Preventive Medicine, 43*(2), S41-S56. <https://doi.org/10.1016/j.amepre.2012.04.030>
- Houck, C. D., Hadley, W., Tolou-Shams, M., & Brown, L. (2012). Truancy is associated with sexual risk among early adolescents. *Journal of Developmental & Behavioral Pediatrics, 33*(9), 728-731. <https://doi.org/10.1097/DBP.0b013e31827134a5>
- Kearney, C. A., Heyne, D., & González, C. (2020). Editorial: school attendance and problematic school absenteeism in youth. *Frontiers in Psychology, 11*, 602242. <https://doi.org/10.3389/fpsyg.2020.602242>
- Lebart, L., Morineau, A., & Fenelon, J. P. (1982). *Traitement des données statistiques*. Dunod.
- Lebart, L., Morineau, A., & Piron, M. (1995). *Statistique exploratoire multidimensionnelle*. Dunod
- Martin, R., Benoit, J. P., Moro, M. R., & Benoit, L. (2020a). School refusal or truancy? A qualitative study of misconceptions among school personnel about absenteeism of children from immigrant families. *Frontiers in Psychiatry, 11*, 202. <https://doi.org/10.3389/fpsyg.2020.00202>
- Martin, R., Benoit, J. P., Moro, M. R., & Benoit, L. (2020b). Corrigendum: school refusal or truancy? A qualitative study of misconceptions among school personnel about absenteeism of children from immigrant families. *Frontiers in Psychiatry, 11*, 300. <https://doi.org/10.3389/fpsyg.2020.00300>
- Maynard, B. R., Vaughn, M. G., Nelson, E. J., Salas-Wright, C. P., Heyne, D. A., & Kremer, K. P. (2017). Truancy in the United States: examining temporal trends and correlates by race, age, and gender. *Children and Youth Services Review, 81*, 188-196. <https://doi.org/10.1016/j.childyouth.2017.08.008>
- Mendoza R., Sgrera, M. R., & Batista-Foguet, J. M. (1994). *Conductas de los escolares españoles relacionadas con la salud (1986-1990)*. Consejo Superior de Investigaciones Científicas.
- Mendoza, R. (2004). La escritura reflexiva como práctica cotidiana de los pre-adolescentes y adolescentes españoles: situación actual y características asociadas. *Revista de Educación, 335*, 467-495.

- Mendoza, R., Batista-Foguet, J. M., & Rubio, A. (2005). El desarrollo de estilos de vida en los adolescentes escolarizados: diferencias entre chicos y chicas. *Revista de Psicología General y Aplicada: Revista de la Federación Española de Asociaciones de Psicología*, 58(1), 51-74.
- Mendoza, R., Batista-Foguet, J. M., & Rubio, A. (2006). La cooperación de los adolescentes en las tareas domésticas: diferencias de género y características asociadas. *Cultura y Educación*, 18(3-4), 363-379.
- Mendoza, R., Batista-Foguet, J. M., Rubio, A., Gómez-Baya, D., & Cruz, C. (2014). La lectura voluntaria de libros en el alumnado español de 10 a 18 años: diferencias territoriales, de género y características asociadas. *Erebra*, (4). <https://doi.org/10.33776/erebea.v0i4.2512>
- Mendoza-Berjano, R. (2003). *Las relaciones padres-hijos: necesidades de apoyo a las familias*. Junta de Castilla la Mancha.
- Mendoza-Berjano, R., Santos-Rocha, R., & Gil, B. (2023). *La promoción de la actividad física en la sociedad contemporánea: orientaciones para la práctica profesional en diversos contextos*. Ediciones Díaz de Santos.
- Organisation for Economic Cooperation and Development. (2019). *PISA 2018 results (Volume III): what school life means for students' lives*. OECD Publishing. <https://doi.org/10.1787/acd78851-en>
- Organisation for Economic Cooperation and Development. (2023). *PISA 2022 results (Volume II): Learning during - and from - disruption*. OECD Publishing. <https://doi.org/10.1787/a97db61c-en>
- Pennsylvania Youth Survey. *State report 2021*. <https://bit.ly/3TURNiJ>
- ESPAD Group. (2020). *ESPAD report 2019: results from the European school survey project on alcohol and other drugs*. EMCDDA Joint Publications, Publications Office of the European Union. <https://bit.ly/3xpILRW>
- Vaughn, M. G., Maynard, B. R., Salas-Wright, C. P., Perron, B. E., & Abdon, A. (2013). Prevalence and correlates of truancy in the US: results from a national sample. *Journal of Adolescence*, 36(4), 767-776. <https://doi.org/10.1016/j.adolescence.2013.03.015>
- Whiting, E. F., Everson, K., & Feinauer, E. (2018). The simple school belonging scale: working towards a unidimensional measure of student belonging. *Measurement and Evaluation in Counseling and Development*, 51(3), 163-178. <https://doi.org/10.1080/07481756.2017.1358057>
- Wold, B., Aarø, L. E., & Smith, C. (1994). *Health behaviour in school-aged children. A WHO cross-national survey. Research Protocol for the 1993-94 study. HEMIL report series, 4*. Research Centre for Health Promotion, University of Bergen.

Zhou, Y., Puradiredja, D. I., & Abel, G. (2015). Truancy and teenage pregnancy in English adolescent girls: can we identify those at risk? *Journal of Public Health*, 38(2), 323-329. <https://doi.org/10.1093/pubmed/fdv029>

# Formative evaluation and quality of feedback: design and validation of scales for school teachers

## *Evaluación formativa y calidad de la retroalimentación: diseño y validación de escalas para docentes escolares*

Juan Romeo Dávila Ramírez <sup>1\*</sup> 

Juan Antonio Huertas Martínez <sup>2</sup> 

<sup>1</sup>University of Tarapacá, Chile

<sup>2</sup>Autonomous University of Madrid, Spain

\* Corresponding author. E-mail: [jdavilar@academicos.uta.cl](mailto:jdavilar@academicos.uta.cl)

### Cómo referenciar este artículo/ How to reference this article:

Dávila Ramírez, J. R., & Huertas Martínez, J. A. (2024).  
Formative evaluation and quality of feedback: design and  
validation of scales for school teachers. *Educación XX1*, 27  
(2), 167-194. <https://doi.org/10.5944/educxx1.38283>

**Date received:** 08/09/2023

**Date accepted:** 23/01/2024

**Published online:** 28/06/2024

## ABSTRACT

Formative evaluation has been described as one of the main pedagogical practices to promote the development of learning since it allows teachers and students to visualize the gaps between the level of mastery achieved and the level of mastery expected and direct their actions towards improvement. Despite this, the operationalization of the strategies that make up said methodology is still confusing and it has not been precisely defined what optimal use implies in terms of quality. The objective of this study is to design and validate a Strategies Scale for Formative Evaluation and a Feedback Quality Scale for Learning. The data of 364 primary and secondary teachers have been analyzed through exploratory factor analysis and confirmatory factor analysis with structural equation models. Then, a cross-validation analysis has been carried out for each scale between two random subsamples. Also, differences have been explored according to the educational level where the participating teachers worked, primary or secondary, and differences according to their gender. The results have indicated an adequate goodness of fit for the Formative Evaluation Strategies Scale:  $\chi^2 / df = 3.2$ , CFI = .91 and RMSEA = .07 and for the Quality of Feedback for Learning Scale  $\chi^2 / df = 1.8$ , CFI = .94 and RMSEA = .05. No significant differences were found according to educational level or gender. The discussion presents a heuristic model that illustrates the relationships between how formative evaluation and quality of feedback have been defined with learning and teaching processes, considering the influences exerted by classroom climates, school climates and national educational systems.

**Keywords:** formative evaluation, feedback, co-evaluation, self-evaluation

## RESUMEN

Se ha descrito a la evaluación formativa como una de las principales prácticas pedagógicas para promover el desarrollo de los aprendizajes ya que permite que docentes y estudiantes visualicen las brechas entre el nivel de dominio alcanzado y el nivel de dominio esperado y direccionen sus acciones hacia la mejora. Pese a ello, la operativización de las estrategias que conforman dicha metodología aún es confusa y no se ha definido con precisión qué implica un uso óptimo en cuanto a su calidad. El presente estudio tiene como objetivo diseñar y validar una Escala de Estrategias para la Evaluación Formativa y una Escala de Calidad de la Retroalimentación para el Aprendizaje. Los datos de 364 docentes de primaria y secundaria han sido analizados a través de análisis factoriales exploratorios y análisis factoriales confirmatorios con modelos de ecuaciones estructurales. Luego, se ha realizado un análisis de validación cruzada para cada escala entre dos submuestras aleatorias. También, se han explorado las diferencias según el nivel educativo donde se desempeñaba el profesorado participante, primaria o secundaria y las diferencias según su género. Los resultados han señalado una adecuada bondad de ajuste para la Escala de Estrategias de Evaluación Formativa:  $\chi^2 / gl = 3.2$ , CFI = .91 y RMSEA = .07 y para la Escala de Calidad de la Retroalimentación para el Aprendizaje  $\chi^2 / gl = 1.8$ , CFI = .94 y RMSEA = .05. No se han encontrado diferencias significativas según nivel educativo ni según género. La



discusión presenta un modelo heurístico que ilustra las relaciones entre como se ha definido evaluación formativa y calidad de la retroalimentación con procesos del aprendizaje y de la enseñanza, considerando las influencias que ejercen los climas de aula, los climas escolares y los sistemas educativos nacionales.

**Palabras clave:** evaluación formativa, retroalimentación, coevaluación, autoevaluación

## INTRODUCTION

### Learning and formative evaluation

Human learning has been defined as a meta-process of psychological transformation that emerges from the interaction between a person and an enriching social environment, as a result of internal processes of explicitation and implicitization, which include the integration of conceptual and motivational content (Illeris, 2014; Well, 2017). This is consistent with the notion of proximal development that emphasizes the role of expert support in learning (Vygotsky, 1979). Both arguments highlight the role of intersubjective processes in learning, which in the case of formal education occur between students and teachers (Greene et al., 2004). In schools, one of the consequences of these interactions is the information that arises about the quality of learning, that is, feedback, a constitutive process of formative evaluation.

In general, formative evaluation has been described as a set of pedagogical strategies that allows teachers and students to describe, analyze, evaluate, and guide the progression of student learning according to previously determined objectives (Lipnevich et al., 2016; Panadero et al., 2012; Shavelson et al., 2008). In this way, feedback constitutes a bridge between learning and formative evaluation, as well as between teaching and formative evaluation, as it provides teachers and students with information about their performance (Bond et al., 2020).

### Strategies for formative evaluation: teacher feedback, co-evaluation, and self-evaluation

Research on the quality of teaching has indicated that formative evaluation has a high impact on the development of student learning (Klute et al., 2017) whether in primary, secondary or higher education (López-Pastor and Pérez-Pueyo, 2017). The literature has highlighted various formative evaluation strategies (Moos and Brookhart, 2019). In this work we have chosen to collect three strategies that have been indicated in the literature as representative of formative evaluation: teacher

feedback, co-evaluation, and self-evaluation. (Bond et al., 2020; Popham, 2013). For now, other strategies have been left out, such as, for example, those that generate situations that demonstrate learning. Teacher feedback has been defined as a teacher's evaluation of a student's performance on a task. It has been shown that its main contribution lies in the fact that, along with informing the student what actions they should develop in a better way from identifying errors, it also guides on how to achieve a better performance (Panadero and Lipnevich, 2022). Co-evaluation refers to the evaluation of a student's performance that is carried out among classmates (Panadero et al., 2023). And self-evaluation indicates the evaluation that each student makes regarding their own performance (Harris and Brown, 2022). Brown and Harris (2013) and Sánchez et. al (2017) have reported that students who have participated in self-evaluation and co-evaluation processes have obtained better learning results in subsequent tests than those who did not, demonstrating the usefulness of both practices. Of the three strategies described, teacher feedback has a central role since it arises from an expert teacher, it guides the student's practice towards improvement and allows addressing the individual differences of the students (Andrade, 2023; Hooley and Thorpe, 2017).

### Quality of feedback for learning

The academic interest in understanding teacher feedback has increased, and various studies have analyzed which factors are associated with quality feedback. For example, Ossenberget al., (2019) have analyzed 61 publications and have identified ten attributes of feedback that improve student performance, for example: that it is detailed and that it considers student needs. Adarkwah (2021) has conducted a scoping review, where he points out that the literature classifies feedback into two types: formative feedback, which describes the progress of student performance in qualitative terms, and summative feedback, which classifies performance based on a quantification of mastery through qualifications, usually for accreditation purposes. He has concluded that quality feedback is one that precisely describes which aspects of performance to improve and that clearly indicates what to do to move forward, beyond the quantification of learning. For their part, Tay and Lam (2022) have studied the impact of different feedback strategies on 75 high school students in Singapore. They have concluded that quality feedback promotes the student's commitment to the feedback received if it visualizes learning that will occur in the future and considers the emotional implication that it will have. Finally, Panadero and Lipnevich (2022) have analyzed 14 feedback models in a systematic review. From this work they have developed the MISCA model composed of five factors: Message, Implementation, Student, Context and Agents. This model emphasizes that quality feedback takes into account the characteristics of the students, who,

in addition to receiving feedback, are also producers of feedback for themselves in self-evaluation and producers of feedback for their classmates in co-evaluation. Regarding the context, it has been indicated that quality feedback requires that each educational center promotes positive school climates and classroom climates oriented to learning (Heritage, 2010), since effective feedback favorably affects student performance if it manages to positively affect students. their motivational states (Rowe, 2017). Likewise, it has been pointed out that national educational systems can favor the development of formative evaluation, and within it feedback, or hinder its implementation (Bond et al., 2020; van der Kleij et al., 2018; van der Kleij and DeLuca, 2023).

### Justification of the research

Although the works described offer a valuable contribution to the understanding of formative evaluation and the quality of feedback, the number of studies on the subject tends to be greater in higher education than in primary and secondary education (Alqassab et al., 2023; Sánchez et al., 2017). On the other hand, the operationalization of feedback processes is still confusing and requires greater conceptual organization (Hortigüela et al., 2019; Van der Kleij et al., 2018). Probably, the above is related to the fact that in some educational contexts feedback is used for several objectives, whether formative, summative (grading with grades) or mixed, which in some way constitutes an obstacle to monitoring the use of this strategy and to know its impact on learning (Adarkwah, 2021). This work seeks to respond to the challenges described. The main objective of this research is to design two teacher self-report scales with a clear theoretical structure and empirical validity. A scale to evaluate the implementation of Formative Evaluation Strategies and another scale to evaluate the Quality of Feedback for Learning that teachers offer to students in classes. The development of both scales can be useful for educational centers to initiate or develop processes of understanding the processes of formative evaluation and feedback of learning or for the development of advisory programs in formative evaluation for teachers in training and in practice. (Matthews et al., 2023; Pat-El et al., 2013; Shavelson et al., 2008).

## METHOD

### Participants

The group of participants is made up of 364 teachers who teach in the Tarapacá Region, Chile. Teachers teach various subjects in courses from 1<sup>st</sup> to 12<sup>th</sup> grade. The

average age is 38 years. 242 women (66.5%) and 122 men (33.5%) participated. They belong to a total of 13 schools, 9 private schools with public financing and 4 public schools. 278 teachers (76.4%) work in private schools with public financing and 86 work in public schools (23.6%). In 2021, the total amount of schoolteachers in the Tarapacá Region has corresponded to 4,607, 1.8% of the total school teachers in Chile and they serve approximately 85,200 students (MINEDUC Study Center, 2022). Most of the participating teachers belong to schools that are oriented towards teaching innovation and educational improvement, an aspect formally recognized by Chilean public educational policies. Although this may constitute a limitation, it has been considered appropriate to validate these scales with teachers oriented towards educational improvement to adequately explore the validity of complex constructs that are related to said improvement.

### Instrument design

To provide theoretical content for the design of the Formative Evaluation Strategies Scale (E3F), the conceptualization of Popham (2013) and Shavelson et al. (2008). This framework has guided the construction of items distributed in three subscales: Teacher feedback, Co-evaluation, and Self-evaluation. The authors of the present work, considering this theoretical framework, have developed a set of items that describe actions typical of such strategies, that consider evaluation procedures such as the use of rubrics, guidelines, or tutorials (Andrade, 2023), and that emphasize the role of personal reflection or that showed the opposite version of traditional evaluation systems.

For the design of the Feedback for Learning Quality Scale (ECRA, acronym in the Spanish language, Escala Calidad de la Retroalimentación para el aprendizaje). Four reviews of the literature have been selected, according to the following criteria: they are theoretical systematizations or systematic reviews, they were published in the last five years, and they consider the impact of the teaching feedback processes in the student. These articles have been described in the introductory section. In Table 1 a synthesis has been made from the contents of these four works in dimensions that are consistent with the way in which current literature indicates the objectives of feedback: performance, motivation, and self-regulation of learning (Lipnevich and Panadero, 2021). In this synthesis it is possible to observe the configuration of three dimensions: an instructional dimension that emphasizes the transmission of the message and the content of the feedback, an interactional dimension that highlights the value of motivation and empathizing with the actions and affections of the students. and a self-regulatory dimension aimed at promoting students to reflect on their own involvement and performance in learning tasks.

Taken together, both conceptual frameworks offer a solid theoretical structure and support the design of an item base for each scale. In the case of the Formative Evaluation Strategies Scale, an initial base of 12 items was built, four items for three subscales. Regarding the Quality of Feedback for Learning Scale, an initial base of 22 items distributed in three subscales was developed, seven items representative of the instructional dimension, seven items representative of the interactional dimension and eight items representative of the self-regulatory dimension. Both scales contain direct and inverse items, have a Likert-type response format with ranges from 1 to 5 and express *completely disagree* to *completely agree*.

## Procedure

Initially, the management teams of each school have been contacted and they have been proposed to participate in the research project. The teaching staff participated voluntarily and approved an informed consent that accounted for the anonymization and confidentiality of the data. These procedures have been approved by the Research Ethics Committee of the Autonomous University of Madrid, report CEI-125-2566. Data collection has been the same in each of the educational centers. The teachers have met in a place equipped with computers and have individually answered the scales on a virtual platform.

## Data analysis and validation procedures

Firstly, exploratory factor analyzes (EFA) have been carried out that have guided the configuration of the subscales of both scales. The EFAs have been carried out on random subsamples corresponding to half of the total sample size ( $N = 182$ ). For this, the principal components method with Equamax rotation has been used. For the identification of factors, factor loading values equal to or greater than .40 have been considered. Subsequently, the indicators of the KMO test, Bartlett's sphericity test and the total explained variance of each scale and its subscales were obtained (Lloret-Segura, 2014). This has allowed the selection of items and the factorial configuration for both scales.

Secondly, in the remaining random subsamples of half of the total sample size ( $N = 182$ ) the items selected for both scales have been analyzed using a confirmatory factor analysis (CFA) with structural equation models (SEM) based on original designs, using the maximum likelihood (ML) method, and following the considerations of Ruiz et. al (2020). Then, in each scale, the mean of each item, its standard deviation, the standard error, and the  $t$ -test statistic have been obtained for a sample that has compared the mean obtained with the central value of the range of responses.

Next, for the data set of each scale, Mardia's multivariate normality index has been obtained, using the asymmetry and kurtosis indicators, their critical value and range. Once the final models were defined, the Cronbach's alpha and McDonald's omega statistics were obtained. Consequently, the goodness of fit and the explained variance of each instrument have been determined. Afterwards, a cross-validation analysis was carried out for each scale between two random subsamples of half the total sample size. Finally, the differences have been analyzed according to the educational level where the participating teachers work, primary or secondary, and differences according to gender. The statistical package IBM SPSS and Amos version 28 were used for data analysis.

## RESULTS

### Exploratory factor analyzes

An EFA has been carried out with the 12 items of the Formative Evaluation Strategies Scale, with the objective of identifying the contribution of each item to its unifactorial configuration. This analysis has presented a total explained variance of 27.9%, a KMO value = .76 and a *p value* of the Bartlett test =  $p < 0.01$ . There it has been pointed out that two items have not reached the factorial weight of .40, E3F\_06 = .33 and E3F\_12 = .38 and have been eliminated from the set. Subsequently, a new EFA was carried out, without these two items, and it showed a total explained variance of 31.6%, a KMO value = .76 and a *p value* of the Bartlett test =  $p < 0.01$ . Then, in a random subsample composed of half of the cases of the total sample size (N = 182), with the 10 items selected, a new EFA has been carried out considering the configuration of three factors, a total explained variance of 57.3%. a KMO value = .71 and a Bartlett test *p value* =  $p < 0.01$ . In this EFA, item E3F\_01 has been eliminated since it is the inverse item of item E3F\_07 and both appear in the same factor. In this way, with the 9 selected items, a new EFA has been carried out under the same conditions as the previous one. This EFA has shown a total explained variance of 59.1%, a KMO value = .69 and a Bartlett test *p value* =  $p < 0.01$ . Factor 1 contains statements that refer to teacher feedback and self-evaluation. Factor 2 has items that refer to co-evaluation. And Factor 3 fundamentally refers to the use of rubrics. The result was a factor that explained 31% of the variance that explained teacher feedback and self-evaluation and a factor that explained 46.9% of the variance that was related to co-evaluation. For the CFA, along with the factor weights, the assignment of the item has been considered according to the theoretical model that was used to construct the questionnaire. This has been done to decide the assignment in items E3F\_04, E3F\_07 and ECRA\_09R and E3F\_05R.

**Table 1***Exploratory factor analysis of the Formative Evaluation Strategies Scale*

Item	Factor 1	Factor 2	Factor 3
E3F_04: In each evaluation I use some procedure - rubric, guideline, tutoring - that informs the student of the level of mastery they achieved in completing a task.			.60
E3F_03R: I don't usually inform my students about what they can do to learn better.	.77		
E3F_10R: I find it very difficult to inform each of my students about what mistakes they made in the evaluations.	.65		
E3F_08R: I prevent my students from commenting on their classmates' work during classes.		.83	
E3F_07: I ask my students to evaluate the work of their classmates' using rubrics or guidelines.		.52	.59
E3F_11R: I avoid asking my students to analyze the performance of their classmates.		.84	
E3F_09R: I prefer to prevent my students from evaluating themselves.	.63		.39
E3F_02: I ask my students to evaluate their own performance using rubrics or guidelines.			.73
E3F_05R: I do not use self-evaluation because my students rate themselves higher than is appropriate.	.54		.47
Explained variance	31.2%	15.6%	12.2%

Note.  $N = 182$ .

Regarding the Feedback Quality Scale, an EFA has also been carried out. Initially, in a random subsample with half of the cases ( $N = 182$ ), an EFA has been carried out with the items of each subscale separately, based on the synthesis of Table 1. For this, acceptable values of factor loading greater than .50. Of the 7 items that corresponded to the instructional dimension, three of them have not reached the indicated factorial weight and have been eliminated from this set (ECRA\_09R = .28, ECRA\_19R = .46 and ECRA\_20R = .46). The EFA of this subscale has a KMO value = .66, a Bartlett's  $p$  value =  $p < 0.01$  and a total explained variance of 32.5%. Of the 7 items that corresponded to the interactional dimension, two of them have not reached the indicated factorial weight and have been eliminated (ECRA\_10R = .13 and ECRA\_15R = .47). The EFA of this subscale presents a KMO value = .65, a Bartlett's  $p$  value =  $p < 0.01$  and a total explained variance of 31.4%. Finally, of the 8

items in the self-regulatory dimension, two of them have not reached the indicated factorial weight and have been eliminated (ECRA\_12 = .42, ECRA\_21 = .48). The EFA of this subscale presents a KMO value = .76, a Bartlett's  $p$  value =  $p < 0.01$  and a total explained variance of 37.5. With a total of 15 items, a new CFA was carried out with a KMO value = .81, a Bartlett's  $p$  value =  $p < 0.01$ , and a total explained variance of 48.7%. In this analysis, items ECRA\_22R, ECRA\_13 and ECRA\_2R have been eliminated because they are inverse items of items ECRA\_16, ECRA\_17 and ECRA\_3, correspondingly. The factor loadings of the items in the three EFA factors of the total sample are very similar to those shown in this subsample.



**Table 1**  
*Synthesis of variables of the quality of teacher feedback for learning based on the comparison of previous research*

Literature reviews on feedback from teachers to students			Dimensions
Ossenberg et. al (2019)	Adarkwah (2021)	Tay and Lam (2022)	Baker and Lipnevich (2022)
It is part of a process	It is detailed	Provides specific and general feedback on performance on a task	Message: The information contained in the feedback message must be clear and useful
It is based on criteria	It is clear and simple		Context: the pedagogical approach and the mode of delivery of feedback favor involvement
Use multiple sources of evidence			
It is frequent			
Involves skillful interaction	Guides student action towards improvement	Guides and motivates practice towards improvement	
Involves the student in more ways than one	Use an appropriate tone of voice	Pay attention to the emotional response of the student	Student: consider individual differences, motivational beliefs, prior knowledge, gender, cultural differences, self-efficacy, etc.
Adapts to the needs of the student	It is appropriate to the demands of the student		
It is welcomed by the student			
Is it bidirectional or reciprocal			
Focuses on the future		Pay attention to future learning evaluation processes	Implementation: connects the instructional context with the internal processing of the student (self-regulation)
It is timely	It is timely	It is timely	Agents: promotes the integration of the teacher, peers, and the learner

*Note.* Own elaboration based on the works indicated.

**Table 2***Exploratory factor analysis of the Quality of Feedback for Learning Scale*

Item	Factor 1	Factor 2	Factor 3
ECRA_01: I show students how to do or execute the learning tasks that I propose to them.	.59		
ECRA_07: My comments or observations are clear, easy to understand and contain instructions on what to do to achieve the learning objectives.	.70		
ECRA_08: When I inform a student about the result of their homework, I use a fraternal, respectful, and cordial tone.	.45	.49	
ECRA_18: My comments on student performance are specific and address important actions that can be improved.	.66		
ECRA_05: I consider the individual characteristics of my students (social context, personality characteristics, special needs) to comment on their work based on their particularities.	.46	.36	
ECRA_04: I almost always put myself in my students' shoes and try to think about how they approach the learning tasks that I propose to them.	.40	.58	
ECRA_03: I am willing to receive comments from my students about the results of their evaluations.		.79	
ECRA_06R: I avoid thinking about how my students feel in the learning tasks that I propose to them.		.56	.51
ECRA_11R: I spend little effort asking the expectations that students have about the learning tasks that I propose.			.82
ECRA_14R: I almost never ask the student what he thinks about his own performance in executing the tasks.			.75
ECRA_16: I don't let much time go by to give my students observations or comments on their work.	.32		.31
ECRA_17: I tell students what procedures or tasks they performed correctly so that they recognize their achievements.	.54		.44
Explained variance	33.2%	10.4%	9.0%

Note . N = 182.

With 12 items, a new EFA has been carried out aimed at knowing the trifactoriality. The method of principal components and Equamax rotation has been used. For the CFA, along with the factor weights, the assignment of the item has been considered according to the theoretical model that was used to construct the questionnaire. This has been done to decide the assignment, especially in items ECRA\_6, ECRA\_16 and ECRA\_17. This structure is confirmed with the EFA of the total sample. This analysis presents a KMO value = .83, a Bartlett's *p value* =  $p < 0.01$  and a total explained variance of 52.7%. Table 2 shows the items of Factor 1, of the instructional dimension and that make up the focused instruction subscale, the items of Factor 2 that correspond to the interactional dimension and that make up the empathic interaction subscale, and the items of Factor 3 that They come from the self-regulatory dimension and make up the self-regulation subscale of student performance.

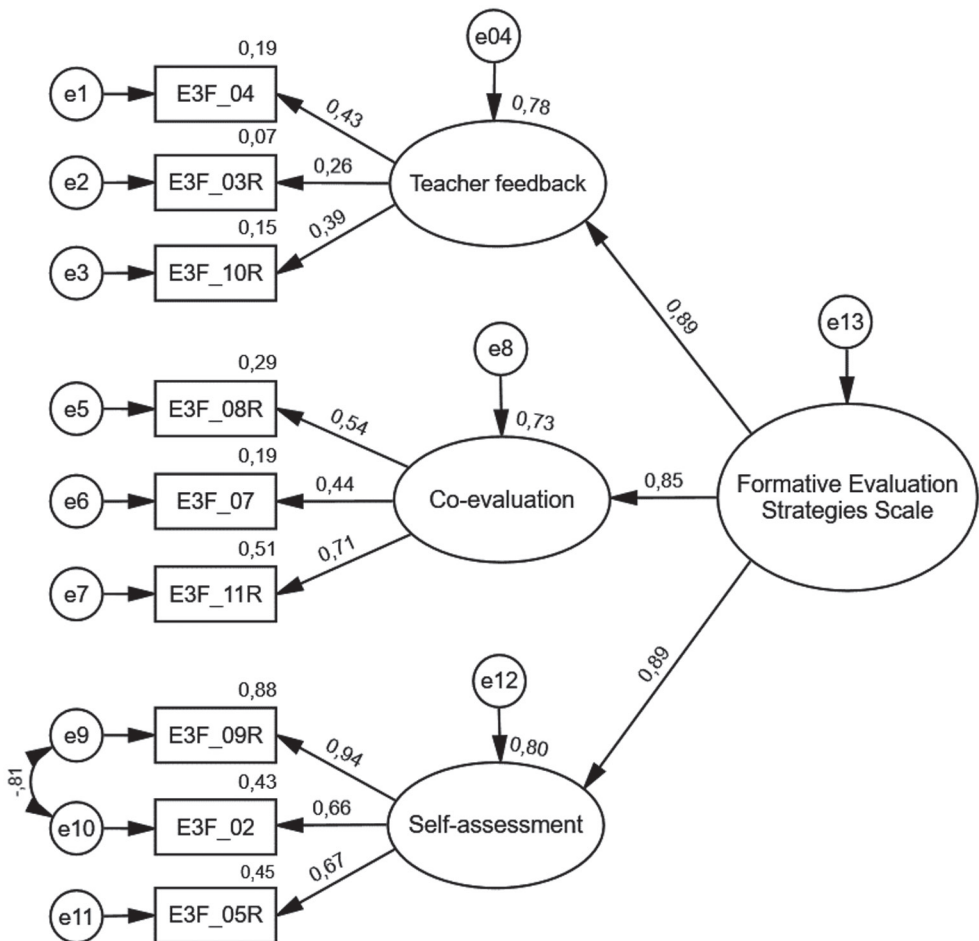
### Confirmatory factor analysis: goodness of fit, explained variance and descriptive analysis

Based on the EFA described in Table 1, a CFA has been carried out with the 9 items selected from the Formative Evaluation Strategies Scale in a random subsample with the other half of the cases in the total sample ( $N = 182$ ). An original model was obtained that presents indicators close to the following reference criteria for the goodness of fit of SEM models:  $\chi^2 / df < 3$ ,  $CFI \geq .95$  and  $RMSEA \leq .05$ . The goodness-of-fit indicators presented by the SEM model of said scale are acceptable:  $\chi^2 / df = 1.3$ ,  $CFI = .97$  and  $RMSEA = .04$ ; CI (.05 - .11). The resulting structural model is presented in Figure 1 and contains three latent variables that represent the subscales: Teacher feedback, composed of three items; Co-evaluation, composed of three items, Self-evaluation, composed of three items and a second-order latent variable.

Regarding the Quality of Feedback for Learning Scale, based on the previous EFA, a CFA has also been carried out on a random subsample with this half of the cases of the total sample ( $N = 182$ ). This analysis has considered the 12 items presented in Table 2. In this way, an original model was obtained that satisfactorily responds to the goodness of fit indicators described in the preceding paragraph:  $\chi^2 / df = 1.2$ ,  $CFI = .96$  and  $RMSEA = .03$ ; CI (.00 - .08). The resulting structural model is presented in Figure 2. It contains three latent variables that represent the subscales: Focused instruction, which emerges from the instructional dimension and contains five items, Empathic interaction, which emerges from the interactional dimension and contains three items, and Self-regulation of student performance, which emerges from the self-regulatory dimension, and which contains four items; and a second-order latent variable.

Figure 1 presents the standardized weights and the coefficients of determination or  $R^2$  of each item and each latent variable of the three subscales of the Formative Evaluation Strategies Scale. Most of the items exceed the standardized weight indicator of .40, except for items E3F\_03R and E3F\_10R. The  $R^2$  values in the subscales are high, being lower in the case of the Co-evaluation strategy with an indicator of .73. The means and values of the  $t$  test present in Table 3 indicate values that are significantly above the central value of the range of responses.

**Figure 1**  
Structural model of the Formative Evaluation Strategies Scale



**Table 3**

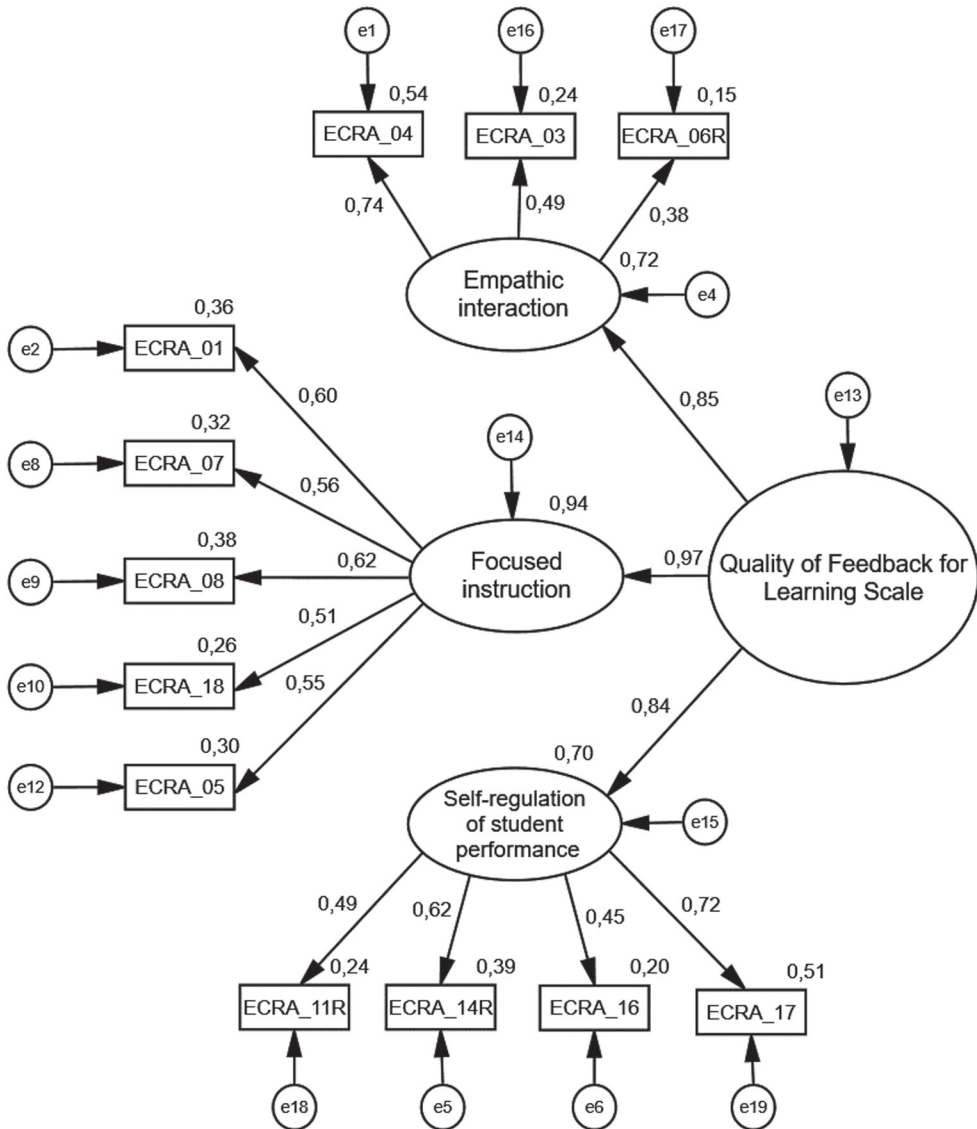
*Means, standard deviations, standard error, and Student's t-test statistics for a sample of the Formative Evaluation Strategies Scale*

<b>Item</b>	<b>M</b>	<b>SD</b>	<b>SE</b>	<b>t</b>	<b>gl</b>	<b>p</b>
E3F_04	4.3	.76	0.05	23.8	181	<.001
E3F_03R	4.4	.83	0.06	22.4	181	<.001
E3F_10R	3.8	1.0	0.08	10.9	181	<.001
E3F_08R	3.4	1.1	0.08	5.12	181	<.001
E3F_07	3.1	1.2	0.09	2.02	181	.045
E3F_11R	3.4	1.1	0.08	5.57	181	<.001
E3F_09R	3.9	1.0	0.07	11.7	181	<.001
E3F_02	3.9	1.0	0.07	12.0	181	<.001
E3F_05R	3.8	1.0	0.08	10.6	181	<.001
E3F_RT	4.2	.61	0.04	26.4	181	<.001
E3F_CV	3.6	.91	0.06	9.02	181	<.001
E3F_AV	3.8	.93	0.06	12.8	181	<.001
E3F Total	3.9	.58	0.04	20.9	181	<.001

*Note.*  $N = 182$ .  $M$  = Mean;  $SD$  = Standard Deviation;  $SE$  = Standard Error;  $t$  =  $t$  value;  $p$  = Student's  $t$  test for one sample with test value = 3 and significance level .05; E3F\_RT = Teacher feedback subscale; E3F\_CV = Co-evaluation subscale; E3F\_AV = Self-evaluation subscale; E3F = Formative Evaluation Strategies Scale.

**Figure 2**

*Structural model of the Quality of Feedback for Learning Scale*



**Table 4**

Means, standard deviations, standard error, and one-sample Student *t*-test statistics for the Quality of Feedback for Learning Scale

Item	<i>M</i>	<i>SD</i>	<i>SE</i>	<i>t</i>	<i>gl</i>	<i>p</i>
ECRA_01	4.7	.49	.03	60.0	181	<.001
ECRA_07	4.3	.73	.03	37.8	181	<.001
ECRA_08	4.7	.55	.03	65.3	181	<.001
ECRA_18	4.2	.64	.04	31.7	181	<.001
ECRA_05	4.5	.97	.03	43.8	181	<.001
ECRA_04	4.5	1.0	.03	52.6	181	<.001
ECRA_03	4.6	.64	.03	49.1	181	<.001
ECRA_06R	4.3	1.0	.05	24.9	181	<.001
ECRA_11R	3.9	.96	.05	16.1	181	<.001
ECRA_14R	4.1	.62	.05	20.8	181	<.001
ECRA_16	4.0	.42	.05	19.1	181	<.001
ECRA_17	4.5	.47	.03	46.0	181	<.001
ECRA_IF	4.5	.64	.02	67.4	181	<.001
ECRA_IE	4.5	.41	.02	60.6	181	<.001
ECRA_ADE	4.1	.49	.03	32.6	181	<.001
ECRA Total	4.3	.73	.02	62.5	181	<.001

Note. *N* = 182. *M* = Mean; *SD* = Standard deviation; *SE* = standard error; *t* = *t* value; *p* = Student's *t* test for one sample with test value = 3 and significance level .05; ECRA\_IF = Focused instruction subscale; ECRA\_IE = Empathic interaction subscale; ECRA\_ADE = Self-regulation of student performance subscale; ECRA = Quality of Feedback for Learning Scale.

Figure 2 presents the standardized weights and the coefficients of determination or  $R^2$  of each item and each latent variable of the three subscales of the Quality of Feedback for Learning Scale. It is observed that most of the items exceed the standardized measurement weight indicator of .40, except for item ECRA\_06 = .38. The  $R^2$  values in the subscales are high, being lower in the case of the self-regulation of student performance subscale with an indicator of .70. The means and the values of the Student's *t* test for one sample presented in Table 4 indicate that the scores are significantly above the central value of the range of responses.

## Normality analysis

Mardía's (1974) multivariate normality indicators show that the distribution of the E3F is close to normal and that the ECRA is not normal. In the case of asymmetry, the value of the statistic is greater than its critical value. Regarding kurtosis, the value of the statistic is not within the critical range established by Mardía according to the sample size (Wulandari et al., 2021). Since SEM with ML requires normality, the  $p$  value of the Bollen-Stine (BS) index was obtained with two thousand bootstraps (Cheung and Lau, 2008; Fan, 2003). A  $p$ -value of .06 for the BS index has been obtained. The  $p$  indicators of the BS Index correct the detected abnormality by exceeding the  $p$  value of .05.

## Reliability analysis

Cronbach's Alpha values indicate acceptable or optimal internal consistency reliability since they are equal to or greater than .70. The Formative Evaluation Strategies Scale has obtained a Cronbach's alpha of .71 and the Quality of Feedback for Learning Scale has obtained a Cronbach's alpha of .78. The values of McDonald's omega indicator are identical to those of Cronbach's alpha in both scales. The correlations between scales and subscales show the absence of collinearity and a significant relationship between the subscales of each scale (Table 5).

**Table 5**

*Multiple correlation statistics between scales and subscales*

Variable	E3F	E3F_RT	E3F_CV	E3F_AV	ECRA	ECRA_IF	ECRA_IE
E3F_RT	.69*						
E3F_CV	.78*	.25*					
E3F_AV	.74*	.38*	.36*				
ECRA	.42*	.51*	.19*	.29*			
ECRA_IF	.31*	.44*	.10*	.20*	.79*		
ECRA_IE	.31*	.30*	.17*	.25*	.70*	.38*	
ECRA_ADE	.37*	.45*	.18*	.24*	.86*	.50*	.44*

*Note.*  $N = 364$ . \*The correlation is significant at the two-sided .01 level; E3F = Formative Evaluation Strategies Scale; E3F\_RT = Teacher feedback subscale; E3F\_CV = Co-evaluation subscale; E3F\_AV = Self-evaluation subscale; ECRA = Learning Feedback Quality Scale; ECRA\_IF scale = Focused instruction subscale; ECRA\_IE = Empathic interaction subscale; ECRA\_AD = Self-regulation of student performance subscale.



## Cross validation

By segmenting the total sample into two random subsamples of equal size, goodness-of-fit indicators close to satisfactory criteria are obtained on both scales (Table 6).

**Table 6**  
*Confirmatory factor analyzes with random subsamples*

E3F					ECRA				
Model	$\chi^2/df$	CFI	RMSEA	C.I.	Model	$\chi^2/df$	CFI	RMSEA	C.I.
E3F-1 (N=182)	2.5	.91	.08	(.05 - .11)	ECRA-1 (N=182)	1.2	.96	.03	(.00 -.06)
E3F-2 (N=182)	2.2	.90	.08	(.05 - .01)	ECRA-2 (N=182)	1.8	.90	.06	(.04 -.09)
E3F (N=364)	3.2	.91	.07	(.05 - .09)	ECRA (N=364)	1.8	.94	.05	(.03 -.06)

*Note.* E3F = Formative Evaluation Strategies Scale; ECRA = Quality of Feedback for Learning Scale; CI = Confidence interval

## Analysis of differences according to educational level

Based on the analysis of the ANOVA test, the existence of significant differences between the means of both scales and the three educational levels where the participating teachers work have been explored, primary 1st to 4th, primary 5th to 8th and secondary 9th to 12th. The results indicate that there is no significant difference according to educational level, in both scales (Tables 7 and 8).

**Table 7**  
*Statistics of the ANOVA test for the comparison of means according to educational level*

Scale	Level	M	OF	N	F	p
Formative Evaluation Strategies Scale	Primary 1 <sup>st</sup> to 4 <sup>th</sup>	3.8	.60	81	.97	.37
	Primary 5 <sup>th</sup> to 8 <sup>th</sup>	3.9	.59	110		
	Secondary 9 <sup>th</sup> to 12 <sup>th</sup>	3.9	.59	173		
	Total	3.8	.59	364		

*Note.* M = Mean; SD = Standard deviation; N = Number of participants; F = ANOVA statistic; p = p value.

**Table 8***Statistics of the ANOVA test for the comparison of means according to educational level*

Scale	Level	<i>M</i>	<i>SD</i>	<i>N</i>	<i>F</i>	<i>p</i>
Quality of Feedback for Learning Scale	Primary 1 <sup>st</sup> to 4 <sup>th</sup>	4.3	.41	81	.124	.94
	Primary 5 <sup>th</sup> to 8 <sup>th</sup>	4.3	.42	110		
	Secondary 9 <sup>th</sup> to 12 <sup>th</sup>	4.3	.40	173		
	Total	4.3	.41	364		

Note. *M* = Mean; *SD* = Standard deviation; *N* = Number of participants; *F* = ANOVA statistic; *p* = *p* value.

### Analysis of differences according to gender

To check the impact of the gender of the teachers on the means of both scales, analyzes were carried out with the Student's *t* test for independent samples. The results have indicated that in both scales the difference in means between male and female teachers is not significant (Tables 9 and 10).

**Table 9***Statistics of the Student t test for the differences in means according to gender*

Scale	Gender	<i>M</i>	<i>OF</i>	<i>N</i>	<i>F</i>	<i>p</i>
Formative Evaluation Strategies Scale	Women	3.9	.58	242	.27	.60
	Men	3.7	.61	122		
	Total	3.8	.59	364		

**Table 10***Student t-test statistics for the difference in means by gender*

Subscale	<i>N</i>	<i>M</i>	<i>OF</i>	<i>N</i>	<i>F</i>	<i>p</i>
Quality of Feedback for Learning Scale	Women	4.3	.38	242	1.7	.18
	Men	4.2	.44	122		
	Total	4.3	.41	364		

## DISCUSSION

The average scores of both scales indicate that the group of teachers reports carrying out a formative evaluation and feedback of acceptable quality. A predictable

result, considering that the participating teachers work in schools that are oriented towards teaching innovation. Both instruments present adequate goodness of fit, reliability and correlation between them. The absence of differences in both scales, between the levels of education (primary and secondary) and by gender, allows us to conclude that the instruments manage to investigate the constructs in a transversal way.

The Formative Evaluation Strategies Scale presents three subscales that are representative of the construct. Feedback, co-evaluation, self-evaluation, and the use of tools such as rubrics are distinguished in this scale. This is an important aspect since these strategies will be formative if they manage to guide the progress of student learning beyond grades (Andrade, 2023; López-Pastor and Pérez-Pueyo, 2017). Consequently, these results are consistent with an understanding of formative evaluation that has highlighted its ability to describe, analyze, evaluate and direct learning progress, while allowing teachers and students to identify gaps between the level of mastery achieved and the level of expected mastery. It demonstrates the student's performance from multiple sources, turns one's own learning and the learning of one's classmates into an object of personal reflection and guides performance toward permanent improvement; either informally or spontaneously, planned for interaction in the classroom or in a more formal way or integrated into the curriculum (Lipnevich et al., 2016; Panadero et al., 2012; Shavelson et al., 2008).

The Quality of Feedback for Learning Scale identifies three subscales that refer to dimensions of the quality of the feedback that teachers offer to students. The *focused instruction subscale* indicates that providing quality feedback implies offering comments that are clear, easy to understand and respectful, considering the individual characteristics of the student and indicating what specific actions or elements can be addressed to improve student performance on the task. The *empathic interaction subscale* emphasizes the need to recognize the impact that feedback could have on the students' motivation, both in their actions and their affects, and the relevance of listening to their impressions about the teaching process. Finally, the self-regulation subscale of student performance refers to how quality feedback encourages the student to identify their level of commitment to improvement and to reflect on their own performance, provides comments temporally close to the task to enhance the perceived usefulness, and visualizes the correct or optimal performance of the students in the task. These results agree with aspects that the literature highlights are basic to defining what to provide feedback and how to do it (Panadero and Lipnevich, 2022). Although the Quality of Feedback for Learning Scale presents these subscales as an expression of the quality of teaching feedback, in the teaching exercise, teachers could evaluate which of these factors they can emphasize, depending on the progress of the learning student at mastery levels or depending on the teaching situation. Thus, as evidenced in the

results of this work, quality feedback is specific, indicates what and how to improve, is respectful of the individual characteristics of the student, is empathetic with the student experience and ensures that students increase their self-regulation. by inviting you to reflect on your own performance in learning tasks (Adarkwah, 2021; Ossenberget al., 2019; Rowe, 2017; Tay and Lam, 2022).

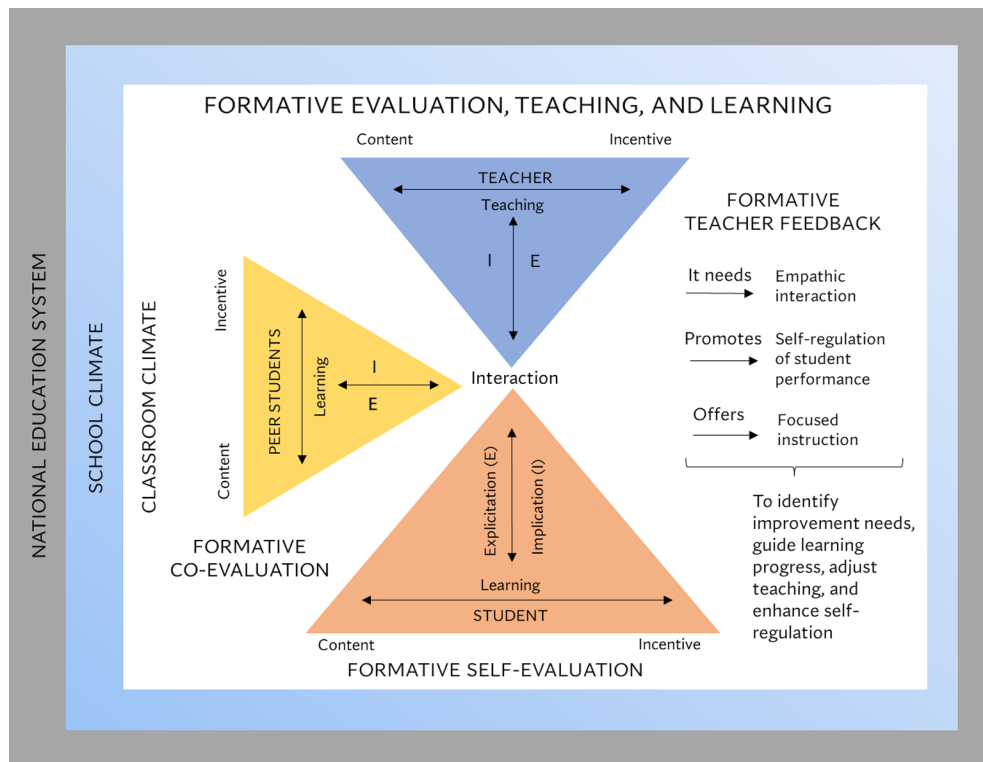
The theoretical scope of this research allows us to visualize the connection between the variables studied. From that interaction, concepts (content) and motivations (incentives) are mobilized that nourish and guide performance and its meaning, both among students and teachers (Illeris, 2014). The symbolic contents, data, or information about one's own performance in learning activities are internalized through implicitization mechanisms and externalized through processes of explicitation or transmission that are inherent to corporality (Poza, 2017). In this process, the formative evaluation strategies organized by teachers direct, encourage, and nourish - from the context - progress in the domain of student learning, since they make feedback a transformative communicative interaction, whether in the form of dialogue intrapersonal (internal feedback) or from interpersonal dialogue; by its contents (focus on the task), by its form (empathy) and by its mechanism (self-regulation). All of this is favored by adequate school climates and classroom climates (Heritage, 2010; Matthews et al., 2023; Pat-El et al., 2013). As van der Kleij and DeLuca (2023) point out, public educational policies can favor the implementation of formative evaluation by promoting teacher training programs that focus on improving school autonomy, but they can hinder its implementation by generating very extensive curricula or not caring about from teacher burnout or the improvement of school infrastructure (van der Kleij et al., 2018).

## Limitations

The teachers who participated in this research belong to the Chilean educational context so that the extrapolation of these results to other contexts must be done with precautions and taking into consideration sociocultural similarities. The measurement process is transversal and includes the self-report of teachers who mostly belong to schools that are formally oriented towards quality and educational improvement. Only data from teachers are collected and analyzed, which invites us to explore the impact of these constructs on student measurements (Adarkwah, 2021).

**Figure 3**

*Explanatory diagram of the connection between learning, teaching, and formative evaluation*



Note. Own elaboration. Heuristic model that connects the results of this research and the contributions of Illeris (2014) and Pozo (2017).

### Future developments

It is proposed to study the predictive validity of both scales with measurements that incorporate student processes, longitudinally, multilevel, in different sociocultural contexts and with a greater number of participants. Likewise, it is suggested to continue researching these scales in digital formative evaluation processes (Hooley and Thorpe, 2017) and in higher education. Likewise, it will be favorable to add other formative evaluation strategies, for example, those related to the production of evidence of learning and the shared construction of evaluation criteria or mastery levels with the students. This will allow us to highlight the value of the interpersonal and pedagogical interaction present in formative evaluation,

as one of the main drivers of human learning, given its motivational, conceptual, behavioral and identity role (Illeris, 2014; Pozo, 2017; Vygotsky, 1979).

## CONCLUSIONS

This research contributes to advancing on the path towards a better-defined formative evaluation methodology, particularly in primary and secondary school educational contexts and from teacher self-report. Two brief scales have been designed and validated that identify elements that are central, both in formative evaluation and in the quality of teaching feedback. Furthermore, both instruments allow self-reporting of teachers' actions or beliefs that can be related to formative evaluation and to more spontaneous or informal feedback and to that which presents higher levels of structure (Bond et al., 2020). Both scales can be useful for new research, for the implementation of advisory programs for teachers in training and in practice (Matthews et al., 2023; Pat-El et al., 2013) and for the development of skills or competencies in the student (Shavelson et al., 2008).

## FINANCING

This work has been funded by the National Research and Development Agency (ANID). Scholarship program. Doctorate Scholarships Chile 2019 – 72200107.

## ACKNOWLEDGEMENTS

Knowledge Generation Project: "Motivation. Evaluation and Self-regulation V". PID2022-138175NB-100. Ministry of Science and Innovation. Spain.

Research Center for Inclusive Education. SCIA-ANID CIE160009 Program. Chile.

## REFERENCES

- Adarkwah, M. A. (2021). The power of assessment feedback in teaching and learning: a narrative review and synthesis of the literature. *SN Social Science*, 1(75). 1-44. <https://doi.org/10.1007/s43545-021-00086-w>
- Andrade, H. L. (2023). What Is Next for Rubrics?: A Reflection on Where We Are and Where to Go From Here In C. Gonsalves, & J. Pearson (Eds.), *Improving Learning Through Assessment Rubrics: Student Awareness of What and How*

- They Learn* (pp. 314-326). IGI Global. <https://doi.org/10.4018/978-1-6684-6086-3.ch017>
- Alqassab, M., Strijbos, J. W., & Panadero, E. (2023). A Systematic Review of Peer Assessment Design Elements. *Educational Psychology Review*, 35(18), 1-36. <https://doi.org/10.1007/s10648-023-09723-7>
- Bond, E., Woolcott, G., & Markopoulos, C. (2020). Why aren't teachers using formative assessment? What can be done about it? *Assessment Matters*, 14, 112–136. <https://doi.org/10.18296/am.0046>
- Marrón, G., & Harris, L. (2013). Student self-Assessment. In J. McMillan (Ed.), *SAGE Handbook of Research on Classroom Assessment* (pp. 367-393). SABIO. <https://doi.org/10.4135/9781452218649>
- Centro de estudios MINEDUC. (2022). *Apuntes 22: Variación en la información estadística de los docentes de la educación en desempeño, año 2021*. Centro de Estudios Ministerio de Educación de Chile (MINEDUC). <https://bit.ly/3VDJQQd>
- Cheung, G. W., & Lau, R.S. (2008). Testing Mediation and Suppression Effects of Latent Variables: Bootstrapping with Structural Equation Models. *Organizational Research Methods*, 11(2), 296–325. <https://doi.org/10.1177/1094428107300343>
- Fan, X. (2003). Using commonly available software for bootstrapping in both substantive and measurement analyses. *Educational and Psychological Measurement*, 63(1), 24-50. <https://doi.org/10.1177/0013164402239315>
- Greene, B. A., Miller, R. B., Crowson, S. M., Duque, B. L., & Akey, K. L. (2004). Predicting high school students' cognitive engagement and achievement: Contributions of classroom perceptions and motivation. *Contemporary Educational Psychology*, 29, 462–482. <https://doi.org/10.1016/j.cedpsych.2004.01.006>
- Harris, L., & Brown, G. (2022). *Self-Assessment*. Routledge. <https://doi.org/10.4324/9781138609877-REE1-1>
- Heritage, M. (2010). *Formative assessment: Making it happen in the classroom*. <https://dx.doi.org/10.4135/9781452219493>
- Hooley, D. S., & Thorpe, J. (2017). The effects of formative reading assessments closely linked to classroom texts on high school reading comprehension. *Educational Technology Research and Development*, (65), 1215–1238. <https://doi.org/10.1007/s11423-017-9514-5>
- Hortigüela, D., Pérez-Pueyo, A., & González-Calvo, G. (2019). Pero... ¿a qué nos referimos realmente con la evaluación formativa y compartida?: Confusiones habituales y reflexiones prácticas. *Revista Iberoamericana de Evaluación Educativa*, 12(1). <https://doi.org/10.15366/riee2019.12.1.001>
- Illeris, K. (2014). Transformative Learning and Identity. *Journal of Transformative Education*, 12(2). 148–163. <https://doi.org/10.1177/1541344614548423>

- Klute, M., Apthorp, H., Harlacher, J., & Reale, M. (2017). *Formative assessment and elementary school student academic achievement: A review of the evidence* (REL 2017–259). U.S. Department of Education. Institute of Education Sciences. National Center for Education Evaluation and Regional Assistance. Regional Educational Laboratory Central.
- Lipnevich, A., & Panadero, E. (2021). A Review of Feedback Models and Theories: Descriptions, Definitions and Conclusions. *Frontiers in Education*, 6, Artículo 720195. <https://bit.ly/3vH3foO>
- Lipnevich, A., Berg, A., & Smith, J. (2016). Toward a model of student response to feedback. In G. T. Marrón., & I. R. Harris (Eds.), *Handbook of Human and Social Conditions in Assessment* (pp. 159–185). Routledge. <https://doi.org/10.4324/9781315749136>
- Lloret-Segura, S., Ferreres-Traver, A., Hernández-Baeza, A., & Tomás-Marco, I. (2014). El análisis factorial exploratorio de los ítems: una guía práctica. Revisada y actualizada. *Anales de Psicología*, 30(3), 1151-1169. <https://dx.doi.org/10.6018/analesps.30.3.199361>
- López-Pastor, V., & Pérez-Pueyo, A. (2017). *Evaluación formativa y compartida en educación: experiencias de éxito en todas las etapas educativas*. Universidad de León. <https://bit.ly/4abtkeZ>
- Mardia, K. V. (1974). Applications of Some Measures of Multivariate Skewness and Kurtosis in Testing Normality and Robustness Studies. *The Indian Journal of Statistics*, 36(2), 115-128. <https://bit.ly/49eBVfE>
- Matthews, K., Sherwood, C., Enright, E., & Cook-Sather, R. (2023). What do students and teachers talk about when they talk together about feedback and assessment? Expanding notions of feedback literacy through pedagogical partnership. *Assessment y Evaluation in Higher Education*, 49(1), 26-38. [10.1080/02602938.2023.2170977](https://doi.org/10.1080/02602938.2023.2170977)
- Moos, C., & Brookhart, S. (2019). *Advancing In Every Classroom: A Guide For Instructional Leaders*. ASCD. <https://bit.ly/4cAfLai>
- Ossenber, C., Henderson, A., & Mitchell, M. (2019). What attributes guide best practice for effective feedback? A scoping reviews. *Advances in Health Sciences Education*, (24), 383–401. <https://doi.org/10.1007/s10459-018-9854-x>
- Panadero, E., & Lipnevich, R. (2022). A review of feedback models and typologies: Towards an integrative model of feedback elements. *Educational Research Review*, (35). <https://doi.org/10.1016/j.edurev.2021.100416>
- Panadero, E., Alonso Tapia, J., & Huertas, J. A. (2012). Rubrics and self-assessment scripts effects on self-regulation. Learning and self-efficacy in secondary education. *Learning and Individual Differences*, 22(6), 806-813. <https://doi.org/10.1016/j.lindif.2012.04.007>



- Panadero, E., Alqassab, M., Fernández-Ruiz, J., & Ocampo, J. (2023) A systematic review on peer assessment: intrapersonal and interpersonal factors. *Assessment y Evaluación in Higher Education*, 8, 1053-1075. [10.1080/02602938.2023.2164884](https://doi.org/10.1080/02602938.2023.2164884)
- Pat-El, R. J., Tillema, H., Segers, M., & Vedder, P. (2013). Validation of Assessment for Learning Questionnaires for teachers and students. *The British journal of educational psychology*, 83(1), 98-113. <https://doi.org/10.1111/j.2044-8279.2011.02057.x>
- Popham., J. (2013). *Evaluación Transformativa: el poder transformador de la evaluación formativa*. Narcea.
- Pozo, J. I. (2017). Aprender más allá del cuerpo: de las representaciones encarnadas a la explicitación mediada por representaciones externas. *Infancia y Aprendizaje*, 40(2), 219-276. [10.1080/02103702.2017.1306942](https://doi.org/10.1080/02103702.2017.1306942)
- Rowe, A. D. (2017). Feelings about feedback: the role of emotions in assessment for learning. In D., Carless, S. Bridges, C. Chan, & R. Glofcheski (Eds), *Scaling up assessment for learning in higher education. The enabling power of assessment (vol 5)*. Springer.[https://doi.org/10.1007/978-981-10-3045-1\\_11](https://doi.org/10.1007/978-981-10-3045-1_11)
- Ruiz, M., Pardo, A., & San Martín. R. (2010). Modelos de ecuaciones estructurales. *Papeles del Psicólogo*, 31(1), 34-35. <https://bit.ly/3TANiIL>
- Sánchez, C. E., Atkinson, K. M., Koenka, A. C., Moshontz, H., & Cooper, H. (2017). Self-grading and peer-grading for formative and summative assessments in 3rd through 12th grade classrooms: A meta-analysis. *Journal of Educational Psychology*, 109(8), 1049-1066. <https://doi.org/10.1037/edu0000190>
- Shavelson, R. J, Young, D. B, Ayala, C. C., Brandon, P. R., Furtak, E. M., Ruiz-Primo, M. A., ..., & Yin, Y. (2008). On the impact of curriculum-embedded formative assessment on learning: A collaboration between curriculum and assessment developers. *Applied Measurement in Education*, 21(4), 295–314. <https://doi.org/10.1080/08957340802347647>
- Tay H. Y. & Lam, K. W. L. (2022). Students' engagement across a typology of teacher feedback practices. *Educational Research for Policy and Practice*, (21), 427–445. <https://doi.org/10.1007/s10671-022-09315-2>
- van der Kleij, F. M., & DeLuca. C. (2023). Implementation of assessment for learning. In R. Tierney, F. Rizvi, & K. Ercikan (Eds.), *International Encyclopedia of Education* (pp. 147-154). <https://doi.org/10.1016/B978-0-12-818630-5.09028-X>
- Van der Kleij, F. M., Cumming, J., & Looney, A. (2018). Policy expectations and support for teacher formative assessment in Australian education reform. *Assessment in Education: Principles. Policy y Practice*, 25(6), 620-637. [10.1080/0969594X.2017.1374924](https://doi.org/10.1080/0969594X.2017.1374924)

- Vygotsky, L. S. (1979). Interacción entre aprendizaje y desarrollo. In M., Cole, J. Vera, S. Scribner, & E. Souberman (Eds.), *El desarrollo de los procesos psicológicos superiores* (pp. 123-140). Crítica-Grijalbo.
- Wulandari, D., Sutrisno, S., & Nirwana, M. B. (2021). Mardia's Skewness and Kurtosis for Assessing Normality Assumption in Multivariate Regression. *Enthusiastic: International Journal of Applied Statistics and Data Science*, 1(1), 1 – 6. <https://doi.org/10.20885/enthusiastic.vol1.iss1.art1>

# Discriminant analysis of positive classroom interpersonal relationships and academic performance in Chilean students at school

*Análisis discriminante de las relaciones interpersonales positivas de aula y rendimiento académico en escolares chilenos*

Olga Cuadros <sup>1\*</sup> 

Benito León-del Barco <sup>2</sup> 

<sup>1</sup> Universidad Católica Silva Henríquez, Chile

<sup>2</sup> Universidad de Extremadura, Spain

\*Corresponding author. E-mail: [ocuadros@ucsh.cl](mailto:ocuadros@ucsh.cl)

## Cómo referenciar este artículo/ How to reference this article:

Cuadros, O., & León-del Barco, B. (2024). Discriminant analysis of positive classroom interpersonal relationships and academic performance in Chilean students at school. *Educación XX1*, 27(2), 195-221. <https://doi.org/10.5944/educxx1.38653>

**Date received:** 15/10/2023

**Date accepted:** 26/02/2024

**Published online:** 28/06/2024

## ABSTRACT

This study proposed to analyse positive dimensions of the interpersonal relationships of students with their peers and teachers in the classroom, in their discriminant role with respect to the differences between levels of academic performance, helping to better understand the relevance of these interpersonal relationships in the educational outcome. An associative design using discriminant analysis was used on a cluster sample of one thousand two hundred seventy-three (n=1273) students with voluntary participation, randomly selected in the second and third level of Basic Education and first and second cycle of Secondary Education (5th grade to 4th grade [levels 5 to 12]) in eight public and private

educational schools that receive state funding from the Chilean government, located in three key regions of the northern macro-zone (Tarapacá) and center of the country (Valparaíso and Metropolitan Region), during 2020 and 2021, corresponding to the pandemic period COVID-19. The mean age was 14.20 years (SD= 2.43; range 10-19); 47.5% (n=605) females, 48% (n=611) males and 4.5% (n=57) with non-binary gender identity. The results point to the identification of approval, instrumental support and affection as dimensions with the greatest predictive capacity in the positive interpersonal relationship with teachers, while with peers with whom they share the classroom, satisfaction, approval and enjoyment of their company stand out. The canonical discriminant function in both models, with teachers and classmates, correctly classifies a significant percentage of students mainly in the notable and outstanding levels of academic performance. These results allow, on the one hand, to recognize favourable aspects for the educational process that occur through interpersonal relationships in the classroom. They also highlight dimensions that are part of the repertoire of expected and intended attitudes and practices within educational interactions, whose influence is recognized for academic achievement.

**Keywords:** interpersonal relationship, teacher student relationship, academic achievement, discriminant analysis, school

## RESUMEN

Este estudio propuso analizar características positivas de las relaciones interpersonales de los escolares con sus pares y profesorado en el aula, en su rol discriminante respecto de las diferencias entre niveles de rendimiento académico, ayudando a comprender mejor la relevancia de estas relaciones interpersonales en el resultado educativo. Se utilizó un diseño asociativo mediante análisis discriminante a una muestra por conglomerados de 1273 alumnos con participación voluntaria, seleccionada aleatoriamente en el segundo y tercer nivel de Educación Básica y primer y segundo ciclo de Educación Media (niveles 5 a 12) en ocho centros educativos públicos y privados que reciben financiamiento estatal del gobierno de Chile, ubicados en tres regiones claves de la macrozona norte (Tarapacá) y centro del país (Valparaíso y Región Metropolitana), durante los años 2020 y 2021, correspondiente al período de pandemia COVID-19. La edad promedio fue de 14.20 años (SD= 2.43; rango 10-19); 47.5% (n=605) mujeres, 48% (n=611) varones y un 4.5% (n=57) con identidad de género no binaria. Los resultados apuntan a identificar como variables de mayor capacidad predictiva en la relación interpersonal positiva con el profesorado, la aprobación, apoyo instrumental y afecto de parte de estos adultos, mientras que con pares con quienes comparten en el aula, destacan la satisfacción, aprobación y disfrute de su compañía. La función canónica discriminante en ambos modelos, con profesorado y compañeros de curso, clasifica correctamente a un porcentaje significativo de estudiantes principalmente en los niveles notable y sobresaliente de rendimiento académico. Estos resultados permiten, por una parte, reconocer aspectos favorecedores para el proceso educativo que suceden a través de las relaciones interpersonales en el aula. Y destacan, además, dimensiones que son parte del repertorio de actitudes y prácticas esperables e

intencionadas dentro de las interacciones educativas, cuya influencia es reconocida para el rendimiento académico.

**Palabras clave:** relaciones interpersonales, relación profesor estudiante, rendimiento académico, análisis discriminante, escuela

## INTRODUCTION

The concept of academic performance is quite broad and complex, and it has been interpreted according to the significance it holds for different involved audiences (de la Fuente Mella et al., 2021). The operationalization of this concept will therefore respond to the perspective one wishes to emphasize; hence, in this study, we opt for a definition that reflects, as much as possible, the way it has been defined in Chile, opening the possibility for discussion about the diversity of factors that can influence its evidence.

Academic performance can be defined in terms of the level of knowledge and skills that the student demonstrates developing in a specific area or subject, which is operationalized in a grade through which their performance, achievement, and level attained are evaluated, corresponding with the age norm (Navarro, 2003). The demonstration of this achievement is usually reflected through assessments by various educational stakeholders, mainly teachers, at a quantitative and/or qualitative level (Castrillón et al., 2020). Considering the complexity of the concept, attention has been given to what helps define and better understand which variables influence academic performance in the educational context. In this sense, aspects associated with socioemotional interactions dependent on the educational institution and the classroom have been of interest for a more epistemologically appropriate and contextualized understanding of academic performance (Berger et al., 2011). Recent research has shown effective evidence of the association between academic performance and socioemotional variables, particularly in Chile, but mainly focused on individual factors (Vera-Sagredo et al., 2021). Although the association between academic performance and individual student factors has been widely discussed and accepted, in recent years, the idea that academic performance does not depend solely on individual and cognitive factors has gained strength. Thus, the development of this research field has been expanded, allowing for the systematic study of the relevance of other types of variables in academic performance, such as those related to social interactions with significant individuals linked to the learning process and context. Consequently, the possibility of studying a socioemotional dimension of academic performance has been established; although, often through indirect pathways related to other variables, such as school engagement (Van Mieghem et al., 2018; Miranda-Zapata et al., 2021).

This explanatory line of study regarding academic performance that incorporates the socioemotional aspects, highlights the need to pay attention to the influence that interpersonal relationships that students develop with teachers and peers in their educational environment have, more directly (Mainhard et al., 2018). School connections with these significant individuals promote not only socioemotional development but also a key factor for psychological and social well-being, as well as for student academic performance and achievement (Fabris et al., 2022). Thus, the factor of interpersonal relationships contributes to the construction of an idea of comprehensive quality education in educational contexts, which, at least in Latin America, has been challenging, given the social, political, and economic conditions applied to educational systems in recent decades (Kutsyuruba et al., 2015; Flores, 2023).

### **Interpersonal relationships in the learning process**

In today's world, especially in the context of the COVID-19 pandemic, it is necessary, but also a significant challenge, to consider the socioemotional dimension within teaching and learning processes in classrooms. The pandemic period made it evident that learning environments need to be perceived as safe, trustworthy, and supportive spaces where learning can occur through sharing with others, being valued, and supported (Berger et al., 2011; Abramowski & Sorondo, 2022). The major challenge lies in highlighting the role of key actors, such as teachers and classmates, in creating conditions of well-being, engagement, and connection with school, which has been described as attachment in the classroom or school attachment (Bergin & Bergin, 2009). The acknowledgment of the importance of affectionate and secure relationships that should emerge and develop in the educational context has been a focus of attention in educational research, as what is observed, in some cases, is an expansion of difficulties in managing positive dimensions in interpersonal relationships in the presence of multiple conflicts and negative interactions that distance the student from school as a safe and trustworthy space (Fernández-Menor, 2023).

Interpersonal relationships are conceived as direct exchanges between individuals who, according to a common purpose, such as learning in school, establish a dynamic balance of both positive and negative dimensions. This dynamic balance involves beliefs, motivations, and expectations about the established relationship and the achievement of its joint purpose (Buhrmester & Furman, 1990). According to the quality of interpersonal relationships model proposed by Furman and Buhrmester (1992), positive dimensions such as the ability to enjoy others' company, develop intimate trust, receive emotional support and approval from others, be satisfied with the relationship, receive instrumental help, and perceive

that the interpersonal relationship is based on affection, have significant effects on various aspects of socioemotional development and adaptation. The effects of these quality of interpersonal relationships' indicators are observed in cognitive, emotional, and motivational aspects; that influence personal and socioemotional development, thus promoting a better ability to cope with constant and daily relational challenges (Morales Domínguez & Gaviria Stewart, 2021).

Regarding the understanding of relational antecedents of learning, it is considered that, in the face of the challenges of learning activities in the classroom and school, positive dimensions in interactions resulting from support, approval, and satisfaction with school processes should be able to balance out negative aspects that may arise in the process, such as aggressive pursuit of power, positioning, and conflict among individuals in groups. Comparative studies show that, in this regard, the perception of dimensions associated with conflict and satisfaction is lower compared to the perceived level of conflict, in students at lower levels. This is further observed through methodologies that emphasize, on one hand, a collective view of group interaction, even in educational contexts that reflect a more individualistic approach to analysing educational processes and their achievement indicators. On the other hand, there is a more comprehensive perspective from a socioemotional development standpoint (Fabris et al., 2023). Through quality interpersonal relationships and through the trust they allow, resources and reinforcements promoting good academic performance are conveyed through pathways such as the reinforcement of self-efficacy and psychological safety (Carmeli et al., 2009; Bosman et al., 2021).

The study of the interpersonal dimension linked to academic performance describes socioeducational focuses of attention such as teacher-student interaction (Ramberg et al., 2019), and student-student interaction (Bradley-Dorsey et al., 2022). When positive aspects prevail in these interactions, processes such as student participation (Reyes et al., 2012), success in the implementation of cooperative methodologies such as peer tutoring (Leung, 2015), through which there is evidence of an increase in levels of school well-being and engagement with learning (Kiuru et al., 2020; Wang et al., 2019).

Studies analysing positive teacher-student and student-student relationships describe interactions that allow students to safely navigate the school academic experience (García-Rodríguez et al., 2022). This academic experience incorporates multiple challenges, related to the structural and curricular arrangements of educational establishments that, if not adaptively addressed, can overload students, and affect their mental health (Encina & Ávila, 2015).

Kiuru and colleagues (2020) highlight, in this regard, the importance of the quality of the teacher-student relationship, as it determines the provision of supportive behaviours, affective, and instrumental resources associated with a higher level of

engagement for both parties. When there is a positive relationship between teacher and student, the probability of success in learning activities increases (Longobordi et al., 2021). Support from the teacher, the use of approval/praise and disapproval as opposed to reprimand, as well as other displays of affection and closeness with the student, provide conditions to establish important interpersonal scaffolding contributing to student achievement and satisfaction. They also contribute to the development of a sense of belonging to the educational institution, essential for good performance within the school context (Gillen-O'Neel, 2021).

On the other hand, peer relationships, particularly those who are classmates, have also been assessed in terms of their influence on academic performance (Wang et al., 2018). In terms of identity and socioemotional development, classmates are especially important as they provide companionship, affection, intimacy, help strengthen self-esteem, offer personal validation, and emotional support, especially in the years of primary and secondary education (Furman & Buhrmester, 1992; Wentzel et al., 2021). However, they are also relevant in terms of their behavioural influence, as their actions due to affiliation and group influence have a significant impact on the development of school engagement, a key factor for good educational performance (Wang et al., 2018).

The evidence in the study of interpersonal relationships with peers, observed within the classroom and/or school context, shows that such interactions reflect processes of learning social behaviour, mainly linked to acceptance and modeling among peers (Gallardo et al., 2016). Thus, commitment, and enjoyment of the school experience, which are key to motivation and academic success, are enhanced, nurtured, and enriched based on these prosocial processes of group acceptance (Kingery et al., 2011; Wentzel et al., 2021).

Some descriptions from meta-analytical studies on the subject, for example, those carried out by Korpershoek and colleagues (2020), describe interpersonal relationships with peers as a prerequisite for the overall positive functioning of students in school. These authors highlight the benefits of being part of groups committed to a common purpose for achieving good academic performance. And they consider that, in those cases, the group arbitrates what is academically expected of the individual's behaviour in terms of their performance in the educational context (Korpershoek et al., 2020). Conversely, they describe functioning that can be negative when there is identification, influence, and modeling of social behaviours among peers linked to risk factors (such as alcohol consumption and other psychoactive substances), which end up being obstacles to good academic performance (Gremmen et al., 2019).

Given the evidence described up to this point, interpersonal relationships with classmates and teachers are crucial for strengthening learning processes and directly contribute to students' academic performance. Therefore, this study



aimed to examine the role and effect of interpersonal relationships with classmates and teachers on the academic performance of elementary and secondary school students. Additionally, this purpose focuses on positive dimensions that may help better understand which of them have a greater impact on students' academic performance at the primary (second cycle) and secondary (first and second cycle) education levels, considering the evidence that it is in these stages where the effect of interactions has a greater influence, and students demonstrate greater autonomy to provide self-report measures.

On this basis, two objectives were outlined: (1) to verify if the positive characteristics (companionship, intimate trust, emotional support, approval, satisfaction, instrumental support, and affection) of students' interpersonal relationships with teachers and classmates discriminate between different levels of their academic performance (Sufficient-Notable-Outstanding), and (2) to analyse which positive characteristics of students' interpersonal relationships with teachers and classmates have a greater power of discrimination or quantify better the differences between the different levels of academic performance.

Based on the background review, we aim to establish the hypothesis that certain positive dimensions in interpersonal relationships with teachers and classmates will have a greater capacity to discriminate between different levels of student academic performance.

## **METHOD**

### **Design**

According to the characteristics of the participants and the aim of the study, a cross-sectional ex post facto research design was followed, in which a phenomenon that has already occurred at a specific moment in time was studied, without continuity over time, and the variables under study were not manipulated. Likewise, an associative design was used, through discriminant analysis, to study which positive characteristics of students' interpersonal relationships discriminate the differences between different levels of academic performance. Finally, an online questionnaire methodology was applied for data collection.

### **Participants**

The sample selection was carried out through a multistage cluster sampling and random selection of groups, in schools that had multiple lines in grades from 5th grade to 12th grade. Cluster sampling was carried out by randomly selecting eight

(8) educational centers, according to the information declared in their institutional educational project. The number of participants was determined based on the number of enrolled students (44048), in the second and third levels of Basic Education (5th to 8th grade, corresponding to ages between 11 and 13 years old), and the first and second cycle of High School (1st to 4th year of High School, corresponding to ages between 14 and 17 years old), in public and private schools receiving state funding from the government of Chile. All establishments are in three key regions of the northern (Tarapacá) and central (Valparaíso and Metropolitan Region) macrozone of the country, selected according to their school performance and school coexistence indicators, during the years 2020-2021, reported in standardized national assessments (Ministry of Education MINEDUC, 2021). The sample was selected considering a sampling error of 3% and a confidence level of 96%, which finally constituted a total of 1273 students with voluntary participation in the study. All of them with distribution percentages by levels corresponding to 11.4% for the 5th grade level, 12.8% for 6th grade, 9.5% for 7th grade, 7.8% for 8th grade, 14.5% for the first level of high school, 16.1% for the second level of high school, 16.6% for the third level of high school, and 11.3% for the fourth and last level of high school. The mean age was 14.2 years (SD= 2.43; range 10-19); 47.5% (n=605) female, 48% (n=611) male, and 4.5% (n=57) non-binary.

## Instruments

*Quality of Interpersonal Relationships Scale:* This scale is an adapted version for Chilean school population by Sandoval-Cartes and Berger (2016), derived from the original version Network of Relationships Inventory – Relationship Quality, specifically the NRI-Social Provisions Version (NRI-SPV) (Furman & Buhrmester, 1985) and NRI-RQV (Furman & Buhrmester, 2009) versions. The NRI-RQV questionnaire consists of 30 items, distributed into ten subscales (five related to positive characteristics and five to negative characteristics, with three items per scale (companionship, intimate trust, emotional support, approval, satisfaction, conflict, criticism, pressure, exclusion, and dominance). In the case of the NRI-SPV questionnaire, six items from two of the ten subscales were incorporated. The two selected subscales correspond to positive characteristics of instrumental support and affection. The scale adapted for this study consists of a total of 36 items. This instrument simultaneously evaluates each dimension in the relationship with different significant individuals within the individual's environment (in this case, classmates and teachers) with a scoring from 1 (never or not at all) to 5 (always or excessively). The reliability indices reported in the original study for the scales range from acceptable to good ( $\alpha=.69$  to  $.93$ ).

Considering the above, in the present study, we worked with the two scales of positive interpersonal relationships, one for classmates and another for teachers. The reliability indices were as follows: positive interpersonal relationships scale with classmates, Cronbach's alpha ( $\alpha = .93$ ), composite reliability (CR = .96), McDonald's omega ( $\Omega = .93$ ), and average variance extracted (AVE = .60); positive interpersonal relationships scale with teachers ( $\alpha = .90$ , CR = .94,  $\Omega = .90$ , and AVE = .47).

To determine the validity of the scales used in our study, we used goodness-of-fit indices described in Table 1, resulting from confirmatory factor analyses. As we can observe, although an optimal model is not presented, the fit indices approximate the desirable values.

**Table 1**

*Goodness-of-fit indices of the proposed model, Quality of Relationships Scale, adapted version for Chilean school population by Sandoval-Cartes (2016)*

Model (7 related factors)	$\chi^2$	$\chi^2/df$	GFI	IFI	TLI	CFI	RMSR	RMSEA
Classmates' subscale	4664.30	10.27	.82	.80	.80	.80	.06	.12
Teachers' subscale	3953.28	7.18	.85	.77	.75	.77	.07	.11

Notes.  $\chi^2$  = Chi-square statistic;  $\chi^2/df$  = Chi-square divided by degrees of freedom; GFI = Goodness-of-fit index; IFI = Incremental fit index; TLI = Tucker–Lewis index; CFI = Comparative fit index; RMSR = Root mean square residual; RMSEA = Root mean square error of approximation.

*Academic performance* was estimated as the observed variable, resulting from the student's grade point average obtained during the last period of the year prior to data collection. This data was reported by the student. These variable reports numerical information with ranges from 1.0 to 7.0 with a maximum of one decimal place. It corresponds to the single numeric scale system used for reporting academic performance at the national level. In this scale, the value of 1.0 corresponds to the minimum performance obtained, the value of 4.0 corresponds to the minimum passing grade, and the value of 7.0 corresponds to the maximum achievable grade.

## Procedure

We followed the ethical guidelines of the American Psychological Association (2010) regarding informed consent from parents or guardians, due to the participants' minority status, and assent from the students for their participation. First, we contacted the schools to explain the study's objectives and request authorization to administer the questionnaires and obtain the grades. The questionnaire was administered during school hours online, using the SurveyMonkey platform, with a duration of about 20 minutes, in an appropriate climate and without distractions, guided by technical support personnel specifically trained for this study. Additionally, anonymity in responses, confidentiality of obtained data, and their exclusive use for research purposes were ensured. The platform settings required each question to be mandatory to prevent leaving questions unanswered and to allow progress in the instrument application. Students who entered their registration but did not want to answer the instrument could exit the application whenever they wished. Under these conditions, a total of 1672 students were registered. Of this number, only 1273 responded to the entire instrument. The remaining 399 records corresponded to those where the student did not want to continue responding to the instrument and abandoned the application. This situation of abandonment of the response process occurred early at the beginning of the survey in most cases. Also included in the records left out of the sample are cases with complete responses but were discarded for not meeting the attentional control criterion in responses. This attentional control criterion corresponds to the introduction of items randomly within the instrument, for which the person had to be alert and not respond in a stereotypical manner (e.g., "Leave this question unanswered. Do not select any response"). Attentional control items were introduced to obtain a partial indicator of data quality, by analysing if the participants were alert during the survey and read the questions before responding. Attentional control items are often used to determine if respondents are answering consciously, are engaged, and thus to mitigate biases during data analysis.

## Data analysis

Initially, reliability analyses (Cronbach's Alpha, Composite Reliability, McDonald's Omega, and Extracted Mean Variance) and confirmatory analysis of the instrument are performed to determine if its conceptual structure, as described in the original studies, adequately fits the data.

Subsequently, three statistical analyses were conducted in the study: (1) ANOVA with partial eta squared effect size test; (2) discriminant analysis to examine which

positive characteristics of students' interpersonal relationships with teachers and classmates discriminate between different levels of their academic performance (Sufficient-Notable-Outstanding). In this discriminant analysis, Academic Performance was included as the dependent variable, grouped into different levels according to the following grade intervals obtained by students: between 3 - 4.90 sufficient level of academic performance, between 5 - 5.90 notable level of academic performance, and between 6 - 7 outstanding level of performance. The grade report corresponds to the educational period in which remote schooling activities were conducted due to the health provisions associated with the COVID-19 pandemic.

Based on this result, the positive subscales of the Scale of Quality of Relationships, adapted version for Chilean school population by Sandoval-Cartes and Berger (2016), were included as independent and predictive variables: 1. Quality of relationships with teacher: companionship (COT); intimate trust (ITT); satisfaction (SAT); emotional support (EST); approval (APT); instrumental support (IST); affection (AFT). 2. Quality of relationships with classmates: companionship (COC); intimate trust (ITC); satisfaction (SAC); emotional support (ESC); approval (APC); instrumental support (ISC); affection (AFC).

Assumptions of linearity and normal distribution were considered for conducting the discriminant analysis. The data were subjected to the Kolmogorov-Smirnov test to analyse normal distribution, revealing  $p > .05$  and normality for all observed variables. Similarly, the  $p$ -value  $> .05$  obtained in the Box's M test demonstrated the equality of covariance matrices across groups. (3) To complement the discriminant analysis with other multivariate data analysis tests, a multinomial logistic regression analysis was conducted, calculating the odds ratios. In these analyses, academic performance grouped into three levels (Sufficient, Notable, and Outstanding) was included as the prediction variable, and the positive characteristics of students' interpersonal relationships with teachers and classmates were included as predictor variables.

The statistical analyses were conducted using the SPSS version 21.0 software for PC and the Free JASP.

## RESULTS

### Positive interpersonal relationships with teachers predicting performance level: Discriminant analysis

Table 2 displays the means and standard deviations of each of the positive subscales of the Scale of Quality of Relationships with teachers, based on different performance levels. Students with an outstanding performance level obtain higher average scores than the notable level group and the sufficient level group in all subscales. On the other hand, the sufficient level group obtains higher scores than the notable level group in all positive relationships, except for emotional support (AEP) and instrumental support (AIP).

**Table 2**

*ANOVA Test Results, Means, and Standard Deviations of Positive Subscales of the Scale of Quality of Relationships with teachers based on Different Performance Levels*

Positive Subscales	Academic Performance Levels			ANOVA		
	Sufficient <i>M(SD)</i>	Notable <i>M(SD)</i>	Outstanding <i>M(SD)</i>	F	p	$\eta^2$ $p^*$
COT	2.51 (0.98)	2.45 (0.99)	2.58 (0.97)	2.049	.129	.003
ITT	1.47 (0.68)	1.47 (0.73)	1.58 (0.76)	2.906	.055	.005
SAT	2.98 (1.07)	2.95 (1.15)	3.23 (1.11)	8.081	.000	.013
EST	1.73 (0.82)	1.77 (0.92)	1.98 (1.02)	6.237	.002	.010
APT	2.30 (1.05)	2.22 (1.00)	2.54 (1.07)	10.99	.000	.017
IST	3.15 (1.06)	3.21 (1.09)	3.49 (1.00)	10.47	.000	.017
AFT	2.93 (0.98)	2.88 (1.11)	3.17 (1.07)	8.395	.000	.013

*Note.* Quality of relationships with teachers: Companionship (COT); intimate trust (ITT); satisfaction (SAT); emotional support (EST); approval (APT); instrumental support (IST); affection (AFT).

\*Partial eta squared effect size test: if  $0.06 \leq \eta^2 < .14$ , the effect is moderate; and if  $\eta^2 \geq .14$ , the effect is strong.

Next, the possible differences between the means of the three performance levels were examined regarding scores on the positive subscales of the Scale of Quality of Relationships with teachers. An analysis of variance (ANOVA) was conducted, revealing significant differences between the three performance levels for the following subscales: satisfaction (SAT) (Wilks  $\lambda = .99$ ,  $F = 8.08$ ,  $p < .001$ ,  $\eta^2 =$

.13); emotional support (EST) (Wilks  $\lambda = .99$ ,  $F = 6.237$ ,  $p < .001$ ,  $\eta^2 = .10$ ); approval (APT) (Wilks  $\lambda = .98$ ,  $F = 10.993$ ,  $p < .001$ ,  $\eta^2 = .17$ ); instrumental support (IST) (Wilks  $\lambda = .98$ ,  $F = 10.477$ ,  $p < .001$ ,  $\eta^2 = .17$ ); affection (AFT) (Wilks  $\lambda = .98$ ,  $F = 8.395$ ,  $p < .001$ ,  $\eta^2 = .13$ ).

Once differences between the means of the three groups of academic performance levels were demonstrated, the discriminant analysis was used to analyse which positive subscales of the Scale of Quality of Relationships with teachers explain these differences to a greater extent. Table 3 shows the structure matrix created in the discriminant analysis. The maximum number of discriminant functions or linear combinations is one less than the number of groups assigned to the dependent variable. Which function has the highest discriminatory power, and will we use to interpret the data? The analysis of discriminant functions indicates that Function 1 has the highest discriminatory power among the three performance levels.

**Table 3**

*Structure Matrix. Variables ordered by the size of the correlation with the discriminant function*

	Functions	
	Function 1	Function 2
Approval (APT)	0.85*	0.45
Instrumental Support (IST)	0.84*	-0.21
Affection (AFT)	0.75*	0.28
Satisfaction (SAT)	0.74*	0.21
Emotional Support (EST)	0.65*	-0.13

*Note.* \* Greater absolute correlation between each variable and the discriminant function.

Function 1 explains a higher percentage of variance than the other functions, shows a higher canonical correlation and distance between discriminated groups (Wilks' Lambda closer to 0). Additionally, the Chi-square analysis presents the highest level of significance. Function 1 (% of variance= 92.3, canonical correlation=.153, Wilks'  $\lambda$ : .97,  $F = 31.706$ ,  $df=14$ ,  $p = .004$ ). Therefore, according to Function 1, the variables with the highest predictive capacity are: approval (APT), instrumental support (IST), and affection (AFT). In essence, students with outstanding performance level would be characterized primarily by the approval of the teacher, instrumental support, and the affection provided by the teacher.

In Table 4, it is observed that the discriminant canonical function correctly classifies 34.2% of sufficient level students, 27% of notable level, and 50.1% of outstanding level. Average gains in prediction are higher than the 33% we would guess by chance in the sufficient and outstanding levels. These percentages indicate that these dimensions of positive interpersonal relationships with teachers mainly help us discriminate among outstanding level students.

**Table 4**  
*Classification results using the discriminant function*

		Predicted membership group		
		Sufficient	Notable	Outstanding
%	Academic Performance			
	Sufficient	34.2	30.1	35.6
	Notable	35.5	27.0	37.5
	Outstanding	26.6	23.3	50.1

Finally, the multinomial regression analysis showed satisfactory fit ( $\chi^2 = 31.833(14)$ ,  $p = .004$ ;  $R$  Nagelkerke = .033) allowing correct classification of 70.5% of cases. Specifically, for the model outcome with the sufficient reference category, parameter estimates reveal that instrumental support from teachers (Wald = 3.201,  $p = .044$ ) is significantly and directly associated with outstanding performance level. The model's OR estimates inform that the probability of having an outstanding level is 1.4 times higher in students with instrumental support from teachers. For the model outcome with the notable reference category, parameter estimates reveal that teacher approval (Wald = 3.902,  $p = .048$ ) is significantly and directly associated with outstanding performance level. The model's OR estimates inform that the probability of having an outstanding level is 1.2 times higher in students with teacher approval.

### Positive interpersonal relationships with classmates predicting performance level: Discriminant analysis

In Table 5, the means and standard deviations of each of the positive subscales of the Scale of Quality of Relationships with classmates are observed, based on different performance levels. Students with an outstanding performance level obtain higher average scores than the notable level group and the sufficient level group in all subscales. On the other hand, the sufficient level group obtains higher



scores than the notable level group in all positive relationships, except for emotional support (ESC) and affection (AFC).

**Table 5**

*ANOVA Test Results, Means, and Standard Deviations of each of the positive subscales of the Scale of Quality of Relationships with classmates based on Different Performance Levels*

Positive Subscales	Academic Performance Levels			ANOVA Test		
	Sufficient <i>M(SD)</i>	Notable <i>M(SD)</i>	Outstanding <i>M(SD)</i>	<i>F</i>	<i>p</i>	$\eta^2 p^*$
COC	2.81 (1.00)	2.73 (1.07)	3.06 (1.07)	10.86	.000	.017
ITC	1.66 (0.95)	1.59 (0.86)	1.78 (0.97)	4.634	.010	.007
SAC	2.89 (1.09)	2.82 (1.19)	3.19 (1.16)	12.48	.000	.020
ESC	1.72 (0.94)	1.75 (0.95)	1.92 (1.02)	3.810	.022	.006
APC	2.15 (1.01)	2.09 (1.01)	2.42 (1.05)	11.83	.000	.019
ISC	2.62 (1.14)	2.55 (1.02)	2.82 (1.03)	7.903	.000	.012
AFC	2.48 (1.13)	2.49 (1.08)	2.77 (1.08)	8.782	.000	.014

*Note.* Quality of relationships with classmates: Companionship (COC); intimate trust (CIC); satisfaction (SAC); emotional support (AEC); approval (APC); instrumental support (AIC); affection (AFC).

\*Partial eta squared effect size test: if  $.06 \leq \eta^2 < .14$ , the effect is moderate; and if  $\eta^2 \geq .14$ , the effect is strong.

The analysis of variance (ANOVA) found significant differences between the three performance levels for all subscales: companionship (COC) (Wilks'  $\lambda = .98$ ,  $F = 10.863$ ,  $p < .001$ ,  $\eta^2 = .17$ ); intimate trust (ITC) (Wilks'  $\lambda = .99$ ,  $F = 4.634$ ,  $p = .010$ ,  $\eta^2 = .07$ ); satisfaction (SAC) (Wilks'  $\lambda = .98$ ,  $F = 12.483$ ,  $p < .001$ ,  $\eta^2 = .20$ ); emotional support (ESC) (Wilks'  $\lambda = .99$ ,  $F = 3.810$ ,  $p = .022$ ,  $\eta^2 = .06$ ); approval (APC) (Wilks'  $\lambda = .98$ ,  $F = 11.833$ ,  $p < .001$ ,  $\eta^2 = .19$ ); instrumental support (ISC) (Wilks'  $\lambda = .98$ ,  $F = 7.903$ ,  $p < .001$ ,  $\eta^2 = .12$ ); affection (AFC) (Wilks'  $\lambda = .98$ ,  $F = 8.782$ ,  $p < .001$ ,  $\eta^2 = .14$ ). Once the existence of differences between the means of the three groups of academic performance levels was demonstrated, the discriminant analysis was conducted, indicating that Function 1 has the highest discriminatory power among the three performance levels (% of variance= 93.8, canonical correlation= .161, Wilks'  $\lambda: .97$ ,  $F = 35.096$ ,  $df = 14$ ,  $p = .001$ ).

As shown in Table 6, according to Function 1, the variables with the highest predictive capacity are: satisfaction (SAC), approval (APC), and companionship (COC). In essence, students with an outstanding performance level would be

characterized primarily by satisfaction, approval, and enjoyment of the time spent in the company of their classmates.

**Table 6**

*Structure Matrix. Variables ordered by the size of the correlation with the discriminant function*

	Functions	
	Function 1	Function 2
Satisfaction (SAC)	0.86*	0.17
Approval (APC)	0.84*	0.19
Companionship (COC)	0.80*	0.12
Affection (AFC)	0.71*	0.47
Instrumental Support (ISC)	0.68*	-0.04

*Note.* \*Greater absolute correlation between each variable and the discriminant function.

Finally, in Table 7, it is observed that the discriminant canonical function correctly classifies 30.1% of sufficient level students, 41% of notable level, and 48.2% of outstanding level. Average gains in prediction are higher than the 33% we would guess by chance in the notable and outstanding performance levels. These percentages indicate that these dimensions of positive interpersonal relationships with classmates mainly help us discriminate between notable and outstanding level students.

**Table 7**

*Classification results using the discriminant function*

	Academic Performance	Predicted membership group		
		Sufficient	Notable	Outstanding
%	Sufficient	30.1	37.0	32.9
	Notable	25.1	41.0	33.9
	Outstanding	20.8	31.0	48.2

Finally, the multinomial regression analysis showed satisfactory fit ( $\chi^2 = 35.448(14)$ ,  $p = .001$ ;  $R$  Nagelkerke = .036), allowing correct classification of 70.7% of cases. Specifically, for the model outcome with the notable reference category, parameter estimates reveal that approval from classmates (Wald = 4.175,  $p = .041$ ) is significantly and directly associated with outstanding performance level. The model's OR estimates inform that the probability of having an outstanding level is 1.3 times higher in students with higher scores in the variable of classmates' approval.

## DISCUSSION AND CONCLUSIONS

The objectives of this study focused on the discriminant analysis of positive characteristics (companionship, intimate trust, emotional support, approval, satisfaction, instrumental support, and affection) in the interpersonal relationships of students with teachers and classmates, based on different levels of academic performance (Sufficient-Notable-Outstanding). Likewise, it aimed to identify which of these characteristics showed greater discriminatory power or quantification of differences between academic performance levels.

After conducting descriptive and multivariate analyses (using discriminant analysis and multinomial logistic regression, calculating odds ratios) to classify and establish the distribution probabilities of positive dimensions in the relationship with teachers and peers, based on levels of student academic performance, the results obtained are consistent with previous empirical evidence. This prior evidence indicates the relevance of positive interpersonal relationship dimensions with educational actors (particularly peers and teachers) in relation to academic performance (Froiland et al., 2019; Kiuru et al., 2020; Leung et al., 2021; MacCann et al., 2020). From the results obtained, it can be specifically distinguished that the significant relationship of academic performance with positive dimensions of interpersonal relationships related to providing support, affection, containment, enjoying the company of others, trusting others, and being satisfied and approving of the conditions with which we relate to others, allows for emphasis on certain socio-emotional competencies that are not only desirable within teaching and learning processes but are systematically reinforced pedagogically in daily schoolwork. The dimensions found can be linked to intentional strategies within curricular frameworks such as those of the Chilean educational system (Ministry of Education, Curriculum and Evaluation Unit, [UCE for its acronym in Spanish], 2021), making some of these strategies, such as collaborative teamwork, mediations, tutorials, and others, which inherently involve the dimensions highlighted by the study, validated, and gain greater relevance within educational work (Alzahrani et al., 2019).

Positive dimensions with peers and teachers thus constitute a specific focus of schoolwork and are part of the repertoire of expected, reinforced, and reflected values and behaviours within regular school practices.

Based on our results and the contrast with previous evidence, we can specifically consider, regarding the specific dimensions of positive interpersonal relationships (satisfaction, approval, companionship, and affection in the case of peers, and approval, instrumental support, satisfaction, and emotional support in the case of teachers), that these dimensions primarily promote supportive relationships that satisfy students' basic psychological and social needs (Froiland et al., 2019). When these needs are met, students feel connected to their teachers and peers, reinforcing and promoting socially appropriate behaviours and engagement processes with learning and learning activity within a positive classroom climate (Ahn et al., 2021).

Considering the results found, we highlight the fact that student academic performance is benefited when relationships with peers and teachers are particularly characterized by three specific aspects: satisfaction with relationships, perception of approval, and provision of support. These aspects are relevant insofar as they energize the bonds themselves, framing a social dimension of performance that helps better understand that academic achievement depends not only on individual psychological and cognitive factors but also on socio-emotional ones (Vera-Sagredo et al., 2021).

Regarding the relationship with teachers, the social and instrumental support they offer to their students, which constitutes one of the significant results of the study, can be associated with intentional pedagogical objectives, considering that in their teacher training these competencies are highlighted as desirable within pedagogical practices (Rubio-González and Cuadra-Martínez, 2022). As perceived support and satisfaction from and towards the figure of the teacher increase, levels of psychological security and tranquility increase, leading to better concentration on tasks when learning (Ahn et al., 2021).

According to Strati and colleagues (2017), the instrumental support of teachers is positively associated with students' levels of engagement in learning activities since resources are provided that facilitate the development of mental and behavioural actions that facilitate learning and are reflected in performance, decreasing the likelihood that students feel incapable of evaluatively addressing the effective demonstration of what they have learned.

Approval emerges as a relevant positive dimension both with teachers and peers when its discriminatory role on student academic outcomes is analysed. Specialized literature highlights that the approval and acceptance offered by these close figures in the classroom have motivational effects that enhance the learning process (Kindermann, 2016). This author describes the influence of other significant people in academic activities and emphasizes a motivational pathway

and a sense of belonging to the school, through which approval, satisfaction, and enjoyment of the relationship with others within the classroom contribute to academic performance. It is because of this positive perception of being accepted and approved, students increase their enjoyment and motivation to attend school, and it is this sense of positive connection with the school and its reference group that promotes situations, actions, and processes through which the performance conditions of students are improved, since they increase their attitude of openness to better use learning opportunities (Eisenberg et al., 2003).

In particular, the dimensions found in the relationship with teachers (approval, instrumental support, affection, satisfaction, and emotional support), which have greater discriminatory capacity in the different levels of academic performance, especially at the outstanding level, become relevant insofar as they highlight focal points in teacher-student interactions. Therefore, they should be included in the curricula of pedagogy programs as a fundamental part of the teacher training process, considering their contribution to improving academic performance through interpersonal interaction (García-Vila et al., 2022). Moreover, they contribute to the promotion of positive and nurturing school climates through the expression of socio-emotional attitudes and resources that provide learning opportunities in warm and comfortable environments for all participants in these processes. The student perception that highlights affective elements, satisfaction, and support in the relationship with their peers within the learning process, in turn, increases the likelihood that the classroom climate is perceived as a motivating stimulus for student engagement with school and their commitment to it, through which this commitment is key to forming safe environments that foster learning and achievement (Wang et al., 2018).

## Limitations

The study presented several limitations, with the most significant being the use of self-reports as the method of data collection. Regarding self-reports for evaluating interpersonal relationships, it is a measure subject to a specific and subjective perception of the students. Caution must be exercised with the Quality of Relationships Scale regarding its validity for generalizing results, as it does not present an optimal model, although the fit indices approximate desirable values. Additionally, a limitation is perceived in that the grades obtained by students during the period preceding data collection correspond to educational processes developed during the period of remote education due to the COVID-19 pandemic, implying that due to various connectivity and socio-sanitary conditions, certain criteria for attendance and evaluation were flexibilized globally, affecting the reported student academic performance for this period. Therefore, academic

performance in this study reflects distributions biased towards passing grades. There was practically no academic failure, considering the total average obtained in the subjects corresponding to the period preceding data collection. Several countries, including Chile, during the pandemic established curricular prioritization criteria and flexibilization of evaluative criteria which are likely to be influencing factors in the reported academic results, which must be taken into consideration considering the obtained results (Leiva-Guerrero et al., 2022). To further analyse this result and limitation, a future line of research that allows for the continuation of this study should consider replicating it in a context of normal class development, without restrictions such as those experienced during the pandemic period.

Other limitations stem from the cross-sectional design, which hinders making further inferences about the relationship between study variables. Lastly, it is important to note that the sample is restricted to three Chilean regions that met the selection indicators according to the study hypothesis, but it is not representative given the coverage scope of the present study. Therefore, it would be optimal to replicate the study by incorporating a broader, nationally representative sample.

## Conclusions

The positive dimensions of interpersonal relationships with classmates and teachers, constitute educational dimensions that are intentionally social and curricular, aimed at contributing to school coexistence and learning; thus, their contribution to academic performance seems highly pertinent through these channels, in light of evidence from models that highlight them as such (Burack et al., 2013; Cerda et al., 2018; Díaz-Vargas et al., 2023; Quílez-Robres et al., 2021). In this sense, the study contributes in a novel way to the specific identification of positive dimensions relevant in initial teacher training processes and continuous training of teachers. These dimensions can enable critical reflection on adjustments and decisions regarding socio-emotional engagement between students and between students and teachers. Promoting this reflection within the framework of policies aimed at strengthening the teaching profession (especially in Chile) promotes giving greater importance to those positive aspects that configure good practices of educational interaction and strengthen teaching-learning processes.

The results of this study allow, on one hand, to recognize aspects favourable to the educational process that occur through interpersonal relationships in the classroom, but also highlight aspects that are part of the repertoire of expected attitudes and practices within educational interactions contributing to achievement and performance. In this regard, they open a window of optimism to emphasize that, despite the attention that school violence and conflict may attract due to their emergence and critical level regarding the decline in academic performance both

nationally and internationally, a positive dimension of interpersonal relationships in school remains essential and carries greater weight, worthy of highlighting, promoting, and cultivating. Therefore, we consider that these findings may be of interest to education faculties and teacher training, allowing teachers in training to reflect on the fact that their positive interactions and attitudes within their teaching practices are valuable and essential for the learning process and educational achievement of their students.

## **ACKNOWLEDGMENTS**

The authors acknowledge the collaboration of the school communities and students in the study. This study was funded by the National Agency for Research and Development (ANID) of Chile, through project INITIAL FONDECYT No. 11200088 entitled "Relationships between school stress and the quality of interpersonal relationships with psychological well-being and academic performance: A comprehensive school experience in Chilean schools".

## REFERENCES

- Abramowski, A., & Sorondo, J. (2022). El enfoque socioemocional en la agenda educativa de la pandemia. Entre lo terapéutico y lo moral. *Revista del IICE*, (51). <https://doi.org/10.34096/iice.n51.10739>
- Ahn, I., Chiu, M. M., & Patrick, H. (2021). Connecting teacher and student motivation: student-perceived teacher need-supportive practices and student need satisfaction. *Contemporary Educational Psychology*, 64, Artículo 101950. <https://doi.org/10.1016/j.cedpsych.2021.101950>
- Alzahrani, M., Alharbi, M., & Alodwani, A. (2019). The effect of social-emotional competence on children academic achievement and behavioral development. *International Education Studies*, 12(12), 141-149. <https://doi.org/10.5539/ies.v12n12p141>
- Berger, C., Alcalay, L., Torretti, A., & Milicic, N. (2011). Socio-emotional well-being and academic achievement: evidence from a multilevel approach. *Psicologia: reflexao e critica*, 24, 344-351. <https://doi.org/10.1590/S0102-79722011000200016>
- Bergin, C., & Bergin, D. (2009). Attachment in the classroom. *Educational Psychology Review*, 21, 141-170. <https://doi.org/10.1007/s10648-009-9104-0>
- Bosman, R. J., Zee, M., de Jong, P. F., & Koomen, H. M. (2021). Using relationship-focused reflection to improve teacher–child relationships and teachers’ student-specific self-efficacy. *Journal of School Psychology*, 87, 28-47. <https://doi.org/10.1016/j.jsp.2021.06.001>
- Bradley-Dorsey, M., Beck, D., Maranto, R., Tran, B., Clark, T., & Liu, F. (2022). Is cyber like in-person? Relationships between student-student, student-teacher interaction and student achievement in cyber schools. *Computers and Education Open*, 3, Artículo 100101. <https://doi.org/10.1016/j.caeo.2022.100101>
- Buhrmester, D., & Furman, W. (1990). Perceptions of sibling relationships during middle childhood and adolescence. *Child Development*, 61(5), 1387-1398. <https://doi.org/10.1111/j.1467-8624.1990.tb02869.x>
- Burack, J. A., D’Arrisso, A., Ponizovsky, V., Troop-Gordon, W., Mandour, T., Tootoosis, C., & Fryberg, S. (2013). ‘Friends and grades’: peer preference and attachment predict academic success among Naskapi youth. *School Psychology International*, 34(4), 371-386. <https://doi.org/10.1177/0143034312446888>
- Carmeli, A., Brueller, D., & Dutton, J. E. (2009). Learning behaviours in the workplace: the role of high-quality interpersonal relationships and psychological safety. *Systems Research and Behavioral Science: The Official Journal of the International Federation for Systems Research*, 26(1), 81-98. <http://doi.org/10.1002/sres.932>
- Castrillón, O. D., Sarache, W., & Ruiz-Herrera, S. (2020). Predicción del rendimiento académico por medio de técnicas de inteligencia artificial. *Formación*



*Universitaria*, 13(1), 93-102. <http://dx.doi.org/10.4067/S0718-50062020000100093>

- Cerda, G. A., Salazar, Y. S., Guzmán, C. E., & Narváez, G. (2018). Impact of the school coexistence on academic performance according to perception of typically developing and special educational needs students. *Journal of Educational Psychology-Propósitos y Representaciones*, 6(1), 275-300. <http://dx.doi.org/10.20511/pyr2018.v6n1.194>
- de la Fuente Mella, H., Marzo Navarro, M., Berne Manero, C., Pedraja Iglesias, M., & González Huenuman, C. (2021). Análisis de los determinantes del rendimiento académico. El caso de Contador Auditor de la Pontificia Universidad Católica de Valparaíso. *Estudios Pedagógicos (Valdivia)*, 47(1), 469-482. <https://dx.doi.org/10.4067/S0718-07052021000100469>
- Díaz-Vargas, C., Tapia-Figueroa, A., Valdebenito-Villalobos, J., Gutiérrez-Echavarría, M. A., Acuña-Zuñiga, C. C., Parra, J., & Cigarroa, I. (2023). Academic performance according to school coexistence indices in students from public schools in the south of Chile. *Behavioral Sciences*, 13(2), 154.
- Eisenberg, M. E., Neumark-Sztainer, D., & Perry, C.L. (2003). Peer harassment, school connectedness, and academic achievement. *Journal of School Health*, 73(8), 311-316. <https://doi.org/10.1111/j.1746-1561.2003.tb06588.x>
- Encina Agurto, Y. J., & Ávila Muñoz, M. V. (2015). Validación de una escala de estrés cotidiano en escolares chilenos. *Revista de Psicología*, 33(2), 363-385. <https://bit.ly/3vwrF4m>
- Fabris, M. A., Roorda, D., & Longobardi, C. (2022). Student-teacher relationship quality research: past, present and future. *Frontiers in Education*, 7, Artículo 1049115. <https://doi.org/10.3389/educ.2022.1049115>
- Fernández-Menor, I. (2023). El enganche y sentido de pertenencia escolar en educación secundaria: conceptos, procesos y líneas de actuación. *Revista de Investigación en Educación*, 21(2), 156-171. <https://doi.org/10.35869/reined.v21i2.4597>
- Flores, G. D. L. C. (2023). Evaluación docente con enfoque formativo: el papel del acompañamiento entre pares. *Aula*, 29, 313-326. <https://doi.org/10.14201/aula202329313326>
- Froiland, J. M., Worrell, F. C., & Oh, H. (2019). Teacher–student relationships, psychological need satisfaction, and happiness among diverse students. *Psychology in the Schools*, 56(5), 856-870. <https://doi.org/10.1002/pits.22245>
- Furman, W., & Buhrmester, D. (1985). Children's perceptions of the personal relationships in their social networks. *Developmental Psychology*, 21(6), 1016–1024. <https://doi.org/10.1037/0012-1649.21.6.1016>

- Furman, W., & Buhrmester, D. (1992). Age and sex differences in perceptions of networks of personal relationships. *Child Development*, 63(1), 103-115. <https://doi.org/10.1111/j.1467-8624.1992.tb03599.x>
- Furman, W., & Buhrmester, D. (2009). Methods and measures: the network of relationships inventory: behavioral systems version. *International Journal of Behavioral Development*, 33(5), 470-478. <https://doi.org/10.1177/0165025409342634>
- García-Rodríguez, L., Redín, C. I., & Abaitua, C. R. (2022). Teacher-student attachment relationship, variables associated, and measurement: a systematic review. *Educational Research Review*, Artículo 100488. <https://doi.org/10.1016/j.edurev.2022.100488>
- Gallardo, L. O., Barrasa, A., & Guevara-Viejo, F. (2016). Positive peer relationships and academic achievement across early and midadolescence. *Social Behavior and Personality: an International Journal*, 44(10), 1637-1648. <http://dx.doi.org/10.2224/sbp.2016.44.10.xxx>
- Gillen-O'Neel, C. (2021). Sense of belonging and student engagement: a daily study of first- and continuing-generation college students. *Research in Higher Education*, 62, 45–71. <https://doi.org/10.1007/s11162-019-09570-y>
- Gremmen, M. C., Berger, C., Ryan, A. M., Steglich, C. E., Veenstra, R., & Dijkstra, J. K. (2019). Adolescents' friendships, academic achievement, and risk behaviors: same-behavior and cross-behavior selection and influence processes. *Child Development*, 90(2), 192-211. <https://doi.org/10.1111/cdev.13045>
- Kindermann T. A. (2016). Peer group influences on students' academic motivation. In K. Wentzel & G. Ramani (Eds.), *Handbook of social influences in school contexts* (pp. 31–47). Routledge.
- Kingery, J. N., Erdley, C. A., & Marshall, K. C. (2011). Peer acceptance and friendship as predictors of early adolescents' adjustment across the middle school transition. *Merrill-Palmer Quarterly* 57(3), 215-243. <https://bit.ly/3TAkPCV>
- Kiuru, N., Wang, M. T., Salmela-Aro, K., Kannas, L., Ahonen, T., & Hirvonen, R. (2020). Associations between adolescents' interpersonal relationships, school well-being, and academic achievement during educational transitions. *Journal of Youth and Adolescence*, 49, 1057-1072. <https://doi.org/10.1007/s10964-019-01184-y>
- Korpershoek, H., Canrinus, E. T., Fokkens-Bruinsma, M., & de Boer, H. (2020). The relationships between school belonging and students' motivational, social-emotional, behavioural, and academic outcomes in secondary education: a meta-analytic review. *Research Papers in Education*, 35(6), 641-680. <https://doi.org/10.1080/02671522.2019.1615116>
- Kutsyruba, B., Klinger, D. A., & Hussain, A. (2015). Relationships among school climate, school safety, and student achievement and well-being: a review of

- the literature. *Review of Education*, 3(2), 103-135. <https://doi.org/10.1002/rev3.3043>
- Leiva-Guerrero, M. V., Sanhueza-Mansilla, J., Soto-Calderón, I., & Muñoz-Lameles, M. E. (2022). Monitoreo de aprendizajes en escuelas públicas chilenas en contexto COVID-19. *Alteridad. Revista de Educación*, 17(1), 89-102. <https://doi.org/10.17163/alt.v17n1.2022.07>
- Leung, K. C. (2015). Preliminary empirical model of crucial determinants of best practice for peer tutoring on academic achievement. *Journal of Educational Psychology*, 107(2), 558–579. <https://doi.org/10.1037/a0037698>
- Leung, C., Leung, J. T., Kwok, S. Y., Hui, A., Lo, H., Tam, H. L., & Lai, S. (2021). Predictors to happiness in primary students: positive relationships or academic achievement. *Applied Research in Quality of Life*, 1-15. <https://doi.org/10.1007/s11482-021-09928-4>
- Longobardi, C., Settanni, M., Lin, S., & Fabris, M. A. (2021). Student–teacher relationship quality and prosocial behaviour: the mediating role of academic achievement and a positive attitude towards school. *British Journal of Educational Psychology*, 91(2), 547-562. <https://doi.org/10.1111/bjep.12378>
- MacCann, C., Jiang, Y., Brown, L. E., Double, K. S., Bucich, M., & Minbashian, A. (2020). Emotional intelligence predicts academic performance: a meta-analysis. *Psychological Bulletin*, 146(2), 150-186. <https://doi.org/10.1037/bul0000219>
- Mainhard, T., Oudman, S., Hornstra, L., Bosker, R. J., & Goetz, T. (2018). Student emotions in class: the relative importance of teachers and their interpersonal relations with students. *Learning and Instruction*, 53, 109-119. <https://doi.org/10.1016/j.learninstruc.2017.07.011>
- Ministerio de Educación Chile (MINEDUC), Unidad de Currículum y Evaluación (UCE). (2021). *Estrategias para el aprendizaje socioemocional desde el currículum nacional*. <https://bit.ly/3PHLyfF>
- Miranda-Zapata, E., Lara, L., & Saracostti, M. (2021). Modelización del efecto del compromiso escolar sobre el rendimiento escolar en cinco países de Iberoamérica. *Revista Iberoamericana de Diagnóstico y Evaluación-e Avaliação Psicológica*, 2(59), 151-161. <https://doi.org/10.21865/RIDEP59.2.12>
- Morales Domínguez, J. F., & Gaviria Stewart, E. (2021). *Redescubrir las relaciones interpersonales*. Editorial Sanz y Torres.
- Navarro, R. E. (2003). El rendimiento académico: concepto, investigación y desarrollo. *REICE. Revista Iberoamericana sobre Calidad, Eficacia y Cambio en Educación*, 1(2), 1-16. <https://bit.ly/4cBTgBP>
- Quílez-Robres, A., Moyano, N., & Cortés-Pascual, A. (2021). Motivational, emotional, and social factors explain academic achievement in children aged 6–12 years:





- a meta-analysis. *Education Sciences*, 11(9), 513. <https://doi.org/10.3390/educsci11090513>
- Ramberg, J., Låftman, S. B., Almquist, Y. B., & Modin, B. (2019). School effectiveness and students' perceptions of teacher caring: a multilevel study. *Improving Schools*, 22(1), 55-71. <https://doi.org/10.1177/1365480218764693>
- Reyes, M. R., Brackett, M. A., Rivers, S. E., White, M., & Salovey, P. (2012). Classroom emotional climate, student engagement, and academic achievement. *Journal of Educational Psychology*, 104(3), 700-712. <https://doi.org/10.1037/a0027268>
- Rubio-González, J. J., & Cuadra-Martínez, D. J. (2022). Teorías subjetivas respecto del apoyo percibido del profesor en estudiantes secundarios. *Revista de Estudios y Experiencias en Educación*, 21(47), 31-49. <https://dx.doi.org/10.21703/0718-5162202202102147002>
- Sandoval-Cartes, H. D., & Berger, C. (2016). *Vínculos de amistad entre alumnos con talento académico que participan en un programa de enriquecimiento extracurricular*. [Tesis de Magíster en Psicología Educacional, Pontificia Universidad Católica de Chile]. Pontificia Universidad Católica de Chile (Chile). <https://bit.ly/43Bahrl>
- Strati, A. D., Schmidt, J. A., & Maier, K. S. (2017). Perceived challenge, teacher support, and teacher obstruction as predictors of student engagement. *Journal of Educational Psychology*, 109(1), 131-147. <https://doi.org/10.1037/edu0000108>
- Travis, J., Kaszycki, A., Geden, M., & Bunde, J. (2020). Some stress is good stress: the challenge-hindrance framework, academic self-efficacy, and academic outcomes. *Journal of Educational Psychology*, 112(8), 1632-1643. <https://doi.org/10.1037/edu0000478>
- Van Mieghem, A., Verschueren, K., Petry, K., & Struyf, E. (2018). An analysis of research on inclusive education: a systematic search and meta review. *International Journal of Inclusive Education*, 1-15. <https://doi.org/10.1080/13603116.2018.1482012>
- Vera Sagredo, A., Cerda Etchepare, G., Aragón Mendizábal, E., & Pérez Wilson, C., (2021). Rendimiento académico y su relación con variables socioemocionales en estudiantes chilenos de contextos vulnerables. *Educación XX1*, 24(2), 375-398. <https://doi.org/10.5944/educXX1.28269>
- Wang, M. T., Kiuru, N., Degol, J. L., & Salmela-Aro, K. (2018). Friends, academic achievement, and school engagement during adolescence: a social network approach to peer influence and selection effects. *Learning and Instruction*, 58, 148-160. <https://doi.org/10.1016/j.learninstruc.2018.06.003>
- Wang, M.-T., Degol, J. L., & Henry, D. A. (2019). An integrative development-in-sociocultural-context model for children's engagement in learning. *American Psychologist*, 74, 1086-1102. <https://doi.org/10.1037/amp0000522>

- Wentzel, K. R., Jablansky, S., & Scalise, N. R. (2021). Peer social acceptance and academic achievement: a meta-analytic study. *Journal of Educational Psychology, 113*(1), 157–180. <https://doi.org/10.1037/edu0000468>
- Wentzel, K. R. (2022). Does anybody care? conceptualization and measurement within the contexts of teacher-student and peer relationships. *Educational Psychology Review, 34*(4), 1919-1954. <https://doi.org/10.1007/s10648-022-09702-4>



# School effectiveness and high reading achievement of Spanish students in PISA 2018: a machine learning approach

*Eficacia escolar y alto rendimiento del alumnado español en PISA 2018: un enfoque de machine learning*

Delia Arroyo Resino <sup>1</sup>   
Alexander Constante-Amores <sup>2\*</sup>   
María Castro <sup>1</sup>   
Enrique Navarro <sup>1</sup> 

<sup>1</sup> Universidad Complutense de Madrid, Spain

<sup>2</sup> Universidad Camilo José Cela, Spain

\* Corresponding author. E-mail: [israelalexander.constante@ucjc.edu](mailto:israelalexander.constante@ucjc.edu)

## Cómo referenciar este artículo/ How to reference this article:

Arroyo Resino, D., Constante-Amores, A., Castro, M., & Navarro, E. (2024) School effectiveness and high reading achievement of Spanish students in PISA 2018: a machine learning approach. *Educación XX1*, 27(2), 223-251. <https://doi.org/10.5944/educxx1.38634>

**Date received:** 14/10/2023

**Date accepted:** 01/02/2024

**Published online:** 28/06/2024

## ABSTRACT

In the last few decades, the analysis of school effectiveness has gained increasing importance in the field of education. This current research focuses on studying the factors of school effectiveness associated with high performance in reading comprehension. The sample is comprised of Spanish students who participated in PISA 2018. The dependent variable is high performance in reading comprehension, and a total of 159 predictors related to school effectiveness have been considered. The data were analyzed using the Random Forest algorithm and binary multilevel logistic regression. Among the key findings, it is highlighted

that the most important variables are process variables: enjoyment of reading and metacognition: evaluating credibility. Furthermore, the relative importance of context or input factors and process factors explains 41% and 38%, respectively, of the variance of the criterion variable. The final model (comprising both groups of factors) explains approximately 54% of reading success. In this model, the predictor that has the most significant effect is metacognition: evaluating credibility, which refers to the subject's ability to assess the quality and credibility of a text (for example, whether the information is valid, accurate, and impartial), with its effect being roughly double that of context or input variables. Among the main conclusions, it is highlighted that it is possible to increase the scarce number of high-performing students in the Spanish context through the development of educational policies that promote a love for reading and metacognitive capacity.

**Keywords:** PISA, high achievement, machine learning, school effectiveness

## RESUMEN

En las últimas décadas, el análisis de la eficacia escolar ha adquirido una creciente importancia en el ámbito educativo. La presente investigación se centra en estudiar los factores de eficacia escolar asociados al alto rendimiento en la comprensión lectora. La muestra se encuentra conformada por los estudiantes españoles que participaron en PISA 2018. La variable criterio es el alto rendimiento en comprensión lectora y se ha contado con un total de 159 predictores relacionados con la eficacia escolar. Los datos se han analizado con el algoritmo de Random Forest y regresión logística binaria multinivel. Entre los principales resultados se destaca que las variables más importantes son las variables de proceso: placer por la lectura y metacognición: evaluar la credibilidad. Además, se demuestra la importancia relativa que tienen los factores de contexto o entrada y proceso explicando un 41% y 38%, respectivamente, de la varianza de la variable criterio. El modelo final (formado por ambos grupos de factores) explica aproximadamente el 54% del éxito lector. En este modelo, el predictor que tiene un mayor efecto es la metacognición: evaluar la credibilidad, referido a la capacidad del sujeto para evaluar la calidad y credibilidad de un texto (por ejemplo, si la información es válida, precisa e imparcial), siendo su efecto aproximadamente el doble que el de las variables de contexto o entrada. Entre las principales conclusiones se destaca la posibilidad de aumentar el escaso número de estudiantes de alto rendimiento en el contexto español mediante el desarrollo de políticas educativas que fomenten el placer por la lectura y la capacidad metacognitiva.

**Palabras clave:** PISA, alto rendimiento, machine learning, eficacia escolar



## INTRODUCTION

School effectiveness is a standard issue in educational research (Creemers et al., 2022), to the extent that it is an area of study that has its own place in scientific literature and far from being an outdated tradition, it continues to be a fruitful and necessary field for reflection and research (Scheerens & Creemers, 2022).

Its origins date back to the Coleman Report (1966), which focused on the study of inequality in academic achievements and which highlights that the socio-economic context in educational results is of more significance than school variables (López-González et al., 2021). According to de la Orden et al. (1997), this phenomenon should be expressed by means of indicators that reflect the relationship between the achievements or results of the system and the goals and objectives set by this system. Therefore, school effectiveness does not only involve the level of performance attained by students, classes and individual educational centres (quality), but also the equitable distribution of learning outcomes among students with different background characteristics (equity) (Kyriakides et al., 2019); consequently, as indicated by Hu et al. (2021) it is fundamental to study the peculiarities of the top-performing group, in reference to the students who outperform the rest. Society, including national/state organisations and schools/teachers, should assume responsibility for offering learning opportunities and additional guidance to the more disadvantaged groups of students, in order to achieve equitable, high-quality education (Creemers et al., 2022). In this way, models of school effectiveness focus on studying the processes implemented by the educational centres that make a significant contribution to students' academic performance, as these are the basic criteria for judging educational effectiveness. Thus, the identification of educational factors associated with student performance is a key aspect in educational research into school effectiveness (Creemers et al., 2022; Murillo, 2007; Scheerens et al., 2013).

The results of international educational assessments, such the Programme for International Student Assessment (PISA), which assess the performance in competencies of students from different educational backgrounds, act as national indicators of effectiveness (Kyriakides et al., 2019). The questionnaires applied to students, families, teachers and head teachers have made it possible to conduct further in-depth research into school effectiveness, by analysing the school factors with the greatest effect extensively, accurately and rigorously. This may lead to the improvement of educational processes and policies in the different regions assessed (Murillo, 2007), a subject which has not yet been fully explored using this database (Kyriakides et al., 2019). Until now, school effectiveness has been studied by PISA from a dual perspective. Firstly, through research which analyses this phenomenon from the aspect of high and low levels of school effectiveness (Gamazo et al.,

2018 and Martínez-Abad et al., 2020). Secondly, through studies that focus on the most significant factors which influence performance in science by high- and low-performing students, such as the study by Hu et al. (2021) who used Creemers & Kyriakides' (2008) dynamic model of school effectiveness in an international assessment for the first time. However, as of today, there has been no analysis of the school effectiveness factors associated with high-performing students compared to other students, a subject of great interest in enabling strategies to be established to improve the quality of educational systems by increasing the percentages of this type of student.

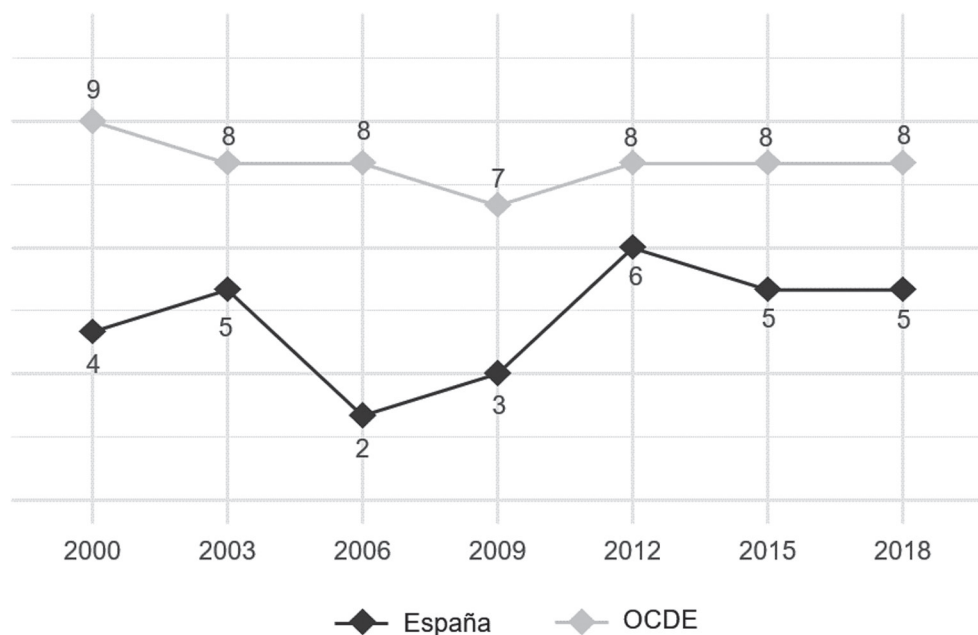
Of the three core competencies assessed triennially by PISA, reading comprehension is an essential tool in the educational field, as it allows students to access and understand reality by developing meaningful learning. Furthermore, it is an essential skill, as we constantly find ourselves producing and understanding texts; this is an everyday activity in the modern world and the basis of independent learning in the knowledge society (García et al., 2018; Molina, 2020).

In this sense, there seems to be a positive relationship between reading literacy and learning. García et al. (2018) establish a significative, positive correlation between the level of students' reading comprehension and their performance in four areas (Spanish Language, Mathematics, Social Sciences and Natural Sciences), which is not surprising, since reading skills are an essential tool for building meanings and knowledge (Gómez et al., 2014). Therefore, students with a low level of reading comprehension are usually low achievers since this competence directly affects learning (Viramontes et al., 2019).

In PISA 2018 there are six levels of reading comprehension, which consider students to be "high-performing" if they attain level 5 or 6. They are characterised as readers who can locate, organise and infer information, engage in critical reflection (level 5), make comparisons, fully understand texts, integrate information from different texts and even create abstract categories (level 6) (OECD, 2019). In Spain, the percentage of students in these "high performing" levels in 2018 was 5%, which is consistently below the average for OECD countries (8% in 2018), as shown in the following figure:

**Figure 1**

*Evolution of the percentage of high-performing students in reading in PISA 2018*



Source: Author's own compilation based on the database of the different PISA reports

Therefore, one of the main problems of the Spanish education system is that there are very few students at the higher levels in this competence. This is a genuine source of concern because it directly affects effectiveness and social equity, so consequently educational systems should be able to increase the percentage of students who attain these higher levels in order to achieve the maximum student performance (Gaviria, 2004).

### Effectiveness factors associated with reading performance

The Context, Input, Process, and Output (CIPO) model by Scheerens (1991) synthesises the traditional idea of school effectiveness. There is extensive literature (Gamazo et al., 2018; Martínez-Abad, et al., 2020; Murillo, 2007) that classifies the factors of school effectiveness most commonly associated with student performance into contextual or background factors (student characteristics, teacher characteristics, infrastructures, etc.), process factors (teacher performance in the classroom and tutorials, didactic methodology, etc.) and output factors (academic

performance). In turn, these factors can be divided into two levels: students and educational centres.

### ***Contextual or input factors***

Among the student contextual factors that are most closely related to high levels of performance in reading comprehension is a favourable socio-economic and cultural environment (Campos and Arantegui, 2022). The research by Franco et al. (2016) emphasises the importance for reading comprehension of the number of books at home, the texts used to perform schoolwork, and parental supervision and support during these tasks.

The variables of student gender and immigration background are also significant. Regarding the former, the research conducted by Frutos and Santaren (2020) reveals greater reading comprehension among female students than among male students, a pattern that is observable in all the PISA and PIRLS reports, although in PISA the gender gap will have narrowed in recent reports. In relation to the latter, this variable has a major impact on reading performance. Specifically, native-born students score higher in reading than first-generation immigrant students (immigrants born in other countries) (Cordero et al., 2013).

As regards the educational centre factors that are most commonly linked to high levels of performance in reading comprehension, school ownership is significant in the area of contextual variables. Asensio-Muñoz et al. (2018) state that it is this educational centre variable that has the closest relationship to reading comprehension performance and that students who come from socio-economically disadvantaged homes have a lower level of performance in this competence. Another important variable is having changed schools two or more times: these students display lower performance in reading compared to those who have not changed schools or who have done so only once (Gamazo et al., 2018).

### ***Process factors***

Among the process factors, the student's academic expectations are of significance (Garrido et al., 2020 and Hu et al., 2021). Students who expect to complete a university degree have a greater chance of being high performers in reading literacy. The research by Franco et al. (2016), as well as that by Herrera et al. (2017) indicate the importance of a positive reading self-concept, as this has a favourable impact on performance. Another variable that is related to academic success is metacognition (Wu et al., 2020). In this sense, greater student metacognitive knowledge leads to higher achievement in reading literacy in the PISA

assessment (Artelt and Schneider, 2015). Specifically, Qi (2021) indicates that out of the different metacognitive strategies, those related to the process of summarising texts are the most important. Another extremely important factor is the enjoyment of reading, as students who spend more time on this activity display a higher level of performance in this competence (Akande & Oyedapo, 2018; Molina, 2020).

Regarding the process factors related to the centre, one of the most important variables is the school environment (Linnakyla et al., 2004). Also of significance is the use of ICT, which plays a fundamental role in high levels of proficiency in reading comprehension, since we are currently in the midst of the age of technology and students use these tools to read, so this situation should be exploited to promote reading (Rivera, 2013). Furthermore, Avendaño and Martínez (2013) emphasise the importance of ICT in establishing new scenarios where students can take an innovative approach to texts and interact with them within the framework of the digital age, which aids the development of reading literacy. Finally, another variable which is also noteworthy is teacher feedback (Hu et al., 2021), which is beneficial when it is high-quality, equitable and timely.

Based on the foregoing, the general objective of this research consists of studying the factors (context or background and process) associated with a high level of performance in reading comprehension within the framework of PISA 2018 using the Spanish sample. To achieve this, we formulated the following specific objectives:

1. Identify the factors with the greatest influence on high levels of reading performance.
2. Determine the relative contribution of the factors with the most impact on the student's chances of attaining a high level of achievement in reading literacy, bearing the hierarchical data structure in mind (level 1: student and level 2; school).

## METHOD

A secondary analysis was conducted of the PISA 2018 international assessment data. Therefore, this is a quantitative study with a non-experimental design, based on cross-sectional data and limited to ex post facto research. It is worth mentioning that this research used a dual methodological strategy. Firstly, the Random Forest machine learning algorithm was used to conduct descriptive and exploratory analysis. Secondly, a predictive logistic model was run, bearing the hierarchical structure of the educational data in mind (level 1: student and level 2: school) (Lee, 2000).

## Muestra

This research used the PISA 2018 database provided by the OECD (<https://www.oecd.org/pisa/data/2018database/>). A total of 79 countries and approximately 600000 students aged between 15 and 16 years participated in the most recent survey. The study sample is composed of the Spanish students (35943) who participated in the most recent survey of the PISA international assessment, with an average age of 15.836 years (SD = 0.288). In this group of students, 49.957% are female and 50.043% are male. It should be borne in mind that 22265 students (64.7%) attend public educational centres/public centres, 9722 (28.3%) are at privately-owned, publicly funded schools and 2410 (7%) are at private centres, in 17 Autonomous Communities. In the preliminary phase of machine learning, the entire dataset was utilized. Subsequently, during the multilevel logistic regression stage, schools with 20 or fewer students were omitted, resulting in a refined sample of 34,411 students across 976 schools.

## Variables

The response variable in the study is Reading Comprehension in PISA 2018, which has been dichotomised (0 = average and low level of performance) and 1 = high level of performance) (see Table 1). A student is considered to be high-performing when they achieve level 5 or 6 in reading literacy in PISA 2018 (OECD, 2019).

**Table 1**

*Number of high-performing Spanish students in reading literacy in PISA 2018*

High level of reading performance	N	%
Yes	1797	5
No	34146	95

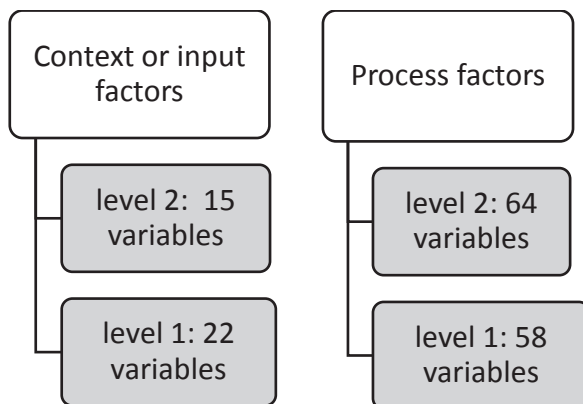
Source: Author's own compilation based on the OECD (2019).

With reference to the predictor variables, this research is based on a total of 159 predictors (see ANNEX 1), which have been grouped into context or input factors and process factors. Furthermore, these have in turn been grouped into two levels: student (level 1) and school (level 2) (see Figure 2). It is important to note that the predictors are composed of complex indices but that some direct variables from the questionnaire have also been included regarding the student, centre and

educational path. The selection of the context or input, and process factors was based on previous studies by Gamazo et al. (2018), Hu et al. (2021) and Martínez-Abad et al. (2020) which address school effectiveness in the PISA international assessment.

**Figura 2**

*Diagram of the independent variables in the study*



## Procedure and data analysis

To meet the first objective, which consisted in identifying the factors most closely related to a high level of reading performance, we used the Random Forest classification algorithm, after conducting data pre-processing (Kassambara, 2018). This supervised machine learning algorithm was chosen for its high accuracy in identifying and ranking key predictor variables, as noted by Sterne (2018). Its implementation necessitates thorough and meticulous data pre-processing before execution, a step underscored by Kassambara (2018) for optimal results. To this purpose, firstly, the missing values in the database were imputed for the student and educational centre. We selected the method of multiple imputation by chained equations, as this is the most suitable method for obtaining accurate estimates (Sterne et al., 2009). The initial dataset of 159 predictor variables was narrowed down to 137 by removing those with over 20% missing data, following the criteria set by Medina and Galván (2007). Exceptions were made for key variables related to learning time: LMMINS (reading), MMINS (mathematics), and SMINS (science), despite their missing data percentages of 24%, 24%, and 25%, respectively. This decision is grounded in the critical importance of learning time as a process variable,

a relationship well-documented in the literature (Martinez-Abad et al., 2020; Hu et al., 2021). Secondly, the data were split randomly into two sets; the first set relates to training (60% of the data) and was used to fit the model and, subsequently, the validation sample (40%) was used to test the model performance (Raschka, 2015). Thirdly, the continuous variables were standardised with the purpose of avoiding predictors with a greater magnitude having a major impact on the model (Kassambara, 2018). Finally, we analysed the variance of the predictors, as it was necessary to eliminate the predictors variables with zero or near-zero variance. None were eliminated, as they all contain information, they have variability.

In order to obtain the best model, the hyperparameters were optimised by means of 10-fold cross-validation. This consisted in dividing the training set into subsets of the same size called folds. In the first iteration the model was fitted with all the observations except the first fold, which was used to predict. In the second the model was trained with all the observations except the second fold, which was used to predict and so on until the tenth iteration (Sarkar et al., 2018).

We used the Random Forest technique on each of the 10 plausible values (PV) and selected the one with the largest area under the curve (AUC), as this metric is the most appropriate when the levels of the criterion variable are unbalanced (Bonaccorso, 2017). The most accurate plausible value was nine (0.827), so consequently this PV was used to report the most significant variables. The great limitation of this technique is that there is no cut-off point for selecting the predictors with the greatest influence on the response variable (Sarkar et al., 2018); for this reason, in line with the study by Gorostiaga and Rojo-Álvarez (2016), who recommend that to select the optimum number of variables it is necessary to assess several sets of variables (20 and 30) and select the set with the best performance, we decided to examine the following sets of variables from the 137 predictors: 15, 20, 25, 30 and 35. In doing so, the aim was greater accuracy in indicating the optimal set of variables. The method of relative importance was selected to sort the variables.

The basis of the second objective was to determine the relative contribution of context or input and process factors which most influenced the chances of a student attaining a high level of achievement in reading literacy, considering the hierarchical data structure (level 1: student and level 2; school). As the criterion variable is of a qualitative, nominal and dichotomous nature, with a significant random variance in level 2 (educational centre) and the intraclass correlation coefficient being higher than 10% (Lee, 2000), we used the multilevel binary logistic regression technique. Prior to running the models, the assumption of multicollinearity was checked in two stages. Firstly, we correlated the variables using Spearman's correlation coefficient, as none of the variables met the assumption of normality. The work by Kassamabara (2018) states that the relationship is considered to be strong when values are larger



than 0.7. Table 2 shows that there are two associations with a high magnitude of correlation. Specifically, we eliminated the variables of the index's *parents' highest occupational status* and *household possessions*, as these have a lower relative importance than the *index of economic, social and cultural status*.

**Table 2**  
*Spearman's correlation*

	Index of economic, social and cultural status
Index of parents' highest occupational status	0.815***
Household possessions	0.704***

Note. Difference is (\*) significant with an  $\alpha = .05$  (\*\*) significant with an  $\alpha = .01$ ; (\*\*\*) significant with an  $\alpha = .001$

Secondly, we checked that the Variance Inflation Factor was lower than 10 and as this was true in all cases, we concluded that the assumption of multicollinearity had been met.

Following this, we eliminated the educational centres with fewer than 20 subjects in order to conduct a multilevel analysis correctly (Gamazo et al., 2018). In particular, a total of 1532 subjects belonging to 133 centres were eliminated, so the final sample consisted of 34411 students. Four models were created, each based on a combination of key contextual (or input) factors and process variables as selected by the machine learning algorithm: model 0 or zero-inflated model, containing no predictors; model 1, composed of the context or input variables; model 2, composed of the process variables; and finally, model 3, composed of all the variables, in order to analyse the contribution of the process variables once the context or input factors had been checked. The odds ratio (Lee, 2000) was used to interpret the coefficients, with reference to the probability of a student having a high level of performance in reading comprehension and the probability of this not occurring. The Percentage of Explained Variance (PEV) was also calculated, which indicates the amount of variance that the model explains (equation 1).

$$PEV = \left( \frac{\sigma_{Zero-inflated\ model}^2 - \sigma_{Final\ model}^2}{\sigma_{Zero-inflated\ model}^2} \right) * 100 \quad \text{Equation 1}$$

Finally, to check the fit of the models, we used the AIC and BIC indices, as well as Deviance, in order to compare nested models; the significance of this reduced statistical model was calculated and the percentage of variance reduction was estimated ( $R^2$ ) (Cameron & Windmeijer, 1997).

The variables were introduced into the model in the order obtained from the machine learning algorithm, as undertaken in the work by Arroyo et al. (2019), Fernández-Mellizo and Constante-Amores (2020) and Constante-Amores et al. (2021).

All the analyses were conducted using the statistical software R version 4.2.0 (R Core Team, 2022). The mice and lme4 packages were used to implement the method of multiple imputation by chained equations and multilevel binary logistic regression respectively. The Random Forest model was created using the machine learning library H2O, which is written in Java but can be used with the programming language R.

## RESULTS

The results are delineated below, organized in alignment with the established objectives.

### Specific objective 1: The most significant contextual or background factors

The following table shows how the first set of predictors composed of 15 variables is the set with the highest level of performance (AUC = 0.839), that is to say, the one that best represents the characteristics of high-performing students in reading literacy.

**Table 3**

*Model performance in the validation sample of the five sets of candidate characteristics using random forests.*

	AUC	Accuracy
15 variables	0.839	0.952
20 variables	0.837	0.947
25 variables	0.830	0.950
30 variables	0.830	0.945
35 variables	0.831	0.949

Table 4 shows the 15 predictors that are most closely linked to high levels of performance in reading comprehension, selected from a total of 137 contextual or input and process variables. Overall, it can be seen that all these variables are related to student characteristics. In relation to the context or input factors, the most significant variables are: *I like or enjoy reading, index of economic, social and cultural status and father's occupation*. Regarding the process variables, the most significant are *metacognition: credibility assessment, reading self-concept: perception of proficiency and reading self-concept: perception of difficulty*.

**Table 4**

*The most significant variables associated with high levels of performance in reading comprehension.*

		Relative importance (%)	
Context or input	6 <sup>th</sup>	Index of economic, social and cultural status	27.432
	8 <sup>th</sup>	Father's occupation	20.300
	10 <sup>th</sup>	Index of parents' highest occupational status	13.569
	11 <sup>th</sup>	Household possessions	10.736
	12 <sup>th</sup>	Mother's occupation	10.506
	13 <sup>th</sup>	Cultural household possessions	10.497
Process	1 <sup>st</sup>	I like or enjoy reading	100.000
	2 <sup>nd</sup>	Metacognition: credibility assessment	86.520
	3 <sup>rd</sup>	Reading self-concept: perception of proficiency	61.827
	4 <sup>th</sup>	Reading self-concept: perception of difficulty	39.826
	5 <sup>th</sup>	Learning time in science (minutes per week)	32.459
	7 <sup>th</sup>	Metacognition: summarising	23.747
	9 <sup>th</sup>	Student's expected occupational status	19.379
	14 <sup>th</sup>	Use of ICT outside of school (for school activities)	7.167
	15 <sup>th</sup>	ICT as a subject in social interaction	4.127

### Specific objective 2: Probability of attaining a high level of reading performance

Once the most important variables had been identified, we conducted the multilevel binary logistic analysis. Table 5 shows the results of the predictive models. In model 1, which was composed of the context or input variables, it is noticeable that

all of them are statistically significant with a positive directionality, and they explain approximately 41% of the variance of the dependent variable. The most significant effect occurs in the predictor *I like or enjoy reading*. Specifically, for each additional point in this predictor, there is a 100% increase in the probability of attaining a high level of reading performance. In model 2, composed solely of the process variables, as in the previous model, all of them are statistically significant, explaining 38.258% of the high level of performance in reading literacy. The greatest effect appears in the variable *metacognition: credibility assessment*. In particular, for each additional point in this predictor, there is a 110% increase in the probability of attaining a high level of performance in reading literacy. In model 3 all of the variables are included, with all of them being statistically significant. Furthermore, they move in a positive direction, except in *reading self-concept: perception of proficiency, use of ICT outside of school (for school activities)* and *TIC as a subject in social interaction*. The variable with the greatest effect is *metacognition: credibility assessment*. Once the context or input variables and the process factors have been controlled, the percentage of explained variance increases by around 13% compared to model 1, thereby producing a total explained variance of 54.676%.

Lastly, as regards the model fits, the model with the lowest AIC and BIC score is the model including all the predictors (model 3), where there is significant reduction in the variance, equivalent to  $R^2$  11% compared to model 1. The reduction in the variance of model 1 is also significant compared to model 0 (12%) and to model 2 compared to the zero-inflated model (20%).

**Table 5**

*Estimation of fixed effects with robust standard errors using multilevel binary logistic regression (odds ratio)*

	Model 0 (zero-inflated)	Model 1 (context or input)	Model 2 (process)	Model 3 (all)
Intercept	0.045 ***	0.015 ***	0.002***	0.001***
Index of economic, social and cultural status		1.245 ***		1.152***
Father’s occupation		1.008 ***		1.007***
Mother’s occupation		1.007 ***		1.005***
Cultural household possessions		1.195 ***		1.145***
I like or enjoy reading			2.000 ***	1.369***
Metacognition: credibility assessment			2.100***	1.989***

	Model 0 (zero-inflated)	Model 1 (context or input)	Model 2 (process)	Model 3 (all)
Reading self-concept: perception of proficiency			1.875***	1.436***
Reading self-concept: perception of difficulty			0.782***	0.790***
Learning time in science (minutes per week)			1.002***	1.001***
Metacognition: summarising			1.777***	1.358***
Student's expected occupational status			1.027***	1.022***
Use of ICT outside of school (for school activities)			0.852***	0.809***
ICT as a subject in social interaction			0.788***	0.819***
Variance	0.528	0.312	0.326	0.241
PEV (%)		40.909	38.258	54.356
AIC	14881	13045	11884	11509
BIC	14895	13104	11969	11636
Loglik	-7563	-6515	-5932	-5739
Deviance	14850	13031	11864	11479
X <sup>2</sup>		1818	2985	1552
Pr(>Chisq)		0.000	0.000	0.000

Note. Difference is (\*) significant with an  $\alpha = .05$  (\*\*) significant with an  $\alpha = .01$ ; (\*\*\*) significant with an  $\alpha = .001$

## DISCUSSION AND CONCLUSIONS

In this study, there has been a deepening in the analysis of the factors (context or input and process) of school effectiveness associated with high performance in reading comprehension within the framework of PISA 2018, which is one of the major problems of the educational system.

Our findings identify 15 variables with a greater influence on high reading performance, among which the most important is the process variable referred to as the enjoyment of reading. These results are also observed in the works carried out by Akande and Oyedapo (2018), Franco et al. (2016), and Molina (2020), indicating

the importance of this predictor in academic reading success. In this sense, there is extensive literature (Gil, 2011) indicating the relevance of the family in fostering reading enjoyment. Additionally, the research of Butlen (2005) shows that the school also plays an important role. Therefore, educational measures must be implemented from the school to increase students' enjoyment of reading (Dezcallar et al., 2014), highlighting the work on students' reading habits.

It is also observed that the five most important predictors belong to process factors (enjoyment of reading, metacognition: evaluating credibility, reader self-concept understood as perception of competence and perception of difficulty and learning time in science - minutes per week). Therefore, considering these results, it seems that these factors play a very relevant role in high reading comprehension performance. This is contrary to extensive literature that states that high reading performance is primarily explained by context or input factors (Cordero et al., 2013; Franco et al., 2016). Although it coincides with the work of Martínez-Abad et al. (2020), in which the most important variables are related to students.

Likewise, it should be noted that in our study, student gender and immigrant status are not important variables in high reading performance, unlike other studies (de Frutos & Santaren, 2020, and Cordero et al., 2013), even Hu et al. (2021) demonstrate that these predictors are important in discriminating and differentiating between students with high and low scientific performance in PISA 2015.

Regarding the second objective based on determining the relative contribution of the factors that most affect the probability of a student achieving high performance in reading competence, the importance of both context or input factors and process factors in reading performance can be appreciated. Each set of predictors explains a very similar percentage variance of 39% and 36%, respectively. The final model explains approximately 52% of the variability of the criterion variable. These results complement the conclusions of Coleman (1966) who showed the preponderance of context or input factors such as socioeconomic status and ethnicity.

In the final model, the predictor with the largest effect is metacognition (odds ratio = 1.989), referring to the subject's ability to evaluate the quality and credibility of a text (for example, if the information is valid, accurate, and impartial, etc.) incorporated for the first time in PISA 2018 (OECD, 2019). This predictor has approximately twice the effect of certain context or input variables that have been of great importance in the scientific literature, such as the index of economic, social, and cultural status, father's occupation, mother's occupation, and cultural possessions of the home (Barrera et al., 2019).

In fact, the other variable related to metacognition (summarizing) also has a greater effect than this set of predictors.

In this sense, the great importance of metacognition in high reading performance stands out compared to other more socio-economic variables, following the line of Qi (2021) and Wu et al. (2020), which point out the important role played by metacognitive variables in high reading performance. Therefore, it is essential that metacognitive capacity be worked on in schools.

Likewise, as in the research of Franco et al. (2016) and Herrera et al. (2017), it should be emphasized, the relevance of reader self-concept (perception of competences and perception of difficulty) in high reading scores in PISA 2018. Also, the academic and professional educational expectations of students about reading competence play a very important role, as was the case in the study by Hu et al. (2021).

From a methodological point of view, this research not only indicates the most important variables but also carries out a predictive model (multilevel binary logistic regression) exhaustively addressing this educational phenomenon for a specific group, which are the high-achieving students compared to the rest. Also, this study represents a methodological advancement in the phenomenon of school effectiveness factors, as it employs for the first time a machine learning approach in the Spanish context. This is a complementary approach to works that use data mining techniques (Martínez-Abad et al., 2020) and binary logistic regression (Gamazo et al., 2018).

With the desirable goal for the Spanish educational system of increasing the low number of high-performing students, educational policies could be developed that promote reading enjoyment and the learning of metacognitive tools in the field of reading, well-known and necessary tools such as evaluating the credibility of texts and summarizing, accredited by the results of this research. Additionally, it is necessary for schools to work on improving self-concept, as it affects students' academic expectations and, therefore, the performance of different subjects (Carrillo et al., 2022).

As prospective research, it would be necessary to determine the factors (context or input and process) associated with high reading performance in other countries and contexts, such as some in Southern Europe (Portugal, Italy, France, Cyprus, Greece, and Malta). Regarding the limitations of the study, it should be noted that the results obtained cannot be interpreted in terms of causality; for this, structural equation models or experimental studies would be necessary. Additionally, the PISA evaluation has been methodologically reviewed and criticized, as shown by the work of Fernández-Cano (2016) alluding, among other issues, to problems of validity of measurement instruments and the way of estimating scores on the performance scale. Another problem is the questionnaires used to collect context information (Jornet, 2016), which lack a clear theory to develop the different constructs measured and the lack of information about their psychometric characteristics.

## REFERENCIAS BIBLIOGRÁFICAS

- Akande, S., & Oyedapo, R. (2018). Developing the reading habits of secondary school students in Nigeria: the way forward. *International Journal of Library Science*, 7(1), 15-20.
- Arroyo, D., Constante-Amores, I. A., & Asensio, I. (2019). La repetición de curso a debate: un estudio empírico a partir de PISA 2015. *Educación XX1*, 22(2), 69-92. <https://doi.org/10.5944/educxx1.22479>
- Artelt, C., & Schneider, W. (2015). Cross-country generalizability of the role of metacognitive knowledge in students' strategy use and reading competence. *Teachers College Record*, 117(1), 1–32. <https://bit.ly/4akHyKI>
- Asensio-Muñoz, I., Carpintero, E., Expósito, E., & López-Martín, E. (2018). ¿Cuánto oro hay entre la arena? Minería de datos con los resultados de España en PISA 2015. *Revista de Educación*, 270, 225-245
- Avendaño, I., & Martínez, D. (2013). Competencia lectora y el uso de las nuevas tecnologías de la información y comunicación. *Revista Escenarios*, 11(1), 7-22.
- Barrera, J. E., Polanco, J. G. C., & Acosta, J. D. (2019). Comprensión lectora de estudiantes universitarios. Factores asociados y mecanismos de acción. *Revista Venezolana de Gerencia*, 24(87), 874-889.
- Bonaccorso, G. (2017). *Machine learning algorithms*. Packt Publishing Ltd.
- Butlen, M. (2005). Paradoja de la lectura escolar. *Revista de Educación*, núm. Extraordinario, 139-151.
- Cameron, A. C., & Windmeijer, F. A. (1997). An R-squared measure of goodness of fit for some common nonlinear regression models. *Journal of Econometrics*, 77(2), 329-342.
- Campos, I. O., & Arantegui, M. (2022). Exploración de la mediación parental en el uso de las TIC y su correlación con la comprensión lectora del alumnado preadolescente. *Lenguaje y Textos*, 55, 43-54. <https://doi.org/10.4995/lyt.2022.15948>
- Carrillo-López, P. J., Constante-Amores, A., Arroyo-Resino, D., & Sánchez-Munilla, M. (2022). Self-concept and academic achievement in primary school: a predictive study. *International Journal of Education in Mathematics, Science and Technology*, 10(4), 1057-107
- Constante-Amores, A., Florenciano Martínez, E., Navarro, E., & Fernández-Mellizo, M. (2021). Factores asociados al abandono universitario. *Educación XX1*, 24(1), 17-44.
- Coleman, J. (1966). *Equality of educational opportunity*. US Government Printing Office.



- Cordero, J. M., Crespo, E., & Pedraja, F. (2013). Rendimiento educativo y determinantes según PISA: una revisión de la literatura en España. *Revista de Educación, 362*, 273-297
- Creemers, B. P., Peters, T., & Reynolds, D. (2022). *School effectiveness and school improvement*. Routledge
- de Frutos, S. F., & Santaren, V. R. (2020). El papel del sexo en comprensión lectora. Evidencias desde PISA y PIRLS. *Revista de Investigación en Educación, 18*(2), 99-117.
- de la Orden, A., Asensio, I., Carballo, R., Fernández Díaz, J., Fuentes, A., García Ramos, J. M., & Guardia, S. (1997). Desarrollo y validación de un modelo de calidad universitaria como base para su evaluación. *RELIEVE - Revista Electrónica De Investigación Y Evaluación Educativa, 3*(1).
- Dezcallar, T., Clariana, M., Cladellas, R., Badia, M., & Gotzens, C. (2014). La lectura por placer: su incidencia en el rendimiento académico, las horas de televisión y las horas de videojuegos. *Ocnos: Revista de Estudios sobre Lectura, 12*(12), 107-116.
- Franco, M., Cárdenas, R., & Santrich, E. (2016). Factores asociados a la comprensión lectora en estudiantes de noveno grado de Barranquilla. *Psicogente, 19*(36), 296-310. <https://doi.org/10.17081/psico.19.36.1299>
- Gamazo, A., Martínez-Abad, F., Olmos-Miguelañez S., & Rodríguez-Conde M. J. (2018). Evaluación de los factores relacionados con la eficacia escolar en PISA. Un análisis multinivel. *Revista de Educación, 379*, 56-84.
- García M. A., Arévalo M. A., & Hernández C. A. (2018). La comprensión lectora y el rendimiento escolar. *Cuadernos de Lingüística Hispánica, 32*(1), 155- 174.
- Garrido, R., Gallo-Rivera, M. T., & Martínez-Gautier, D. (2020). ¿Cuáles son y cómo operan los determinantes del fracaso escolar? Replanteando las políticas públicas para el caso de España y sus regiones. *Revista Internacional de Ciencias del Estado y de Gobierno, 1*(4), 509-540.
- Gaviria, J. L. (2004). La situación española: el rendimiento de los estudiantes. In G. Haug, J. L. Gaviria, C. Lomas, M.D. de Prada, & D. Gil (Eds.), *El rendimiento de los estudiantes al final de la educación obligatoria: objetivos europeos y situación española* (pp.18- 83). Santillana.
- Gil, J. (2011). Hábitos lectores y competencias básicas en el alumnado de educación secundaria obligatoria. *Educación XX1, 14*(1), 117-134.
- Gómez, I. M., García, J. A., Vila, J. O., Elosúa, M. R., & Rodríguez, R. (2014). The dual processes hypothesis in mathematics performance: beliefs, cognitive reflection, working memory and reasoning. *Learning and Individual Differences, 29*(1), 67-73.

- Gorostiaga, A., & Rojo-Álvarez, J. L. (2016). On the use of conventional and statistical-learning techniques for the analysis of PISA results in Spain. *Neurocomputing*, *171*, 625-637.
- Herrera, J. C., Treviño, A., & Navarrete, G. (2017). *Factores de riesgo asociados a falta de competencia para la comprensión lectora en niños de primaria* [Comunicación]. X Congreso Nacional de Investigación Educativa.
- Hu, J., Peng, Y., & Ma, H. (2021). Examining the contextual factors of science effectiveness: a machine learning-based approach. *School Effectiveness and School Improvement*, *33*, 21-50. <https://doi.org/10.1080/09243453.2021.1929346>
- Kassambara, A. (2018). *Machine learning essentials: Practical guide in R*. Sthda.
- Kyriakides, L., Charalambous, E., Creemers, B. P. M., Antoniou, P., Devine, D., Papastylianou, D., & Fahie, D. (2019). Using the dynamic approach to school improvement to promote quality and equity in education: a European study. *Educational Assessment, Evaluation and Accountability*, *31*(1), 121-149. <https://doi.org/10.1007/s11092-018-9289-1>
- Lee, V. E. (2000). Using hierarchical linear modeling to study social contexts: the case of school effects. *Educational Psychologist*, *35*(2), 125-141.
- Linnakyla, P., Malin, A., & Taube, K. (2004). Factors behind low reading literacy achievement. *Scandinavian Journal of Educational Research*, *48*(3), 231-249.
- López-González, E., Navarro, E., García San Pedro, M. J., Lizasoain, L., & Tourón, J. (2021). Estudio de la eficacia escolar en centros educativos de primaria mediante el uso de modelos jerárquicos lineales. *Bordón*, *73*(1), 59-80. <https://doi.org/10.13042/Bordon.2021.80530>
- Martínez-Abad, F., Gamazo, A., & Rodríguez-Conde, M. J. (2020). Educational data mining: identification of factors associated with school effectiveness in PISA assessment. *Studies in Educational Evaluation*, *66*, Artículo 100875.
- Medina, F., & Galván, M. (2007). *Imputación de datos: teoría y práctica*. Cepal.
- Molina, I. (2020). Comprensión lectora y rendimiento escolar. *Revista Boletín Redipe*, *9*(1), 121-131.
- Murillo, F. J. (Coord.) (2007). *Investigación iberoamericana sobre eficacia escolar*. Convenio Andrés Bello.
- Organización para la Cooperación y el Desarrollo Económicos. (2019). *PISA 2018 assessment and analytical framework*. OECD publishing.
- Qi, X. (2021). Effects of self-regulated learning on student's reading literacy: evidence from Shanghai. *Frontiers in Psychology*, *11*, Artículo 555849.
- Rivera, J. (2013). Punto de encuentro entre los jóvenes y la lectura: estrategia constructivista para fortalecer su comportamiento lector. *Simbiosis Estudiantil* *7*(1).

- Sarkar, D., Bali, R., & Sharma, T. (2018). *Practical machine learning with Python. A problem-solvers guide to building real-world intelligent systems*. Apress.
- Scheerens, J. (1991). Process indicators of school functioning: a selection based on the research literature on school effectiveness. *Studies in Educational Evaluation*, 17(2), 371–403. [https://doi.org/10.1016/S0191-491X\(05\)80091-4](https://doi.org/10.1016/S0191-491X(05)80091-4).
- Scheerens, J., & Creemers, B. P. (2022). *School effectiveness and school improvement*. Routledge
- Scheerens, J., Witziers, B., & Steen, R. (2013). A meta-analysis of school effectiveness studies. *Revista de Educación*, 361, 619-645. <https://doi.org/10.4438/1988-592X-RE-2013-361-235>
- Sterne, J. A., White, I. R., Carlin, J. B., Spratt, M., Royston, P., Kenward, M. G., & Carpenter, J. R. (2009). Multiple imputation for missing data in epidemiological and clinical research: potential and pitfalls. *BMJ*, 338, 23-93
- Viramontes, E., Amparán, A., & Núñez, L. D. (2019). Comprensión lectora y el rendimiento académico en educación primaria. *Investigaciones sobre Lectura*, 12, 65-82.
- Wu, Y. J., Carstensen, C. H., & Lee, J. (2020). A new perspective on memorization practices among East Asian students based on PISA 2012. *Educational Psychology*, 40(5), 643-662.

## ANNEX 1

**Table 1***Context or input variables*

	SC001Q01TA	Which of the following best describes the community in which your school is located?
	SCHLTYPE	School Ownership
	STRATIO	Student-Teacher ratio
	SCHSIZE	School Size (Sum)
	CLSIZE	Class Size
	EDUSHORT	Shortage of educational material
	STAFFSHORT	Shortage of educational staff
	RATCMP1	Number of available computers per student at modal grade
	RATCMP2	Proportion of available computers that are connected to the Internet
Level 2: centre	TOTAT	Total number of all teachers at school
	PROATCE	Index proportion of all teachers fully certified
	PROAT5AB	Index proportion of all teachers ISCED LEVEL 5A Bachelor
	PROAT5AM	Index proportion of all teachers ISCED LEVEL 5A Master
	PROAT6	Index proportion of all teachers ISCED LEVEL 6
	SC048Q03NA	Percentage <national modal grade for 15-year-olds>: Students from socioeconomically disadvantaged homes
	SC048Q01NA	Percentage <national modal grade for 15-year-olds>: Students whose <heritage language> is different from <test language>
	ST003D02T	Student (Standardized) Birth - Month
	ST004D01T	Student (Standardized) Gender
Level 1: student	LANGN	Language at home (3-digit code)
	MISCED	Mother's Education
	FISCED	Father's Education
	HISCED	Highest Education of parents
	PARED	Index highest parental education in years of schooling
	PAREDINT	Index highest parental education (international years of schooling scale)
	BMMJ1	ISEI of mother

---

	BFMJ2	ISEI of father
	HISEI	Index highest parental occupational status
	IMMIG	Index Immigration status
	DURECEC	Duration in early childhood education and care
	SCCHANGE	Number of school changes
	CHANGE	Number of changes in educational biography
	ESCS	Index of economic, social and cultural status
Level 1:	WEALTH	Family wealth
student	CULTPOSS	Cultural possessions at home
	ICTRES	ICT resources
	ICTHOME	ICT available at home
	HOMEPOS	Home possessions
	HEDRES	Home educational resources
	ST004D01T	Student (Standardized) Gender
	LANGN	Language at home (3-digit code)
	MISCED	Mother's Education (ISCED)

---

**Table 2**  
*Level 2 process variables*

Level 2: school	Learning difficulties	STUBEHA TEACHBEHA	Student behaviour hindering learning Teacher behaviour hindering learning
	Family participation	SC064Q01TA	Proportion of parents: Discussed their child's progress with a teacher on their own initiative
		SC064Q02TA	Proportion of parents: Discussed their child's progress on the initiative of one of their child's teachers
		SC064Q03TA	Proportion of parents: Participated in local school government (e.g. parent council or school management committee)
		SC064Q04TA	Proportion of parents: Volunteered in physical or extra-curricular activities [...]
	School assessment	SC037Q01TA	Quality assurance at school: Internal evaluation/Self-evaluation
		SC037Q02TA	Quality assurance at school: External evaluation
		SC037Q03TA	Quality assurance at school: Written specification of the school's curricular profile and educational goals
		SC037Q04TA	Quality assurance at school: Written specification of student performance standards
		SC037Q05NA	Quality assurance at school: Systematic recording of data such as [...] attendance and professional development
SC037Q06NA		Quality assurance at school: Systematic recording of student test results and graduation rates	
SC037Q07TA	Quality assurance at school: Seeking written feedback from students (e.g. regarding lessons, teachers or resources)		
SC037Q08TA	Quality assurance at school: Teacher mentoring		
SC037Q09TA	Quality assurance at school: Regular consultation aimed at school improvement [...] over a period of at least six months		
SC037Q010NA	Quality assurance at school: Implementation of a standardised policy for reading subjects [...]		

Level 2: school	Student assessment	SC154Q01HA	School's use of assessments of students: To guide students' learning
		SC154Q02WA	School's use of assessments of students: To inform parents about their child's progress
		SC154Q03WA	School's use of assessments of students: To make decisions about students' retention or promotion
		SC154Q04WA	School's use of assessments of students: To group students for instructional purposes
		SC154Q05WA	School's use of assessments of students: To compare the school to <district or national> performance
		SC154Q06WA	School's use of assessments of students: To monitor the school's progress from year to year
		SC154Q07WA	School's use of assessments of students: To make judgements about teachers' effectiveness
		SC154Q08WA	School's use of assessments of students: To identify aspects of instruction or the curriculum that could be improved
		SC154Q09HA	School's use of assessments of students: To adapt teaching to the students' needs
		SC154Q010WA	School's use of assessments of students: To compare the school with other schools
		SC154Q011HA	School's use of assessments of students: To award certificates to students
		SC165Q01HA	Teachers' practices: [...] students learn about the histories of diverse cultural groups that live in <country of test>.
		SC165Q02HA	Teachers' practices: [...] students learn about the histories of diverse cultural groups that live in other countries.
		SC165Q03HA	Teachers' practices: [...] students learn about the cultures [...] of [...] groups that live in <country of test>
SC165Q04HA	Teachers' practices: [...] students learn about different cultural perspectives on historical and social events.		
SC165Q05HA	Teachers' practices: Our school supports activities that encourage students' expression of diverse identities [...]		
SC165Q06HA	Teachers' practices: Our school offers an exchange programme with schools in other countries.		

<p>Level 2: school</p>	<p>Autonomy of the centre</p>	<p>SC165Q07HA Teachers' practices: Our school organises multicultural events (e.g. cultural diversity day).</p> <p>SC165Q08HA Teachers' practices: In our school, we celebrate festivities from other cultures.</p> <p>SC165Q09HA Teachers' practices: In our school, students are encouraged to communicate with people from other cultures via [...]</p> <p>SC165Q09HA Teachers' practices: Our school adopts different approaches to educate students about cultural differences [...]</p> <p>SC165Q10HA Teachers' practices: [...] students learn about the histories of diverse cultural groups that live in &lt;country of test&gt;.</p> <p>SC156Q01HA At school: Its own written statement about the use of digital devices</p> <p>SC156Q02HA At school: Its own written statement specifically about the use of digital devices for pedagogical purposes</p> <p>SC156Q03HA At school: A programme to use digital devices for teaching and learning in specific subjects</p> <p>SC156Q04HA At school: Regular discussions with teaching staff about the use of digital devices for pedagogical purposes</p> <p>SC156Q05HA At school: A specific programme to prepare students for responsible Internet behaviour</p> <p>SC156Q06HA At school: A specific policy about using Social Networks (&lt;Facebook&gt;, etc.) in teaching and learning</p> <p>SC156Q07HA At school: A specific programme to promote collaboration on the use of digital devices among teachers</p> <p>SC156Q08HA At school: Scheduled time for teachers to meet to share, evaluate or develop instructional materials and [...]</p> <p>SC155Q01HA Capacidad de la escuela mediante dispositivos digitales: El número de dispositivos digitales conectados a Internet es suficiente</p> <p>SC155Q02HA Capacidad del centro escolar mediante dispositivos digitales: El ancho de banda o la velocidad de Internet del centro es suficiente.</p> <p>SC155Q03HA School's capacity using digital devices: The number of digital devices connected to the Internet is sufficient</p>
------------------------	-------------------------------	--



<p>Level 2: school</p>	<p>Autonomy of the centre</p>	<p>SC155Q04HA School's capacity using digital devices: The school's Internet bandwidth or speed is sufficient</p> <p>SC155Q05HA School's capacity using digital devices: The number of digital devices for instruction is sufficient</p> <p>SC155Q06HA School's capacity using digital devices: Digital devices [...] are sufficiently powerful in terms of computing capacity</p> <p>SC155Q07HA School's capacity using digital devices: The availability of adequate software is sufficient</p> <p>SC155Q08HA School's capacity using digital devices: Teachers have the [...] skills to integrate digital devices in instruction</p> <p>SC155Q09HA School's capacity using digital devices: Teachers have sufficient time to prepare lessons integrating digital devices</p> <p>SC155Q10HA School's capacity using digital devices: Effective professional resources for teachers to learn how to use digital [...]</p> <p>SC155Q11HA School's capacity using digital devices: An effective online learning support platform is available</p> <p>SC042Q01TA School's equity-oriented policies: These students attend regular classes and receive additional periods of [...]</p> <p>SC042Q02TA School's equity-oriented policies: Before transferring to regular classes, [...] preparatory programme aimed at [...]</p> <p>SC150Q01IA School's equity-oriented policies: Before transferring to regular classes, [...] instruction in school subjects [...]</p> <p>SC150Q02IA School's equity-oriented policies: These students receive [...] amounts of instruction in their &lt;heritage language&gt;</p> <p>SC150Q03IA School's equity-oriented policies: Class size is reduced to cater to the special needs of these students.</p> <p>SC150Q04IA School's equity-oriented policies: These students attend regular classes and receive additional periods of [...]</p> <p>SC150Q05IA School's equity-oriented policies: Before transferring to regular classes, [...] preparatory programme aimed at [...]</p>
------------------------	-------------------------------	--





<p>Level 1: Student</p>	<p>EMOSUPS                  ST225Q01HA                  ST225Q02HA                  ST225Q03HA                  ST225Q05HA                  ST225Q06HA                  EC154Q01A                  EC154Q02A                  EC154Q03A                  EC154Q04HA                  EC154Q05A                  EC154Q06A                  EC154Q07A                  EC154Q08HA                  EC154Q09A                  EC158Q01HA                  EC158Q02HA                  EC159Q01HA                  EC159Q02HA                  WB176Q01HA                  BSMJ                  MMINs                  LMINs                  SMINs                  TMINs</p>	<p>Parents' emotional support perceived by student (WLE)                  Do you expect to complete? &lt;ISCED level 2&gt;                  Do you expect to complete? &lt;ISCED level 3B or C&gt;                  Do you expect to complete? &lt;ISCED level 3A&gt;                  Do you expect to complete? &lt;ISCED level 5B&gt;                  Do you expect to complete? &lt;ISCED level 5A or 6&gt;                  Do you currently attend additional instruction? [Enrichment lessons] in [Test language]                  Do you currently attend additional instruction? [Enrichment lessons] in mathematics                  Do you currently attend additional instruction? [Enrichment lessons] in [science]                  Do you currently attend additional instruction? [Enrichment lessons] in foreign language                  Do you currently attend additional instruction? [Remedial lessons] in [Test language]                  Do you currently attend additional instruction? [Remedial lessons] in mathematics                  Do you currently attend additional instruction? [Remedial lessons] in [science]                  Do you currently attend additional instruction? [Remedial lessons] in foreign language                  Do you currently attend additional instruction? Lessons to improve your [study skills]                  On the most recent day you attended school, how long did you study in the morning before going to school? Hours                  On the most recent day you attended school, how long did you study in the morning before going to school? Minutes                  On the most recent day you attended school, how long did you study after leaving school? Hours                  On the most recent day you attended school, how long did you study after leaving school? Minutes                  When was the very last time you did your homework/studied for school?                  Student's expected occupational status (SEI)                  Learning time (minutes per week) - &lt;Mathematics&gt;                  Learning time (minutes per week) - &lt;test language&gt;                  Learning time (minutes per week) - &lt;science&gt;                  Learning time (minutes per week) - in total</p>
-------------------------	---	--

<p>Level 1: Student</p>	<p>UNDREM METASUM METASPAM ICTSCH DISCLIMA TEACHSUP DIRINS PERFEED ADAPTIVITY TEACHINT JOYREAD STIMREAD SCREADCOMP SCREADDIFF PISADIFF PERCOMP PERCOOP ATLNACT COMPETE RESILIENCE MASTGOAL BELONG ENTUSE HOMESCH USESCH INTICT COMPIC AUTICT SOIAICT ICTCLASS ICTOUTSIDE GFOFAIL DISCRIM</p>	<p>Meta-cognition: understanding and remembering Meta-cognition: summarising Meta-cognition: assess credibility ICT available at school Disciplinary climate in test language lessons (WLE) Teacher support in test language lessons (WLE) Teacher-directed instruction (WLE) Perceived feedback (WLE) Adaptation of instruction (WLE) Perceived teacher's interest (WLE) Joy/Like reading (WLE) Teacher's stimulation of reading engagement perceived by student (WLE) Self-concept of reading: Perception of competence (WLE) Self-concept of reading: Perception of difficulty (WLE) Perception of difficulty of the PISA test (WLE) Perception of competitiveness at school (WLE) Perception of cooperation at school (WLE) Attitude towards school: learning activities (WLE) Competitiveness (WLE) Resilience (WLE) Mastery goal orientation (WLE) Subjective well-being: Sense of belonging to school (WLE) ICT use outside of school (leisure) (WLE) Use of ICT outside of school (for school work activities) (WLE) Use of ICT at school in general (WLE) Interest in ICT (WLE) Perceived ICT competence (WLE) Perceived autonomy related to ICT use (WLE) ICT as a topic in social interaction (WLE) Subject-related ICT use during lessons (WLE) Subject-related ICT use outside of lessons (WLE) General fear of failure (WLE) Students' perception of discrimination at school</p>
-------------------------	--	---



# Construction and validation of the emotional development on early primary education scale (EDEPES-28)

## *Construcción y validación de la escala de desarrollo emocional en educación primaria inicial (EDEEPI-28)*

María Priego-Ojeda <sup>1\*</sup>   
Èlia López-Cassà <sup>2</sup>   
Núria Pérez-Escoda <sup>2</sup>   
Gemma Filella-Guiu <sup>1</sup> 

<sup>1</sup> Universidad de Lleida, Spain

<sup>2</sup> Universidad de Barcelona, Spain

\* Corresponding author. E-mail: [maria.priego@udl.cat](mailto:maria.priego@udl.cat)

### Cómo referenciar este artículo/ How to reference this article:

Priego-Ojeda, M., López-Cassà, È., Pérez-Escoda, N., & Filella-Guiu, G. (2024). Construction and validation of the emotional development on early primary education scale (EDEPES-28). *Educación XX1*, 27(2), 253-281. <https://doi.org/10.5944/educxx1.38358>

**Date received:** 18/09/2023

**Date accepted:** 29/01/2024

**Published online:** 28/06/2024

### ABSTRACT

While it is well-known that being emotionally competent contributes to improving the well-being and academic performance of students, there are few validated Spanish instruments that can assist teachers in assessing emotional competencies in early primary education children. In this study, we present the development and validation of the Emotional Development on Early Primary Education Scale (EDEPES) for students aged between 5 and 8 years. The study included a sample of 1113 students enrolled in the first and second grades of primary education in different educational centers in Spain. A preliminary

version of the questionnaire with around 41 items was distributed, along with measures of anxiety (CAS) and academic performance (average score). These measures were taken at two time points with a 6-month interval. The results supported a 4-factor model of 28 items, comprising emotional competencies of emotional awareness, emotion regulation, emotional autonomy, and social competence, along with a higher-order factor to measure overall emotional competence. The EDEPES-28 demonstrated satisfactory reliability and criterion validity, showing significant associations with anxiety and academic performance. Furthermore, the results supported the assumptions of measurement invariance, revealing gender differences in both courses, with these distinctions being more pronounced in the second course, and girls obtaining higher scores. In conclusion, the EDEPES-28 proves to be a useful and easy-to-use instrument for teachers to assess the emotional competencies of early primary education students.

**Keywords:** emotional competencies, emotion regulation, primary education, teachers, questionnaire development and validation, psychometric properties

## RESUMEN

Aunque es bien sabido que ser emocionalmente competente contribuye a mejorar el bienestar y el rendimiento académico de los alumnos, existen pocos instrumentos españoles validados que puedan ayudar a los docentes a evaluar de manera sencilla las competencias emocionales en niños y niñas de ciclo inicial de educación primaria. En este estudio, presentamos el desarrollo y validación de la Escala de Desarrollo Emocional en Educación Primaria Inicial (EDEEPI) para el alumnado de entre 5 y 8 años. El estudio incluyó una muestra de 1113 estudiantes escolarizados en primero y segundo curso de educación primaria en diferentes centros educativos de España. Se distribuyó una versión preliminar del cuestionario de unos 41 ítems, recogiendo además medidas de ansiedad (CAS) y de rendimiento académico (media académica). Estas medidas fueron tomadas en dos tiempos con una separación de 6 meses. Los resultados apoyaron un modelo de 4 factores de 28 ítems, que comprende las competencias emocionales de conciencia emocional, regulación emocional, autonomía emocional y competencia social, junto con un factor de orden superior para medir la competencia emocional global. El EDEEPI-28 demostró una fiabilidad y validez de criterio satisfactorias, mostrando asociaciones significativas con la ansiedad y el rendimiento académico. Además, los resultados respaldaron los supuestos de invarianza de medida, revelando diferencias de género en ambos cursos, siendo estas más acentuadas en segundo curso, con mayores puntuaciones para las niñas. En conclusión, el EDEEPI-28 demuestra ser un instrumento útil y de fácil uso para que el profesorado pueda evaluar las competencias emocionales del alumnado de ciclo inicial de educación primaria.

**Palabras clave:** competencias emocionales, regulación emocional, educación primaria, profesorado, desarrollo y validación de cuestionario, propiedades psicométricas

## INTRODUCTION

Emotional competence was originally defined as “the ability to deal effectively with emotional information—that is, with one’s feelings and desires” (Buck, 1990, p.302). In contrast, emotional intelligence (EI) was simultaneously defined by Salovey and Mayer (1989, p.189) as “the ability to monitor one’s own and others’ feelings and emotions, to discriminate among them, and to use this information to guide one’s thinking and actions”. As the term emotional intelligence gained importance in the research community, it evolved into a comprehensive concept encompassing various aspects related to emotional competencies. This led to several research streams, often oscillating between the conception of emotional intelligence as a trait (Petrides & Furnham, 2001) or as an ability (Salovey & Mayer, 1989).

Regardless of the theoretical approach, it is evident that emotional intelligence plays a crucial role in the relationship with mental health and well-being (Fernandez-Berrocal & Extremera, 2016). These benefits are noticeable across diverse populations, with particular significance in children and adolescents. This recognition has prompted scientific contributions emphasizing the necessity of incorporating emotional education within formal education, acknowledging its positive impact on schools and its pedagogical value in students’ personal and social development (Durlak et al., 2011).

Numerous studies confirm that possessing strong emotional competencies is associated with positive outcomes for students, including lower levels of anxiety (Matthews et al., 2016), higher self-esteem, and fewer internalizing symptoms (Schoeps et al., 2021), as well as higher prosocial behavior (Sporzon & Lopez, 2021; Ruvalcaba-Romero et al., 2017). Emotional intelligence is also linked to reduced classroom conflict and student stress (Domitrovich et al., 2017; Pérez-López et al., 2021; Ros-Morente et al., 2017) and improved academic performance (Greenberg et al., 2017; MacCann et al., 2019; Pulido & Herrera, 2017). Furthermore, gender differences have been examined in this context, revealing that boys tend to score higher than girls in emotional intelligence (EI) subscales such as adaptability (Jordan et al., 2010). On the other hand, girls typically report higher scores in intrapersonal and interpersonal variables (Jordan et al., 2010) and demonstrate better abilities in recognizing, regulating, and expressing emotions (Maguire et al., 2016).

Models based on social and emotional learning (SEL) that aim to promote EI within an educational context, such as the framework of the Collaborative for Academic, Social and Emotional Learning (CASEL, 2003), highlight that programs enhancing emotional competencies, such as self-awareness and relationship skills, consistently benefit the well-being of children and adolescents (Taylor et al., 2017). Additionally, projects like PROMEHS, which aims to promote mental health in schools across many European Union (EU) countries, place special emphasis on improving

emotional competencies (Poulou et al., 2022). Even within the current Spanish legislative framework, the Organic Law on Education (LOMLOE) includes emotional education as a pedagogical principle and a key competence to be developed in the educational curriculum. In this regard, the Organic Law 3/2020 explicitly mentions the concept of “emotional education” for the first time, with particular emphasis on the Primary and Compulsory Secondary Education stages (Lozano & Hernández, 2022).

To effectively promote these emotional competencies, the availability of assessment instruments is crucial. These tools aid in determining the initial level of students’ emotional competencies, designing educational programs tailored to enhance less developed competencies, and evaluating the impact and effectiveness of these emotional education programs (Bisquerra, 2020; Pérez-Escoda et al., 2021; López-Cassà & Pérez-Escoda, 2022). However, both education professionals and researchers often encounter challenges in finding suitable instruments for accurate evaluation (Bisquerra & López-Cassà, 2021), especially when dealing with young children in the early years of primary school who may struggle to comprehend self-report questions about their own emotions.

### Assessing emotional competence in children

Among the various theoretical paradigms used to approach emotional intelligence, multiple measures have been proposed. Questionnaires like the Trait Emotional Intelligence Questionnaire (TEIQue, Petrides, 2001), the Emotional Quotient Inventory (EQ-i, Bar-On, 1997), or the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT, Mayer et al., 2002), have also been adapted for younger populations for younger populations, including the TEIQue-Child Form (Mavroveli et al., 2008), EQ-i Youth Version (Bar-On & Parker, 2000), and the MSCEIT-Young Version (Rivers et al., 2012).

Some of these adaptations, despite being translated into Spanish, such as the EQ-i Youth Version (Ferrandiz et al., 2012), are directly derived from the adult questionnaire, without considering the differences between the emotional worlds of children and adults. Others, like the MSCEIT or the TEIQue, do not encompass earlier ages corresponding to the initial years of primary school or earlier. Additional questionnaires, such as the Assessment of Children’s Emotional Skills (ACES, Schultz et al., 2004), though assessed in younger children, concentrate on specific aspects of emotional competence, such as emotional recognition, and do not offer a comprehensive measure of emotional competence.

Recent works, like those presented by Pérez-González et al. (2022), and Bisquerra and López-Cassà (2021), which offer a synthesis of instruments for assessing emotional competencies, also highlight the need for validated instruments



suitable for accurately evaluating emotional competencies within the early years of primary education. Furthermore, it is crucial that these instruments be tailored to the Hispanic context, offering valuable measures validated or developed based on samples of Spanish-speaking children.

To propose novel approaches to evaluate emotional competencies in Spanish children, the Psychopedagogical Guidance Research Group of the University of Barcelona (GROP, by its acronym in Catalan) has developed the Emotional Development Questionnaire for Primary Education (CDE-9-13, Pérez-Escoda et al., 2021), a questionnaire framed within Bisquerra and Pérez-Escoda's model of emotional competence. This model defines emotional competencies as "a set of abilities, knowledge, skills, aptitudes, attitudes, and values required to understand, express, and appropriately regulate emotional experiences" (Bisquerra & Pérez-Escoda, 2007, p.69). Although framed within the theoretical perspective of emotional intelligence, this model also possesses an open character and considers other perspectives such as Gardner's multiple intelligences theory (2000), neuroscience, positive psychology, and humanistic pedagogy. The model considers five basic emotional competencies: emotional awareness, emotional regulation, emotional autonomy, social competence, and competencies for life and well-being.

Emotional awareness involves the ability to recognize and understand one's own emotions as well as the emotions of others, including the capacity to perceive the emotional atmosphere of a particular context. Emotional regulation encompasses the skill to effectively manage and control emotions. This includes recognizing the connection between emotions, thoughts, and behaviors, utilizing effective coping strategies, and being able to generate positive emotions within oneself, among other factors. Emotional autonomy encompasses various traits and aspects related to the self-management of emotions, including self-esteem, a positive outlook on life, responsibility, critical analysis of social norms, and personal self-efficacy. Social competence is about the ability to establish and maintain positive relationships with others, entailing mastering social skills, effective communication, respect, and pro-social attitudes, among other qualities. Lastly, competencies for life and well-being pertain to the ability to adopt appropriate and responsible behaviors to effectively navigate daily challenges as well as extraordinary life circumstances.

Another recent questionnaire based on this same theoretical framework is the Emotional Competence Assessment Questionnaire (ECAQ, Bartroli et al., 2022), which provided psychometric evidence to measure emotional competencies in small children between 3 and 5 years old. However, neither of these recent instruments covers the first cycle of primary education.

## Research objectives

With the aim of addressing the research gap in evaluating emotional competencies in children during the first cycle of primary education, considering a relevant theoretical framework within the Hispanic context, and providing an easy-to-use and concise measure for teachers, the present study introduces a new instrument—the Emotional Development on Early Primary Education Scale (EDEPES). This scale is based on the theoretical model of Bisquerra and Pérez-Escoda (2007) and the GROPE.

The specific objectives of the present study are as follows: (1) Investigate the EDEPES initial factorial structure through an exploratory factor analysis (EFA). (2) Conduct a confirmatory factor analysis (CFA) to scrutinize the factorial structure, comparing the results obtained through EFA with the model of emotional competence proposed by Bisquerra and Pérez-Escoda (2007). (3) Develop and propose the final form for the EDEPES. (4) Test the reliability of the final form of the EDEPES. (5) Examine measurement invariance and potential gender differences across all emotional competencies within the different courses of the first cycle of primary school education. (6) Assess criterion validity by exploring the correlations between emotional competencies, children's anxiety levels, and academic performance, as these variables have been observed to have relevant links with children's emotional intelligence.

## METHOD

### Participants

The sample considered for the factor analysis comprised 1113 primary school students aged 5 to 8 ( $M = 6.37$ ;  $SD = .591$ ), from three different Spanish autonomous communities: 90.3% from Catalonia, 1.7% from Navarre, and 8% from the Basque Country. Among them, 547 students were in their first year of primary school (48.8% girls and 51.2% boys), while 566 students were in their second year (50.2% girls and 49.8% boys). Approximately 19.9% of the schools where the students were enrolled were located in rural areas, while 80.1% were situated in urban areas. The minimum sample size was determined based on the recommended item-observation ratios of MacCallum et al. (1999), which suggest ratios between 1:5 and 1:10 to ensure sufficient sample power for factor analysis. Additionally, the suggestions proposed by Hu and Bentler (1999) recommended a minimum sample size of 250 or more. To assess test-retest reliability and criterion validity, a subsample of 430 children ( $M = 6.34$ ;  $SD = .571$ ) answered all the questionnaires a second time within a 6-month

interval. This subsample comprised 233 students in their first year of primary school (54.5% girls and 45.5% boys) and 197 students in their second year (43.7% girls and 56.3% boys).

## Measures

### *Emotional development on early primary education scale (EDEPES)*

The initial version of the EDEPES, tested in the present article, consisted of 41 items, assessed using a 5-point Likert scale ranging from 0 (never) to 4 (almost always). Taking inspiration from the López-Cassà (2007) observation scale for emotional competence, a non-validated scale designed to propose a preliminary measure of emotional competencies within the model of Bisquerra and Pérez-Escoda (2007), a pool of 83 items was a priori considered. Through careful evaluation by experts, this item pool was subsequently reduced to 41 items that were deemed the most representative of the emotional competencies intended to be assessed. The group of experts consisted of ten professionals from different Spanish universities who had a deep understanding of the theoretical model within the questionnaire.

The preliminary item distribution of the EDEPES aimed to evaluate the five emotional competencies included in the model of Bisquerra and Pérez-Escoda (2007): emotional awareness (17 items), composed by the subscales of emotional expression, emotional recognition, and emotional ambivalence, emotional regulation (6 items), emotional autonomy (7 items), social competence (7 items), and life and well-being competencies (4 items). All the items were formulated in Spanish and underwent preliminary assessment in a pilot test to evaluate language-related issues.

The questionnaire was designed for teachers to fill out by observing and inquiring about individual children's responses and behaviors. The assessment targeted children aged 5 to 8, corresponding to the first cycle of primary education in Spain. The preliminary scale aimed to generate scores for each dimension, as well as for the total measure of emotional competence. Example items include "The student is able to look for solutions to problems with the help of the teacher" and "The student can acknowledge his or her personal qualities". The internal consistency of each dimension and the overall scale will be reported in the results section, as well as the full report of psychometric properties.

### ***Child anxiety scale (CAS)***

The CAS Spanish adaptation (Gillis, 2011) was utilized to assess anxiety levels and examine criterion validity. Children completed the scale, which consists of 20 dichotomous items (yes or no questions) yielding a single total score. Example items include, “Can you do things better than most children, or do other children do them better than you?” and “Do you think a lot of bad things happen to you, or do a few bad things happen to you?” Regarding internal consistency, the scale demonstrated a Kuder-Richardson formula 20 (KR20) of 0.58 at Time 1 and 0.66 at Time 2.

### ***Academic performance***

The school supplied data on students’ academic performance, indicated by their overall average grades on a scale from 0 to 10. The scores from all subjects included in the academic curriculum were utilized to compute the overall average. This quantitative measure was evaluated at two specific time points: the first trimester (Time 1) and the third and final trimester (Time 2), with an interval of approximately 6 months between the assessments.

### ***Procedure***

First, after selecting items for the preliminary version of the EDEPES, the project obtained approval from the Ethics Committees of the University of Barcelona, the University of Lleida, and the Catalan Health Service to ensure the protection of children’s data. Second, contact was established with several universities in other autonomous communities, disseminating information about the questionnaire and the project via email. Third, with the assistance of these institutions, researchers established contact with various educational centers. Detailed information about the questionnaire was sent to these centers by email, and a total of 23 schools from different autonomous communities expressed interest in the project. Six of these schools were private, while the others were public. Fourth, teachers within these centers who voluntarily agreed to participate were provided with prior instructions on accurately assessing students using the questionnaire. Seminars and online meetings were conducted to ensure that teachers from all centers had a clear understanding of how to administer the questionnaire. Fifth, parents were asked to provide and sign informed consent before the distribution of the questionnaire. Sixth, after obtaining parental consent, data collection took place online at the end of the first trimester and the end of the third trimester through a private platform from the University of Barcelona. Each student was assigned

a code to guarantee anonymity throughout the entire process and facilitate identification for researchers at the two measurement points. In addition to the EDEPES, demographic questions, in conjunction with the CAS, were distributed to students. Teachers also provided academic performance reports at each assessment point. Seventh, at the conclusion of the study, a general report was provided to teachers and centers as a way of expressing gratitude for their collaboration.

## Data analysis

Univariate and multivariate normality were assessed, also exploring the presence of outliers. Subsequently, the full sample was divided into two equal groups using the SOLOMON approach (Lorenzo-Seva, 2022), a splitting method specifically designed for factor analysis to create two equivalent subsamples.

Next, using one of the subsamples, an exploratory factor analysis (EFA) was performed to assess the factor validity of the EDEPES. After determining the recommended number of factors to retain and assigning the selected items to their respective dimensions, a confirmatory factor analysis (CFA) was conducted using the second subsample. Several models were evaluated, drawing inspiration from the initial theoretical model by Bisquerra and Pérez-Escoda (2007), the results of the EFA, and an approach suggested by the authors to strike a balance between the theoretical model and the EFA findings. Model fit was evaluated using the Chi-square test ( $\chi^2$ ), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standard Root Mean Square Residuals (SRMR). CFI and TLI values above 0.90, and RMSEA and SRMR values below 0.08, indicated good model fit (Hu & Bentler, 1999). Differences between models were tested using the Chi-square difference test ( $\Delta\chi^2$ ). Robust maximum likelihood estimation (MLM) was employed for all the models examined. The minimum sample size recommended for CFA using this estimator is 250 or more (Hu & Bentler, 1999).

Reliability analysis was conducted using Cronbach's  $\alpha$ , MacDonald's  $\omega$ , and composite reliability (CR) with values above 0.60 considered adequate (MacDonald, 1999; Taber, 2018). Average variance extracted (AVE) was additionally tested, with values above 0.50 considered satisfactory (Hair et al., 2010). Test-retest reliability was assessed using intra-class correlations (ICC), with values above 0.40 considered fair (Cicchetti, 1994).

The following step involved analyzing measurement invariance (MI) across genders. Configural, metric, and scalar invariance were evaluated with the models compared using the Chi-square difference test ( $\Delta\chi^2$ ). After confirming gender measurement invariance, differences between genders were explored for the

entire sample and within each class group. Lastly, to evaluate criterion validity, bivariate correlations were conducted to examine the relationships of the EDEPES dimensions and the overall emotional competence with children's levels of anxiety and academic performance at Time 1 and Time 2. To do so, total scores for each variable were used. All the analyses were performed using R, primarily utilizing the 'lavaan' package (Rosseel, 2012) and IBM SPSS 26.0.

## RESULTS

### Exploratory factor analysis

First, univariate normality was examined, with item skewness and kurtosis values falling within the range of  $\pm 2$ , indicating univariate normality. Mardia's test reported significant skewness (59351.98,  $p < .001$ ) and kurtosis (249.69,  $p < .001$ ) values, evidencing the absence of multivariate normality. No missing values were found in the full sample as the questionnaire was distributed online to control this aspect. Mahalanobis distance scores identified the presence of some outliers. However, none of these outliers were extreme values, so all of them were included in the analysis.

Subsequently, the matrix determinant, Kaiser-Meyer-Olkin measure of sampling adequacy (KMO), and Bartlett's test were utilized to evaluate the appropriateness of conducting a factor analysis. The matrix determinant was  $4.27e-15$ , Bartlett's test was significant (1084.8,  $df = 40$ ,  $p < .001$ ), and KMO was .96. These values indicated that the data can be factorized. Before conducting the EFA, the sample was divided into two identical groups using the SOLOMON procedure (Lorenzo-Seva, 2022), resulting in a sample of 557 participants for the EFA and 556 participants for the CFA.

The next step involved performing the EFA. Parallel analysis (PA) was used to determine the number of recommended factors to retain, which was five. Oblimin rotation was also applied since the correlation between the factors was assumed, given the relationship established between the emotional competencies. The initial 5-factor solution yielded a model fit of  $\chi^2(820) = 18768.16$ ,  $p < .001$ , TLI = .782, RMSEA = .09, RMSR = .04. Information pertaining to the preliminary 41-item EDEPES can be found in Supplemental Material 1, which includes data on item skewness and kurtosis values, factor loadings, explained variance, uniqueness, communalities, complexity values, and factor correlations.

Before proceeding with the CFA, items with factor loadings below .40 were decided to be eliminated. Specifically, item 5, which related to the expression of

love, item 17 referring to emotional ambivalence, and item 39 from the life and well-being competencies dimension were removed.

### Confirmatory factor analysis

The next step involved performing a CFA on the second subsample to test three different models: Model 1, which was a 5-factor model exclusively based on the theoretical model of emotional competence (Bisquerra & Pérez-Escoda, 2007); Model 2, a 4-factor model inspired from the EFA results; and Model 3, a 4-factor model aimed at finding a balance between the theoretical model and the model suggested by the EFA. In Model 3, it was decided to exclude the subdimension of emotional expression because the only items that showed adequate loadings were those related to negative emotions. Since this subdimension exhibited a negative polarization and did not capture the entire emotional experience, it was agreed to retain only the subdimension related to emotional recognition, which exhibited good factor loadings for both positive and negative emotions. Additionally, two items from the emotional autonomy subscale (“The student can appreciate the differences between people as positive aspects” and “The student can recognize their limitations”) were removed due to ambiguity. The wording of these questions led to confusion among experts regarding their appropriate subscale placement, and the results from the EFA also indicated similar factor loadings in two different subscales.

Results for Model 1 indicated robust model fit values of  $\chi^2(774) = 3901.12$ ,  $p < .001$ , CFI = .73, TLI = .72, RMSEA = .10, SRMR = .09. Model 2 demonstrated improved model fit values of  $\chi^2(590) = 2671.10$ ,  $p < .001$ , CFI = .79, TLI = .77, RMSEA = .09, SRMR = .08, with significant differences between the models ( $\Delta\chi^2 = 1264.80$ ,  $\Delta df = 184$ ,  $p < .001$ ). Model 3 exhibited the best model fit values, with  $\chi^2(346) = 1584.13$ ,  $p < .001$ , CFI = .84, TLI = .82, RMSEA = .10, SRMR = .06, and significant differences compared to both Model 1 ( $\Delta\chi^2 = 2326.60$ ,  $\Delta df = 428$ ,  $p < .001$ ) and Model 2 ( $\Delta\chi^2 = 1086.70$ ,  $\Delta df = 244$ ,  $p < .001$ ). Consequently, Model 3 was selected to support the data and validate the structure of the questionnaire. After considering the modification index suggestions (Roseel, 2012), our final model demonstrated fair robust model fit values of  $\chi^2(336) = 1011.28$ ,  $p < .001$ , CFI = .91, TLI = .90, RMSEA = .07, SRMR = .06.

Table 1 presents the items included in each emotional competence dimension of the EDEPES-28, along with their corresponding factor loadings and errors (SE). In our final model, we considered four emotional competencies: emotional awareness, emotional regulation, emotional autonomy, and social competence, along with a higher-order factor that measures global emotional competence.

**Table 1**  
CFA factor loadings for EDEPES-28

Predicted factor	Item	F1	F2	F3	F4	SE
<b>F1. Emotional awareness</b>	1. Can recognize sadness	.75				.02
	2. Can recognize fear	.82				.03
	3. Can recognize joy	.61				.02
	4. Can recognize anger	.67				.03
	5. Can recognize love	.78				.03
	6. Can recognize shame	.85				.03
	7. Can recognize surprise	.82				.03
	8. Can recognize anxiety	.63				.04
<b>F2. Emotional regulation</b>	9. Is able to relax with the teacher's help		.81			.03
	10. Is able to ask for others' help		.71			.03
	11. When feeling a strong negative emotion, he/she is able to distract him/herself by doing a different activity suggested by the teacher		.73			.03
	12. When feeling a strong negative emotion, he/she is able to change the way he/she thinks about what is happening with the help of the teacher		.77			.03
	13. Is able to look for solutions to problems with the help of the teacher		.84			.03
	14. Is able to accept his/her share of responsibility in a conflict with the help of the teacher		.83			.03
<b>F3. Emotional autonomy</b>	15. Can recognize their physical qualities			.64		.02
	16. Can recognize their personal qualities (e.g., sympathy, kindness, etc.)			.75		.02
	17. Can recognize their academic qualities			.65		.02
	18. Can identify the people who like him/her			.70		.02



Construction and validation of the emotional development on early primary education scale  
(EDEPES-28)

Predicted factor	Item	F1	F2	F3	F4	SE
<b>F3. Emotional autonomy</b>	19. Can participate actively in activities that are proposed to him/her			.74		.03
	20. Can say no if he/she thinks differently from others			.58		.02
	21. Can enjoy the activities he/she does			.82		.03
	22. Can develop a positive attitude towards change			.76		.02
<b>F4. Social competence</b>	23. Say thank you to others				.78	.05
	24. Ask permission when he/she needs to				.80	.05
	25. Apologize when he/she needs to				.88	.05
	26. He/she usually help others				.82	.05
	27. He/she usually share				.82	.05
	28. Can acknowledge his/her mistakes				.73	.04
<b>Global emotional competence</b>	Emotional awareness	.70				.09
	Emotional regulation		.89			.22
	Emotional autonomy			.92		.34
	Social competence				.90	.39

Note. All factor loadings were significant at  $p < .001$ . SE: Standard error of factor loadings.

## Reliability analysis

Values for the four dimensions of the EDEPES-28 evidenced optimal reliability results for all the emotional competencies: emotional awareness ( $\alpha = .90$ ,  $\omega = .89$ , CR = .89, AVE = .56), emotional regulation ( $\alpha = .91$ ,  $\omega = .88$ , CR = .88, AVE = .61), emotional autonomy ( $\alpha = .90$ ,  $\omega = .83$ , CR = .82, AVE = .49) and social competence ( $\alpha = .92$ ,  $\omega = .90$ , CR = .90, AVE = .66). Only for emotional autonomy, AVE showed a little bit lower value than .50, reporting good values for the other indicators. Hierarchical omega for the global emotional competence also evidenced optimal internal consistency with a value of .87.

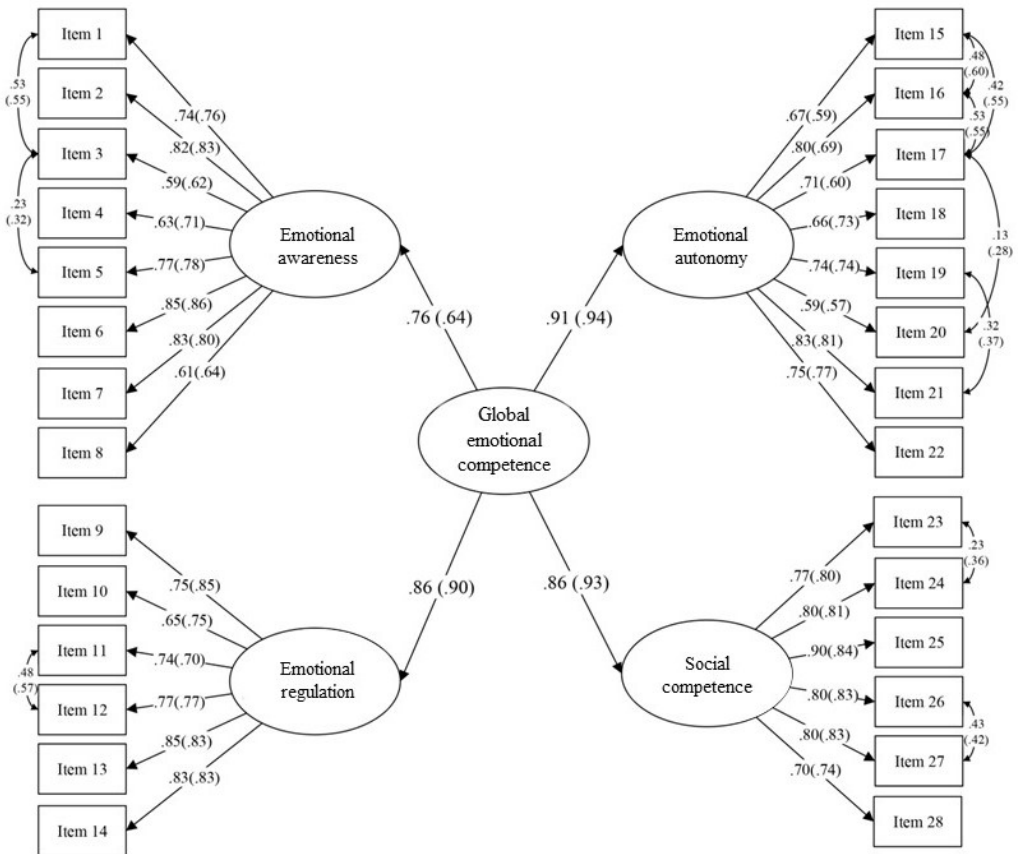
Intra-class correlations were tested to explore test-retest reliability for each emotional competence dimension: emotional awareness (.47 ICC [95% CI (.31, .58),  $F = 2.02$ ,  $p < .001$ ]), emotional regulation (.73 ICC [95% CI (.65, .80),  $F = 4.13$ ,  $p < .001$ ]), emotional autonomy (.66 ICC [95% CI (.54, .76),  $F = 3.50$ ,  $p < .001$ ]), social competence (.66 ICC [95% CI (.56, .74),  $F = 3.25$ ,  $p < .001$ ]) and the global emotional competence (.60 ICC [95% CI (.45, .71),  $F = 2.84$ ,  $p < .001$ ]). Cicchetti's (1994) guidelines contemplate values between .40 and .59 as fair, so all emotional dimensions evidenced an adequate test-retest reliability.

## Measurement invariance and sex differences

Invariance related to sex was tested on our final 4-factor model of emotional competence, following the next steps and utilizing the CFA subsample ( $N = 556$ ). First, separated models for girls and boys were evaluated, with both reporting adequate model fit (girls:  $\chi^2(336) = 687.55$ ,  $p < .001$ , CFI = .92, TLI = .91, RMSEA = .07, SRMR = .08; boys:  $\chi^2(336) = 629.04$ ,  $p < .001$ , CFI = .92, TLI = .91, RMSEA = .07, SRMR = .06). Figure 1 shows factor loadings for boys and girls, as well as items' variances and covariances.

**Figure 1**

Model of the EDEPES-28 with factor loadings and covariances for both sexes



Note. Values for girls are inside parenthesis.

Second, configural equivalence was measured by performing a multigroup analysis, exhibiting again fair model fit values ( $\chi^2(670) = 1934.02$ ,  $p < .001$ , CFI = .92, TLI = .91, RMSEA = .07, SRMR = .07). Third, equal factor loadings were assumed for both groups to test metric invariance, and forth, scalar invariance was evaluated fixing both loadings and intercepts. When comparing the models, using the Satorra-Bentler's method (2001), no significant differences were found. Table 2 shows model fit values for the multigroup model and all the constrained models.

**Table 2**

*Sex measurement invariance comparing differences between the multigroup model and the constrained models*

Models	$\chi^2$ (df)	TLI	CFI	RMSEA	SRMR	AIC	BIC	$\Delta\chi^2$	p
<b>Multigroup model: Configural invariance</b>	1934.02 (670)	.91	.92	.07	.07	29431	30287	-	-
<b>Metric invariance</b>	1960.29 (697)	.91	.92	.06	.07	29404	30142	23.69	.647
<b>Scalar invariance</b>	1989.37 (720)	.91	.92	.06	.07	29387	30026	33.63	.070

**Table 3**

*T-test results for sex differences per course*

	First year				Second year			
	Boys	Girls	Group differences		Boys	Girls	Group differences	
	M(SD)	M(SD)	t(p)	Cohen's <i>d</i>	M(SD)	M(SD)	t(p)	Cohen's <i>d</i>
<b>Emotional awareness</b>	20.01 (5.55)	20.49 (5.74)	-0.99 (.320)	.08	19.78 (6.30)	21.33 (5.99)	-3.00 (.002)	.25
<b>Emotional regulation</b>	15.28 (4.35)	16.26 (4.45)	-2.60 (.009)	.22	15.34 (4.74)	16.78 (3.98)	-3.92 (.001)	.32
<b>Emotional autonomy</b>	21.64 (5.18)	21.72 (5.32)	-0.18 (.852)	.01	21.52 (5.48)	22.74 (4.83)	-2.79 (.005)	.23
<b>Social competence</b>	15.57 (4.82)	16.80 (4.72)	-2.99 (.002)	.25	15.46 (4.50)	17.50 (3.98)	-5.73 (.001)	.48
<b>Global emotional competence</b>	72.51 (17.43)	75.28 (18.28)	-1.81 (.070)	.15	72.11 (17.19)	78.37 (15.50)	-4.55 (.001)	.38

As the findings support measurement invariance, a comparison of mean differences between boys and girls was conducted to explore sex differences in each course for the latent variables of our four emotional competencies as well as the global emotional competence. In the first-year course, differences were found for the subscales of emotional regulation and social competence. Among second-year students, the differences were more prominent, indicating variations in all the subscales and the global emotional competence, with girls exhibiting higher scores. Table 3 presents means and standard deviations for boys and girls in both courses, along with t-test and effect size results.

### Criterion validity

Correlations between all the emotional competencies, academic achievement and children's anxiety were explored to assess criterion validity, using a subsample of 430 students. Related with children's anxiety, all the competencies at Time 1 showed significant negative associations with anxiety at Time 1 and Time 2 except for emotional awareness and emotional regulation, which only reported significant links at Time 1. Considering academic performance, all the emotional competencies evidenced positive correlations at both times. Discussed relationships are exposed in Table 4.

**Table 4**

*Correlations for EDEPES-28 subscales and global emotional competence (Time 1) with anxiety and academic performance (Time 1 and Time 2)*

	Anxiety (Time 1)	Anxiety (Time 2)	Academic performance (Time 1)	Academic performance (Time 2)
<b>Mean (SD)</b>	7.30 (3.02)	7.17 (3.31)	7.20 (1.24)	7.53 (1.32)
<b>Emotional awareness</b>	-.15**	.00	.30***	.26***
<b>Emotional regulation</b>	-.18***	-.09	.22***	.22***
<b>Emotional autonomy</b>	-.25***	-.18***	.45***	.47***
<b>Social competence</b>	-.17***	-.11*	.28***	.27***
<b>Global emotional competence</b>	-.23***	-.12**	.38***	.37***

Note. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

## DISCUSSION

Although it is well-established that being emotionally competent contributes to the enhancement of students' well-being by reducing conflict and stress (Domitrovich et al., 2017; Pérez-López et al., 2021; Ros-Morente et al., 2017), promoting academic performance (Greenberg et al., 2017; MacCann et al., 2020; Pulido & Herrera, 2017), and fostering a positive classroom environment (Díaz-López et al., 2019; Ruvalcaba-Romero et al., 2017), there are limited Spanish-validated instruments available to assist teachers in evaluating emotional competencies in the first cycle of primary school education. The aim of the present study was to develop and validate the EDEPES, a scale designed to aid teachers in assessing emotional competencies in children within this age group.

The questionnaire was developed within the theoretical model proposed by Bisquerra and Pérez-Escoda (2007) and the GROP, which considers five basic emotional competencies: emotional awareness, emotional regulation, emotional autonomy, social competence, and competencies for life and well-being. This model was selected for its inclusive nature, as it adopts an integrative perspective that extends beyond the confines of emotional intelligence theory and remains open to adjacent theories related to emotional competencies, such as positive psychology and multiple intelligences theory. Additionally, since this model was developed with consideration of the Hispanic context, it offers an interesting and relevant perspective for the foundation of the EDEPES questionnaire.

In light of the first objective, which involved exploring the factorial structure of the questionnaire, the exploratory factor analysis (EFA) suggested a 5-factor model that could align with the theoretical framework. However, contrary to our expectations, some items initially intended for specific factors exhibited higher loadings for others. For example, items initially included to measure social competence loaded on emotional regulation and emotional autonomy. Similarly, certain items considered for emotional autonomy also loaded on emotional regulation. Furthermore, none of the items included in the dimension of competencies for life and well-being loaded for this specific dimension; instead, they showed factor loadings for emotional regulation and emotional autonomy.

Regarding items intended to measure emotional recognition and emotional expression, which are aspects encompassed within emotional awareness the results indicated good factor loadings for all the emotions included in emotion recognition. However, for emotional expression, only negative emotions loaded in one factor, while positive emotions exhibited either small loadings for other factors (e.g., "joy") or similar factor loadings for multiple factors (e.g., "love"). Additionally, we observed that one of the factors consisted of only four items, with most of them showing factor loadings below .40.

Next, after eliminating irrelevant items that didn't show a strong loading for either of the preliminary factors during the EFA, the second objective involved performing a CFA to test three models: one strictly following the theoretical model, one inspired by the results of the EFA, and one hybrid model that we decided to propose to find a balance between the theoretical model and the results suggested by the EFA. After testing the three models, the hybrid model reported the best model fit. This model included 28 items, composing the final version of our questionnaire, the EDEPES-28, fulfilling our third objective.

For this model, four dimensions were proposed. These dimensions do not completely overlap with the model proposed by Bisquerra and Pérez-Escoda (2007), as is the case with other proposals to measure emotional competencies in young children within this theoretical framework, such as the ECAQ (Bartroli et al., 2022). Instead, they redefine the suggested emotional competencies while also considering the data suggestions. The EDEPES-28 includes the dimensions of emotional awareness, measuring the ability to observe and identify one's own and others' emotions; emotional regulation, referring to the ability to control and influence one's own emotions with the help of others or the teacher; emotional autonomy, encompassing the capacity to self-manage, maintain a healthy self-image and self-esteem, and show a positive and assertive attitude; and social competence, entailing effective and respectful communication, as well as the skillful display of prosocial behaviors. These four basic emotional competencies constitute a global emotional competence, which is a higher-order dimension supported by the model.

Related to reliability and considering the fourth objective, all the dimensions included in the EDEPES-28 showed excellent values, with Cronbach's  $\alpha$ , MacDonald's  $\omega$  and composite reliability (CR) above .80. The higher order factor for the global emotional competence also reported an excellent hierarchical  $\omega$ . Since values above .60 were considered adequate (MacDonald, 1999; Taber, 2018), it can be concluded that the EDEPES-28 exhibited a solid internal consistency. Test-retest reliability was measured with intra-class correlations (ICC), and again the four emotional competencies reported good results, with values above .40 considered fair (Cicchetti, 1994). Additionally, average variance extracted (AVE) was explored to observe how our latent constructs explained the variance of their indicators. Most of the emotional competencies demonstrated values above .50 (Fornell & Larcker, 1981; Hair et al., 2010), with only emotional autonomy showing a slightly lower value of .49. Overall, the results indicated that the EDEPES-28 exhibited good reliability, consistent with other questionnaires developed within the same theoretical model (Bartroli et al., 2022; Pérez-Escoda et al, 2021).

The next objective involved assessing measurement invariance considering gender. The EDEPES-28 demonstrated equivalence across genders, indicating that the factors included in our model have the same meaning when evaluating boys

or girls. None of the previously validated questionnaires within this model have reported results related to measurement invariance (Bartroli et al., 2022; Pérez-Escoda et al., 2021). However, psychometric evaluations of other questionnaires measuring emotional intelligence, such as the EQ-I Young Version (Davis & Wigelsworth, 2017) and the Wong and Law Emotional Intelligence Scale (WLEIS) (Di et al., 2020), have also demonstrated similar results in this regard.

Given the ensured gender measurement invariance, we investigated gender differences across courses. Among first-year students, variations were identified in the competencies related to emotional regulation and social competence. In second-year students, girls exhibited higher scores in all competencies, including global emotional competence. Previous research has consistently highlighted distinctions between boys and girls, with girls expressing more positive emotions (e.g., sympathy) and internalizing emotions (e.g., anxiety), while boys tend to express more externalizing emotions (e.g., anger) (Chaplin & Aldao, 2013).

Other studies have reported that girls demonstrate higher proficiency in pro-social behaviors (Maguire et al., 2016; McTaggart et al., 2021), excel in emotional recognition, emotional regulation, and competent emotional expression (Maguire et al., 2016), and exhibit more accurate discrimination of emotions (Tottenham et al., 2011). A recent study exploring gender differences in emotion regulation in Spain highlighted that, during early childhood, girls tend to score higher than boys (Sanchis-Sanchis et al., 2020). Another study investigating emotional competence within the model proposed by Bisquerra and Pérez-Escoda (2007) reported significant differences in the first cycle of primary education, with these differences becoming more pronounced in the second cycle and diminishing by the third cycle (López-Cassà et al., 2021). These distinctions may be explained by maturation processes that occur earlier in girls than in boys, aligning with the questionnaire findings that reveal more pronounced differences in the second year than in the first year of primary school.

Meeting our latest objective of examining criterion validity, we conducted correlations between the four emotional competencies and the overall emotional competence with anxiety and academic performance. These assessments were carried out twice within a six-month interval. Previous research has underscored meaningful connections between emotional competencies and children's anxiety (Mathews et al., 2016) as well as academic performance (MacCann et al., 2020). Notably, these relationships seem to be more pronounced in younger children, which is why these variables were selected to explore the associations with the emotional competencies proposed by the EDEPES-28.

In relation to anxiety at Time 1, all emotional competencies displayed a negative relationship. However, at Time 2, only emotional autonomy and social competence, along with the overall emotional competence, demonstrated a significant negative



association. This suggests that emotional awareness and emotional regulation may be more closely linked to the current state of anxiety, while competencies such as emotional autonomy and social competence may also be associated with future symptoms of anxiety. Numerous studies have shown negative correlations between emotional competencies and anxiety in both children and adolescents (Mathews et al., 2016; Ros-Morente et al., 2017; Schoeps et al., 2021). Additionally, research indicates that trait emotional intelligence can predict symptoms of anxiety and depression (Russo et al., 2012). Children who report less effective emotional expression, less emotional awareness, and lower emotional self-efficacy tend to exhibit higher anxiety. Thus, it is crucial to develop solid and skillful emotional competencies to enhance children's well-being.

Regarding academic performance, all emotional competencies showed positive associations at both time points. These positive relationships align with findings from previous studies, illustrating that nurturing emotional competencies can positively impact children's academic performance (Greenberg et al., 2017; Huang & Zeng, 2023; Maccann et al., 2019; Pulido & Herrera, 2017; Sporzon & López-López, 2021). Moreover, these benefits extend to adolescents and young adults (Maccann et al., 2019; Merino-Tejedor et al., 2017; Pulido & Herrera, 2017). Based on the results obtained, the EDEPES-28 shows an optimal criterion validity, evidencing relevant links with children's anxiety and academic performance.

### Limitations and future considerations

Before presenting our conclusions, several limitations need to be considered. Firstly, we did not employ a random sampling method, and the children who participated were from pre-selected schools interested in establishing a collaboration agreement. Future research should aim to explore more diverse populations, including the evaluation of samples with special conditions, such as children with disabilities or specific diagnoses. This would allow us to observe whether the assessment of emotional competencies yields similar results in populations with special needs.

Secondly, children's emotional competencies were assessed by teachers. Although the questionnaire is designed as a tool for teachers to evaluate emotional competencies, as self-report assessments are especially challenging in children of these ages, it is important to note that despite prior guidance to ensure proper use and reliable assessments, there remains a potential source of bias in this process. While we included a student self-report questionnaire for anxiety and assessed academic performance through evaluations by various teachers, future research should consider developing and incorporating separate questionnaires for students and parents, in addition to the teacher's report. This approach would facilitate the

comparison and contrast of results reported by different sources, providing a more comprehensive insight into the actual emotional competence of children.

Thirdly, criterion validity was only explored concerning the relationship with anxiety and academic performance. Although these variables were selected due to their relevant links with emotional competencies, future research should investigate associations between emotional competencies and other variables of interest, such as the use of specific emotion regulation strategies or children's perception of the classroom climate.

## CONCLUSIONS

Despite the limitations presented above, the results indicate that the EDEPES-28 is a reliable instrument for teachers to measure children's emotional competencies during early primary education. The data supported the factorial structure of the proposed hybrid model, inspired by the model developed by the GROPE and the results reported by the EFA. The final version of the questionnaire, the EDEPES-28, comprises four emotional competencies: emotional awareness, emotional regulation, emotional autonomy, and social competence, as well as a higher-order factor to measure global emotional competence. Both the four emotional competencies and the global emotional competence demonstrated solid reliability and construct validity. The results related to gender also supported configural, metric, and scalar invariance, with no differences between the multigroup model and the constrained models. Additionally, relevant gender differences were highlighted, particularly in second-year students, with girls showing higher scores in all competencies.

Lastly, results revealed good criterion validity, with emotional competencies displaying negative associations with anxiety and positive links with academic performance. These findings underscore the validity and reliability of the EDEPES-28, making it a useful tool to measure emotional competencies in children within the first cycle of primary school.

## ACKNOWLEDGEMENTS

This publication is part of the RTI2018-098294-B-I00/PRE2019-091604, funded by MCIN/AEI/10.13039/501100011033/ERDF "A way of doing Europe".

## REFERENCES

- Bartroli, M., Angulo-Brunet, A., Bosque-Prous, M., Clotas, C., & Espelt, A. (2022). The Emotional Competence Assessment Questionnaire (ECAQ) for children aged from 3 to 5 years: validity and reliability evidence. *Education Sciences*, *12*, 489. <https://doi.org/10.3390/educsci12070489>
- Bisquerra, R. (2020). *Emociones: instrumentos de medición y evaluación*. Síntesis.
- Bisquerra, R., & Pérez-Escoda, N. (2007). Las competencias emocionales. *Educación XX1*, *10*, 61-82.
- Bisquerra Alzina, R., & Lopez Cassà, E. (2021). La evaluación en la educación emocional: instrumentos y recursos. *Aula Abierta*, *50*(4), 757–766. <https://doi.org/10.17811/rifie.50.4.2021.757-766>
- Buck, R. (1990). Rapport, emotional education, and emotional competence. *Psychological Inquiry*, *1*(4), 301-302. [https://doi.org/10.1207/s15327965pli0104\\_4](https://doi.org/10.1207/s15327965pli0104_4)
- Chaplin, T. M., & Aldao, A. (2013). Gender differences in emotion expression in children: a meta-analytic review. *Psychological Bulletin*, *139*(4), 735-765. <https://doi.org/10.1037/a0030737>
- Cicchetti, D. V. (1994). Guidelines, criteria, and rules of thumb for evaluating normed and standardized assessment instruments in psychology. *Psychological Assessment*, *6*, 284-290. <https://doi.org/10.1037/1040-3590.6.4.284>
- Collaborative for the Advancement of Social and Emotional Learning. (2003). *Safe and sound: An educational leader's guide to evidence-based social and emotional learning (SEL) programs*. ERIC Clearinghouse.
- Davis, S. K., & Wigelsworth, M. (2018). Structural and predictive properties of the Emotional Quotient Inventory Youth Version–Short Form (EQ-i:YV[S]). *Journal of Personality Assessment*, *100*(2), 197-206. <https://doi.org/10.1080/00223891.2017.1280502>
- Di, M., Deng, X., Zhao, J., & Kong, F. (2022). Psychometric properties and measurement invariance across sex of the wong and law emotional intelligence scale in chinese adolescents. *Psychological Reports*, *125*(1), 599-619. <https://doi.org/10.1177/0033294120972634>
- Díaz-Lopez, A., Rubio-Hernández, F. J., & Carbonell-Bernal, N. (2019). Efectos de la aplicación de un programa de inteligencia emocional en la dinámica de bullying. Un estudio piloto. *Journal of Psychology and Education*, *14*(2), 124-135. <https://doi.org/10.23923/rpye2019.02.177>
- Domitrovich, C., Durlak, J., Staley, K., & Weissberg, R. (2017). Social-emotional competence: an essential factor for promoting positive adjustment and reducing risk in school children. *Child Development*, *88*. <https://doi.org/10.1111/cdev.12739>

- Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. B. (2011). The impact of enhancing students' social and emotional learning: a meta-analysis of school-based universal interventions. *Child Development*, *82*(1), 405-432. <https://doi.org/10.1111/j.1467-8624.2010.01564.x>
- Fernández-Berrocal, P., & Extremera, N. (2016). Ability emotional intelligence, depression, and well-being. *Emotion Review*, *8*(4), 311-315. <https://doi.org/10.1177/1754073916650494>
- Ferrándiz, C., Hernández-Torrano, D., Bermejo, R., Ferrando, M., & Sainz Gómez, M. (2012). Social and emotional intelligence in childhood and adolescence: Spanish validation of a measurement instrument. *Revista de Psicodidáctica*, *17*, 309-338.
- Filella, G., Morera, M. -J., Pérez-Escoda, N., & Granado, X. (2014). Resultados de la aplicación de un programa de educación emocional en educación primaria. *Estudios sobre Educación*, *26*, 125-147. <https://doi.org/10.15581/004.26.125-147>
- Gillis, J. S., Gómez Fernández, D. E., & Pulido García, M. T. (2011). *CAS: Cuestionario de Ansiedad Infantil: manual*. TEA Ediciones. <https://bit.ly/3JhAbYx>
- Greenberg, M., Domitrovich, C., Weissberg, R., & Durlak, J. (2017). Social and emotional learning as a public health approach to education. *Future of Children*, *27*, 13-32. <https://doi.org/10.1353/foc.2017.0001>
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*, 1-55. <https://doi.org/10.1080/10705519909540118>
- Huang, C., & Zeng, X. (2023). Social and emotional development of disadvantaged students and its relationship with academic performance: evidence from China. *Frontiers in Psychology*, *14*, 1170656. <https://doi.org/10.3389/fpsyg.2023.1170656>.
- Jordan, J.-A., McRorie, M., & Ewing, C. (2010). Gender differences in the role of emotional intelligence during the primary-secondary school transition. *Emotional & Behavioural Difficulties*, *15*(1), 37-47. <https://doi.org/10.1080/13632750903512415>
- López-Cassà, E. (2007). *La educación emocional en el segundo ciclo de la educación infantil. Diseño, desarrollo y evaluación de un programa de educación emocional para la prevención y el desarrollo humano*. [Tesis Doctoral]. Universitat de Barcelona (Barcelona).
- López-Cassà, E., & Pérez-Escoda, N. (2022). La educación emocional: una necesidad para el bienestar personal y social. En N. Pérez-Escoda & E. López-Cassà (Eds.), *Retos para el bienestar social y emocional* (pp. 23-35). Wolters Kluwer.
- Lozano, M. Y., & Hernández Arroyo, S. (2022). Emotional education in legislation: analysis based on minimum contents decrees from LOMLOE. HUMAN REVIEW.

- International Humanities Review / Revista Internacional De Humanidades*, 13(2), 1–17. <https://doi.org/10.37467/revhuman.v11.4023>
- Lorenzo-Seva, U. (2022). SOLOMON: a method for splitting a sample into equivalent subsamples in factor analysis. *Behavior Research Methods*, 54(6), 2665-2677. <https://doi.org/10.3758/s13428-021-01750-y>
- MacCallum, R. C., Widaman, K. F., Zhang, S., & Hong, S. (1999). Sample size in factor analysis. *Psychological Methods*, 4, 84-99. <https://doi.org/10.1037/1082-989X.4.1.84>
- Maccann, C., Jiang, Y., Brown, L., Double, K., Bucich, M., & Minbashian, A. (2019). Emotional intelligence predicts academic performance: a meta-analysis. *Psychological Bulletin*, 146. <https://doi.org/10.1037/bul0000219>
- Maguire, L. K., Niens, U., McCann, M., & Connolly, P. (2016). Emotional development among early school-age children: gender differences in the role of problem behaviours. *Educational Psychology*, 36(8), 1408-1428. <https://doi.org/10.1080/01443410.2015.1034090>
- Mathews, B., Koehn, A., Movahed Abtahi, M., & Kerns, K. (2016). Emotional competence and anxiety in childhood and adolescence: a meta-analytic review. *Clinical Child and Family Psychology Review*, 19. <https://doi.org/10.1007/s10567-016-0204-3>
- Mavroveli, S., Petrides, K. V., Shove, C., & Whitehead, A. (2008). Investigation of the construct of trait emotional intelligence in children. *European Child & Adolescent Psychiatry*, 17(8), 516-526. <https://doi.org/10.1007/s00787-008-0696-6>
- Mayer, J. D., Salovey, P., Caruso, D. R., & Sitarenios, G. (2003). Measuring emotional intelligence with the MSCEIT V2.0. *Emotion*, 3(1), 97-105. <https://doi.org/10.1037/1528-3542.3.1.97>
- McDonald, R. P. (1999). *Test theory: A unified treatment*. Lawrence Erlbaum Associates Publishers.
- McTaggart, V., McGill, R., & Stephens, S. (2022). Gender differences in the development of children's social and emotional competencies during the pre-school year. *Early Child Development and Care*, 192(12), 1952-1966. <https://doi.org/10.1080/03004430.2021.1957859>
- Petrides, K. V., & Furnham, A. (2001). Trait emotional intelligence: psychometric investigation with reference to established trait taxonomies. *European Journal of Personality*, 15(6), 425-448. <https://doi.org/10.1002/per.416>
- Pérez-Escoda, N., & Filella, G. (2019). Educación emocional para el desarrollo de competencias emocionales en niños y adolescentes. *Praxis & Saber*, 10(24), 23-44. <https://doi.org/10.19053/22160159.v10.n25.2019.8941>
- Pérez-González, J. C., Jiménez-Cantón, G., Rodríguez-Donaire, A., & Cejudo-Prado, J. (2022). Vademécum de la evaluación comprehensiva del aprendizaje social y

- emocional y de la inteligencia emocional. En N. Pérez-Escoda, & E. López-Cassà (Eds.), *Retos para el bienestar social y emocional* (pp. 247-271). Wolters Kluwer.
- Pérez López, R., & Gómez Hurtado, I. (2021). Educando las emociones: investigación-acción sobre un programa de educación emocional para el alumnado de educación primaria. *Investigación en la Escuela*, 104, 13-28. <http://dx.doi.org/10.12795/IE.2021.i104.02>
- Poulou, M. S., Grazzani, I., Cavioni, V., Ornaghi, V. M., Conte, E., Cefai, C., Camilleri, L., & Bartolo, P. (2022). *Teachers' and students' changes in social and emotional competences following the implementation of PROMEHS: a European program for promoting mental health at schools. educational research applications*. <https://bit.ly/3TX92QK>
- Rivers, S., Brackett, M., Reyes, C., Mayer, J., Caruso, D., & Salovey, P. (2012). Measuring emotional intelligence in early adolescence with the MSCEIT-YV: psychometric properties and relationship with academic performance and psychosocial functioning. *Journal of Psychoeducational Assessment*, 30, 344-366. <https://doi.org/10.1177/0734282912449443>
- Ros-Morente, A., Filella, G., Ribes, R., & Escoda, N. (2017). Análisis de la relación entre competencias emocionales, autoestima, clima de aula, rendimiento académico y nivel de bienestar en una muestra de escolares de educación primaria. *REOP - Revista Española de Orientación y Psicopedagogía*, 28, 8. <https://doi.org/10.5944/reop.vol.28.num.1.2017.19355>
- Ruvalcaba Romero, N., Fernández-Berrocal, P., Salazar-Estrada, J., & Gallegos, J. (2017). Positive emotions, self-esteem, interpersonal relationships and social support as mediators between emotional intelligence and life satisfaction. *Journal of Behavior, Health & Social Issues*, 9. <https://doi.org/10.1016/j.jbhsi.2017.08.001>
- Salovey, P., & Mayer, J. D. (1989). Emotional intelligence. *Imagination, Cognition and Personality*, 9(3), 185-211. <https://doi.org/10.2190/DUGG-P24E-52WK-6CDG>
- Sanchis-Sanchis, A., Grau, M. D., Moliner, A. -R., & Morales-Murillo, C. P. (2020). Effects of age and gender in emotion regulation of children and adolescents. *Frontiers in Psychology*, 11. <https://bit.ly/43zV3Dz>
- Schoeps, K., Tamarit, A., Postigo-Zegarra, S., & Montoya-Castilla, I. (2021). Los efectos a largo plazo de las competencias emocionales y la autoestima en los síntomas internalizantes en la adolescencia. *Revista de Psicodidáctica*, 26(2), 113-122. <https://doi.org/10.1016/j.psicod.2020.12.001>
- Schultz, D., Trentacosta, C., Izard, C.E., Leaf, P., & Mostow, A. (2004). *Children's emotion processing: the development of the Assessment of Children's Emotion Skills (ACES)*.

- Sporzon, G., & López, M. C. (2021). Evaluación de la inteligencia emocional y la conducta prosocial y su correlación en alumnado de educación primaria. *Estudios sobre Educación, 40*, 51-73. <https://doi.org/10.15581/004.40.51-73>
- Taber, K. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education, 48*, 1-24. <https://doi.org/10.1007/s11165-016-9602-2>
- Taylor, R. D., Oberle, E., Durlak, J. A., & Weissberg, R. P. (2017). Promoting positive youth development through school-based social and emotional learning interventions: a meta-analysis of follow-up effects. *Child Development, 88*(4), 1156-1171. <https://doi.org/10.1111/cdev.12864>
- Tottenham, N., Hare, T. A., & Casey, B. J. (2011). Behavioral assessment of emotion discrimination, emotion regulation, and cognitive control in childhood, adolescence, and adulthood. *Frontiers in Psychology, 2*, 39. <https://doi.org/10.3389/fpsyg.2011.00039>

**Supplementary Table 1**

*Rotated factor loadings from the Exploratory Factor Analysis (EFA), kurtosis and skewness values, explained variance, and correlations between factors (N=557).*

Items	Skewness	Kurtosis	F1	F5	F3	F2	F4	h	u2	Co
Exp_1	-.03	-.73	-.06	.13	<b>.74</b>	.17	-.10	.67	.32	1.22
Exp_2	.09	-.72	.07	.02	<b>.84</b>	.01	-.10	.73	.26	1.04
Exp_3	-.47	.06	.21	.18	.24	<b>.45</b>	-.03	.57	.42	2.37
Exp_4	.02	-.93	-.34	.05	<b>.65</b>	.16	.18	.51	.48	1.85
Exp_5	-.38	-.10	.30	-.01	.35	.31	.05	.46	.53	2.99
Exp_6	-.12	-.60	.18	.20	<b>.58</b>	-.07	-.19	.54	.45	1.72
Exp_7	-.16	-.33	.05	.30	<b>.48</b>	.11	.05	.56	.43	1.85
Exp_8	.30	-.47	.07	-.07	<b>.82</b>	-.19	.13	.68	.31	1.18
Reco_9	-.20	-.42	-.02	<b>.80</b>	-.05	.16	-.02	.70	.29	1.09
Reco_10	-.31	-.05	.01	<b>.81</b>	.14	-.08	.04	.77	.22	1.08
Reco_11	-.37	-.37	.09	<b>.73</b>	-.17	.29	-.11	.72	.27	1.52
Reco_12	-.42	-.07	.00	<b>.67</b>	.09	-.04	.09	.55	.44	1.08
Reco_13	-.52	.31	.13	<b>.60</b>	.02	.10	.08	.58	.41	1.18
Reco_14	-.14	-.19	.05	<b>.80</b>	.12	-.08	.05	.76	.23	1.07
Reco_15	-.30	.10	.01	<b>.82</b>	.05	-.08	.04	.70	.29	1.03
Reco_16	-.04	-.47	.08	<b>.44</b>	.28	-.32	.27	.58	.41	3.43
ExpEco_17	.11	.32	.28	.33	.12	-.12	.33	.56	.43	3.45
Reg_18	-.28	-.50	<b>.63</b>	.10	.02	.15	-.09	.55	.44	1.22
Reg_19	-.26	-.35	<b>.48</b>	-.07	.20	.17	.15	.43	.56	1.91
Reg_20	-.17	-.10	<b>.77</b>	-.01	-.03	-.02	.01	.57	.42	1.00
Reg_21	-.11	-.31	<b>.80</b>	.02	-.04	-.06	.04	.62	.37	1.02
Reg_22	-.29	-.32	<b>.65</b>	-.02	-.01	.14	.17	.60	.39	1.23
Reg_23	-.18	-.26	<b>.84</b>	-.02	-.06	-.04	.07	.67	.32	1.02
Au_24	-.41	.29	-.02	.35	.03	.18	<b>.41</b>	.49	.50	2.35
Au_25	-.18	-.17	.11	.27	.08	.23	<b>.44</b>	.62	.37	2.46
Au_26	-.32	.02	.09	.19	-.06	.14	<b>.64</b>	.66	.33	1.34
Au_27	-.47	-.21	-.02	.20	.07	<b>.62</b>	.23	.68	.31	1.55
Au_28	-.42	-.16	.25	.21	-.05	<b>.41</b>	.15	.55	.44	2.57
Au_29	-.29	.30	<b>.49</b>	.06	.05	.02	.39	.60	.39	1.97
Au_30	-.12	.12	<b>.44</b>	.20	-.02	-.15	.39	.56	.43	2.67
Sc_31	-.46	-.32	.21	.08	-.02	<b>.56</b>	.20	.61	.38	1.59
Sc_32	-.47	.02	<b>.53</b>	.20	.13	.21	-.18	.60	.39	2.06
Sc_33	-.64	.25	<b>.65</b>	.10	.06	.12	-.18	.54	.45	1.30
Sc_34	-.34	-.24	<b>.73</b>	.10	.11	.05	-.12	.65	.34	1.15



Construction and validation of the emotional development on early primary education scale  
(EDEPES-28)

Items	Skewness	Kurtosis	F1	F5	F3	F2	F4	h	u2	Co
Sc_35	-.26	-.35	.06	-.02	.00	.34	<b>.52</b>	.48	.51	1.76
Sc_36	-.31	-.34	<b>.54</b>	.12	.07	.25	.05	.63	.36	1.57
Sc_37	-.33	-.05	<b>.72</b>	.08	.03	.09	-.01	.65	.34	1.06
Lwc_38	-.28	-.03	<b>.45</b>	.08	.01	.34	.07	.54	.45	2.00
Lwc_39	-.30	-.04	.24	-.08	.05	.34	.27	.34	.65	2.94
Lwc_40	-.4	-.16	.30	.04	.03	<b>.62</b>	.04	.68	.31	1.45
Lwc_41	-.06	.07	<b>.79</b>	-.04	.00	-.12	.13	.60	.39	1.10
<b>SS loadings</b>			8.3	6.33	3.91	3.5	2.72			
<b>%Var</b>			0.2	0.15	0.1	0.09	0.07			
<b>CumVar</b>			0.2	0.36	0.45	0.54	0.6			
<b>% Explained</b>			0.34	0.26	0.16	0.14	0.11			
<b>Cum %</b>			0.34	0.59	0.75	0.89	1			
<b>F1</b>			1							
<b>F5</b>			0.52	1						
<b>F3</b>			0.2	0.5	1					
<b>F2</b>			0.4	0.39	0.08	1				
<b>F4</b>			0.33	0.36	0.16	0.17	1			

Note. **h2**: communality; **u2**: uniqueness; **com**: complexity; **Exp**: Emotional expression (Emotional awareness); **Reco**: Emotional recognition (Emotional awareness); **ExpReco**: Ambivalence (Emotional awareness); **Reg**: Emotional regulation; **Au**: Emotional autonomy; **Sc**: Social competence; **Lwc**: Life and well-being competences.



# An examination of the relationship between an intervention with emotional competences and violence. The role of anxiety

## *Análisis de la relación e intervención entre las competencias emocionales y la violencia. El papel de la ansiedad*

Agnès Ros Morente <sup>1\*</sup> 

Raquel Gomis <sup>1</sup> 

María Priego <sup>1</sup> 

Gemma Filella <sup>1</sup> 

<sup>1</sup> Universidad de Lleida, Spain

\* Corresponding author. E-mail: [agnes.ros@udl.cat](mailto:agnes.ros@udl.cat)

### Cómo referenciar este artículo/ How to reference this article:

Ros Morente, A., Gomis, R., Priego, M., & Filella, G. (2024). An examination of the relationship between an intervention with emotional competences and violence. The role of anxiety. *Educación XX1*, 27(2), 283-299. <https://doi.org/10.5944/educxx1.35828>

**Date received:** 14/10/2022

**Date accepted:** 22/02/2024

**Published online:** 28/06/2024

### ABSTRACT

School violence has received increased interest from researchers during the last decades. According to the literature, violence in schools is related to various negative outcomes, such as a negative climate, decreased well-being of the students, or bad academic performance. Numerous studies have tried to detangle the underlying variables that can improve coexistence and prevent peer aggression and violence. Emotional competencies seem to constitute an interesting factor in this deed, increasing well-being and positive coexistence

in class. The present study aims at analyzing the role of emotional competencies when preventing violence, as well as the role that anxiety plays in this relationship. The sample was constituted of 767 Spanish primary school students of 4th, 5<sup>th</sup>, and 6th grade from various public and private centers of a few northern Spain cities. Variables of emotional competencies, anxiety, and violence were gathered with self-informed questionnaires (CDE 9-13, STAI and CUVE-R). A pre-post design with experimental and control group was carried out. Results show that, as it was expected, emotional competencies are inversely correlated to violence. Also, anxiety plays an important role in the relationship between both factors, although no full mediation was found. Several interaction effects between pre and post evaluation were found in different variables, such as emotional awareness, social competence, life and well-being competencies and the global score of emotional competence. According to our results, students decreased their anxiety levels after intervention, in a significant way. Also, it was observed that higher levels of emotional competencies are directly related to lower levels of violence in post evaluation. All in all, interventions, like the one described in the present article, may be beneficial and show that the improvement of the management of emotions may be a good solution to prevent violent behaviors in school.

**Keywords:** school coexistence, violence, emotional competences, anxiety, school climate

## RESUMEN

Durante las últimas décadas, la comunidad científica ha mostrado interés en la investigación de la violencia escolar. De acuerdo con la literatura, la violencia en los centros escolares está relacionada con varios aspectos negativos, como son un clima de aula negativo, un menor bienestar de los estudiantes o unos malos resultados académicos. Varios estudios han intentado averiguar las variables que subyacen a esta relación, previniendo así, las conductas violentas entre los estudiantes. El presente estudio tiene como objetivo analizar el rol de las competencias emocionales para prevenir la violencia, así como el papel que juega la ansiedad. La muestra fue constituida por 767 alumnos de 4º, 5º y 6º de diferentes centros privados y públicos de ciudades del norte de España. Se recogieron datos de las variables de competencias emocionales, ansiedad y violencia con cuestionarios (CDE 9-13, STAI and CUVE-R). Se realizó un diseño pre-post con grupo control. Tal y como se esperaba, las competencias emocionales están inversamente relacionadas con la violencia. Además, el grado de ansiedad juega un papel muy relevante en la relación. No se observó un efecto mediador de la ansiedad completo. Diferentes efectos de interacción fueron detectados entre los momentos pre y post en diferentes variables como fueron, consciencia emocional, competencia social o la competencia para la vida y el bienestar. De acuerdo con los resultados, los estudiantes redujeron los niveles de ansiedad después de la intervención de manera significativa. También, se observaron mayores niveles de violencia en aquellos individuos con menos manejo de sus competencias emocionales. Así pues, a modo de conclusión, los resultados parecen indicar que las intervenciones como la realizada en el presente estudio, podrían ser de gran beneficio y mostrar mejoras en

el manejo de las emociones, previniendo, de este modo, las conductas violentas en los centros escolares.

**Palabras clave:** convivencia escolar, violencia, competencias emocionales, ansiedad, clima de aula

## INTRODUCTION

School violence and its prevention have become subjects of great international scientific interest, given the latest numbers referring to aggression. It is important to note that reports, like the one of UNESCO, in 2019, indicate that almost one in three students (32%) has suffered an episode of bullying.

School violence is related to many unhealthy outcomes, such as mental disorders symptoms (Fabbri et al., 2022; Gong et al., 2022; Kim et al., 2020) less academic achievement (Kim et al., 2020), or worsened psychological well-being (Fabbri et al., 2022). At a pedagogical level, there are also many negative consequences, such as, a bad school climate (Benbenishty et al., 2016). In this sense, studies show that the more school violence, the worse climate is observed in the school. This fact has several negative implications. For example, different studies have shown that when the school environment is negative, the centre becomes more vulnerable to situations of bullying (Wang et al., 2014) as well as to the social and emotional development of students (Lester et al., 2017), and academic performance is affected (Benbenishty et al., 2016).

Differently, a positive school climate, with good coexistence and a good classroom climate, promotes students' motivation to learn, at the same time that it improves social skills (Curby et al., 2009; Wang et al., 2014). In addition to that, healthy friendship relationships and emotional support seem to promote a better learning process and higher academic achievement (Kim et al., 2020; Reyes et al., 2012).

When studying school climate, results at all ages point at the importance of variables such as emotional competencies or anxiety (Coyle et al., 2021; Gong et al., 2022). Studies show that these variables have a great impact in school violence, students' well-being, and anxiety, among others (Ros-Morente et al., 2017). For this reason, they are of great interest in educational research at an international level, since an improvement in emotional skills could mean an improvement in other variables and in the school climate itself (Martínez-Sánchez, 2019). In addition, it is a fact that education of these skills helps the emotional development of students and good school performance (Nasir & Masrur, 2010).

Also, some studies have shown that emotional competencies could predict anxiety levels in students, as a predictor of the level of psychological well-being

(Ros-Morente et al., 2017). Regarding the relationship of anxiety, school climate and school violence, there are studies that find significant relationships between students with high levels of anxiety and higher levels of aggressive behavior, pointing to emotional regulation as an explanation (Fernández-Sogorb et al. al., 2020). That is, those students that have more problems regulating their emotions will tend to use aggression to manifest their emotional state.

Thus, if emotional competencies are linked to anxiety levels (Ros-Morente et al., 2017) and anxiety levels are related to psychological well-being and more aggressive behaviors at school, and, as a consequence, to greater school violence (Fernández-Sogorb et al., 2020), one can assume that training the management of emotions will have a great benefit when promoting favorable school climate and reducing the rates of violence in the centers.

With this in mind, authors have proposed different training programs, which have been developed based on these emotional competencies. Its results, so far, are promising (Corcoran et al., 2018; Durlak et al., 2011; Taylor et al., 2017), showing improvements in emotional skills, prosocial behavior and behavioral problems of students, as well as in academic performance (Weissberg et al., 2015) and reducing the anxiety of the students (Keefer et al., 2018; Sánchez-Gómez et al., 2020).

When talking about emotional competencies, however, it is important to clarify and identify the theory which frames the different studies, since there is no general consensus on the conceptualizations, models and tools used to measure intellectual, educational and emotional skills (Pérez-González et al., 2020; Nelis et al., 2009).

This study is based on the emotional competencies model of the Psychopedagogical Orientation Research Group (GROP), which suggests five emotional competencies which can be trained to improve emotional skills and psychological well-being. These group of competences are: emotional awareness, emotional regulation, social competence, emotional autonomy, and skills for life and well-being (Bisquerra and Pérez-Escoda, 2007). Emotional awareness refers to the skill to identify one's emotions and the emotions of others. Emotion regulation is when a person can manage the emotions that is feeling at a certain moment. Emotional autonomy describes aspects related with self-esteem. Social competence concern prosocial behaviour and skills for the life and well-being describes the ability to function effectively in life (Bisquerra & Pérez-Escoda, 2007).

The objective of this study is to evaluate an emotional skills program developed for students from 4<sup>th</sup> to 6<sup>th</sup> grade) aiming to improve emotional skills, as well as reducing anxiety. The aim is to observe the relationship between school violence, emotional skills, and anxiety with a sample of school children in the fourth, fifth and sixth grades of primary education (8 to 12 years old) before and after an intervention to work on emotional competencies.

For all those reasons, it is hypothesized that after the intervention with the emotional education program and in the post-test evaluation, emotional competencies of students would improve. Also, it is expected a reduction in anxiety. Likewise, it is expected to observe a negative relationship between emotional competencies and the presence of school violence, also presenting an indirect relationship between them through anxiety.

## METHOD

### Participants

The sample was comprised by 767 Spanish primary school students. Between the participants, 311, 192 and 265 were coursing 4<sup>th</sup>, 5<sup>th</sup>, and 6<sup>th</sup> grade, respectively, from various public and private centers of a few northern Spain cities (Lleida, Barcelona, Donosti, and A Coruña). The experimental group consisted in 616 participants and the control group was composed by 151 participants. The mean age was 9.92 (SD = .93) for the experimental group and 9.87 (SD = .87) for the control group. Related to sex, there were 292 girls and 324 boys in the experimental group and 85 girls and 66 boys in the control group. The sample was recruited using a convenience sampling technique, due to the prior agreement established with the schools that showed voluntary interest in participating in the project. Students answered a paper-and-pencil survey two times, before and after the intervention (pretest and post-test), with parents' and teachers' consent. The majority of schools expressed their willingness to be involved in the program, and a few of them agreed to participate in the control condition with the understanding that they could access the program for their own use after the study. Since we wanted to prioritize the experimental group, these conditions resulted in a difference in sample size between the two groups.

### Measures

*Emotional competencies.* The 41-item Emotional Development Questionnaire (CDE 9-13, Pérez-Escoda et al., 2021) was used to measure the five emotional competencies developed by the GROPE (Bisquerra & Pérez-Escoda, 2007): emotional awareness, emotion regulation, emotional autonomy, social competence, and life and well-being competences, as well as the global emotional competence. Items were measured on a 11-point Likert scale with 0 indicating *never* and 10 suggesting *most of the time*. Example items are: “*I can easily describe my feelings*” and “*I get angry very often*”. Related to reliability, for the present sample, each competence

reported the following Cronbach's  $\alpha$  values: emotional awareness (Cronbach's  $\alpha_{pre} = .80$ ;  $\alpha_{post} = .81$ ); emotional regulation ( $\alpha_{pre} = .74$ ;  $\alpha_{post} = .75$ ), emotional autonomy ( $\alpha_{pre} = .65$ ;  $\alpha_{post} = .64$ ), social competence ( $\alpha_{pre} = .73$ ;  $\alpha_{post} = .72$ ) and life, well-being competences ( $\alpha_{pre} = .73$ ;  $\alpha_{post} = .70$ ) and global emotional competence ( $\alpha_{pre} = .93$ ;  $\alpha_{post} = .92$ ).

*State anxiety.* The 20-item subscale from the Spanish adaptation of the State-Trait Anxiety Inventory (STAI, Spielberger et al., 1970; Buéla-Casal et al., 2016) was used to measure state anxiety. In the Spanish version, items were measured using a 4-point scale, that ranges from 0 (indicating *not at all*) to 3 points (indicating *almost always*). Example items are: "*I find myself restless*" and "*I am worried*". Reliability and fit measures for the present sample were the following:  $\alpha_{pre} = .84$ ;  $\alpha_{post} = .85$ .

*Presence of violence in school.* The 31-item School Violence Questionnaire-Revised (CUVE-R, Álvarez-García et al., 2011) was used to measure the presence of different types of violence in the school environment. It comprises six factors: verbal violence from students towards students, verbal violence from students towards teachers, direct physical violence and threats between students, indirect physical violence by students, social exclusion and disruption in the classroom; as well as the total level of school violence. The questionnaire includes items measured on a 5-point Likert scale with 1 indicating *never* and 5 indicating *always*. Sample items include: "*Some students hit their classmates on the school grounds*" and "*Some students neither work nor allow others to work*". The evaluation of this measure was performed only after the intervention, using the scale to explore the total level of school violence as a latent variable. This variable showed an adequate reliability, with a Cronbach's  $\alpha$  value of .89.

## Procedure

First, each member of the research group contacted schools that showed interest in participating Emotion Education Program. An educational agreement was formed between the university and the schools, having the consent from both teachers and parents. After securing their unanimous approval, both emotional competences questionnaire and state anxiety questionnaire were administered to children at two separated times (before and after the intervention). The questionnaire to evaluate school violence was administered only one time (after the intervention). International Helsinki recommendations were followed and institutional approval was also obtained from the relevant ethics committees to safeguard the identity and well-being of participants both during the data collection and the intervention. Before the intervention, teachers from both the experimental and control group schools did a training session to be able to distribute the questionnaires. Only



the teachers of the experimental group underwent a 30-hour training for the intervention, explaining them the program in detail.

The intervention was conformed by two programs, one that involved 25 classroom activities integrated in the Emotional Education program developed by the GROPE (López-Cassà, 2023), and other that implied the interaction with the video game Happy 8-12 (Filella et al., 2014). Both the Emotional Education program and the video game are focused on improving children's emotional competences and are based in the emotional competences model of Bisquerra and Pérez-Escoda (2007), developed by the GROPE. Throughout the entire course, the students, together with their teachers, engaged in various activities for approximately one hour per week. These activities were tailored to each course's age group and involved an active and practical approach, including group dynamics, role-playing, discussions, relaxation exercises, and interactive games. The primary objective was to train and strengthen emotional competences, encouraging the active participation of all students.

To further reinforce emotional competences and promote assertive conflict resolution, the students used the video game "Happy 8-12," specifically designed for this purpose. The game featured 25 conflicts set in familiar contexts such as school, home, or the playground. The conflict resolution process involved several steps: first, identifying the conflict; second, recognizing the emotions inspired by the conflict; third, selecting strategies to resolve the conflict; and fourth, identifying the emotions experienced after providing an answer. In the video game, students had the option to choose passive, aggressive, or assertive responses to conflicts. However, the game actively encouraged the selection of assertive responses by awarding higher points and offering additional mini-games.

## Data analyses

Descriptive statistics were reported for each emotional competence (emotional awareness, emotional regulation, emotional autonomy, social competence, and life and well-being competences), the global emotional competence, state anxiety, and the presence of violence in school. Normality and homogeneity of variance were checked. Variables with a non-normal distribution were transformed using a two-stage approach (Templeton, 2011). To do so, total scores for each measure were used. To explore reliability, Cronbach's  $\alpha$  was reported, with values higher than .60 considered adequate (Taber, 2018).

A repeated measures mixed ANOVA was performed to explore changes related to the intervention, considering time (pretest and post-test) and group (experimental and control), using course and sex as covariates. Transformed values for each variable were introduced in the mixed model. Missing cases were

previously eliminated from the analysis. Since the sample size for each group was unbalanced, and this condition could be a potential source of bias, between-subject differences for the group variable were examined using a t-test, to assess possible pretest disparities.

Afterward, a multigroup mediation analysis was carried out to explore the relationship between global emotional competence at Time 1 (pretest) and the presence of violence at Time 2 (post-test), mediated by anxiety state at Time 2. The analysis evaluated both groups to assess possible differences between the variables' links. As both the exogenous and endogenous variables were composed of several subscales, the total scores for each subscale were used to create our latent variables. Anxiety was included in the model as an observed variable, using its total score as well.

Model fit was examined using the Chi-square test ( $\chi^2$ ), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standard Root Mean Square Residuals (SRMR). CFI and TLI values above .90 and RMSEA and SRMR below .08 were considered adequate (Hu and Bentler, 1999). The data analysis was implemented using IBM SPSS Statistics (Version 26) and R (R Core Team, 2022).

## RESULTS

First, in Table 1, descriptive statistics for each emotional competences, the global emotional competence and state anxiety were reported for time (pretest and post-test) and group (experimental and control). The measure related to the total presence of violence in school as well as their subscales were reported during post-test.

**Table 1**  
*Descriptive statistics*

Variables	M (SD)			
	Experimental		Control	
	Pretest	Post-test	Pretest	Post-test
Emotional awareness	86.39 (18.23)	90.86 (17.04)	88.91 (16.42)	88.11 (16.30)
Emotional regulation	65.37 (17.47)	67.06 (17.03)	67.59 (15.12)	67.78 (16.62)
Emotional autonomy	30.40 (6.92)	31.28 (6.51)	31.38 (6.03)	31.16 (6.56)
Social competence	54.82 (12.64)	57.99 (12.11)	56.58 (11.24)	56.68 (11.14)
Life and well-being competences	45.42 (9.53)	46.48 (8.71)	47.11 (7.68)	44.87 (8.51)
Global emotional competence	282.43 (53.35)	293.69 (49.64)	291.59 (44.99)	288.62 (47.43)
State anxiety	28.68 (6.22)	27.98 (6.01)	27.95 (5.89)	27.51 (5.87)
Verbal violence Student-Student		5.53 (1.26)		5.43 (1.08)
Verbal violence Student-Teacher		7.48 (2.04)		7.11 (2.01)
Direct physical violence		12.18 (2.29)		10.90 (2.52)
Indirect physical violence		9.25 (2.12)		8.08 (1.80)
Social exclusion		11.19 (2.17)		9.38 (1.72)
Classroom disruption		10.60 (1.91)		9.46 (2.08)
Total presence of school violence		56.25 (9.75)		50.39 (9.26)

Next, to explore the effect of the program, examining differences in group, time, and the interaction between group and time, a repeated measure mixed ANOVA was performed using previously normalized variables. Most of the variables reported significant Kolmogorov-Smirnov and Shapiro-Wilk values, except for emotional regulation, with negative skewed distributions. As the sample size was unbalanced between the experimental and the control group, differences related to group were explored by performing a t-test. There were no group differences in most of the variables at the pretest, except for life and well-being competences ( $t(765) = -2.29$ ,  $p = .023$ ), with the experimental group reporting lower values.

Subsequently, considering these previous differences, results for the repeated measures ANOVA were explored. Related to the main effect for the variable time, results showed a significant main effect of time in state anxiety ( $F_{(1.760)} = 4.02, p = .045, \eta^2 p = .005$ ), with a decrease in the mean from pretest to post-test. No significant main effect on time was detected in none of the emotional competences: emotional awareness ( $F_{(1.760)} = .88, p = .348, \eta^2 p < .001$ ), emotional regulation ( $F_{(1.760)} = .51, p = .475, \eta^2 p < .001$ ), emotional autonomy ( $F_{(1.760)} = .01, p = .915, \eta^2 p < .001$ ), social competence ( $F_{(1.760)} = .03, p = .860, \eta^2 p < .001$ ), life and well-being competences ( $F_{(1.760)} = .01, p = .906, \eta^2 p < .001$ ) and the global emotional competence ( $F_{(1.760)} = .07, p = .789, \eta^2 p < .001$ ).

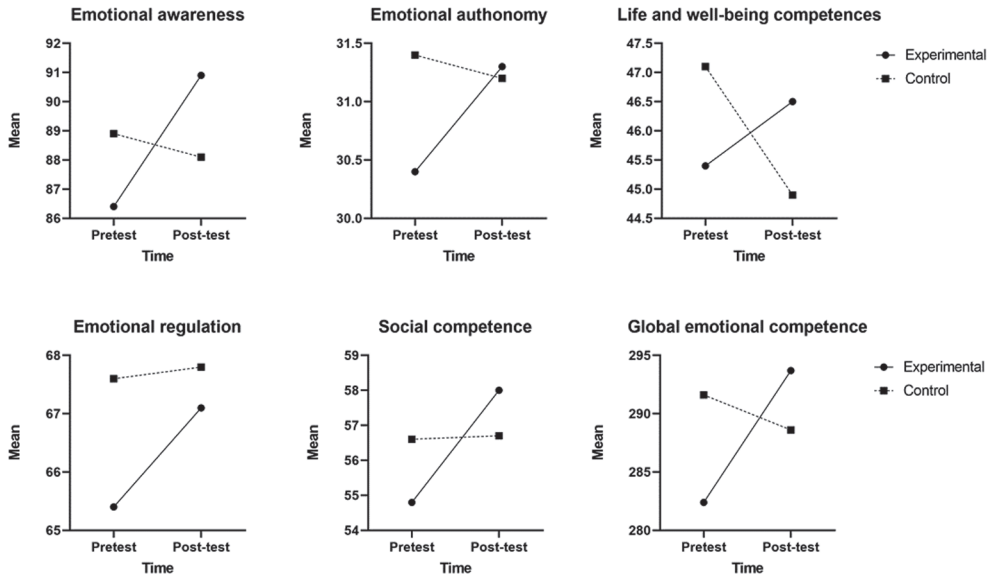
Related to the variable group, no significant effect was found for all the considered variables: emotional awareness ( $F_{(1.760)} = .14, p = .705, \eta^2 p < .001$ ), emotional regulation ( $F_{(1.760)} = .82, p = .365, \eta^2 p < .001$ ), emotional autonomy ( $F_{(1.760)} = .65, p = .418, \eta^2 p < .001$ ), social competence ( $F_{(1.760)} = .00, p = .928, \eta^2 p < .001$ ), life and well-being competences ( $F_{(1.760)} = .16, p = .689, \eta^2 p < .001$ ), the global emotional competence ( $F_{(1.760)} = .04, p = .837, \eta^2 p < .001$ ) and state anxiety ( $F_{(1.760)} = 3.7, p = .053, \eta^2 p = .005$ ).

In contrast, significant interaction effects between group and time were found for emotional awareness ( $F_{(1.760)} = 18.86, p < .001, \eta^2 p = .024$ ), social competence ( $F_{(1.760)} = 12.93, p < .001, \eta^2 p = .017$ ), life and well-being competence ( $F_{(1.760)} = 23.46, p < .001, \eta^2 p = .030$ ) and the global emotional competence ( $F_{(1.760)} = 21.69, p < .001, \eta^2 p = .028$ ). This suggested that a crossover effect may have occurred. Taking a look at Figure 1 and the descriptive statistics in Table 1, it can be observed that the experimental group had an increment in emotional awareness, social competence, life and well-being competences and global emotional competence, while the control group decreases or maintains their levels.

Considering our covariables, sex between-subjects differences were found for emotional awareness ( $F_{(1.760)} = 5.56, p = .019, \eta^2 p = .007$ ) and social competences ( $F_{(1.760)} = 4.33, p = .038, \eta^2 p = .006$ ) with girls showing higher values. Course differences were also found for emotion regulation ( $F_{(1.760)} = 20.06, p < .001, \eta^2 p = .026$ ), emotional autonomy ( $F_{(1.760)} = 11.29, p < .001, \eta^2 p = .015$ ), life and well-being competencies ( $F_{(1.759)} = 25.01, p < .001, \eta^2 p = .032$ ) and the global emotional competence ( $F_{(1.760)} = 12.75, p < .001, \eta^2 p = .017$ ), with higher values for children that were coursing 4<sup>th</sup> grade, with the 6<sup>th</sup> grade reporting the lowest values. Although there are differences related to these covariables, neither course ( $F_{(7.754)} = 1.31, p = .242, \eta^2 p = .012$ ) nor sex ( $F_{(7.754)} = .84, p = .553, \eta^2 p = .008$ ) interacted with time showing no within-subjects effects.

**Figure 1**

*Effects of the emotional education program in both each emotional competence and the global emotional competence*



The next step was to evaluate if there is any relationship between the previous level of global emotional competence and the presence of violence at the post-test, evaluating a possible mediation through pretest and post-test state anxiety. First, bivariate correlations were checked.

**Table 2**

*Bivariate correlations among the variables of interest*

	1	2	3	4
1.Global emotional competence <sub>pre</sub>	—			
2.Presence of violence in school <sub>post</sub>	-.16***	—		
3.State anxiety <sub>pre</sub>	-.03	.04	—	
4.State anxiety <sub>post</sub>	-.37***	.13**	.12**	—

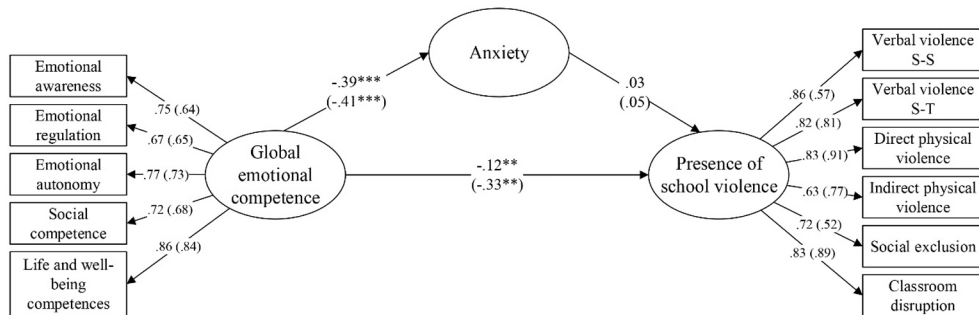
Note. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

Table 2 shows negative correlations between global emotional competence at pretest, and state anxiety and presence of violence at post-test. Positive correlations

were found between post-test state anxiety and presence of violence. Pretest state anxiety didn't report significant relationships except for post-test state anxiety, so it wasn't included in the multigroup mediation model (Figure 2).

**Figure 2**

*Multigroup mediation model for global emotional competence, state anxiety and presence of violence in school.*



Note. Factor loadings and standardized coefficients for the control group are in parenthesis. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

The model reported good fit measures:  $X^2 = 274.65$ ,  $df = 98$ ,  $p < .001$ ,  $CFI = .96$ ,  $TLI = .95$ ,  $SRMR = .03$ , and  $RMSEA = .07(.06, .08)$ . As it can be seen in Figure 2, the level of global emotional competence at pretest was negatively related with the presence of violence at posttest in both control ( $\beta = -.33$ ,  $p = .001$ ) and experimental group ( $\beta = -.12$ ,  $p = .004$ ). The global emotional competence was also negatively related with post-test state anxiety for both control ( $\beta = -.41$ ,  $p < .001$ ) and experimental group ( $\beta = -.39$ ,  $p < .001$ ). The model reported small and significant  $R^2$  for state anxiety ( $R^2_{exp} : .16$ ,  $p < .001$ ;  $R^2_{control} : .16$ ,  $p < .001$ ) and for presence of violence ( $R^2_{exp} : .02$ ,  $p < .001$ ;  $R^2_{control} : .12$ ,  $p < .001$ ). No significant relationship between state anxiety and presence of violence at post-test was found. Also, the global emotional competence didn't show indirect effects on the presence of school violence through state anxiety neither for the experimental ( $\beta = -.01$ ,  $p = .476$ ) or the control group ( $\beta = -.02$ ,  $p = .557$ ). In conclusion, the global emotional competence is negatively associated with the presence of future school violence in both groups as well as with anxiety.

## DISCUSSION

The increasing rates of violence in schools have become seriously worrying due to the negative effects they have in the mental health, well-being and academic

achievement of students (for example, Coyle et al., 2021; Gong et al., 2022; Kim et al., 2020). For this reason, the subject of violence and aggression in schools has been addressed by scientists during the latest decades. Evidence has repeatedly proved that, contrary to what was initially assumed, scholar violence is related to emotional variables and its management and not with hostility of the participants in conflicts or situations (Pons et al., 2005; Ros-Morente, 2017).

Prior studies have identified variables that constitute risk factors for scholar violence, such as, school climate (Wang et al., 2014). At the same time that, certain variables can be identified as prevention variables, especially when trained in early stages of life. Take as an example emotional competences or emotion regulation (Corcoran et al., 2018; Durlak et al., 2011; Taylor et al., 2017; Ros-Morente et al., 2017), which trained properly and with educational programs, can prevent conflict and violent situations to a great extent (Ros-Morente et al., 2017). This is also the case, for instance, of anxiety (Martínez-Monteaegudo et al., 2011) or school climate (Benbenishty et al., 2016).

Given the aforementioned previous findings, the aim of this work was to evaluate a program of emotional competences specifically developed for primary school students and its effects in anxiety (as an indicator of psychological well-being) and scholar violence.

According to our results, students decreased their anxiety levels after intervention, in a significant way. However, no differences were observed for emotional competences at first sight. When taking time into account (pre and post evaluations), emotional competences seemed to importantly increase, such as competences of well-being, social competence and global emotional competence. Although this may seem counterintuitive, previous studies have shown that anxiety state is the variable that is faster to show changes and the most responsive one to interventions and that some of the competences are more resistant to change (e.g., emotion regulation) (Ros-Morente, 2017). For this reason, results were not surprising, and even, expected.

However, it is important to note that, interestingly and as it was mentioned above, there were several interaction effects between group (experimental vs. control) and time (pre vs. post) for different competences, such as, emotional awareness, social competences, life and well-being competences and the global score of emotional competences. In all of these cases, when studying the behavior of competences improvement along time, different changes for the students that received the training and for those who did not show it were observed. In this sense, the level of competence for those students that received the training exponentially increased, while those students that underwent no intervention, showed a decrease in the aforementioned competences. Although there is not a lot of literature regarding the matter of stability of competences among time, it could be hypothesized that

those competences that are not trained, not only do not improve, but they can also become less adaptative with time and that interventions would benefit from having more time at their disposal (Collie, 2020; Pekrun, 2009).

Regarding the association of emotional competences and violence, according to our results, higher levels of emotional competences, that is, being more competent emotionally, is directly related to lower levels of violence in the future. This is coincident with existing literature, which proves that those students that can manage their emotions better and that show higher levels of assertiveness also exhibit less violence with their peers and teachers in school (Röll, Koglin, & Petermann, 2012).

All in all, this article shows the importance that emotional competences have when it comes to wellbeing (anxiety) and violence. Interventions that improve the management of emotions and emotional competences seem to offer a good solution to prevent violent behaviors in the scholar context. However, more studies are needed in order to find out the behaviour that emotional competences have along time, in order to tackle the interactions, mediations and other pathways towards a better climate and wellbeing of students, with an environment free of violence.

## ACKNOWLEDGMENTS

Esta publicación es parte del proyecto de I+D+i / ayuda RTI2018-098294-B-I00/ PRE2019-091604, financiado/a por MCIN/ AEI/10.13039/501100011033/ FEDER “Una manera de hacer Europa”.

## REFERENCES

- Benbenishty, R., Astor, R. A., Roziner, I., & Wrabel, S. L. (2016). Testing the causal links between school climate, school violence, and school academic performance: a cross-lagged panel autoregressive model. *Educational Researcher*, 45(3), 197–206. <https://doi.org/10.3102/0013189X16644603>
- Bisquerra, R., & Pérez-Escoda, N. (2007). Las competencias emocionales. *Educación XX1*, 10. <https://doi.org/10.5944/educxx1.1.10.297>
- Carretero, R., & Nolasco, A. (2016). La inteligencia emocional desde la perspectiva del sexismo. *Inteligencia Emocional y Bienestar II*, 445–453.
- Collie, R. J. (2020). The development of social and emotional competence at school: an integrated model. *International Journal of Behavioral Development*, 44(1), 76-87.



- Corcoran, R. P., Cheung, A. C. K., Kim, E., & Xie, C. (2018). Effective universal school-based social and emotional learning programs for improving academic achievement: a systematic review and meta-analysis of 50 years of research. *Educational Research Review*, 25, 56–72. <https://doi.org/10.1016/j.edurev.2017.12.001>
- Coyle, S., Malecki, C. K., & Emmons, J. (2021). Keep your friends close: exploring the associations of bullying, peer social support, and social anxiety. *Contemporary School Psychology*, 25, 230-242.
- Curby, T. W., LoCasale-Crouch, J., Konold, T. R., Pianta, R. C., Howes, C., Burchinal, M., Bryant, D., Clifford, R., Early, D., & Barbarin, O. (2009). The relations of observed pre-K classroom quality profiles to children's achievement and social competence. *Early Education and Development*, 20(2), 346–372. <https://doi.org/10.1080/10409280802581284>
- Durlak, J. A., & Weissberg, R. P. (2011). Promoting social and emotional development is an essential part of students' education. *Human Development*, 54(1), 1–3. <https://doi.org/10.1159/000324337>
- Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. B. (2011). The impact of enhancing students' social and emotional learning: a meta-analysis of school-based universal interventions. *Child Development*, 82(1), 405–432. <https://doi.org/10.1111/j.1467-8624.2010.01564.x>
- Fabbri, C., Powell-Jackson, T., Leurent, B., Rodrigues, K., Shayo, E., Barongo, V., & Devries, K. M. (2022). School violence, depression symptoms, and school climate: a cross-sectional study of Congolese and Burundian refugee children. *Conflict and Health*, 16(1), 1-11.
- Fernández-Sogorb, A., Sanmartín, R., Vicent, M., & García-Fernández, J. M. (2020). Latent profiles of anxious children and their differences in aggressive behavior. *Sustainability*, 12(15). <https://doi.org/10.3390/SU12156199>
- Filella, G., Agulló Morera, M.-J., Pérez-Escoda, N., & Oriol Granado, X. (2014). Results of an emotional education program in primary school. *Estudios sobre Educación*, 26, 125–147. <https://doi.org/10.15581/004.26.125-147>
- Gong, Z., Reinhardt, J. D., Han, Z., Ba, Z., & Lei, S. (2022). Associations between school bullying and anxiety in children and adolescents from an ethnic autonomous county in China. *Psychiatry Research*, 314, 114649.
- Keefer, K., Parker, J., & Saklofske, D. H. (2018). *Emotional intelligence in education. Integrating research with practice*. Springer.
- Kim, Y. K., Sanders, J. E., Makubuya, T., & Yu, M. (2020). Risk factors of academic performance: experiences of school violence, school safety concerns, and depression by gender. *Child & Youth Care Forum*, 49, 725-742.
- Lester, S., Lawrence, C., & Ward, C. L. (2017). What do we know about preventing school violence? A systematic review of systematic reviews. *Psychology, Health*




- & *Medicine*, 22(sup1), 187–223. <https://doi.org/10.1080/13548506.2017.1282616>
- López-González, L., & Oriol, X. (2016). The relationship between emotional competence, classroom climate and school achievement in high school students *Culture and Education: Cultura y Educación*, 28(1), 130–156. <https://doi.org/10.1080/11356405.2015.1120448>
- Martínez-Monteagudo, M. C., Inglés Saura, C. J., Trianes Torres, M. V., & García Fernández, J. M. (2011). Profiles of school anxiety: differences in social climate and peer violence. *Electronic Journal of Research in Educational Psychology*, 25(9), 1023-1042.
- Martínez-Sánchez, A. (2019). Competencias emocionales y rendimiento académico en los estudiantes de educación primaria. *Psychology, Society & Education*, 11(1), 15–25.
- Nasir, M., & Masrur, R. (2010). An exploration of emotional intelligence of the students of IUI in relation to gender, age and academic achievement. *Bulletin of Education and Research*, 32(1), 37–51.
- Nelis, D., Quoidbach, J., Mikolajczak, M., & Hansenne, M. (2009). Increasing emotional intelligence: (How) is it possible? *Personality and Individual Differences*, 47(1), 36–41. <https://doi.org/10.1016/J.PAID.2009.01.046>
- Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura (2019). *Behind the numbers: ending school violence and bullying. Sustainable Development Goals: Education 2030*, 1–74. <https://bit.ly/4acZnuP>
- Pekrun, R. (2009). Emotions at school. In K. R. Wentzel, & D. B. Miele (Eds.) *Handbook of motivation at school* (pp. 589-618). Routledge.
- Pérez-González, J. C., Saklofske, D. H., & Mavroveli, S. (2020). Trait emotional intelligence: foundations, assessment, and education. *Frontiers in Psychology*, 11. <https://doi.org/10.3389/FPSYG.2020.00608>
- Pons, F., Hancock, D. R., Lafortune, L., & Doudin, P. A. (2005). *Emotions in learning*. Aalborg Universitetsforlag.
- Reyes, M., Brackett, M., Rivers, S., White, M., & Salovey, P. (2012). Classroom emotional climate, student engagement, and academic achievement. *Journal of Educational Psychology*, 104(3), 700–712. <https://doi.org/10.1037/a0027268>
- Reyna, C., & Brussino, S. (2015). Diferencias de edad y género en comportamiento social, temperamento y regulación emocional en niños argentinos. *Acta Colombiana de Psicología*, 18(2), 51–64. <https://doi.org/10.14718/ACP.2015.18.2.5>
- Röll, J., Koglin, U., & Petermann, F. (2012). Emotion regulation and childhood aggression: longitudinal associations. *Child Psychiatry & Human Development*, 43(6), 909-923.

- Ros-Morente, A., Filella, G., Ribes, R., & Pérez-Escoda, N. (2017). Análisis de la relación entre competencias emocionales, autoestima, clima de aula, rendimiento académico y nivel de bienestar en una muestra de escolares de educación primaria. *REOP - Revista Española de Orientación y Psicopedagogía*, 28(1), 8–18. <https://doi.org/10.5944/REOP.VOL.28.NUM.1.2017.19355>
- Sánchez-Gómez, M., Oliver, A., Adelantado-Renau, M., & Bresó, E. (2020). Inteligencia emocional y ansiedad en adolescentes: una propuesta práctica en el aula. *Revista de Nuevas Tecnologías y Sociedad*, 91, 74–89.
- Taylor, R. D., Oberle, E., Durlak, J. A., & Weissberg, R. P. (2017). Promoting positive youth development through school-based social and emotional learning interventions: a meta-analysis of follow-up effects. *Child Development*, 88(4), 1156–1171. <https://doi.org/10.1111/cdev.12864>
- Wang, W., Vaillancourt, T., Brittain, H. L., McDougall, P., Krygsman, A., Smith, D., Cunningham, C. E., Haltigan, J. D., & Hymel, S. (2014). School climate, peer victimization, and academic achievement: results from a multi-informant study. *School Psychology Quarterly*, 29(3), 360–377. <https://doi.org/10.1037/SPQ0000084>
- Weissberg, R. P., Durlak, J. A., Domitrovich, C. E., & Gullotta, T. P. (2015). Social and emotional learning: past, present, and future. In J. A. Durlak, C. E. Domitrovich, R. P. Weissberg, & T. P. Gullotta (Eds.), *Handbook of social and emotional learning: research and practice* (pp. 3–19). The Guilford Press. <https://bit.ly/49iDMjg>



# Impact of a service-learning and sport education programme on social competence and learning

## *Impacto de un programa de aprendizaje-servicio y educación deportiva sobre la competencia social y los aprendizajes*

Juan-Gregorio Fernández-Bustos<sup>1\*</sup>   
Luis Miguel García López<sup>1</sup>   
David Gutiérrez<sup>1</sup>   
Irene González-Martí<sup>1</sup>   
Jorge Abellán<sup>1</sup> 

<sup>1</sup> Universidad de Castilla La Mancha, Spain

\* Corresponding author. E-mail: [juang.fernandez@uclm.es](mailto:juang.fernandez@uclm.es)

### Cómo referenciar este artículo/ How to reference this article:

Fernández-Bustos, J. G., García López, L. M., Gutiérrez, D., González-Martí, I., & Abellán, J. (2024). Impact of a service-learning and sport education program on social competence and learning. *Educación XX1*, 27(2), 301-339. <https://doi.org/10.5944/educxx1.38229>

**Date received:** 04/09/2023  
**Date accepted:** 11/02/2024  
**Published online:** 28/06/2024

### ABSTRACT

The development of social competence (SC) has become a priority for policymakers, educators and researchers. The pedagogical models of sports education and service-learning are among the most noteworthy of various methodologies with a positive impact on SC. The aim of this study was to determine the impact on SC and learning of a programme that integrated a service-learning (SL) experience with the sport education model (SEM). The research design was quasi-experimental, with a control group and an experimental group (service recipients and providers). The programme consisted of two different phases

in terms of organisation and participation. Measurements were taken before starting the programme, and at the end of Phase 1 and Phase 2. Phase 1 was completed by 478 students (276 from the 6th year of primary education and service recipients; 202 from the 4th year of secondary education and service providers), while 337 completed both phases (142 from the 1st year of secondary education and service recipients; 195 from the 1st year of baccalaureate and service providers). In the first phase, we collected data on skill execution and decision making in the game of ringo, using a game performance assessment instrument. Knowledge of technique, tactics and rules was also assessed. In both phases, SC was measured using the Adolescent Multidimensional Social Competence Questionnaire (Gómez-Ortiz et al., 2017). The results evidenced the effectiveness of the programme in learning, primarily in the areas related to knowledge, both as regards the recipients and providers of the service. The second phase of the SEM-SL programme was also effective in developing social competence and many of its dimensions (cognitive reappraisal, social adjustment, social efficacy, normative adjustment) among the service providers. These results suggest that the combination of these two methodologies provides a teaching-learning ecosystem that is conducive to developing socio-emotional aspects and learning inherent to sport itself, creating a positive experience for all involved, especially for those volunteering their service.

**Keywords:** social competence, service learning, active learning, sport education, physical education

## RESUMEN

El desarrollo de la competencia social (CS) se ha convertido en una prioridad para legisladores, educadores e investigadores. Entre las diferentes metodologías que han incidido positivamente sobre la CS destacan tanto el modelo pedagógico de Educación Deportiva (MED) como el Aprendizaje-Servicio (ApS). El objetivo de este estudio fue conocer el impacto de un programa (MED-ApS) que hibridó ApS con el MED sobre la CS y los aprendizajes del alumnado. El diseño de investigación fue cuasiexperimental con grupo control y grupo experimental (receptores y prestadores del servicio), diferenciándose dos fases en cuanto a organización y participación. Se tomaron medidas antes de comenzar el programa, al finalizar la fase 1, y al concluir la fase 2. La fase 1 la completaron 478 estudiantes (276 de 6º Educación Primaria y receptores del servicio; 202 de 4º ESO y prestadores del servicio), mientras que ambas fases las concluyeron 337 (142 de 1º ESO y receptores del servicio; 195 de 1º Bachillerato y emisores del servicio). En la fase 1 se recogieron datos de los aprendizajes en la ejecución y toma de decisiones en el juego del ringo, así como de los conocimientos teóricos sobre técnica, táctica y reglamento. Ambas fases evaluaron la CS a través del Cuestionario Multidimensional de CS para Adolescentes (Gómez-Ortiz et al., 2017). Los resultados evidenciaron aprendizajes más destacados entre los participantes en el programa. El MED-ApS también fue efectivo, en su fase 2, en el desarrollo de la CS y sus dimensiones (Reevaluación Cognitiva, Ajuste Social, Eficacia Social, Ajuste Normativo) entre los emisores del servicio. Estos resultados sugieren que la combinación de estas dos

metodologías ofrece un ecosistema de enseñanza-aprendizaje propicio para el desarrollo de aspectos socioemocionales y de aprendizajes inherentes al propio deporte, ofreciendo una experiencia positiva para todos, especialmente para los que prestan voluntariamente su servicio.

**Palabras clave:** competencia social, aprendizaje-servicio, aprendizaje activo, educación deportiva, educación física

## INTRODUCTION

Since the OECD (2005) first considered social competence (SC) as a basic element in the development of individuals in the technological society, it has been promoted by both administrations and researchers in the field of education.

SC can be defined as the ability to achieve personal goals in social interactions by efficaciously maintaining positive relationships with others (Leduc & Bouffard, 2017). In recent years, SC has evolved towards a multidimensional concept that includes (Gómez-Ortiz et al., 2017) the following: a) social skills, such as prosocial behaviours, which are key in developing positive social interactions (Padilla-Walker et al., 2015); b) emotional skills, such as emotion regulation, which favour positive social development tailored to the environment, and cognitive reappraisal, which anticipates the emotional consequences of a particular situation; c) normative adjustment or the ability to adapt to the rules and conventions of the immediate social environment, which favours school coexistence; d) being and feeling accepted by peers (social adjustment) as an indicator of satisfactory interpersonal relationships (Zhang et al., 2014); and e) perceived efficacy in social interactions.

This competence plays a crucial role in the educational process, as it promotes positive, high-quality learning, being recognised as an aim of the curricula of various subjects, including physical education (PE) (Opstoel et al., 2020). Given its social character, school PE is a context with the potential to promote positive development by helping students acquire life skills that can transfer to other important domains (school, family, work) (Weiss, 2011). It thus presents an ideal setting for developing SC (Wang & Chen, 2021).

The review by Opstoel et al. (2020) highlighted the positive role of PE and sport in improving social skills, life skills, SC and psychosocial competence. Noteworthy PE programmes include the personal and social responsibility model (Monzonís & Capllonch, 2014), the use of cooperative learning (Grineski, 1996), and education and adventure programmes (Koszałka-Silska, et al., 2021). In addition, the sport education model (SEM) and service-learning (SL) can be highlighted due to their being grounded in active and participatory learning and offering a learning environment conducive to SC.

The SEM includes six essential characteristics of sport, namely, seasons, formal competition, affiliation, festivity, keeping records and a culminating event. In order for sport to have the potential to socialise, these features are combined with a number of pedagogical strategies, such as modifying sport content to the level of the students and the adoption of the dual role of player and person of responsibility within their team (coach, physical trainer, etc.) or organisation (referee, sport director, etc.) (Siedentop et al., 2020). As well as developing students' sporting skills, this methodology succeeds in promoting their autonomy and responsibility through roles, establishing a climate conducive to meaningful learning, positive values and ethical development (Evangelio et al., 2016).

Research has described many benefits of the use of the SEM in school settings. For example, in the sphere of learning, students following the model presented significant gains in content knowledge, competence and perceived learning, and a better understanding of the game compared to those that did not follow the model (Browne et al., 2004). It has also been shown to be useful in improving technical execution and correct decision-making during play at the technical level (Browne et al., 2004), as well as enhancing understanding and decision-making at the tactical level (Hastie et al., 2009).

The SEM has also been associated with increases in positive relationships, prosocial attitudes (Manninen & Campbell, 2022), assertiveness and empathy, and a reduction in negative attitudes, such as passivity and aggressiveness (García-López & Gutiérrez, 2015), primarily among students in the same team (Casado-Robles et al., 2022). Harvey et al. (2014) underlined that notions such as inclusiveness, responsibility, ownership, personal and social development, and social justice are part of the architecture of this pedagogical model.

Few studies have specifically examined the benefits of the SEM in terms of SC. Luna et al. (2020) reported significant improvements in certain indicators of social competence (social adjustment, prosocial behaviour and social efficacy) in adolescent students. Wang and Chen (2021) highlighted that the SEM has the potential to promote SC, as it provides students with meaningful opportunities for socialisation thanks to its inherent structures and characteristics. They identify two key factors through which the SEM may foster SC: accomplishing an optimal balance between competition and cooperation, and promoting inclusiveness.

However, despite the potential benefits of the SEM, the teaching of ethical behaviours, and thus of SC, needs to be intentionally and systematically designed (Harvey et al., 2014). In addition to a structured, intentional context, authors recommend a positive approach to development based on the strengths of the individual (e.g. prosocial behaviour, such as respecting others), rather than on the problems to be solved, that is, a negative approach (e.g. reducing antisocial behaviour such as bullying) (Holt, 2016). In this sense, by complementing the



SEM, SL methodology may provide an intentional learning framework that can facilitate this positive approach in developing SC (García-López et al., 2022). SL is an educational methodology that brings learning and community service together in a single project with a civic and academic grounding, boasting an eminently practical character and a close relationship with the system of personal, social and civic values (Varela et al., 2019). It has the potential to transform the teaching-learning process, helping students to acquire social values and critical thinking through the understanding of a social problem (Chiva-Bartoll et al., 2020a). One of the most important characteristics of SL in PE, in contrast to other fields, is that SL entails physical interaction and active participation (Capella-Peris et al., 2020). According to Chiva-Bartoll and Fernández-Río (2022), SL has all the elements required for it to be considered an activist, transformative and inter-contextual pedagogical model in PE, which focuses on developing students' social and affective domains, with its main theme being "learning by serving".

Although programmes using SL have evidenced substantial impacts on social and cognitive learning (Yoiro & Ye, 2012), in PE, they have also been shown to encourage prosocial behaviours (Chiva-Bartoll et al., 2020b), social well-being (Chiva-Bartoll et al., 2020c), leadership, social skills and social justice (Whitley et al., 2017), as well as promoting learning (Capella-Peris et al., 2020). Similarly, SL methodology has been reported to enhance the development of SC (Gil-Gómez et al., 2016), specifically in the dimensions of social responsibility, helping and collaboration, and adherence to social norms. Despite the benefits of this methodology, further work on its use, especially in stages of compulsory education, is required, given that as most of the research on SL in general, and in PE in particular, has been carried out in higher education settings (Chiva-Bartoll et al., 2020c).

Considering the virtues of both methodologies, their compatibility means that combining them in the same programme is not only feasible, but also offers key educational opportunities. Nonetheless, few works have experimented with the integrated use of the SEM and SL. García López et al. (2023) reported that SL enhances the benefits of the SEM, such as role-playing, the development of greater responsibility and autonomy, as well as enhanced feelings of belonging (García López et al., 2019). García Lopez et al. (2023) and Gutiérrez et al. (2019) integrated the two methodologies as a strategy to facilitate the transition of students from primary to secondary school using a programme called SEM-SL. In these studies, secondary education students participated as service providers while their primary education counterparts were involved as recipients.

The results revealed that this hybridisation (SEM-SL) developed facilitators for transition, including becoming acquainted with friendly older students serving as mentors, developing feelings of belonging to the group and the school, and getting to know and becoming familiar with students and a school that were new to them

(García López et al., 2019). Additionally, the secondary students gained awareness of the service performed and found personal satisfaction in the outcomes, highlighting the social relationships forged with their younger peers, which encouraged them to repeat the experience. The recipients of the service reported feeling greater confidence about the school transition, having met, and established relationships with, their older peers, as well as developing feelings of belonging (Gutiérrez et al., 2019).

In light of the virtues of both methodologies and the results of previous studies, the aim of this study was to ascertain, in the context of compulsory education, the impact on SC and learning of the SEM-SL programme, in both the students providing the service and those receiving it. The evidence from previous research suggests as a hypothesis that the implementing these two approaches (SEM and LS) in conjunction will positively impact both learning and the development of the various dimensions of SC.

## METHOD

### Design and participants

We conducted a quasi-experimental study under a quantitative approach, divided into two phases. The study involved an experimental group (EG) (participants in the SEM-SL programme) and a control group (CG) (students from the same schools but who did not participate in the programme). We collected measures at pre-test (before the programme), post-test 1 (at the end of Phase 1 of the programme) and post-test 2 (end of Phase 2). The initial sample in Phase 1 comprised 782 students, 432 in the 6th year of primary education and 350 in the 4th year of compulsory secondary education, divided between the EG and the CG (see supplementary material). Data for the variables under study, however, were only collected on 478 participants (276 primary, 202 secondary). The participants were distributed in five networks, corresponding to five secondary schools and primary schools located in their catchment area (potential future students at these secondary schools). All the networks included one intact group of secondary students and between one and three intact groups of their primary counterparts. Two secondary education networks were established in the province of (omitted for anonymity) in an urban setting, and three in the province of (omitted for anonymity), two in an urban location and one in a rural area. The teaching staff had a minimum of two years' experience and had participated in a 20-hour SEM course. All the students had previously taken part in a season of the SEM (16 sessions). Of the initial participants in Phase 1, 337 successfully completed Phase 2 (Table 1), which was implemented entirely in the secondary schools.

**Table 1***Distribution of the participants that completed the two phases of the SEM-SL programme*

Group	Experimental Group				Control Group			
	n	Male (%)	Female (%)	M age* (SD)	n	Male (%)	Female (%)	M age* (SD)
Service recipients (6 <sup>o</sup> prim. 1 <sup>o</sup> sec.) <i>n</i> = 142	76	37 (49%)	39 (51%)	11.23 (±0.24)	66	39 (59%)	27 (41%)	11.30 (±0.52)
Service providers (4 <sup>o</sup> sec.-1 <sup>o</sup> bacc.) <i>n</i> = 195	128	55 (43%)	73 (57%)	15.42 (±0.59)	67	36 (53%)	32 (48%)	15.40 (±0.63)
Total <i>N</i> = 337	204	92 (45%)	112 (55%)	13.88 (±2.11)	133	75 (56%)	59 (44%)	13.43 (±2.14)

Note. \*Mean age before starting Phase 1 of the programme.

## Programme

The study was divided into two phases.

The first phase was conducted across the third term of the 2018-2019 academic year (April-June). It involved the coordinated and simultaneous implementation of the SEM in primary and secondary schools using a teaching unit (season in SEM terminology) based on the game of ringo (18-21 PE sessions for the secondary students; 14-18 PE sessions for the primary students). The unit integrated SL actions by the secondary students (visits to primary schools by secondary students, visits to secondary schools by primary students, and organisation of culminating events at secondary schools), following the design proposed by García Lopez et al. (2023) to integrate SL into a SEM season (see schedule for Phase 1 in the supplementary material). To ensure the genuine hybridisation of these pedagogical models, we followed the recommendations of Hastie and Buchanan (2000), which entail verifying the compatibility of the objectives, theories and learning experiences of both models (for a more detailed description, see García-López et al., 2019). The game of ringo was chosen due to its low level of technical difficulty, which encouraged the students' enjoyment from the first sessions, and significantly reduced the differences between them in terms of their initial levels of competence and the previous experience the boys and girls might have had of the game. During

this phase, the CG participants (primary and secondary) followed a teaching unit based on ringo, using traditional methodology (assignment of tasks, direct command, guided discovery and problem-solving learning), following the aims established in the teaching programme, but without the use of pedagogical models or SL intervention.

In the primary schools, with only one 6th year class, this was chosen as the EG, while in schools with more than one group of 6th graders, these were randomly allocated to CG or EG. In the case of secondary education, only one EG and one CG were chosen per school, being randomly allocated across the 4th year groups. In each school, the same teacher was responsible for the CG and EG.

While implementing the SEM, we held weekly meetings to resolve problems, monitor progress and review the planning of the following week's sessions. These meetings, coordinated by the network supervisor, served to ensure the application of a SEM checklist, which drew on those proposed by Metzler (2017) and Sinelnikov (2009). The role of the network supervisor (experienced researcher) consisted of coordinating the implementation of the SEM-SL programme in the network of which they were in charge, conducting weekly meetings with teachers, monitoring the implementation of the SEM in their respective primary and secondary schools at least three times during the season, as well as collaborating in all the SL activities (introductory motivational task, service reflections and culminating events) (further information in Table 2 of the supplementary material). Those responsible for supervising the different networks held a weekly meeting to share their perceptions on the progress of the programme in each network and to solve any difficulties encountered. This organisation was maintained in Phase 2 of the programme.

The genuine need identified and which we intended to address by means of SL was the facilitation of the children's educational transition from primary to secondary school. The planning and implementation of the SL actions for the programme followed the five key stages (context analysis, project plan, action plan, action implementation and evaluation) established by Puig-Rovira et al. (2007) for SL projects in educational settings, contextualised in the SEM-SL programme, following the guidelines proposed by García-López et al. (2023) (for further information, see Table 2 in the supplementary material). For example, in the "action" stage, the secondary students had the opportunity to train their primary counterparts on three occasions: one training session at the primary school, one at the secondary school and one more during each network's culminating event. Complementary to these meetings, a time of dialogue was provided for the primary and secondary students to discuss the expectations of the former and the experiences of the latter with regard to secondary school. These training sessions were preceded by a preparatory session with the secondary students and a subsequent session to reflect on the development of the service.

The second phase was implemented in the first term of the 2019-20 academic year (September-November) and involved consolidating the service and greater mastery of the SEM. The primary students that had already gained experience of the SEM in the previous academic year and had then transferred to their 1st year at the secondary school of reference, formed part of the new EG, despite their not all being in the same class. Meanwhile, the 1st-year baccalaureate students, who had been in the 4th year of secondary the previous year, being part of the EG, were again in charge of implementing the service programme. The learning objectives, the need for service, as well as the stages for planning and implementing the SL were the same as in Phase 1 (see Tables 2 and 4 in the supplementary material for further information). This service programme was again integrated into the use of the SEM, but, in this case, it took place during break and participation was voluntary. It was thus not included in the PE curriculum and students' learning was not assessed. The number of participants varied between phases due to the voluntary nature of the monitoring of the project in Phase 2 by the students attached to the reference secondary school (service providers and recipients) and the experimental mortality of participants enrolled in the secondary schools in question. In addition, only 4 of the 5 initial networks participated in this second phase, as one of the schools was unable to continue the programme due to its PE teachers transferring to other educational centres.

The first stage of this phase was implemented in the PE classes, where, over six sessions (weeks two to four of the term) the older students learned the content to be taught. This was followed by the five-week programme (two breaks per week), which included a 10-session SEM season, distributed in five training sessions, four competition sessions (regular league) and a culminating event (more information in Tables 2 and 4 of the supplementary material). The content consisted of a progression of modified net and wall games, where the final game used for the competition and culminating event was a modified version of spikeball-roundnet. This game was chosen as it met the following criteria: encouraging participation and inclusion, novelty, a dynamic activity, low to moderate technical and tactical demand, and the use of small playing spaces that permit the simultaneous participation of a large number of students.

### **Instruments and variables**

To measure SC, we used the Adolescent Multidimensional Social Competence Questionnaire (AMSC-Q) (Gómez-Ortiz et al., 2017) validated in 12- to 17-year-old students. This questionnaire consists of 26 items, scored on a 1- to 7-point Likert-type scale (1 = completely false; 7 = completely true). These items are distributed in five key domains of SC: 1) prosocial behaviour (offering different types of help

to peers); 2) cognitive reappraisal (ability to regulate emotion through cognitive modification of the situation linked to generating feelings); 3) social efficacy (an individual's perception of their efficacy in social relationships); 4) social adjustment (perception of social acceptance and friendship); and 5) normative adjustment (adherence to general and specific rules of coexistence in school settings). The questionnaire showed good reliability ( $\alpha$ -pre = .89;  $\alpha$ -post1 = .90;  $\alpha$ -post2 = .88) and validity in this study. The AMSC-Q items were examined using via principal component analysis with Promax rotation, extracting five factors that explained 55.80% of the variance. The items of each factor scored in ranges from .40 to .75. The Kaiser-Meyer-Olkin index (KMO) was .92 and Bartlett's test of sphericity was significant ( $p < .001$ ).

The learning of the PE content itself was divided into two types, for which two ad hoc instruments were designed:

Execution and decision-making in the game was assessed using a game performance assessment instrument (GPAI), which is a tool for assessing technical knowledge and the ability to solve tactical problems (Oslin et al., 1998). For this study, and in the context of the sport of ringo, a rubric-type GPAI was designed with two components to be measured: reception execution (the player receives the ringo in line with the rules) and throwing decision-making (the player throws the ringo into a space, to a player or with a trajectory that makes it difficult to receive). For each of these components, coding criteria were created according to the success of the actions: 5 = very high performance (success in almost all actions); 4 = high performance (success in most of the actions); 3 = medium performance (success in about half of the actions); 2 = low performance (success in less than half of the actions); 1 = very low performance (success in few actions).

A questionnaire to evaluate theoretical knowledge of ringo, which consisted of 10 questions for primary school participants and 15 for secondary school ones. The participants had to choose between three possible answers, with the questions being divided into four dimensions: technical knowledge (two questions for primary, three for secondary); tactical knowledge (two questions for primary, four for secondary); rules knowledge (three questions for primary, four for secondary); fair play and health (three questions for primary, four questions for secondary). Each correct answer scored 1 point on the primary school questionnaire and 0.66 on the secondary school questionnaire.

## Procedure

Before initiating the study, we contacted the management teams of the schools and the PE teachers, as well as the Regional Ministry of Education, Culture and Sport of Castilla-La Mancha, informing them of the aims and commitment involved in the study, with only those that returned the interest and commitment document taking part. Subsequently, informed consent was obtained from the participating students and their legal representatives. The aims, risks, benefits and data processing involved were explained. Data protection was guaranteed through anonymity, in accordance with Organic Law 3/2018 on Personal Data Protection and Guarantee of Digital Rights. These documents and the entire study followed the ethical standards provided for in the Declaration of Helsinki, complying with the relevant ethical principles in the practice of research with human participants, such as respect for the participants, benefit for the community and justice.

To evaluate SC (AMSC-Q), we took pre- (before starting the programme), post-1 (at the end of Phase 1) and post-2 (after Phase 2) measurements in each group (EG and CG), for both service recipients and providers. This procedure was undertaken by trained research staff under similar conditions. The questionnaires were administered in small groups (maximum 20 students), in spacious rooms so as to favour concentration and privacy. The participants were given written guidelines on how to complete the questionnaires, with an additional verbal explanation by a researcher. In the case of the group receiving the service, the researchers read out each item of the questionnaire. The need to answer honestly was emphasised, highlighting that anonymity was guaranteed. To identify each questionnaire, a secret personal code was used to associate each student's pre-intervention data with their post-study data. The students were given 15 minutes to complete the questionnaire, which was found to be more than sufficient, with no participant needing the full time.

Learning was assessed before starting the programme and at the end of Phase 1. The pre-intervention measures of performance and decision-making were collected in the first session of the ringo teaching unit in real 2 x 2 game conditions, while the CG post measures were taken in the last session, and the EG measures were collected in the session prior to the culminating event. The written questionnaire on knowledge was administered in the classroom before the second session and following the last session. The questionnaire was administered in conditions similar to those used when evaluating SC.

## Data analysis

Before embarking on the inferential statistical analysis, we performed the corresponding tests of normality (Kolmogorov-Smirnov) for all the dependent variables ( $n > 50$ ), of homoscedasticity (Levene) in the analyses for independent samples, and sphericity (Mauchly) in the cases of repeated samples. None of the variables showed a normal distribution ( $p < .05$ ), nor were the assumptions of homogeneity of variances and sphericity ( $p < 0.05$ ) met (more information in the supplementary material). Therefore, we opted to use non-parametric tests for the inferential analysis. The Mann-Whitney test (two independent samples) was used to determine the existence of differences between the EG and CG in each of the variables studied, and thus to ascertain the homogeneity of the groups under study, both before starting the programme and at the end of each phase. Subsequently, the Friedman test was conducted (related samples at three different times) for two-factor rank variance analysis in order to see whether there were differences in SC and its dimensions before and after each of the two phases of the programme. In the latter analyses, to establish the differences between each of the three measures (pre-post1-post2), we used the Bonferroni correction, being the most conservative method. For the learning-related variables, the Wilcoxon signed-rank test for paired samples was applied since the data were only collected before and after Phase 1 (two different points in time). Our analyses were conducted using SPSS (v.28 for Windows). Significance was set at  $p < .05$ .

## RESULTS

### Social competence

The Mann-Whitney test confirmed the absence of inter-group differences (GE-GC) in the variables under study both before and after the first phase of the programme ( $p > .05$ ). Only the normative adjustment variable presented higher scores in the EG in the primary school children, at pre and post-test 1 ( $Z = -2.36$ ;  $p = .17$ ). The same test at the end of the programme (post-test 2) revealed significant differences in the EG in social adjustment ( $Z = -2.22$ ;  $p = .26$ ), social efficacy ( $Z = -3.75$ ;  $p < .001$ ), normative adjustment ( $Z = -4.34$ ;  $p < .001$ ) and in the total SC score ( $Z = -4.24$ ;  $p < .001$ ) (see supplementary material)

Table 2 presents the descriptive statistics (M and SD) for the service recipients in SC and its dimensions, differentiating between the experimental and control groups. It also shows the values for bilateral asymptotic significance on the Friedman test and for the pairwise comparison with Bonferroni adjustment. As can be seen, the



programme was not effective in enhancing the service recipients' SC ( $p > .05$ ). Only small improvements in prosocial behaviour and normative adjustment were found in the EG when comparing the measures at post-test 2 (end of Phase 2) and post-test1 (end of Phase 1), in the first case, and at post-test2 and pre-test, in the second case.

**Table 2**

*Descriptive statistics for social competence in the service recipients according to the EG and CG*

					<i>Friedman test</i>	
		<i>PRE</i>	<i>POST1</i>	<i>POST2</i>	<i>p</i>	<i>Pairwise comparison<sup>1</sup></i>
		<i>M (DT)</i>	<i>M (DT)</i>	<i>M (DT)</i>		<i>(D Cohen effect size)</i>
		<i>a</i>	<i>b</i>	<i>c</i>		
<b>CR</b>	GE n=76	21.30 (± 3.52)	21.12 (± 3.96)	21.39 (± 4.30)	.420	
	GC n=66	21.16 (± 4.14)	21.12 (± 3.90)	20.88 (± 5.23)	.582	
<b>SA</b>	GE n=76	46.41 (± 8.31)	48.24 (±10.21)	48.07 (± 7.45)	.786	
	GC n=66	47.15 (± 5.96)	46.02 (± 6.37)	46.83 (± 7.52)	.692	
<b>PB</b>	GE n=76	30.29 (± 3.18)	29.41 (± 3.61)	30.34 (± 4.15)	.004**	c > b d=0.24
	GC n=66	30.97 (± 4.03)	29.68 (± 4.47)	30.34 (± 4.47)	.441	
<b>SE</b>	GE n=76	23.89 (± 2.90)	23.78 (± 3.05)	23.91 (± 3.28)	.570	
	GC n= 66	23.67 (± 3.06)	22.86 (± 3.45)	23.35 (± 3.15)	.175	
<b>NA</b>	GE n=76	29.81 (± 3.74)	30.00 (± 4.06)	30.82 (± 4.33)	.030*	c > a d=0.25
	GC n= 66	26.91 (± 6.28)	27.17 (± 5.90)	27.82 (± 5.47)	.018*	c > b d=0.11
<b>TST</b>	GE n=76	151.71 (± 15.18)	151.54 (±17.95)	154.53 (± 16.32)	.157	
	GC n=66	150.22 (± 17.79)	147.15 (±18.36)	149.54 (± 18.53)	.521	

*Note.* <sup>1</sup>adjustment with Bonferroni. CR: cognitive reappraisal; SA: social adjustment; PB: prosocial behaviour; SE: social efficacy; NA: normative adjustment; TSC: total social competence.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

The same analyses for the service provider group (Table 3) revealed statistically significant differences ( $p < .01$ ) in the EG for all the variables under study, with the exception of prosocial behaviour. The pairwise comparisons (Bonferroni), however, showed that these differences were only found in values at the final measurement (Phase 2) when compared with both the pre-test measures and those performed at the end of phase 1. No significant differences were found in the scores collected for the CG between any of the three data collection points.

**Table 3**

*Descriptive statistics for social competence in the service providers according to the EG and CG*

		<i>Friedman test</i>				
		<i>PRE</i>	<i>POST1</i>	<i>POST2</i>	<i>p</i>	<i>Pairwise comparison1</i>
		<i>M (DT)</i>	<i>M (DT)</i>	<i>M (DT)</i>		<i>(D Cohen effect size)</i>
		<i>a</i>	<i>b</i>	<i>c</i>		
<b>CR</b>	GE n=128	20.21 (± 3.93)	20.45 (± 4.10)	22.02 (± 3.04)	.000***	c > a d=0.52 c > b d=0.44
	GC n=67	20.19 (± 4.08)	20.54 (± 5.57)	20.70 (± 4.40)	.268	
<b>SA</b>	GE n=128	45.90 (± 6.76)	46.50 (± 6.65)	48.84 (± 6.02)	.002**	c > a d=0.46 c > b d=0.37
	GC n=67	44.95 (± 7.47)	44.62 (± 9.25)	45.80 (± 8.57)	.299	
<b>PB</b>	GE n=128	28.50 (± 4.56)	28.75 (± 4.81)	29.03 (± 3.73)	.426	
	GC n=67	27.70 (± 5.26)	27.78 (± 5.06)	28.43 (± 3.79)	.953	
<b>SE</b>	GE n=128	22.06 (± 3.35)	22.37 (± 3.41)	23.66 (± 3.13)	.000***	c > a d=0.49 c > b d=0.39
	GC n=67	21.43 (± 4.56)	21.69 (± 4.15)	21.79 (± 4.19)	.293	

<i>Friedman test</i>						
		<i>PRE</i> <i>M (DT)</i> <i>a</i>	<i>POST1</i> <i>M (DT)</i> <i>b</i>	<i>POST2</i> <i>M (DT)</i> <i>c</i>	<i>p</i>	<i>Pairwise</i> <i>comparison1</i> <i>(D Cohen effect size)</i>
<b>NA</b>	GE n=128	28.83 (± 4.67)	28.75 (± 5.32)	31.25 (± 4.14)	.000***	c > a d=0.55 c > b d=0.52
	GC n=67	28.50 (± 4.50)	29.12 (± 4.06)	29.11 (± 4.06)	.103	
<b>TST</b>	GE n=128	145.5 (± 17.18)	146.75 (±17.98)	155.41 (± 12.52)	.000***	c > a d=0.66 c > b d=0.56
	GC n=67	143.03 (± 19.12)	143.71 (±19.34)	145.92 (± 17.52)	.260	

Note. <sup>1</sup>adjustment with Bonferroni. CR: cognitive reappraisal; SA: social adjustment; PB: prosocial behaviour; SE: social efficacy; NA: normative adjustment; TSC: total social competence.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

## Learning

Learning was only assessed during Phase 1, given that it referred to content delivered during the PE classes, and which formed part of the curriculum. The results of the Wilcoxon test for game execution and decision-making showed significant improvements in both the EG and CG and in both service recipients and providers (Tables 4 and 5). These improvements were similar in both groups under study (EG and CG).

In knowledge-related learning, the service recipients in the EG showed improvements in all the variables under study, except for fair play and health, while the CG only improved in rules knowledge and total test scores (Table 4).

**Table 4**

Descriptive statistics for the learning variables in service recipients, according to EG and CG

		<i>Wilcoxon test</i>				
		<i>PRE</i> <i>M (DT)</i>	<i>POST1</i> <i>M (DT)</i>	<i>Z</i>	<i>p</i>	<i>D Cohen</i> <i>effect size</i>
<b>EX</b>	GE n=230	3.17 (± 0.94)	3.99 (± 0.86)	10.01	.000***	0.91
	GC n=46	2.87 (± 0.83)	4.29 (± 0.79)	7.36	.000***	1.75
<b>DM</b>	GE n=230	3.08 (± 1.08)	3.80 (±0.96)	9.22	.000***	0.70
	GC n=46	2.98 (± 0.77)	4.11 (± 0.86)	4.88	.000***	1.38
<b>TECK</b>	GE n=204	0.71 (± 0.79)	1.18 (± 0.86)	4.840	.000***	0.57
	GC n=41	1.02 (± 0.83)	1.00 (± 0.80)	0.42	0.674	0.02
<b>TACK</b>	GE n=204	1.61 (± 0.77)	1.93 (± 0.79)	4.68	.000***	0.41
	GC n=41	1.81 (± 0.79)	1.78 (± 0.72)	0.35	.729	0.04
<b>DECK</b>	GE n=204	1.99 (± 0.70)	2.16 (± 0.70)	1.801	.072	0.24
	GC n=41	2.09 (± 0.72)	2.12 (± 0.75)	0.16	.873	0.04
<b>RK</b>	GE n=204	1.03 (± 0.84)	2.24 (± 0.85)	9.87	.000***	1.43
	GC n=41	1.05 (± 0.81)	2.07 (± 0.85)	3.88	.000***	1.23
<b>TOTALK</b>	GE n=204	4.45 (± 2.26)	6.15 (± 2.85)	9.11	.000***	0.66
	GC n=41	5.31 (± 2.05)	6.49 (± 1.96)	3.71	.000***	0.59

Note. EX: execution; DM: decision-making; TECK: technical knowledge; TACK: tactical knowledge; DECK: fair play and health knowledge; RK: rules knowledge; TOTALK: total knowledge score.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

Meanwhile, the service providers showed improvements at the end of Phase 1 in both groups (EG, CG). The improvements were higher, however, in the EG in

terms of technical knowledge, rules knowledge, and fair play and health, as well as in the total ringo knowledge score (Table 5).

**Table 5**

*Descriptive statistics for the learning variables in service providers, according to EG and CG*

		<i>Wilcoxon test</i>				
		<i>PRE M (DT)</i>	<i>POST1 M (DT)</i>	<i>Z</i>	<i>p</i>	<i>D Cohen effect size</i>
<b>EX</b>	GE n=128	3.11 (± 0.89)	3.95 (± 0.84)	7.81	.000***	0.97
	GC n=73	2.88 (± 0.75)	4.03 (± 0.67)	7.35	.000***	1.61
<b>DM</b>	GE n=128	3.07 (± 1.08)	3.88 (± 0.95)	8.18	.000***	0.80
	GC n=73	3.03 (± 0.86)	3.85 (± 0.79)	6.07	.000***	0.99
<b>TECK</b>	GE n=129	0.76 (± 0.72)	1.54 (± 0.75)	6.77	.000***	1.06
	GC n=72	1.32 (± 0.85)	1.56 (± 0.91)	3.22	.000***	0.27
<b>TACK</b>	GE n=129	2.24 (± 1.13)	2.88 (± 1.10)	5.43	.006**	0.57
	GC n=72	2.58 (± 1.11)	2.79 (± 0.94)	2.73	.000***	0.20
<b>DECK</b>	GE n=129	2.33 (± 0.82)	2.74 (± 0.82)	4.38	.000***	0.50
	GC n=72	2.44 (± 0.77)	2.42 (± 0.82)	0.14	.141	0.03
<b>RK</b>	GE n=129	1.33 (± 1.33)	2.74 (± 0.83)	8.03	.000***	1.27
	GC n=72	1.82 (± 1.05)	2.40 (± 0.88)	3.93	.000***	0.60
<b>TOTALK</b>	GE n=129	4.76 (± 4.76)	6.50 (± 2.80)	6.79	.000***	0.45
	GC n=72	5.64 (± 2.00)	6.35 (± 2.68)	3.42	.000***	0.30

*Note.* EX: execution; DM: decision-making; TECK: technical knowledge; TACK: tactical knowledge; DECK: fair play and health knowledge; RK: rules knowledge; TOTALK: total knowledge score.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

## DISCUSSION AND CONCLUSIONS

The present study sought to determine whether a programme based on hybridising SEM and SL might have an impact on enhancing SC and the learning of service recipients and providers. In order to assess the achievement of the objectives set, it is necessary to analyse the results according to the group under study and the intervention phase.

Regarding the improvement of SC, the programme was not effective in the students receiving the service, with slight improvements only in prosocial behaviour being observed during the implementation of the second phase. Meanwhile, the students in the group providing the service showed significant improvements in both overall SC and its different dimensions (cognitive reappraisal, social adjustment, social efficacy, normative adjustment). However, like their younger counterparts, these improvements only emerged in the second phase of the programme.

The disparate impact of the SEM-SL programme should be analysed based on the characteristics of each of its phases and the role of the participating groups. The lack of improvements as a result of implementing the SEM-SL hybrid in Phase 1 runs counter to several studies in the context of PE that report the positive contributions of the SEM in developing SC (Luna et al., 2020; Wang & Chen, 2021) or aspects inherent to it, such as prosocial behaviours (Manninen & Campbell, 2022), empathy and friendship (García López & Gutiérrez, 2015). However, unlike the participants in the cited studies, the students in our research had previous experience in implementing the model. This experience was necessary to provide training for the participating teachers, to promote familiarity with the model in the case of the students and to ensure fidelity in applying the SEM before initiating the programme. This may have reduced the effect of the SEM on SC in both the first and second phases of the programme.

Additionally, the results of Phase 1 also contradict studies that have associated SL with improvements in prosocial behaviours (Chiva-Bartoll et al., 2020b), social skills and social justice (Whitley et al., 2017). However, the design of Phase 1 reduced the interaction between service providers and recipients to three separate isolated events, which limited the opportunities to create positive interactions that could encourage the development of SC.

However, Phase 2 of the SEM-SL programme was delivered entirely in the secondary schools, allowing for contact and interaction between the whole community participating in the programme, not only during the intervention, but also at different times during the school day (e.g. other breaks, leaving and arriving at school, class changeovers). In addition, in contrast to Phase 1, the members of the programme shared activities with children that, having changed educational stage, had transferred from other schools and were now part of the new school,

providing them with more opportunities for social development. Understanding the importance of the quality and number of social relationships in the participants' positive adaptation (Kingery & Erdley 2007), this second phase represented a quantitative and qualitative leap in these relationships, which allowed the effect on SC of the hybrid use of the two methodologies (SEM and SL) to be optimised. In fact, a large number of encounters occurred in a context of maximum interaction, with very little teacher intervention and where the service providers assumed almost all the responsibilities. According to García López et al. (2023), this new approach to the SEM has a multiplying effect on some of its already recognised benefits, such as improved role representation, the development of greater responsibility and autonomy, and the fostering of a sense of belonging, aspects that also encourage the friendly relationships (García López & Gutiérrez, 2015) associated with SC.

Moreover, and although, and although studies support the notion that SC development programmes are more effective in adolescents than in pre-adolescents (Schuller & Demetriou, 2018), and that the greatest benefits of SL are generated among those providing the service (Cañadas, 2021), the effect of the specific role of the service provider in the SEM-SL programme is different when assessing its impact on improving SC. Our secondary school students voluntarily took the decision to participate in the study to help younger students, which gave them the opportunity to empathise with them, with their problems and needs, and above all to take responsibility for their learning and well-being. This underscores two key aspects that the SEM-LS hybrid fosters in the service providers, that is, responsibility and autonomy. These qualities were intentionally promoted through the combined use of the two methodologies, but also through the design and implementation of Phase 2 being enriched with activities complementary to the programme (coaching, reflection on the service, the meeting conditions, organisation, etc.). These activities, considered from a relational perspective, played a crucial role in changing the attitudes, responsibility and autonomy of the student service providers (García López et al., 2023), which might have had an impact on the improvement of SC. That is why an intentionally, specifically tailored and systematic design is essential (Bailey et al., 2009) in programmes that use sport as a framework to provide experiences to develop psychosocial aspects, promoting self-discovery and life skills, particularly if implementing a positive approach based on the student's strengths (Holt, 2016), as in the case of SC development.

In addition to the social learning associated with SC, in the first phase of the programme, our study also sought to understand the impact of SEM-SL on the learning involved in the game of ringo. In this sense, both the EG and CG and both the service recipient and provider groups showed substantive progress in learning related to the execution of the game and decision-making. However, the participants (providers and recipients) showed more notable improvements in

knowledge-related learning (technical, tactical, rules, fair play and health) compared to the controls. These findings are consistent with those of other studies where students following the SEM showed greater gains in content knowledge and better understanding of the game (Browne et al., 2004). However, despite the SEM being effective in improving technical execution and decision-making in the game, there were scant differences with respect to those that did not follow the programme (CG), coinciding with studies such as that of Pritchard et al. (2008), but contrasting with others such as that by Hastie et al. (2009), who reported more substantial improvements in technical skills and decision-making in those following the SEM. It is precisely the characteristics inherent to the SEM (roles, autonomy, responsibility, affiliation and feelings of belonging) that create a climate more likely to provide greater possibilities for meaningful learning (Browne et al., 2004; Evangelio et al., 2016), as opposed to the role of the mere recipient of information in traditional teaching (García-López & Gutiérrez, 2017).

SL may also have served to foster learning, since, as well as contributing to the development of social and civic competence, this methodology has been shown to be effective in the acquisition of curricular learning (Santos-Pastor et al., 2020). While the SEM seeks to make students competent in the practice of the actual game, in addition to being literate, reflective players, SL aims to bolster such learning, by encouraging competence in service-related tasks (experiential learning), in our case, the teaching of a sport. It is our belief, then, that the service providers were able to improve their knowledge (technical, tactical, rules, fair play and health) by attempting to successfully teach these aspects to the group receiving the service. Meanwhile, the children's learning in the target group may also have benefited from the more individualised teaching provided by their older peers. Although most of the experiences in the literature have been implemented in higher education, the benefits of the use of SL in learning in the context of PE have been reported not only in the social aspects (Ruiz-Montero et al., 2022) but also in the academic realm (Capella-Perís et al., 2020).

Notwithstanding our findings, it is necessary to highlight certain limitations of the present study. Firstly, the use of non-parametric tests for inferential statistics limited the possibility of performing more complete and robust analyses such as, for example, controlling for the effect of variables (gender or school network) that might have an impact on the results. It is also worth noting the participant loss between the first and second phases due to students transferring to secondary schools not involved in the project, which may have increased the bias of the research and, therefore, affected the generalisability of the results. The voluntary nature of the service providers' participation conditioned the selection of participants, and may also have had an impact on the findings, as they were understood to be intrinsically



motivated to provide the service and predisposed to enhancing the efficacy of the programme.

Additionally, although the socioeconomic and cultural contexts were similar, and the design of the activities, the protocols and the organisation were the same in all the cases, we cannot ignore the biases inherent to the quasi-experimental nature of the study and its implementation by different researchers in the school networks.

Furthermore, since SC was measured according to students' self-perceptions, we do not know whether these improvements translated into the development of prosocial skills and behaviours. Therefore, for future research, it would be interesting to conduct multilevel assessments based not only on self-assessment, but also on behavioural assessment by peers, teachers and/or external observers. It is also necessary to redesign the programme, preserving its strengths, while mitigating the weaknesses detected, for example, by enriching Phase 1 with more activities and interactions between groups.

Moreover, given the flexibility of this SEM-SL programme, it can be easily transferred to a large number of school contexts where it could be highly effective in facilitating the transition from primary to secondary school, thus opening up new avenues of future research.

In conclusion, partially fulfilling the hypothesis proposed when beginning the research, only in Phase 2 did the SEM-SL programme prove to be effective in developing SC and most of its dimensions (cognitive reappraisal, social adjustment, social efficacy, normative adjustment), although this effect was primarily detected in the service provider group. Thus, it was necessary to maximise the quantity and quality of interactions through teaching-learning situations that encouraged emotional involvement between peers. The SEM-SL programme was also effective in learning, especially in the areas related to knowledge (technical, tactical, declaratory and rules), in the case of both service providers and recipients.

Given the above, we understand that combining the SEM and SL methodologies provides an ideal teaching-learning ecosystem, not only for the development of SC but also for the learning inherent to sport itself, exposing students to experiences in which they all individually and collectively contribute to create a positive collective experience. Moreover, the complementarity shown by both models adds weight to the idea of their integrated use, multiplying the recognised benefits in responsibility, positive and respectful relationships, autonomy, and a sense of belonging.

## ACKNOWLEDGEMENTS

This study forms part of the project “ Impact of the Sport Education Model as Service-Learning on the social and civic competence ” (EDU2017-86928-R) funded by the Ministry of Economy, Industry and Competitiveness within the call for grants for R&D projects under the State Programme for Research, Development and Innovation oriented towards the Challenges of Society corresponding to call 2017. We would like to thank the management teams of the 17 participating schools for their help, as well as the work of all the PE teaching staff who were actively involved in this programme. Special thanks go to the students who provided services for their younger peers to help ease their transition from primary to secondary school.

## REFERENCES

- Bailey, R., Armour, K., Kirk, D., Jess, M., Pickup, I., Sandford, R., & Education, B. P. (2009). The educational benefits claimed for physical education and school sport: an academic review. *Research Papers in Education*, 24(1), 1-27. <https://doi.org/10.1080/02671520701809817>
- Browne, T. B., Carlson, T. B., & Hastie, P. A. (2004). A comparison of rugby seasons presented in traditional and sport education formats. *European Physical Education Review*, 10(2), 199-214. <https://doi.org/10.1177/1356336X04044071>
- Cañadas, L. (2021). Aprendizaje-servicio universitario en contextos de actividad física, educación física y deporte: una revisión sistemática. *Educación e pesquisa*, 47, Artículo e237446. <https://doi.org/10.1590/S1678-4634202147237446>
- Capella-Peris, C., Gil-Gómez, J., & Chiva-Bartoll, Ò. (2020). Innovative analysis of service-learning effects in physical education: a mixed-methods approach. *Journal of Teaching in Physical Education*, 39(1), 102-110. <https://doi.org/10.1123/jtpe.2019-0030>
- Casado-Robles, C., Mayorga-Vega, D., Guijarro-Romero, S., & Viciano, J. (2022). Effect of a sport education-based teaching unit in physical education on high school students' social networks and quantitative sociometry scores: a cluster randomized control trial. *Revista de Psicodidáctica*, 27(1), 66-75. <https://doi.org/10.1016/j.psicoe.2021.10.001>
- Chiva-Bartoll, O., & Fernández-Rio, J. (2022). Advocating for service-learning as a pedagogical model in physical education: towards an activist and transformative approach. *Physical Education and Sport Pedagogy*, 27(5), 545-558. <https://doi.org/10.1080/17408989.2021.1911981>
- Chiva-Bartoll, Ò., Capella-Peris, C., & Salvador-García, C. (2020a). Service-learning in physical education teacher education: towards a critical and inclusive

- perspective. *Journal of Education for Teaching*, 46(3), 395-407. <https://doi.org/10.1080/02607476.2020.1733400>
- Chiva-Bartoll, O., Montero, P. J. R., Capella-Peris, C., & Salvador-García, C. (2020b). Effects of service learning on physical education teacher education students' subjective happiness, prosocial behavior, and professional learning. *Frontiers in Psychology*, 11, 331. <https://doi.org/10.3389/fpsyg.2020.00331>
- Chiva-Bartoll, O., Moliner, M. L., & Salvador-García, C. (2020c). Can service-learning promote social well-being in primary education students? A mixed method approach. *Children and Youth Services Review*, 111, Artículo 104841. <https://doi.org/10.1016/j.childyouth.2020.104841>
- Evangelio, C., González-Víllora, S., Serra-Olivares, J., & Pastor-Vicedo, J. C. (2016). El modelo de educación deportiva en España: una revisión del estado de la cuestión y prospectiva. *Cuadernos de Psicología del Deporte*, 16(1), 307-324. <https://bit.ly/3VCnZZG>
- García-López, L. M., & Gutiérrez, D. (2015). The effects of a sport education season on empathy and assertiveness. *Physical Education and Sport Pedagogy*, 20(1), 1-16. <https://doi.org/10.1080/17408989.2013.780592>
- García-López, L. M., & Gutiérrez, D. (2017). *Aprendiendo a enseñar deporte. Modelos de Enseñanza Comprensiva y Educación Deportiva* (2ª ed.). INDE.
- García-López, L. M., Gutiérrez, D., & Fernández-Bustos, J. G. (2019). Emprendimiento docente en la transición de educación primaria a educación secundaria: una propuesta desde la educación deportiva y el aprendizaje-servicio. *Contextos Educativos: Revista de Educación*, 24, 113-121. <https://doi.org/10.18172/con.3913>
- García-López, L. M., Gutiérrez, D., González-Martí, I., Segovia, Y., & MacPhail, A. (2023). Enhancing sport education experiences through service-learning. *European Physical Education Review*, 29(2), 215-232. <https://doi.org/10.1177/1356336X221132770>
- Gil-Gómez, J., Moliner-García, M. O., Chiva-Bartoll, Ó., & García-López, R. (2016). Una experiencia de aprendizaje-servicio en futuros docentes: desarrollo de la competencia social y ciudadana. *Revista Complutense de Educación*, 27(1), 53-73. [http://dx.doi.org/10.5209/rev\\_RCED.2016.v27.n1.45071](http://dx.doi.org/10.5209/rev_RCED.2016.v27.n1.45071)
- Gómez-Ortiz, O., Romera-Félix, E. M., & Ortega-Ruiz, R. (2017). Multidimensionalidad de la competencia social: medición del constructo y su relación con los roles del bullying. *Revista de Psicodidáctica*, 22(1), 37-44. [https://doi.org/10.1016/S1136-1034\(17\)30042-4](https://doi.org/10.1016/S1136-1034(17)30042-4)
- Grineski, S. (1996). *Cooperative learning in physical education*. Human Kinetics Publishers.
- Gutiérrez, D., Segovia, Y., García López, L. M., & Fernández-Bustos, J. G. (2019). Integración del aprendizaje-servicio en el modelo de educación deportiva como

- facilitador de la transición a la educación secundaria. *Publicaciones*, 49(4), 87–108. <https://doi.org/10.30827/publicaciones.v49i4.11730>
- Harvey, S., Kirk, D., & O'Donovan, T. M. (2014). Sport education as a pedagogical application for ethical development in physical education and youth sport. *Sport, Education and Society*, 19(1), 41-62. <https://doi.org/10.1080/13573322.2011.624594>
- Hastie, P. A., & Buchanan, A. M. (2000). Teaching responsibility through SE: prospects of a coalition. *Research Quarterly for Exercise and Sport*, 71(1), 25-35. <https://doi.org/10.1080/02701367.2000.10608877>
- Hastie, P. A., Sinelnikov, O. A., & Guarino, A. J. (2009). The development of skill and tactical competencies during a season of badminton. *European Journal of Sport Science*, 9(3), 133-140.
- Holt, N. L. (Ed.). (2016). *Positive youth development through sport*. Routledge. <https://doi.org/10.1080/17461390802542564>
- Kingery, J. N., & Erdley, C. A. (2007). Peer experiences as predictors of adjustment across the middle school transition. *Education and Treatment of Children*, 30(2), 73-88. <https://doi.org/10.1353/etc.2007.0007>
- Koszałka-Silska, A., Korcz, A., & Wiza, A. (2021). The impact of physical education based on the adventure education programme on self-esteem and social competences of adolescent boys. *International Journal of Environmental Research and Public Health*, 18(6), 3021. <https://doi.org/10.3390/ijerph18063021>
- Leduc, C., & Bouffard, T. (2017). The impact of biased self-evaluations of school and social competence on academic and social functioning. *Learning and Individual Differences*, 55, 193-201. <https://doi.org/10.1016/j.lindif.2017.04.006>
- Luna, P., Guerrero, J., Rodrigo-Ruiz, D., Losada, L., & Cejudo, J. (2020). Social competence and peer social acceptance: evaluating effects of an educational intervention in adolescents. *Frontiers in Psychology*, 11, 1305. <https://doi.org/10.3389/fpsyg.2020.01305>
- Manninen, M., & Campbell, S. (2022). The effect of the sport education model on basic needs, intrinsic motivation and prosocial attitudes: a systematic review and multilevel meta-analysis. *European Physical Education Review*, 28(1), 78-99. <https://doi.org/10.1177/1356336X211017938>
- Metzler, M. (2017). *Instructional models in physical education*. Routledge.
- Monzonís, M., & Capllonch, M. (2014). La educación física en la consecución de la competencia social y ciudadana. *Retos: Nuevas Tendencias en Educación Física, Deporte y Recreación*, 25, 180-185. <https://doi.org/10.47197/retos.v0i25.34509>
- Organization for Economic Co-operation and Development (2005). *The definition and selection of key competencies: executive summary*. <https://bit.ly/3TVLLhU>

- Oslin, J. I., Mitchell, S. A., & Griffin, L. I. (1998). The Game Performance Assessment Instrument (GPAI): development and preliminary validation. *Journal of Teaching in Physical Education*, 17(2), 231-243. <https://doi.org/10.1123/jtpe.17.2.231>
- Opstoel, K., Chapelle, L., Prins, F. J., De Meester, A., Haerens, L., van Tartwijk, J., & De Martelaer, K. (2020). Personal and social development in physical education and sports: a review study. *European Physical Education Review*, 26(4), 797-813. <https://doi.org/10.1177/1356336X19882054>
- Padilla-Walker, L. M., Fraser, A. M., Black, B. B., & Bean, R. A. (2015). Associations between friendship, sympathy, and prosocial behavior toward friends. *Journal of Research on Adolescence*, 25(1), 28-35. <https://doi.org/10.1111/jora.12108>
- Pritchard, T., Hawkins, A., Wiegand, R., & Metzler, J. N. (2008). Effects of two instructional approaches on skill development, knowledge, and game performance. *Measurement in Physical Education and Exercise Science*, 12(4), 219-236. <https://doi.org/10.1080/10913670802349774>
- Puig-Rovira, J. M., Batlle, R., Bosch, C., & Palos, J. (2007). *Aprendizaje servicio: educar para la ciudadanía*. Octaedro.
- Ruiz-Montero, P. J., Santos-Pastor, M. L., Martínez-Muñoz, L. F., & Chiva-Bartoll, O. (2022). Influencia del aprendizaje-servicio universitario sobre la competencia profesional en estudiantes de titulaciones de actividad física y deporte. *Educación XX1*, 25(1), 119-141. <https://doi.org/10.5944/educxx1.30533>
- Santos-Pastor, M. L., Cañadas, L., Martínez-Muñoz, L. F., & García-Rico, L. (2020). Design and validation scale to assess university service-learning in physical activity and sports. *Educación XX1*, 23(2), 67-93. <http://doi.org/10.5944/educXX1.25422>
- Schueller, I., & Demetriou, Y. (2018). Physical activity interventions promoting social competence at school: a systematic review. *Educational Research Review*, 25, 39-55. <https://doi.org/10.1016/j.edurev.2018.09.001>
- Siedentop, D., Hastie, P. A., & van der Mars, H. (2020). *Complete guide to sport education (3rd ed.)*. Human Kinetics.
- Sinelnikov, O. A. (2009). Sport education for teachers: professional development when introducing a novel curriculum model. *European Physical Education Review*, 15(1), 91-114. <https://doi.org/10.1177/1356336X09105213>
- Varela, D. C., Losada, A. S., & Fernández, J. E. R. (2019). Aprendizaje-servicio e inclusión en educación primaria: una revisión sistemática desde la educación física. *Retos: Nuevas Tendencias en Educación Física, Deporte y Recreación*, 36, 611-617. <https://doi.org/10.47197/retos.v36i36.68972>
- Wang, B., & Chen, S. (2021). Sport education for social competence in K-12 physical education. *Quest*, 73(4), 391-409. <https://doi.org/10.1080/00336297.2021.1986410>

- Weiss, M. R. (2011). Teach the children well: a holistic approach to developing psychosocial and behavioral competencies through physical education. *Quest*, 63(1), 55-65. <https://doi.org/10.1080/00336297.2011.10483663>
- Whitley, M. A., Walsh, D., Hayden, L., & Gould, D. (2017). Narratives of experiential learning: students' engagement in a physical activity-based service-learning course. *Journal of Teaching in Physical Education*, 36(4), 419-429. <https://doi.org/10.1123/jtpe.2016-0141>
- Yorio, P. L., & Ye, F. (2012). A meta-analysis on the effects of service-learning on the social, personal, and cognitive outcomes of learning. *Academy of Management Learning & Education*, 11, 9–27. <https://doi.org/10.5465/ame.2010.0072>
- Zhang, F., You, Z., Fan, C., Gao, C., Cohen, R., Hsueh, Y., & Zhou, Z. (2014). Friendship quality, social preference, proximity prestige, and self-perceived social competence: interactive influences on children's loneliness. *Journal of School Psychology*, 52(5), 511-526. <https://doi.org/10.1016/j.jsp.2014.06.001>

## ANNEX 1

Additional information on the distribution of participants, scheduling of study phases and inter-group differences for each of the variables at the beginning of the study and at the end of each of the phases.

**Table A.1**

*Distribution of participants in phase 1 of the MED-ApS program*

Net	PEd			HERSELF			Total net
	male	females	total	male	females	total	
1	17 (41%)	23 (59%)	40 (100%)	26 (49%)	27 (51%)	53 (100%)	93
2	73 (58.9%)	51 (41.1%)	124 (100%)	44 (44.9%)	54 (55.1%)	98 (100%)	222
3	45 (48.4 %)	48 (51.6%)	93 (100%)	53 (63.1 %)	31 (36.9 %)	84 (100%)	177
4	45 (41.7 %)	62 (58.3 %)	107 (100%)	14 (31.6 %)	28 (68.4 %)	42 (100%)	149
5	36 (54.5 %)	30 (45.5 %)	66 (100%)	34 (46.6%)	39 (53.4 %)	73 (100%)	139
Total	216	214	430	171	179	350	780

**Table A.2**

*Key stages followed in the planning and execution of SL (Puig-Rovira et al. 2007) in each of the phases of the MED-ApS program (taken from García-López et al.. 2023)*

Stage	Actions
<b>1. Context analysis</b>	Once schools and PE teachers expressed interest in participating in the MED-ApS (SE-SL) project prior to the start of each of the two phases, project leaders met with secondary school teachers to establish: (a) secondary school teachers' perceptions of secondary school students' participation through an SL programme aimed at the transition from primary to secondary school; (b) who would participate in the study in each school; (c) students' sporting interests and experiences; and (d) the specific context of each school in facilitating the transition from primary to secondary school. These meetings allowed teachers to be formally involved in the planning of the project, providing key information for the design and agreeing on the responsibility for teaching/supervising the classes. These meetings also helped teachers to connect the MED-ApS programme with the PE curriculum of groups participating in the project.
<b>2. Project plan.</b>	Following Hildenbrand and Schultz (2015), each network supervisor and the teachers included in that network completed a Memorandum of Understanding to determine desired outcomes, working methodology and communication methods, opportunities for teacher support, and a clear and realistic timeline for project implementation.
<b>3. Action plan</b>	The SL project was presented to all Secondary Education groups (4th ESO phase 1, 1st Bachillerato phase 2). This involved a motivational activity for the students, a presentation of the aims of the SL project and the activities in which they would participate (depending on their participation preferences). The SL aimed to promote a positive transition from primary to secondary school by introducing various elements that could facilitate the process for primary school students, such as having acquaintances from primary school, meeting older students, being aware of the help provided by the school, and participating in small group activities where they could interact closely with new classmates.



<b>4. Action</b>	<p>The 4th ESO students during phase 1 and the 1st Bacalaureate students in phase 2 implemented the project under the supervision of the teachers and coordinated by the network supervisor. In phase 1, the 4th ESO students had the opportunity to train primary school students in the sport of ringo on three occasions: one training session at primary school, one at their secondary school and one during each final network event. In phase 2, the 1st Bacalaureate students coached and organised the spikeball-roundnet sport season to their younger peers during approximately 23 sessions that took place during breaks and two additional classes. The service providers took the time to talk to them about the expectations of the primary school students and their experiences at the school. Each of these sessions involved a preparatory activity from the previous session, and another activity to reflect on the development of the service. The student service providers' reflections revolved around: (a) coaching the sport (e.g. "What challenges arose in teaching ringo catching?"); and (b) the transition from primary school to secondary school (e.g. 'What is your perception of the expectations of your students? 'What is your perception of primary school students' expectations of what is involved in becoming a secondary school student?").</p>
<b>5. Assessment project</b>	<p>At the end of the respective culminating events, the student service providers analysed the results of the service activity, reflecting on their learning, celebrating their learning experiences and proposing possible future actions.</p>

**Table A.3**  
*Phase 1 programming*

<b>MED phase</b>	<b>Sessions</b>	<b>Sports Education</b>	<b>Service Learning</b>
Organization	1-2	Introduction to SE. Equipment selection.	S. 1: Motivational task introductory to SL
Pre-season	3-6	Assignment of roles. Introduction of 2 trainers. Physical trainer. sports director. Teaching the specific game (ringo)	S. 4: Preparing for the First Teaching Session S. 5: First teaching session: training in PE schools S. 6: Service Reflection
	7-11	Intra and inter-teams. Introduction of referee roles. annotator and publicist. Team jersey design and decoration	S. 8: Preparing for the Second Teaching Session S. 9: Second teaching session: training in PE schools S. 10: Service Reflection S. 11: Coaching at SS (school three)
Competition	12-17	Formal competition (all against all) and training sessions	S. 12: Service Reflection S. 14: Organization of the network's culminating event S. 15: Culminating event of the network S. 16: Service Reflection
Culminating event	18-19	Culminating event at the school, preparation and celebration	S. 19: SL Assessment and Celebration

**Table A.4**  
*Phase 2 Programming*

MED phase	Sessions	Context	Sports Education	Service Learning
Organization	1	Recess		S. 1: Motivational task introductory to SL
	2-7	PE Class		S. 2-7: Training in the sports content of broadcasters
	8-9	Recess + 1h		S. 8: Motivation for participation in the recipient program S. 9: Service Reflection
Preseason	10-13	Recess	Team Practice	S. 10-12: Training of Service Recipients S. 13: Service Reflection
Competition	14-21	Recess	Formal competition (all against all) and training sessions	S. 14-20: Training of Service Recipients S. 21: Service Reflection
Culminating event	22-23	Recess + 1h	Culminating event at the institute. Preparation and celebration	S. 22: Training of Service Recipients S. 23: Service Reflection

**Table A.5**

*Inter-group differences (Experimental Group/Control Group) in the variables under study before starting the program (pre-test). Mann-Whitney test*

		Level	
		Primary	Secondary
CR	<i>Z</i>	-.13	-1.13
	<i>p</i>	.896	.256
SA	<i>Z</i>	-.82	-1.89
	<i>p</i>	.411	.058
PB	<i>Z</i>	-1.39	-1.33
	<i>p</i>	.164	.181
SE	<i>Z</i>	-1.64	-.830
	<i>p</i>	.100	.406
NA	<i>Z</i>	-2.07	-.575
	<i>p</i>	.038*	.566
TSC	<i>Z</i>	-.29	-2.18
	<i>p</i>	.770	.029*

CR: cognitive reappraisal; SA: social adjustment; PB: prosocial behaviour; SE: social efficacy; NA: normative adjustment; TSC: total social competence.

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

**Table A.6**

*Inter-group differences (Experimental Group/Control Group) in the variables under study after phase 1 (post-test 1). Mann-Whitney test*

		Level	
		Primary	Secondary
CR	Z	-.21	-.82
	p	.828	.411
SA	Z	-1.66	-1.78
	p	.097	.075
PB	Z	-.28	-1.68
	p	.778	.092
SE	Z	-1.59	-1.10
	p	.111	.269
NA	Z	-2.38	-.06
	p	.017*	.951
TSC	Z	-1.58	-1.77
	p	.114	.076

CR: cognitive reappraisal; SA: social adjustment; PB: prosocial behaviour; SE: social efficacy; NA: normative adjustment; TSC: total social competence.

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

**Table A.7**

*Inter-group differences (Experimental Group/Control Group) in the variables under study after phase 2 (post-test 2). Mann-Whitney test*

		Level	
		Primary	Secondary
CR	Z	-.38	-1.83
	p	.698	.066
SA	Z	-1.19	-2.22
	p	.232	.026*
PB	Z	-.36	-.87
	p	.714	.381
SE	Z	-1.21	-3.75
	p	.223	<.001***
NA	Z	-3.37	-4.34
	p	<.001***	<.001***
TSC	Z	-1.81	-4.21
	p	.070	<.001***

CR: cognitive reappraisal; SA: social adjustment; PB: prosocial behaviour; SE: social efficacy; NA: normative adjustment; TSC: total social competence.

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

**Table A.8**

Normality test of the variables under study (Kolmogorov-Smirnov for a sample).  
CR,SA,PB,SE,NA,TSC

	K-S Statistic	p
CRpre	0.095	.000***
SAPre	0.125	.000***
PBpre	0.147	.000***
SEpre	0.110	.000***
NAPre	0.133	.000***
TSCpre	0.087	.000***
CRpost1	0.127	.000***
SAPost1	0.117	.000***
PBpost1	0.123	.000***
SEpost1	0.116	.000***
NAPost1	0.156	.000***
TSCpst1	0.135	.000***
CRpost2	0.112	.000***
SAPost2	0.154	.000***
PBpost2	0.228	.000***
SEpost2	0.233	.000***
NAPost2	0.286	.000***
TSCpst2	0.256	.000***
TEpre	0.123	.000***
DMpre	0.229	.000***
KTECpre	0.284	.000***
KTACpre	0.268	.000***
KDESpre	0.269	.000***
KREGpre	0.181	.000***
KTOTALpre	0.095	.000***
TEpost	0.125	.000***
DMpost	0.147	.000***

	<b>K-S Statistic</b>	<b>p</b>
KTECpost	0.110	.000***
KTACpost	0.133	.000***
KDESpst	0.087	.000***
KREGpost	0.127	.000***
KTOTALpost	0.117	.000***

CR: cognitive reappraisal; SA: social adjustment; PB: prosocial behaviour; SE: social efficacy; NA: normative adjustment; TSC: total social competence; TE: technical execution; DM: decision-making; KTEC: technical knowledge; KTAC: tactical knowledge; KDEC: knowledge, sportsmanship and health; KREG: regulatory knowledge; KTOTAL: general knowledge. \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

**Table A.9**  
*Mauchly sphericity test for related samples*

	<b>Mauchly</b>	<b>p</b>
CR	0.903	.000***
AS	0.922	.000***
SA	0.826	.000***
IS	0.789	.000***
PB	0.829	.000***
CST	0.801	.000***

CR:cognitive reappraisal; SA: social adjustment; PB: prosocial behaviour; SE: social efficacy; NA: normative adjustment; TSC: total social competence.

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$



**Table A.10**

*Homoscedasticity test for group-dependent variables (GE vs CG) (Levene's test). Results for student providers and recipients in the pre-test*

	Primary School		Secondary school	
	Levene	<i>p</i>	Levene	<i>p</i>
CRpre	0.07	.784	0.00	.995
SAPre	3.65	.057	3.09	.079
PBpre	1.28	.258	0.64	.424
SEpre	6.30	.012*	2.09	.149
NAPre	9.50	.002**	0.10	.743
TSCpre	0.09	.761	2.03	.154
TEpre	0.14	.708	1.94	.165
DMpre	6.57	.011*	10.7	.001**
KTECpre	1.10	.294	5.45	.020
KTACpre	1.49	.223	0.01	.901
KDESpred	2.09	.149	0.11	.730
KREGpre	0.00	.956	0.02	.869
KTOTALpre	1.21	.272	0.05	.810

CR: cognitive reappraisal; SA: social adjustment; PB: prosocial behaviour; SE: social efficacy; NA: normative adjustment; TSC: total social competence; TE: technical execution; DM: decision-making; KTEC: technical knowledge; KTAC: tactical knowledge; KDEC: knowledge, sportsmanship and health; KREG: regulatory knowledge; KTOTAL: general knowledge.

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

**Table A.11**

*Homoscedasticity test for group-dependent variables (GE vs CG) (Levene's test). Results for student providers and recipients in post-test 1*

	Primary School		Secondary School	
	Levene statistician	<i>p</i>	Levene statistician	<i>p</i>
CRpost1	1.27	.260	0.07	.785
SApost1	4.35	.038*	4.91	.027*
PBpost1	2.01	.157	0.00	.996
SEpost1	1.34	.247	2.20	.138
NApost1	9.72	.002**	2.38	.124
TSCpst1	0.08	.772	0.40	.523
TEpost	0.79	.373	5.17	.024*
DMpost	0.84	.358	5.26	.023*
KTECpost	2.39	.123	3.05	.082
KTACpost	0.27	.603	1.70	.193
KDESpst	0.31	.577	0.00	.936
KREGpost	0.29	.588	0.05	.810
KTOTALpost	5.34	.021*	0.10	.743

CR: cognitive reappraisal; SA: social adjustment; PB: prosocial behaviour; SE: social efficacy; NA: normative adjustment; TSC: total social competence; TE: technical execution; DM: decision-making; KTEC: technical knowledge; KTAC: tactical knowledge; KDEC: knowledge, sportsmanship and health; KREG: regulatory knowledge; KTOTAL: general knowledge.

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

**Table A.12**

*Homoscedasticity test for group-dependent variables (GE vs CG) (Levene's test). Results for student providers and recipients in the posttest2*

	Primary School		Secondary School	
	Levene	<i>p</i>	Levene	<i>p</i>
CRpost2	2.87	.092	8.28	.004**
SApost2	0.07	.778	3.64	.058
PBpost2	0.02	.880	0.00	.964
SEpost2	0.10	.741	2.23	.136
NApost2	7.12	.008**	0.18	.666
TSCpst2	1.53	.218	2.30	.131

CR: cognitive reappraisal; SA: social adjustment; PB: prosocial behaviour; SE: social efficacy; NA: normative adjustment; TSC: total social competence

\**p* < 0.05; \*\**p* < 0.01; \*\*\**p* < 0.001



# Analysis of the schooling programs of 2-3 years old students in Primary and Childhood Education schools in Spain

## *Análisis de los programas de escolarización del alumnado de 2-3 años en colegios de Educación Infantil y Primaria en España*

Daniel Turienzo <sup>1\*</sup> 

Nuria Manzano-Soto <sup>2</sup> 

<sup>1</sup> Camilo José Cela University, Spain

<sup>2</sup> National University of Distance Education, Spain

\* Corresponding author. E-mail: [dturienzo@ucjc.edu](mailto:dturienzo@ucjc.edu)

### **Cómo referenciar este artículo/ How to reference this article:**

Turienzo, D., & Manzano-Soto, N. (2024). Analysis of the schooling programs of 2-3 years old students in Primary and Childhood Education schools in Spain. *Education XX1*, 27(2), 341-361. <https://doi.org/10.5944/educxx138649>

**Date received:** 15/10/2023

**Date accepted:** 29/02/2024

**Published online:** 28/06/2024

### **ABSTRACT**

In the last two decades, the net enrolment rate in the first cycle of Early Childhood Education has increased almost fivefold. This expansion has occurred in all regions across the board, albeit with different magnitudes. Despite the progress made, the fact that the stage is voluntary and not free has led to significant differences associated with the socioeconomic and cultural level of the families. To overcome these barriers, all communities have implemented strategies of social tariffs, rebates, fee exemptions or free education to provide affordable school places. Likewise, one of the public policies that has been adopted in different Autonomous Communities are the programs for the incorporation of

students in the first cycle in Infant and Primary Education schools. These initiatives have focused especially on students aged 2-3 years, although there are also some initiatives that incorporate the entire cycle or the second and third year in schools. This article analyses the possibilities (and challenges) presented by this policy from a redistributive approach that guarantees equal opportunities and early childhood care as a right. To this end, in the light of current regulations, the conditions and scope of these programs are analyzed to achieve the extension of the right to education and access to quality Early Childhood Education for all. It is concluded that these programs allow progress to be made in free education, to bet on universalist and stable policies over time, to promote co-teaching, to incorporate professionals in continuous training plans and to optimize existing investments, resources and facilities. On the contrary, it is necessary to adapt the spaces, preserve the identity of the stage and implement focused measures in favor of educational equity.

**Keywords:** early childhood education, early childhood care, access to education, early schooling, equity

## RESUMEN

En las últimas dos décadas, la tasa neta de escolarización en el primer ciclo de Educación Infantil se ha multiplicado prácticamente por cinco. Esta expansión se ha producido en todas las regiones de manera generalizada, aunque con diferentes magnitudes. A pesar de los avances alcanzados, el hecho de que la etapa sea voluntaria y no gratuita ha llevado a que existan importantes diferencias asociadas al nivel socioeconómico y cultural de las familias. Para superar estas barreras, todas las comunidades han implementado estrategias de tarificación social, bonificación, exención de tasas o gratuidad de las enseñanzas para facilitar plazas escolares asequibles. Asimismo, una de las políticas públicas que se ha adoptado en diferentes comunidades autónomas son los programas para la incorporación del alumnado del primer ciclo en los centros de Educación Infantil y Primaria. Estas iniciativas se han enfocado especialmente al alumnado de 2-3 años, aunque también existen algunas iniciativas que incorporan todo el ciclo o el segundo y tercer curso en los colegios. En este artículo se analizan las posibilidades (y retos) que presenta esta política desde un enfoque redistributivo que garantice la igualdad de oportunidades y la atención de la primera infancia como derecho. Para ello, a la luz de la normativa vigente, se analizan las condiciones y el alcance de estos programas para lograr la extensión del derecho a la educación y el acceso a una Educación Infantil de calidad para todos. Se concluye que estos programas permiten avanzar en la gratuidad, apostar por políticas universalistas y estables en el tiempo, fomentar la codocencia, incorporar a los profesionales en los planes de formación continua y optimizar las inversiones, recursos e instalaciones existentes. Por el contrario, es necesario que se produzca una adaptación de los espacios, preservar la identidad propia de la etapa e implementar medidas focalizadas en pro de la equidad educativa.

**Palabras clave:** educación infantil, atención a la primera infancia, acceso a la educación, escolarización temprana, equidad

## INTRODUCTION

There is a broad consensus among academic literature when it comes to pointing out the benefits associated with Early Childhood Education as an effective tool to fight against the intergenerational transmission of poverty due to its capacity to compensate for inequalities, becoming a key policy to guarantee a equitable that guarantees opportunities and allows their use by everyone (Espinosa Bayal, 2018; León et al., 2022). Investment in early childhood education constitutes the redistributive educational policy par excellence and a clear example of preventive policy and social investment (Ferrer, 2020), being the educational stage with the greatest potential to reduce social differences throughout life compared to investments made. in later stages (Heckman , 2017).

From the individual perspective, different works point out how Early Childhood Education contributes to the stimulation of cognitive and non-cognitive abilities (Bonal and Scandurra, 2019). The PISA 2015 report (and subsequent ones) points out that students who have attended Early Childhood Education show better general results in cognitive tests, even once sociocultural differences have been compensated (OECD, 2016). Thus, the policy of universalization of the second cycle of Early Childhood Education is associated with better academic results and a lower future probability of repetition (Felfe et al., 2015). Along these lines, Pilarz (2018) finds a positive association between early schooling and the development of mathematical, linguistic or scientific skills. For its part, the TIMSS study (2019) specifically analyzed the effect that formal early learning (attendance in the first cycle of Early Childhood Education) and informal learning (reading and mathematics activities carried out at home) has on performance in mathematics and science, concluding that the effect is additive (MEFP, 2020). The effects would be long-lasting since they are mediated by the development of non-cognitive capacities such as creativity, work capacity, personal autonomy or socialization (Mancebón et al., 2018). This would explain its positive relationship with future performance and school dropout prevention (Cebolla-Boado et al., 2017). From a social level, the expansion of schooling in early childhood education has been related to the improvement of work-family conciliation, favoring female work activity (MEFP, 2020). This relationship has been proven in the Spanish case (Nollenberger and Rodríguez-Planas, 2015) although its effect is increasingly discrete to the extent that the group of mothers who could react to this incentive has decreased (González-Motos and Saurí, 2023). Likewise, a positive relationship is found with higher salaries and taxes for both mothers and students in the future (van Huizen and Plantenga, 2018).

The benefits derived from early childhood education, together with the fact that there is no homogeneous access between social groups (given the overrepresentation of the most favored groups), generate a situation in which guaranteeing care and

education in early childhood is a priority in terms of educational policy (MEFP, 2022). This priority has been evident in the recommendations made by the European Commission (2019) which urge that early childhood education be of quality, affordable, accessible and inclusive, as well as the importance of having adequate financing. Accordingly, member states have promoted an intense agenda of reforms aimed at facilitating access to quality educational programs between 0 and 3 years old, with special attention to students from disadvantaged backgrounds. Likewise, along with targeted measures aimed at eliminating access barriers (reducing costs, prioritizing admission, deductions, awareness, information...), others of a universal nature have been implemented. Among others: a) establish a year of compulsory education before starting Primary Education, b) increase the obligation to attend Early Childhood Education by more than one year, c) increase the period of compulsory education to 2-3 years and, d) extend the legal right to an ECEC place <sup>1</sup> (European Commission, 2020). In this sense, Spain has a level of schooling above the OECD and EU23 average, placing it closer to countries with higher levels of schooling, such as Norway, Sweden or Portugal than to the opposite countries. Efforts in recent decades have focused on creating places and improving accessibility, but there are still important territorial inequalities and certain social groups continue to be underrepresented (Navarro-Varas and León, 2023).

The first cycle of Early Childhood Education in Spain is characterized by being non-free and voluntary education. Consequently, educational administrations do not guarantee places for all students, which has generated a strong presence of the private sector both in terms of ownership and management. The high territorial dispersion, together with lax regulation and the participation of different public institutions, has led to it being the educational stage where there is the greatest diversity of models (Bonal and Scandurra, 2019). At this point, one of the policies that has been developed in some communities in Spain consists of creating specific classrooms for students aged 2-3 years in Early Childhood and Primary Education centers, reserved until now for students aged 3 to 12 years. These programs, which began in isolation in Cantabria, have spread with their own particularities to most of the Autonomous Communities, although with different degrees of generalization.

---

<sup>1</sup> ECEC (Early Childhood Education and Care)



## METHODOLOGY

### Objectives

In this work, we seek to analyze the possibilities that these 'programs for the incorporation of students' can offer in terms of equity, and as an example of a redistributive and equal opportunity policy.

### Hypothesis

It is based on the hypothesis that these programs have great advantages, but that their optimization will ultimately depend on their institutional design.

### Method

To this end, all existing programs to date have been analyzed, as well as those planned for the imminent future, which includes 11 of the 17 autonomous communities. Namely: Aragon, Cantabria

Canary Islands, Valencian Community, Community of Madrid, Castilla y León, Castilla-La Mancha, Foral Community of Navarra, Extremadura, Basque Country and Region of Murcia.

Starting from current regulations, the elements that these programs have in common are analyzed, as well as the main effects they have in the regions where they have been operating for the longest time. This work is completed with the bibliographic review and analysis of secondary documentation available in each region.

### Analysis procedure

The analysis has been structured in the following dimensions. Firstly, the expansion process of the first cycle of Early Childhood Education is presented, paying special attention to territorial differences and social inequalities. The early schooling programs are presented below, pointing out their main characteristics. Finally, the opportunities and risks associated with the institutional design of these programs are analyzed.

The conclusions summarize the main ideas derived from this analysis and some elements for debate.

## ANALYSIS

### The expansion of the first cycle of Early Childhood Education

The evolution of schooling in the first cycle of Early Childhood Education has been exponential, going in recent decades from a net rate of 3.3% in 1991 to 41.8% in 2022. Analyzing the historical series, this progression has been constant, only attenuated during the pandemic due to fear of contagion and parents' loss of employment (Turienzo et al., 2022).

The expansion of the first cycle of Early Childhood Education has occurred across the board, although important territorial and social differences hide behind the schooling rates. Regarding territorial inequalities, in Table I, it can be seen how the net schooling rate presents a polarization with regions that exceed the national average by more than 10 points (Basque Country 54.4% and Madrid 51.7%) and others with 15 points below (Autonomous Cities, Principality of Asturias, Castilla y León, Region of Murcia and the Canary Islands). The former come to double the latter.

**Table 1**

*Net school enrollment rates in the first cycle of Early Childhood Education*

	1991-92	2001-02	2011-12	2021-22
Spain	3.3	10.6	30.7	41.8
Andalusia	0.7	1.3	33.7	50.8
Aragon	2.6	4.3	31.7	36.1
Asturias, Principality of	0.8	1.8	16.9	27.1
Balearic Islands	1.7	6.6	21.5	28.5
Canary Islands	1.0	1.1	7.1	25.1
Cantabria	0.5	3.4	24.0	33.2
Castile and León	1.6	8.2	16.9	24.1
Castilla la Mancha	1.0	1.9	33.9	34.6
Catalonia	9.9	26.9	36.4	39.6
Valencian Community	7.7	6.8	25.3	39.7
Extremadura	0.7	1.3	3.3	34.8
Galicia	2.8	12.9	22.8	50.5
Madrid, Community of	2.6	16.3	43.3	51.7

	1991-92	2001-02	2011-12	2021-22
Murcia, Region of	1.4	8.6	15.6	21.7
Navarra, Foral Community of (2)	0.0	13.2	10.5	31.7
Basque Country	2.1	23.1	51.9	54.4
Rioja, La	1.5	2.5	15.7	50.6
Ceuta	0.9	3.4	3.8	21.5
Melilla	0.1	8.5	17.8	31.1

*Fountain:* Own elaboration based on MEFP data (2023).

These divergences respond both to the different public policies carried out and to the productive structure, demographic characteristics, and historical trajectories of each region. Likewise, the institutional design more focused on prioritizing a model focused on conciliation or equity could contribute to facilitating or hindering access to this stage (León et al., 2022). Some factors such as low financing, the absence of a coherent financing model and the fragmentation of powers between different administrations have contributed to these differences. However, it should be noted that in the last two decades disparities in access have been mitigated to a certain extent in a process of regional convergence (Mancebón and Villar, 2020).

Secondly, there are gaps in access, since the schooling rate varies significantly depending on the socioeconomic and cultural level of the families (Navarro-Varas and León, 2023; Requena and Salazar, 2022). This bias in favor of the middle classes is not exclusive to Spain, but affects most countries (European Commission, 2019) because educational systems have been designed as a conciliation tool (Palomera, 2022). This approach tends to prioritize the family situation of the parents, overrepresenting families with double incomes or breadwinners and penalizing unemployment situations (Navarro-Varas, 2022). This regressive nature of investment has been widely known and documented as part of the Mateo effect (González-Motos and Saurí, 2023). Access depends largely on the socioeconomic status of families, regardless of whether social class is defined by educational or economic factors, with the greatest differences appearing between low positions and the rest (Requena and Salazar, 2022). According to the analysis of Flisi and Blasko (2019) based on the European Union survey of income and living conditions EU-SILC (*Statistics on Income and Living Conditions*), significant differences appear depending on the level of income (24.2% T1; 39.1% T2; 50.9% T3)<sup>2</sup>, mother's

<sup>2</sup> 24% of families located in the first income tertile use Early Childhood Education services, compared to 39.1% in the second tertile and 50.9% in the third tertile.

education (46% with higher education compared to 32% in otherwise), risk of poverty (24.9% at risk compared to 43.7% without risk) and risk of social exclusion (25.5% at risk compared to 44% without risk).

These differences are due to a wide range of factors related to both supply (affordability, accessibility, availability, etc.) and demand (care needs, alternative systems, parenting models, etc.). However, there are three that are decisive: 1) the lack of public places, 2) the admission systems, and 3) the cost of the service. On the supply side, especially in some territories, it does not cover demand, leaving broad social layers without a school position. Given the fact that there are not places for all students, it is essential to resort to admission systems. Although notable progress has been made both in the creation of public places and in the adoption of an equity approach, admission scales continue to prioritize employment status (León et al. 2022). The lack of public provision and financing has generated a strong presence of the private sector where a large part of the resources is provided by families. The cost of the service that families must assume, higher than in later stages, means that many do not use these services or do so to a lesser extent than desired (Velaz-Medrano et al., 2020). The differences in access between the most advantaged and least advantaged households gradually reduced before 2011. Starting this year, the differences between groups widen again and in 2016 access rates are recorded that are even more unequal than in 2008 (Bonal, 2020).

At this point it is worth remembering that the benefits of participation in early childhood care and education programs have been shown to be especially beneficial for those students from more disadvantaged socioeconomic backgrounds (Heckman, 2006; van Huizen and Plantenga, 2018) since it allows them to participate in richness of the pedagogical and social context that preschool represents, mitigating social inequalities and childhood educational poverty (European Commission, 2019; MEFP, 2022). In this way, the paradox arises that the students who can benefit the most from this policy are precisely those who have the most difficulty accessing and are most at risk of not doing so under optimal conditions that make it possible to compensate for the initial disadvantages (Ferrer, 2020).

### **Early schooling programs for 2–3-year-old students in CEIPs: characteristics**

In terms of educational policy, the first cycle of Early Childhood Education is presented as the most diverse in terms of provision models. Furthermore, the fact that the offer is fragmented into administrations of different levels (autonomous and local) and ownership adds extra complexity that materializes in diverse realities. One of the solutions that have been articulated are early schooling programs for 2–3-year-old students in the CEIP or CEIPSO.

These emerged in 2003 in Cantabria, where they are fully established and were soon adopted by the Basque Country and the Foral Community of Navarra (on a voluntary basis and at the initiative of the centers themselves). For its part, the Valencian Community implemented the program experimentally in 2015 with the particularity of extending it free of charge to municipal schools and offering aid to private centers. In 2016, the first 2-3 classrooms were created in Aragón and later in Extremadura, which in 2022 also incorporated the second course of the first cycle of Early Childhood Education (1-2 years). Following these initiatives, early incorporation programs have been extended, especially in 2022, whose progress has been favored by the arrival of European *Next Generation funds*. For its part, Castilla y León developed a proposal for 2-3 years of schooling in schools, the particularity of which is to extend free education to public and private public and private nursery schools and public schools. In a similar sense, the Region of Murcia has incorporated part of the 2–3-year-old students into both public and subsidized CEIPs. In the case of the Community of Madrid, the entire first cycle of Early Childhood Education has been added to the CEIPs. For its part, Canarias designed an experimental program that, in addition to groups of 2-3 years, included mixed classrooms of 1-2 and 2-3. In the case of Castilla-La Mancha, this program has been developed to guarantee schooling in areas suffering from depopulation.

At this point it is worth pointing out some similarities of these programs in which their virtues also lie.

- Ownership: in most cases, the program is only developed in public centers, which represents a considerable expansion of the available offer and a commitment to a solid public system. The exceptions would come from Castilla y León, the Basque Country and the Region of Murcia.
- Free: except in the case of the Basque Country, where only part of it is financed, in all cases socio-educational assistance is free so families should only assume the same costs and fees as in other stages for complementary services.
- Collaboration between administrations: these programs usually involve collaboration between local administrations, responsible for the maintenance and adaptation of the centers, and the regional administration.
- Co-teaching: the programs are committed to co-teaching, either through a teacher and a senior technician (Cantabria, Comunitat Valenciana, Aragón) or two senior technicians in Early Childhood Education (Extremadura) or even three specialists (Canary Islands).
- Ratios and group size: analyzing current legislation, classroom size varies between 18 and 20 students per group. However, the inclusion of more than one professional means a reduction in the ratios in practical terms.

However, the possibilities of these programs do not reside in their nature *per se*, but are conditioned by their specificities and implementation processes. Therefore, it is necessary to point out (Table II) also some of its differential characteristics.

**Table 2**

*Differences in the organization of early incorporation programs*

Autonomous community	Age	Ownership	Start year
Aragon	23	Public	2016
Cantabria	1-2 and 2-3	Public	2003
Canary Islands	Mixed 1-2/2-3. Classroom 2-3	Public	2022
Valencian Community	23	Public (and help private)	2015
Madrid's community	the whole cycle	Public	2022
Castile and León	2-3 (1-2 in 2024)	Public and private (subsidized)	2022
Castilla la Mancha	2/3 years	Public	2022
Foral Community of Navarra	2-3 years	Public, concerted and private	2006
Extremadura	1-2 and 2-3	Public	2018
Basque Country	the whole cycle	Public and concerted	2005
Murcia Region	23	Public and concerted	2023

Source. self-made.

Along with the differences in institutional design, it should be noted that the scope is very unequal. In certain regions its impact has been residual, as is the case of the Foral Community of Navarra, while in others such as the Basque Country or Cantabria it has contributed to shaping the organization and distribution of students.

### Opportunities and risks associated with the institutional design of these programs

The characteristics described make these programs an opportunity, not without risks, to advance the provision of educational opportunities for all. Table III shows both the opportunities and risks of these early entry programs.

The advantages in terms of educational equity, quality and inclusion are related to free education, to the universal nature, to the articulation under one administration, to the simplification and homogenization of admission processes,

to the optimization of investments, to the improvement of the conditions of the teaching staff, with co-teaching and reduction of ratios as an improvement in quality and progress in the integration of both cycles.

**Table 3**  
*Opportunities and risks of early entry programs*

Opportunities	Risks
Consolidation of the public system	Loss of private provision and school segregation
Free	Regressive inversion if not universal
Universal character	Lack of targeted compensatory policies
Investment optimization	Understaffing
Increase in quality	Inadequacy of spaces
Integration with later stages	
— Greater educational recognition	
— Improve transition processes	Organizational rigidity
— Personal incorporation into training plans	Loss of self-identity
— Inspection service optimization	
— Improve working conditions	
Administrative harmonization and governance	Inattention to schooling 0-2

Source. self-made.

Each of these opportunities is analyzed below, in contrast to their risks.

### ***Consolidation of the public system***

The fragmentation of public provision, together with the historical underfunding in childhood policies, has led to the expansion of the first cycle of early childhood education having constantly occurred with insufficient provision, especially in certain cities and communities (Bonal, 2020). Despite the progress that has been achieved in recent decades, a system with a strong presence of the private sector still prevails, which together with lax regulation has generated a great divergence in the offer both in terms of access and quality of service. educational service (León et al. 2022). The benefits of Early Childhood Education are greater when it comes to quality interventions and public provision, compared to private or mixed services (van Huizen and Plantenga, 2018). Overall, in Spain private centers have lower quality, derived from the priority given to healthcare aspects over educational ones (Río et al., 2022). Likewise, they sometimes operate in a kind of legal limbo due to

the different types of activity permits (Save The Children, 2019; Martínez- Virto et al., 2022).

On the other hand, the fact that the public offer is frequently fragmented in different administrations (Velaz-Medrano et al. 2020) contributes to an unequal offer, not only between different autonomous communities but even in the same territory. Therefore, this measure, which frequently stems from greater collaboration between administrations and commitment on the part of educational administrations, can lead to the consolidation of a robust public Early Childhood Education system. However, the benefits of this policy do not prevent certain externalities from existing. One of them is the closure of private schools, and therefore the reduction of supply in the short term. In this sense, some communities such as Castilla y León, the Basque Country or the Region of Murcia are choosing to finance private (or subsidized) centers, guaranteeing free tuition. On the other hand, in those regions where it is decided to establish subsidies or aid for private centers, a double risk is generated. Firstly, an increase in segregation can occur through partial concerts that act as a socioeconomic filter and condition subsequent itineraries (Save The Children, 2019). Furthermore, there is a risk, when establishing agreements with private entities, that nursery schools become managed by investment funds with the consequent risk of commercialization. On the other hand, subsidizing private centers under a free competition regime can generate dysfunctions in educational planning, with there being simultaneously oversupply and overdemand in the same territory, with proximity acting as an access barrier (Save The Children, 2021; Río et al., 2022). From the perspective of promoting access of certain social groups to Early Childhood Education, subsidizing private centers to reduce the cost borne by families has shown limited effectiveness, which is why it is considered more pertinent to increase places in public Early Childhood Schools. (Bonal, 2020; Sola-Espinosa et al., 2023).

### **Free**

The literature identifies the availability of places and the price that families must assume as the main barrier to schooling (Sola-Espinosa et al., 2023; Río et al, 2022; Castellanos-Serrano and Perondi, 2022; González-Motos and Saurí , 2023). According to the *Living Conditions Survey* (2016), 52.4% of families that do not use educational or formal care services do so for economic reasons (Velaz-Medrano et al. 2020). For this reason, most of the autonomous communities have developed strategies aimed at reducing the price that families have to assume. These policies have varied depending on the model, often opting for: general reduction in public rates and prices, agreements and subsidies with private centers, bonuses for certain groups, tax relief and social pricing systems. Likewise, different autonomous



communities have opted for total or partial free of charge. Early schooling programs would eliminate this barrier and facilitate access to disadvantaged families who are left out of redistributive actions (Save The Children , 2021). On the other hand, it would allow the incorporation of broad social layers that have part-time jobs, the informal economy or receive low remuneration, who currently must make a cost-benefit balance (Río et al. 2022). However, advancing free of charge without having incorporated social groups that are currently underrepresented, such as students at risk of social exclusion, can increase the regressive nature of this investment (Navarro-Varas, 2022) and reduce its effectiveness in the fight against the intergenerational transmission of poverty (Requena and Salazar, 2022). For this reason, in a scenario of public undersupply, a social pricing system is considered more appropriate than general reductions (Palomera, 2022). Bonus systems have improved access to certain social groups, although their effects have been diverse (León et al., 2016; Martínez- Virto et al., 2022; González-Motos and Saurí , 2023) because sometimes They have not been able to meet the needs of families that are in a situation of constant precariousness (Rio-Ruiz et al., 2022) or they have been poorly financed, which has not allowed them to display their full effectiveness (Bonal and Scandurra , 2019). .

To guarantee access, free educational services must be accompanied by a place guarantee (European Commission, 2019) in such a way that there is no gap between demand and supply (Ferrer, 2020).

### *Universal character*

Given the social differences that exist in access to the first cycle of Early Childhood Education, and that the benefits of this policy are greater in the most disadvantaged groups, the need to take measures to move towards the universalization of these teachings seems clear. Compared to other proposals, universalizing teaching makes it possible to eliminate not only barriers related to affordability and availability but also barriers derived from lack of information or administrative procedures. However, different works have already calculated that greater investment is not only viable in budgetary terms, but that the returns would exceed the investment made in most of the scenarios analyzed (Castellanos-Serrano and Perondi, 2022). Universalizing the last year of the first cycle through the creation of free places in Early Childhood and Primary Schools can constitute the first step in the universalization of Early Childhood Education (Mancebón and Villar, 2020). Currently, there is an important difference between Cantabria and the Basque Country and the rest of the cases analyzed due to the consolidation of the early schooling program in the first case and the long tradition of schooling in Early Childhood Education in the second. In the case of Cantabria, the net schooling rate at 2 years is 79.1% (2021-

2022) while the Basque Country has a rate of 91.3% at 2 years, which brings it closer to the universalization (MEFP, 2023). The risk at this point comes from a traditional dilemma in public policies that is decided between opting for universal or targeted actions. In the case at hand, expanding supply without mechanisms that allow compensating and favoring access to traditionally underrepresented groups, can entail limitations in its redistributive capacity (Navarro-Varas and León, 2023) and in universalization itself due to self-exclusion processes. The accumulated evidence indicates that it is necessary to establish a *progressively universalist approach* that combines the provision of educational services for all, with targeted programs that improve access for the most vulnerable groups (European Commission, 2020).

### ***Optimization of investment derived from population loss***

Considering birth rates, the demographic winter is already a reality that will be transferred to the educational system in the coming years and whose effects are already being felt in the initial stages. According to Eurostat estimates, in the coming years Spain would lose more than 800,000 students (National Foresight and Strategy Office of the Government of Spain, 2021). In addition to the demographic challenge that will affect the entire population, rural depopulation will especially affect certain territories. The combination of both phenomena will produce the closure of classrooms and centers. This situation offers the possibility of increasing educational quality without the need to increase the budget. The incorporation of 2–3-year-old students will avoid the loss of school population while serving an older age range and contributing to mitigating depopulation. On the other hand, it is evident that from the point of view of expense and efficiency it is more profitable to enable a classroom in an already created center than to build a school from scratch. This is the case of Castilla-La Mancha, which has authorized the creation of 60 classrooms (about 1,200 places) in areas suffering from extreme depopulation. For its part, the Valencian Community has taken advantage of the arrival of *Next Generation* European funds to adapt and enable classrooms at CEIP, instead of creating new facilities, reinforcing this transformation process.

### ***Increase in educational quality***

The benefits derived from early schooling are not automatic, but rather these must be comprehensive quality interventions (Heckman, 2017). The programs for the early incorporation of students into the CEIP clearly support co-teaching as a tool to improve educational quality. This idea has been materialized through different profiles and options such as two Higher Early Childhood Education

Technicians per classroom (Extremadura, Region of Murcia), one Higher Early Childhood Education Technician and one Teacher (Aragón, Comunitat Valenciana, Cantabria) or even three profiles in the same classroom (Canary Islands). This formula has a clear impact on the students, but also on the teachers, since it influences the teaching induction processes, the complementarity and division of work, feedback and professional learning in practice (Fernández- Enguita, 2020). Regarding students, it is necessary to highlight that the quality of early childhood education programs is linked, more than in other stages, to the numerical relationship between students and teachers (MEFP, 2022). In these programs, a maximum classroom size of 18-20 students per classroom is established, but since they are attended by 2 professionals, the ratio is close to the recommendations of the European Early Childhood Education Network for this age (8 students per teacher), assuming a great reduction compared to the other proposals for schooling at 2 years. The great challenge at this point comes from the adaptation and adaptation of the facilities to the specific needs of 2–3-year-old students. These requirements are even greater in the case of communities that incorporate the entire stage (0-3) given the specificities of children under 1 year of age. Structural elements constitute a basic pillar of educational quality, but the absence of common regulation regarding minimum requirements has generated gaps in quality (Bonal and Scandurra, 2019).

### *Integration with later stages*

Currently there is a clear fracture between the first and second cycle of Early Childhood Education. These differences affect staff, facilities, provision of places, authority on which they depend, governance, schooling rates, curriculum, cost, resources, etc. which lead to both stages being difficult to compare (León et al. 2022). De facto, it is common for there to be differentiated standards for the first and second cycles (Velaz-Medrano et al., 2020). This reality does not only affect Spain, but is common in most OECD countries regarding schooling before and after age 3 (MEFP, 2022). However, participation rates in these programs are higher when the offer is part of the educational system and is free (Castellano-Serrano and Perondi, 2022). Early schooling programs, through the integration of personnel into educational structures, can contribute to the improvement of employment conditions, currently very unequal between centers, networks and institutions (Martínez- Virto et al., 2022). Likewise, different services could be optimized through effective extension to 2–3-year-old students, such as educational inclusion services, teacher training plans or the educational inspection itself, which currently has limited work at this stage. especially in certain communities where centers with different administrative regimes coexist. The risk at this point would come from a

rigid school organization or schedules that do not adapt to the needs of families (González-Motos and Saurí, 2023). In this sense, atypical schedules and lack of job stability (Palomera, 2022) could influence the decision not to attend school even if there are places available.

In another order, the integration of the last year of the first cycle of Early Childhood Education in the CEIPs would facilitate the transition processes between this stage and the subsequent ones. Furthermore, it would contribute to improving the social perception and valuation of this stage as educational, attenuating one of the access barriers related to family expectations and values associated with upbringing (Save The Children, 2019). At this point, there is a risk of forgetting the very nature of Early Childhood Education, considering this stage as preparatory and preparatory for subsequent ones.

### ***Administrative harmonization and governance***

The first cycle of Early Childhood Education is the educational stage with a greater weight of the private sector, with a public offer that does not cover all demand and where the management and governance models are more diverse. In this sense, the ownership falls on different administrations (municipalities, consortia, education departments, councils, non-educational administrations...) and the private sector that has different incentives. This diversity of actors translates into the existence of a fragmented offer and different policies in the same territory. In practical terms, they involve different offers, procedures, admission periods, fees and criteria, which means that many families encounter an administrative barrier since these procedures presuppose certain skills and living conditions that not all families have (Sola- Espinosa et al., 2023). For this reason, in the recommendations for Early Childhood Education (European Commission, 2019) emphasized the need to have a *coherent government under a single authority*. This issue does not refer so much to the fact that the powers fall to an exclusive administration, but rather that all centers have standards related to evaluation, quality, accessibility, affordability, curriculum or similar facilities. In the case of Spain, the dispersion of policies can compromise the effectiveness of investment. However, among early schooling programs it is common to either opt for collaboration between administrations (Cantabria) or assume a common framework for administrations (Comunicat Valenciana). Harmonization would reduce the complexity of the procedures that schooling processes sometimes entail and that especially affect families with multiple situations of vulnerability (Save The Children, 2019).

At this point, one of the fundamental elements that can contribute to the generation of a solid system is the increase and commitment of financing by the educational administrations of the autonomous communities. This process would

entail a solid policy that would correct the historically scarce financing of this stage and establish long-term dynamics far from cyclical fluctuations, as was seen with the 2008 crisis (Bonal, 2020). The underfinancing of Early Childhood Education has been associated with the limitation of teacher training, the devaluation of facilities and the prioritization of minimum compliance with healthcare aspects rather than the development of the educational project (Río et al., 2022). One of the risks entailed by a policy focused on 2-3 years is the lack of attention, in terms of public policies and social perception, of the preceding years, which would generate a gap between the end of the childcare permits and the schooling.

### 3. DISCUSSION AND CONCLUSIONS

The personal and social benefits associated with participation in early childhood education and care programs, together with the fact that there is unequal access between groups, has led to this being a priority for most European countries, and one of the objectives of the 2030 agenda. Therefore, most educational systems are implementing measures to increase child schooling rates. In this process, universal policies are combined with other targeted ones. In this context, the early schooling programs for students in the first cycle of Early Childhood Education (especially 2-3 years old) in Early Childhood and Primary Education Schools implemented in different Spanish regions are framed.

According to the review carried out, it can be stated that these programs contain important possibilities associated with increasing the offer and consolidating the public system through a free and universal service. Including students from the previous cycle in schools makes it possible to optimize educational investment, especially in a context of demographic decline, while achieving greater integration with subsequent stages, improving the transition between them. Such integration would facilitate administrative harmonization, better governance and greater recognition of professionals. Because of the greater and better investment, there has been an increase in educational quality derived from the commitment to co-teaching and the reduction of the teacher-student ratio.

On the other hand, although these types of programs can improve the Early Childhood Education stage, there are also risks that must be assessed. Firstly, the increased schooling of 2–3-year-old students in education can generate gaps with the preceding years, as well as overlooking the necessary advances in parental permits and licenses. In the process of incorporating students from the first cycle of Early Childhood Education in schools, it is necessary to pay special attention to the adaptation of spaces and educational processes considering the nature of this stage, among others, guaranteeing a certain flexibility to meet family needs. Progress in access to education must go hand in hand with improvements in quality, especially

through attention to the specific care and education needs of students. Finally, it should be noted that the specific characteristics of some programs entail certain risks such as the incorporation of private centers, which could ultimately generate dependence on them and loss of strategic capacity to design an Early Childhood Education network. Something similar happens with the lack of piloting in some Autonomous Communities.

It can be stated that early schooling programs, and especially some of their characteristics, although not perfect, can contribute to the generation of universal, inclusive and quality Early Childhood Education, which in the end will be one of the keys. to guarantee a more equitable, fair and effective educational system.

## REFERENCES

- Bonal, X. (2020). Financiación y equidad en España. In L. Gortázar (Coord.), *La financiación del sistema educativo: invertir en calidad, equidad e inclusión* (pp. 87-96). ANELE – REDE.
- Bonal, X., & Scandurra, R. (2019). *Equidad y educación en España. Diagnóstico y prioridades*. Intermón Oxfam.
- Castellanos-Serrano, C., & Perondi, A. (2022). Presupuestos y legislación con perspectiva de género: educación 0 a 3, permisos por nacimiento, jornadas y condiciones laborales. *Papers*, 107(3), Artículo e3064.
- Cebolla-Boado, H., Radl, J., & Salazar, L. (2017). Preschool education as the great equalizer? A cross-country study into the sources of inequality in reading competence. *Acta Sociologica*, 60(1), 41-60.
- Comisión Europea (2019). *Recomendación del Consejo relativa a unos sistemas de educación y cuidados de la primera infancia de alta calidad*. <https://bit.ly/3TWQe47>
- Espinosa Bayal, M<sup>a</sup>. A. (2018). *La garantía del derecho a la educación en la etapa 0-3 años. Una inversión necesaria y rentable*. UNICEF.
- European Commission (2019). *Key data on early childhood education and care in Europe*. Publications Office of the European Union.
- European Commission (2020). *Structural Indicators for monitoring education and training systems in Europe – 2020: overview of major reforms since 2015*. Eurydice Report. Publications Office of the European Union.
- Felfe, C., Nollenberger, N., & Rodríguez-Planas, N. (2015). Can't buy mommy's love? Universal childcare and children's long-term cognitive development. *Journal of Population Economics*, 28(2), 393–422. <https://doi.org/10.1007/s00148-014-0532-x>

- Fernández-Enguita, M. (2020). Del aislamiento en la escuela a la codocencia: enseñar es menos colaborativo que aprender o trabajar, y debe dejar de serlo. *Participación Educativa*, 7(10), 15-32.
- Ferrer, A. (2020). La equidad educativa en un marco europeo de inversión social en infancia 2020+. Cinco propuestas para invertir y una oportunidad europea para impulsarlas. In L. Gortázar (Coord.), *La financiación del sistema educativo: invertir en calidad, equidad e inclusión* (pp.59-74). ANELE – REDE.
- Flisi, S., & Blasko, Z. (2019). *A note on early childhood education and care participation by socio-economic background*. Publications Office of the European Union.
- González-Motos, S., & Saurí, E. (2023). State nurseries are not for us: the limitations of early childhood policies beyond price barriers in Barcelona. *International Journal of Early Childhood*, 55, 295-312. <https://doi.org/10.1007/s13158-022-00343-w>
- Heckman, J. (2006). Skill formation and the economics of investing in disadvantaged children. *Science*, 312(5782), 1900-1902. <https://doi.org/10.1126/science.1128898>
- Heckman, J. (2017). *Early childhood education: quality and access pay off*. The Heckman Equation.
- Van Huizen, T., & Plantenga, J. (2018). Do children benefit from universal early childhood education and care? A meta-analysis of evidence from natural experiments. *Economics of Education Review*, 66, 206-222. <https://doi.org/10.1016/j.econedurev.2018.08.001>
- León, M., Ibañez, Z. L., Maestripiéri, L., Muñoz, C. A., & Salido, O. (2016). *Empleo y maternidad: obstáculos y desafíos a la conciliación de la vida laboral y familiar*. Informe 78. FUNCAS.
- León, M., Palomera, D., Ibañez, Z., Martínez-Virto, L., & Gabaldón-Estevan, D., (2022). Entre la equidad y la conciliación: similitudes y disparidades en el diseño institucional del primer ciclo de educación infantil en España. *Papers*, 107(3), Artículo e3084.
- Mancebón, M.J., Pérez-Ximénez de Embún, D., & Villar-Aldonza, A. (2018). Evaluación del efecto de la escolarización temprana sobre las habilidades cognitivas y no cognitivas de los niños de cinco/seis años. *Hacienda Pública Española / Review of Public Economics*, 226(3), 123-153. <https://doi.org/10.7866/HPE-RPE.18.3.5>
- Mancebón, M. J., & Villar, A. (2020). La escolarización de los menores de tres años. Una asignatura pendiente. In Fundación Ramón Areces (Ed.), *Indicadores comentados sobre el estado del sistema educativo español*. Fundación Europea Sociedad y Educación.
- Martínez-Virto, L., & Canals, L. (2022). Las escuelas infantiles 0-3 en Navarra: características, estrategias y retos para promover la equidad. *Papers*, 107(3). <https://doi.org/10.5565/rev/papers.3059>

- Ministerio de Educación y Formación Profesional (2020). *TIMSS 2019. Informe español (II). Contexto de aprendizaje familiar, escolar y del aula*. Secretaría general técnica.
- Ministerio de Educación y Formación Profesional (2022). *Panorama de la educación. Indicadores de la OCDE*. Secretaría general técnica.
- Ministerio de Educación y Formación Profesional (2023). *Las cifras de la educación en España. Curso 2018-2019*. Secretaría general técnica.
- Navarro-Varas, L. (2022). La importancia del coste de los servicios de educación y atención de la primera infancia en la ocupación laboral femenina de la metrópolis de Barcelona. *Papers*, 107(3). <https://doi.org/10.5565/rev/papers.3076>
- Navarro-Varas, L., & León, M. (2023). ¿Quién gana y quién pierde? El acceso desigual a los recursos de educación y cuidado en la temprana infancia. *Revista Española de Investigaciones Sociológicas (REIS)*, 182, 81-96. <https://doi.org/10.5477/cis/reis.182.81>
- Nollenberger, N., & Rodríguez-Planas, N. (2015). Full-time universal childcare in a context of low maternal employment: quasi-experimental evidence from Spain. *Labour Economics*, 34(36), 124–136. <https://doi.org/10.1016/j.labeco.2015.02.008>
- Organización para la Cooperación y el Desarrollo Económicos (2016a). *PISA 2015 Results (Volume II): Policies and practices for successful schools*. OCDE Publishing. <https://dx.doi.org/10.1787/9789264267510-en>
- Oficina Nacional de Prospectiva y Estrategia del Gobierno de España (2021). *España 2050: Fundamentos y propuestas para una estrategia nacional de largo plazo*. Ministerio de Presidencia 2021.
- Palomera, D. (2022). ¿Estado de bienestar para todas? Análisis de las desigualdades sociales en las solicitudes y el acceso a las guarderías públicas, y el papel de la política social para aliviarlas. *Papers. Revista de Sociología*, 107(3), Artículo e3068.
- Pilarz, A. R. (2018). Multiple childcare arrangements and school readiness in kindergarten. *Early Childhood Research Quarterly*, 42, 170-182. <https://doi.org/10.1016/j.ecresq.2017.09.004>
- Requena, M., & Salazar, L. (2022). La igualdad pendiente: persistencia de la desigualdad de oportunidades tras la expansión educativa. In L. Ayala (Coord.) *Desigualdad y pacto social*. Fundación La Caixa.
- Río, M. A., Martín, R., & Ortega, M. (2022). Luces y sombras de la educación infantil 0-3 en Andalucía: condiciones de acceso y de escolarización. *Revista de Sociología de la Educación-RASE*, 15(1), 127-151. <https://doi.org/10.7203/RASE.15.1.22990>
- Save the Children (2019). *Donde todo empieza. Educación infantil de 0 a 3 años para igualar oportunidades*. Save the Children.



- Save the Children (2021). *Donde todo empieza. Educación infantil de 0 a 3 años para igualar oportunidades. Anexo Andalucía*. Save the Children
- Sola-Espinosa, I., Rogero-García, J., & Meil, G. (2023). El uso de servicios formales de cuidado infantil entre 0 y 3 años en España. *Revista Española de Sociología*, 32, 1, 1-21.
- Suárez, M. J. (2013). Working mothers' decisions on childcare: the case of Spain. *Review of Economics of the Household*, 11(4), 545-561. <https://doi.org/10.1007/s11150-013-9189-6>
- Turienzo, D., Rogero, J., & Díaz, V. (2022). The impact of COVID-19 on the Spanish education system. In C. de Castro Pericacho, A. Pedreño Cánovas, & M. Latorre Catalán (Eds.), *COVID-19 and Social Change in Spain* (pp. 139-150). Routledge.
- Velaz-Medrano, C., Manzano-Soto, N., & Turienzo, D. (2020). *El primer ciclo de la Educación Infantil en las CC. AA. a través de la revisión normativa*. Ministerio de Educación y Formación Profesional.



# Sex education and coeducation in adolescence: perspective of families, teachers, and adolescents

## *Educación sexual y coeducación: perspectivas de las familias, el profesorado y la población adolescente*

Enrique Bonilla-Algovia <sup>1,2\*</sup>   
Concepción Carrasco-Carpio <sup>1</sup>   
Esther Rivas-Rivero <sup>1</sup> 

<sup>1</sup> Universidad de Alcalá, Spain

<sup>2</sup> Universidad a Distancia de Madrid, Spain

\* Corresponding author. E-mail: [enrique.bonilla@uah.es](mailto:enrique.bonilla@uah.es); [enrique.bonilla.a@udima.es](mailto:enrique.bonilla.a@udima.es)

### Cómo referenciar este artículo/ How to reference this article:

Bonilla-Algovia, E., Carrasco-Carpio, C., & Rivas-Rivero, E. (2024). Sex education and coeducation in adolescence: perspective of families, teachers, and adolescents. *Educación XX1*, 27(2), 363-388. <https://doi.org/10.5944/educxx1.38394>

**Date received:** 22/09/2023

**Date accepted:** 20/02/2024

**Published online:** 28/06/2024

### ABSTRACT

Sex education from a coeducational perspective contributes to the comprehensive development of adolescents and promotes a more just, egalitarian, and inclusive society. This research, consisting of two sequential studies, uses a mixed-method paradigm that combines quantitative and qualitative approaches. The aim of the research was to analyse the onset and duration of romantic relationships that take place during adolescence, as well as to study in depth how sex education is approached in homes and schools in Castilla-La Mancha, from the perspective of teachers, families and adolescents. The first study's sample comprised of 1840 adolescents, while the second study's sample consisted of 109

adolescents, 11 teachers, 6 fathers, and 4 mothers. Although romantic relationships are common during adolescence, the results show that the sex education provided in homes and educational centres is not adapted to the needs and requirements of adolescents. The dominant approach to sexuality in the family is the risk model, while teachers tend to support more comprehensive educational models. However, in the absence of rigorous and age-appropriate information, adolescents often turn to other sources of information outside the control of education, including the internet and peer groups. This highlights the need for a comprehensive sexuality education through the two main socialisation spaces.

**Keywords:** sexuality, sex education, affective relationships, romantic relationships, adolescence

## RESUMEN

La educación sexual desde el enfoque de la coeducación contribuye al desarrollo integral de la adolescencia y promueve una sociedad más justa, igualitaria e inclusiva. Esta investigación, estructurada en dos estudios secuenciales, está basada en un paradigma metodológico mixto que combina el enfoque cuantitativo y el cualitativo. El objetivo ha sido analizar el inicio y la duración de las relaciones románticas que tienen lugar en la etapa adolescente, así como profundizar en la forma de abordar la educación sexual en los hogares y en los centros educativos de Castilla-La Mancha, a través de la perspectiva de profesorado, familias y adolescentes. La muestra del primer estudio está formada por 1840 adolescentes; la muestra del segundo estudio, por 109 adolescentes, 11 docentes, 6 padres y 4 madres. Los resultados evidencian que, aunque la participación en relaciones románticas es una práctica habitual en la adolescencia, la educación sexual que se proporciona en los hogares y centros educativos no se adapta a las necesidades y los requerimientos de la población adolescente. El modelo de abordaje de la sexualidad que predomina en el ámbito familiar es el modelo de riesgo, mientras que el profesorado suele apoyar modelos educativos más integrales. No obstante, ante la falta de información rigurosa y adaptada a estas edades, la población adolescente suele recurrir a otras fuentes de información que escapan al control educativo, entre las que se encuentran Internet y los grupos de iguales. Esto subraya la necesidad de un abordaje integral de la sexualidad en los dos principales espacios de socialización.

**Palabras clave:** sexualidad, educación sexual, relaciones afectivas, relaciones románticas, adolescencia

## INTRODUCTION

Sexuality is a dimension or essential component of human beings that is present throughout life and that manifests differently based on age. It encompasses aspects such as knowledge of the human body, sex, gender, sexual orientation, identity, love, diversity, pleasure, health, reproduction, affection and power (UNESCO, 2018). This dimension arises from the interaction of multiple factors, ranging from biological and psychological to sociocultural and ethical, and expresses itself in how people are, feel, think and act (Pan American Health Organization and World Health Organization, 2000).

One distinctive feature of adolescence is the emergence and establishment of romantic relationships (Collins et al., 2009), although the ways of relating in this stage have changed in recent decades (Flores-Hernández et al., 2021). The concept of romantic relationships refers to various voluntary interactions that are mutually recognised by the parties and are typically characterised by emotional intensity, displays of affection and sexual behaviour (Collins et al., 2009). Academic literature suggests that romantic dating can be considered a normative behaviour in the adolescent stage in the Western context (Zimmer-Gembeck, 2002). The use of the Internet and social networks have expanded the available spaces for the search and emergence of romantic relationships, extending them beyond traditional settings, such as schools or peer groups (Tienda et al., 2022). The opportunities to engage in such relationships may be greater with the possibilities offered by the Internet. In this context of normativity, there is some consensus on the importance of romantic relationships in adolescent development (Brar et al., 2023; Collins et al., 2009); however, there are many discrepancies regarding the age at which they should begin (González et al., 2021).

Seiffge-Krenke (2003) found that at 13 years old, 40% of adolescents had a romantic partner, at 15 years old, 43% had a partner and at 17 years old, 47% had a partner. The average duration of romantic relationships varied with age and were longer at 17 years old (11.8 months) than at 15 years old (5.1 months) and 13 years old (3.9 months). However, research suggests that romantic and sexual relationships in adolescence are starting earlier. González and Molina (2018) conducted a study with adolescent women who had initiated romantic relationships and found that half (50.1%) had started their romantic relationships at 13 years or earlier, 48.3% between 14 and 16 years old and only 1.7% between 17 and 19 years old. According to the Youth Institute (2021), 59% of Spanish youth aged 15 to 19 have had sexual relations with or without penetration (52% with penetration and 7% without penetration), with the average age of first sexual experience being 16.2 years. Considering that romantic and sexual relationships often begin at some point in adolescence, it becomes essential for educational institutions and households to

address relationships, in particular, and sexuality, in general, from an educational and comprehensive perspective (Barriuso-Ortega et al., 2022; Calvo et al., 2018; Carirote, 2007; Ferreiro, 2017; García-Vázquez et al., 2014; Goldfarb and Lieberman, 2021; UNESCO, 2018, 2022; UNESCO and UNFPA, 2023a; Venegas, 2013, 2017).

Romantic and sexual relationships in adolescence are shaped by socialisation and cultural learning (Cerretti and Navarro-Gúzman, 2018). However, education and socialisation are not neutral, as they have the potential to perpetuate social inequalities or drive transformations (Martínez, 2016). Especially in the last two decades, various transformative educational proposals have emerged that are focused on the comprehensive approach to sexuality. Sexual education has been given various names depending on the country and context; currently, the most internationally accepted term is 'Comprehensive Sexuality Education' (CSE), as used by UNESCO (2022). CSE involves a continuous, gradual and comprehensive educational process based on scientific evidence about sexuality, which can be carried out in both formal and non-formal settings (UNESCO, 2018):

It is a process based on a curriculum to teach and learn about the cognitive, emotional, physical, and social aspects of sexuality. Its goal is to prepare children, girls, and young people with knowledge, skills, attitudes, and values that will empower them to: realize their health, well-being, and dignity; develop respectful social and sexual relationships; consider how their choices affect their own well-being and that of others; and understand their rights throughout life and ensure they protect them. (UNESCO, 2018, p. 16)

CSE assumes comprehensive education in terms of the breadth of content and topics, thereby moving away from traditional, moralistic and abstinence models that show a narrow and exclusionary view of sexuality (Leung et al., 2019; UNESCO and UNFPA, 2023a, 2023b). CSE incorporates a transformative and holistic vision that not only addresses the biological aspects of reproduction, risks and diseases but also includes all aspects surrounding sexuality in a progressive, contextual and age-appropriate manner (UNESCO, 2018). Therefore, sexuality education must embrace diversity (UNESCO, 2023) as well as gender equality and human rights (Haberland and Rogow, 2015; UNESCO, 2018, 2022).

The educational approach to sexuality can be classified into four models (UNESCO, 2014): the moralistic model, the risk model, the integrative model and the development model. First, the moralistic or abstinence model focuses on teaching abstinence from sexual relationships until marriage, legitimising it for reproductive purposes. Second, the risk model focuses on preventing health problems related to sexual relationships by providing information on topics such as unintended pregnancies, contraceptives and sexually transmitted diseases (STDs/STIs). Third, the integrative model focuses on the right to comprehensive health, which is understood as a requirement for the wellbeing of citizens; it adds to the

topics of the previous model by incorporating topics such as exercising rights, affectivity, pleasure, gender equality and preventing gender-based violence. Finally, the development and wellbeing model focuses on learning to be, with a vision of sexuality that goes beyond health and the previous topics to promote the integral development of individuals throughout life within the framework of sustainable development and democratic participation for a fairer society (UNESCO, 2014).

In the Spanish context, sexuality education is generally carried out through 'affective-sexual education', which also falls within the framework of human rights and gender equality but emphasises a coeducational approach (Venegas, 2013, 2017). Coeducation seeks comprehensive socialisation without sexist stereotypes through the promotion of gender equality and sexual and emotional education; it also seeks to overcome gender roles and violence (Méndez et al., 2017). This approach has evolved conceptually over the years to incorporate new elements related to non-sexist education (Álvarez et al., 2019), such as sexuality, emotions and affections (Ferreiro, 2017). However, affective-sexual education is contextualised within the coeducational approach because it addresses the social and relational dimension that is part of sexuality (Venegas, 2017). This inclusion of the affective allows differentiation between traditional sexual education and affective-sexual education. The former focuses more on the biological dimension of sexuality (e.g., the human body, sexual organs and reproduction), paying particular attention to guidelines aimed at preventing unwanted pregnancies and STDs or STIs, while the latter incorporates the social dimension of affective and sexual relationships, addressing how power and social inequalities intersect with sexuality and affectivity (Venegas, 2017).

Using information obtained from focus groups in both urban and rural areas, García-Vázquez et al. (2014) analysed the opinions and proposals of teachers and students regarding sexuality education in schools. Their findings revealed that the sexual education activities conducted in schools (e.g., sessions, talks and workshops) were similar in both urban and rural areas and were well-regarded by teachers and students. They also found that the educational approach to sexuality was hindered by lack of time, inadequate teacher training, the difficulty of the topic and little institutional support and interest. Fernández et al. (2022) studied how sexual education and diversity are addressed in classrooms at different educational stages. Results showed that teachers consider it important to address sexuality in schools but that various obstacles prevent its approach, including training gaps, curricular and time constraints and fears associated with its nature as a socially taboo topic. Teacher preparation and support from the educational community can become facilitators of sexual education in schools (Walker et al., 2021), promoting teacher training that aligns with CSE guidelines (O'Brien et al., 2021; UNESCO, 2022) and greater collaboration with families (UNESCO and UNFPA, 2023a).

Braga and Alcaide (2010) employed a sample of teacher training students to analyse the sexual education provided by families and educational institutions. Results showed that the majority of the sample had received little or no sexual education; thus, the approach to sexuality in these contexts had been scarce or non-existent. Using qualitative techniques, Caricote (2008) found that families do not understand the comprehensiveness of human sexuality and tend to approach it with fear and taboo. García-Vázquez et al. (2012) conducted several focus groups in different secondary schools after the students had completed a sexual education programme to gather the opinions of students, families and teachers. The results of the study showed that teachers believe that these interventions require time, coordination and institutional support, while families are somewhat afraid to address sexuality at home because they lack knowledge.

Cerretti and Navarro-Gúzman (2018) conducted a quantitative research study to analyse the beliefs and attitudes towards sexuality of a sample of adolescents aged 16 to 18. Only 16.4% of girls and 32.9% of boys considered the main purpose of sexuality to be reproduction; thus, the majority were far from a moralistic conception of sexuality; however, the study also highlighted the presence of biases and insufficient knowledge on the topic. Lameiras et al. (2006) implemented a coeducational and sexual education programme with adolescents, which demonstrated an increase in knowledge and attitudinal change regarding sexuality and gender equality. However, the programme revealed certain reservations and limited involvement on the part of teachers and families. Similarly, an action research experience on affective-sexual education with adolescents in Granada found that sexuality is generally presented as a taboo topic in the family setting (Venegas, 2013).

Individuals create their own vision of sexuality based on the information they receive—whether implicitly or explicitly—from the environment in which they socialise (UNESCO, 2014). The information adolescents have about sexuality and romantic and sexual relationships comes from various sources (e.g., families, schools, peer groups, people in the environment and the Internet), but it tends to be distorted or insufficient (Caricote, 2008). The limited information reaching young people is generally confined to intercourse and its risks, thereby overlooking the comprehensiveness of sexuality (Calvo et al., 2018). Given the taboos surrounding sexuality and the scarcity of comprehensive sexual education, various agents have gained prominence as sources of information during adolescence and youth, such as peer groups, the Internet and pornography (Alonso-Ruido et al., 2022; Roldán, 2022; Vélez, 2022).

The objectives of the research are to analyse the initiation and duration of romantic relationships during adolescence and to delve into how sexual education



is addressed in homes and educational institutions in Castilla-La Mancha based on the opinions of teachers, families and the adolescent population.

## METHOD

### Design

The research is based on a mixed-method paradigm that combines quantitative and qualitative approaches. A structured sequential strategy was employed in two phases or studies, with the results of the first study (quantitative) used for the development of the second study (qualitative). The first phase involved the administration of a structured questionnaire to students in educational centres in Castilla-La Mancha. The data collected through the questionnaire were used to design the question script for the second phase, which involved conducting in-depth interviews with families and teachers as well as discussion groups with adolescents from the educational centres that participated in the first study.

### Participants

The first phase of the research (quantitative study) used a representative sample of 1,840 students in the third and fourth years of Compulsory Secondary Education (ESO) in the Autonomous Community of Castilla-La Mancha. By ages, 46.2% of the students were between 12 and 14 years, and 53.8% were between 15 and 18 years. The average age was 14.67 years ( $SD = .89$ ). By gender, 49.9% were boys, and 50.1% were girls. The sample was obtained through stratified random sampling that into account the provinces (Toledo, Cuenca, Guadalajara, Albacete and Ciudad Real) and the size of the municipalities where the educational centres were located (urban, semi-urban and rural). The sampling assumed a confidence level of 95% and a margin of error of 2.2% for an approximate sample of 40,000 students enrolled in the third and fourth years of ESO.

The second phase of the research (qualitative study) used a sample of 109 adolescents, 11 teachers and 10 families. The selection of participants was done through intentional sampling in the same educational centres as the first phase. As shown in Table 1, fourteen discussion groups were conducted with adolescents, and 21 in-depth interviews were conducted with teachers and families.

**Table 1***Characteristics of Participants in the Second Phase of the Research*

<b>Interviews with Teachers</b>	<b>Sex</b>	<b>Age</b>	<b>Specialty</b>
EP1	Female	35	Spanish Language and Literature
EP2	Male	31	Physical Education
EP3	Female	41	History and Ethical Values
EP4	Male	32	Mathematics
EP5	Female	26	English
EP6	Male	33	English
EP7	Female	57	Spanish Language and Literature
EP8	Female	45	Spanish Language and Literature
EP9	Female	43	Geography and History
EP10	Male	39	Physical Education
EP11	Female	49	Therapeutic Pedagogy
<b>Interviews with Families</b>	<b>Sex</b>	<b>Age</b>	<b>Occupation</b>
EF1	Female	41	Administrative
EF2	Male	52	Commercial
EF3	Female	58	Educational Counsellor
EF4	Male	47	Educational Counsellor
EF5	Female	48	Administrative
EF6	Male	41	Nursing Assistant
EF7	Female	47	Administrative
EF8	Male	49	IT Professional
EF9	Male	47	Police
EF10	Male	35	Builder
<b>Discussion Groups with Adolescents</b>	<b>Sex</b>	<b>Age</b>	<b>Number of Participants</b>
GD1	Boys	3rd ESO	7
GD2	Mixed	3rd ESO	8

Discussion Groups with Adolescents	Sex	Age	Number of Participants
GD3	Mixed	3rd ESO	9
GD4	Girls	3rd ESO	8
GD5	Boys	3rd ESO	8
GD6	Mixed	3rd ESO	8
GD7	Girls	4th ESO	8
GD8	Boys	4th ESO	7
GD9	Mixed	3rd ESO	12
GD10	Boys	4th ESO	6
GD11	Girls	4th ESO	8
GD12	Mixed	4th ESO	6
GD13	Mixed	2nd ESO	7
GD14	Girls	2nd ESO	7

## Procedure

The research team developed the structured questionnaire for the first phase and conducted random sampling to select educational centres in Castilla-La Mancha. Contacts were provided by the Department of Education and the Institute for Women of Castilla-La Mancha. Educational centres received all information about the objectives and contents of the research. Data collection took place in the facilities of the centres. The information gathered was used in the creation of the script for the in-depth interviews and discussion groups in the second phase. Interview dates were scheduled based on the availability of adolescents, teachers and families. Discussion groups and interviews were recorded and transcribed by the research team. Both studies ensured anonymity and had the relevant informed consents. In compliance with ethical aspects of scientific research, both research studies obtained approval from the Research Ethics Committee of the University of Alcalá (CEI/HU/2019/39 and CEIP/2021/3/069).

## Instrument

The quantitative phase collected information at a single point in time through a self-administered questionnaire consisting of custom-made questions that addressed sociodemographic characteristics (gender, age, school year, province and size of the residence municipalities) as well as variables related to romantic relationships: Have you had a partner? (yes/no); Do you currently have a partner? (yes/no); What is the duration of the longest romantic relationship you have had? (in months).

The qualitative phase also collected information at a single point in time but used interviews and discussion groups as data collection techniques. A script of thematic blocks was developed, but the questions and their order were not predetermined; the research team guided the conversations towards the topics of interest but allowed participants freedom in responding. The collected data were analysed in the form of verbatims or literal phrases.

## Data analysis

The questionnaire data were analysed using the statistical programme SPSS (version 24), while the interview and discussion group data were analysed using the programme ATLAS.ti (version 22). In the first phase, descriptive statistics (frequency and mean) and comparative analyses (Chi-square, Student's t-test and one-way ANOVA) were employed. In the second phase, an analysis of verbatims by categories was conducted: 1) social changes in sexuality; 2) addressing sexuality in the family; 3) addressing sexuality in educational centres; and 4) seeking information about sexuality in adolescence. Verbatims display a series of codes that must be considered to interpret the results. First, all verbatims include the interview or discussion group number (see Table 1), the participant's gender and a number replacing the name (e.g., TeacherEP1, FatherEF2, or Girl8GD7). Second, parentheses with ellipses indicate a cut in the sentence, ellipses indicate a pause while speaking and text in square brackets incorporates a note or clarification.

## RESULTS

### Study 1: Quantitative research

Participation in romantic relationships is a common practice in adolescence. Nearly six out of ten adolescents in Castilla-La Mancha have had at least one partner, with no difference based on gender (56.7% girls and 57.7% boys;  $\chi^2 = .16$ ,  $p = .691$ ). However, romantic experiences varied based on age and the size of the residence municipality. The percentage of adolescents who had initiated their romantic lives significantly increased with age (see Table 2). A higher percentage of 17–18 year-old students have had a partner (89.8%) compared to 14 year-old students (50.3%) or 12–13 year-olds (42.2%) ( $\chi^2 = 77.13$ ;  $p < .001$ ). In addition, although the differences were small, a higher percentage of students in urban areas (60.1%) compared to semi-urban areas (54.1%) and rural areas (57.6 %) have had some romantic experience ( $\chi^2 = 6.25$ ;  $p = .044$ ).

The differences extended to having a partner at the exact moment of completing the questionnaire. The percentage of adolescents involved in a romantic relationship at that moment increased significantly with age (see Table 2), with 11.9% of 12–13 year-olds having a partner compared to 19.1% of 15 year-olds and 32.2% of 17–18 year-olds ( $\chi^2 = 27.68$ ;  $p < .001$ ). Regarding the size of municipalities, a lower percentage of adolescents in rural areas (9.1%) compared to semi-urban areas (19.3%) and urban areas (17.8%) had a partner at the moment they completed the questionnaire ( $\chi^2 = 6.16$ ;  $p = .046$ ).

The data indicate that romantic relationships in adolescence are generally brief, although there is considerable variability as the duration of an individual's most stable relationship ranges from one month to a year. As shown in Table 2, among students aged 14 to 16, the duration of the longest romantic relationship is very similar, with an average close to three-and-a-half months. The most notable differences are found when comparing groups at the age extremes, that is, 12–13 year-olds ( $M = 2.32$  months;  $SD = 1.28$ ) and 17–18-year-olds ( $M = 4.84$  months;  $SD = 2.98$ ), where variability is larger ( $F = 2.92$ ,  $p = 0.21$ ). On the contrary, the duration of romantic relationships does not seem to be affected by the size of municipalities ( $F = .34$ ;  $p = .715$ ): rural areas ( $M = 3.38$  months;  $SD = 2.88$ ), semi-urban areas ( $M = 3.44$  months;  $SD = 2.58$ ) and urban areas ( $M = 3.61$  months;  $SD = 2.66$ ).

**Table 2***Romantic Relationships in Adolescence According to Age*

	12–13 years	14 years	15 years	16 years	17–18 years	Statistical
Percentage of adolescents who have had some romantic relationship	42.2%	50.3%	59.5%	73.9%	89.8%	$\chi^2=77.13^{***}$
Percentage of adolescents who had a romantic relationship when answering the questionnaire	11.9%	14.2%	19.1%	25.8%	32.2%	$\chi^2=27.68^{***}$
Duration of the longest romantic relationship they have had (in months)	2.32	3.56	3.55	3.42	4.84	F= 2.92*

Note: \*p ≤ .05; \*\*p ≤ .01; \*\*\*p ≤ .001.

## Study 2: Qualitative research

### *Social Changes in Sexuality*

Families perceive adolescent romantic relationships as brief and sporadic, lacking the commitment seen in adult relationships. They acknowledge the significant role of social media in current relationship dynamics. In line with the first phase findings, they are aware that romantic and sexual relationships often commence at early ages. Consequently, parents agree that adolescents should receive appropriate sexual education, although opinions vary on what is deemed suitable at these ages.

A couple of years ago, [my child] had a partner, at around 12 or 13 years. A couple of months, three months, around that, but nothing more. And I asked, and [they] said, 'No, I [haven't had sexual relations]'. And I asked, 'But your classmates, have they?' And [they] said yes, that some of [their] classmates have started their sexual life... The issue is that the levels of adolescents have progressed so much that, well, with my age, starting a sexual life at 15–16 was early, but now it's not early. [MotherEF1]

Because from my age to theirs, everything has turned upside down. So, before, at seventeen or eighteen, you were just starting to figure things out. Now, at thirteen and fourteen... [FatherEF9]

The early onset of romantic and sexual relationships is not the sole reason for addressing sexuality in adolescence. The interviews and discussion groups reveal that despite societal progress towards values such as tolerance, gender equality and respect for sexual diversity, gender inequity still permeates romantic relationships. Adolescent discourse also indicates the persistence of gender-based violence and discrimination against the LGBT community.

Relative to other groups this year [at school], there have been [cases of] harassment due to gender and also due to sexuality [TeacherEP4].

It's true that there are perfectly normal people our age who are quite homophobic. I mean, although supposedly, that should be more or less accepted today because it's not about accepting anything; it just is, and that's it. But many people are still against it. Or comments that, when you hear them, you're like, 'Well, I don't know where that person came from' [Girl7GD3].

There's still domestic violence [referring to violence against women] [Boy2GD10].

### *Addressing Sexuality in the Family*

The prevailing educational model for addressing sexuality in the family is the risk model (UNESCO, 2014). Sexuality is primarily approached to prevent or address health issues related to sexual relationships, with a focus on risks such as unwanted pregnancies and STIs/STDs. However, integrative and developmental models also surfaced in family interviews, incorporating themes such as consent, pleasure, self-esteem, respect, affections, sexual orientation and gender violence.

Yes, I do think [we provide adequate sexual and emotional education] because whenever we've talked, well, even my husband, who has talked to them, has explained a bit about condoms and all that. I've even told my son that if he ever has a partner and she gets pregnant, the first thing he should do is tell me and his father. I think we do talk openly about the topic as well [MotherEF1].

I've always told [names of his son and daughter]: 'You have to respect yourself, and you're free to enjoy your sexuality as you want, when you want, and how you want'. ... The truth is, I have two wonderful children, what can I say, but, well, they'll start, and I'm already ahead. 'Well, [daughter's name], when you're older, this will happen to you, and I don't know, you have to know and take precautions...' I personally don't mind that my daughter or my son, when the time comes, enjoy their sexuality, damn it, yes, you can enjoy it, and you do. It's just that you have to educate them to respect themselves [FatherEF6].

The sexual education provided at home generates diverse perspectives, not only regarding the adopted educational models but also in the willingness or intention to address sexuality with children. Three educational profiles emerged based on parents' predisposition to discuss these topics at home: families taking the initiative in sexual education and trying to create an atmosphere of trust (consistent profile); families not openly addressing sexuality but willing to discuss it when asked, thus shifting the responsibility to their children (moderate profile); and families avoiding or outright not addressing sexuality (evasive profile). While some of these profiles consider sexuality a taboo, they do not necessarily align with a moralistic educational model based on abstinence and the reproductive purpose of sexuality. Regardless of their defended model, families have varying degrees of willingness to address sexuality based on factors such as embarrassment, educational level or trust with their children.

We can talk about many things, but that kind of conversation, no [MotherEF5].

Here [referring to the father's house] we always told him that he could talk about whatever he wanted and that there was no problem. And that the day he wanted [to talk about it], the day it needed to be addressed, it would be addressed, and that's it. But when it came time to address it, he had already talked about it with his mother [referring to the mother's house] [FatherEF9].

I understand that, yes, parents should have those talks with their children, but I'll explain, sometimes that's complicated. Many times it's complicated because, for example, no one has talked to me about anything, and I've learned everything by myself at school or wherever, like most people. But, of course, I think that should also be done by people who have studied for it. That is, in school, have a class where they can explain it better than parents because many times on such occasions, the child doesn't want to talk to the father or mother about it. Or says, 'Yes, yes, okay'. And then, who knows if they understood or not [FatherEF10].

Discussion groups with adolescents corroborate what parents stated in interviews – some families provide sexual and emotional education, but not all. Sexuality is still perceived as a taboo topic for many families. Families that do address these issues tend to focus on the risks of emotional and sexual relationships and social media. In this context, the taboo is not only present for the parents but also extends to adolescent boys and girls; the discourse indicates that shame is a common feeling when discussing these topics at home. Findings suggest that when families are less willing to address sexuality and do not create a climate of trust, adolescents may perceive sexuality as a dark and shameful aspect of their identity.

Not with our parents. But if my parents just see a kiss on a soap opera, they already turn it off. They tell me, 'close your eyes'.... When they talk to you like that at that



age, around 11 or 12, it doesn't instil confidence in telling them, for example, that you have a girlfriend or something. Because just covering your eyes with a simple kiss already creates insecurity [Boy4GD1].

They've never talked to me about sex either [Boy7GD1].

My mother always tells me to be careful, and such... [Girl1GD2].

With parents, it's impossible because you imagine your father or your mother, and the world collapses on you. Because when I start talking with my father, I can already imagine... [Boy7GD5].

### *Addressing Sexuality in Educational Institutions*

Teachers generally advocate for a more comprehensive approach to sexuality in adolescence, with their opinions and educational proposals falling between the integrative and developmental models (UNESCO, 2014). They place significant emphasis on the right to integral health and the importance of creating a society with greater equality and social justice. While the risk model is present in the collective imagination, the interviewed teachers believe it is essential to prevent STIs/STDs and make students aware of contraceptive methods. However, they assert that sexual education should be comprehensive and not limited to these topics. Teachers also express the need to encourage student reflection to correct distorted beliefs and prejudices surrounding sexuality.

When they come to talk about sexuality at school, last year was very funny in a tutorial I had because they asked who was a virgin and who was not. So, many boys, I don't know what, no, not me, teacher. Then, the next day, they told me about their experiences. They open up a lot to me because it's true that I also give them space. (...) So, those are the kinds of things, I think you need that personal connection with them because the kids... It's useless for them to say, 'We're going to teach you how to put on a condom!' Fine. And I'm in class laughing with my friends putting a condom on a piece of wood. I'm looking at the course thinking, 'Later they're going to ask me everything they didn't dare to ask them'. The girls are shocked; the boys, who have done it fifty times because they stole condoms from their fathers and put them on with their dicks normally down... I mean, it's true, that's how it is, there's nothing more. So, that's useless; what works for them is telling you what happens to them in sex [TeacherEP1].

I think they have such a mistaken idea of what sexual relationships are, that that also needs to be worked on. We also have a workshop on... affection. No, it's called the Workshop on Affective-Sexual Relationships. Normally, it's also given by the street

educator. This year, we were lucky to have a colleague with whom we also worked on diversity, and it's good to teach them that many of the things out there [on the Internet and social media] are lies. (...) It's good to talk to them about their sexuality, healthy affective-sexual relationships, the process... These workshops explain all that. Besides, they are very good, they are given in the first and second years, and there are others for the third and fourth years. But these first- and second-year ones explain things like what genitals are like, what changes adolescence is bringing to your body, what sexual relationships are like, at what moment each one of us has different developments. We talk a lot, which is very related to gender equality and sexual violence as well. Well, that, they shouldn't force you, and we also have several very interesting videos [to address sexual consent in affective-sexual relationships]. (...) This year, we gave a workshop on affective-sexual diversity, and we talked about, well, everything... about sexual diversity, and it was discussed in a two-hour workshop [TeacherEP9].

While comprehensive models of sexuality predominate in teachers' ideals, most feel that sexual education is not adequately addressed in educational institutions. Some teachers take the initiative and address sexuality in their classrooms, individually implementing these comprehensive models. However, interviews show that the curricular approach to sexual education is generally carried out through occasional workshops conducted by professionals from other institutions. This task does not typically fall on teachers. Moreover, the brevity of these workshops does not allow for an in-depth exploration of the comprehensive nature of sexuality.

Sex education is needed in schools, and I would currently ask for external agents. (...) For example, the youth information officer or the director of the youth information centre we have here, who is wonderful, [the woman's name]. She's a very approachable girl, who also has a son, and is more external to us, so she can be closer in some aspects and vocabulary [TeacherEP10].

Yes, from the Guidance Department, they also give talks of that type, especially with the younger ones, the first and second years of ESO [compulsory secondary education]. There is usually, I don't know if once a quarter, but yes, there are. People from associations related to the topic come and have talks with them in groups, and they orient them, answer their questions, listen to them, too... And inform them. And that's fine. Yes, but it should be something like what we were talking about before, that maybe they shouldn't be left alone once a quarter or a year, but since they have access to that kind of content every day [on the Internet and pornography], it should be dealt with in a more regular way, perhaps [TeacherEP6].

Adolescent discourses indicate that in dealing with doubts about romantic and sexual relationships, they sometimes feel more comfortable addressing sexuality in schools than in their homes. However, consistent with teacher views, they

believe that sexual education in educational institutions often involves sporadic workshops based on the risk model ('the condom talk', Boy4GD1) and is challenging to execute due to its content and the taboos surrounding these topics. Beyond these workshops, adolescents state that the approach to sexuality in educational institutions depends on the individual disposition of the teacher as well as the trust they have with the students.

It depends because then the talks are very complicated, and you have to know how to organise a sex education talk. Because then they say 'oh, ass', and everyone laughs. Or 'you have to do this and place it here and be careful', everyone laughs. So, you have to be very careful, and it's probably not easy to give a talk. Because maybe we, up to a certain point, are mature for that. Up to a certain point. But if they do it to a first-year [student] and... the first time they hear 'you have to do this and place it here and do', nothing, they laugh, it's impossible [Boy7GD5].

They understand you more [if it's a young teacher], in the sense that they talk more with you. But there are teachers who, maybe, you talk about sex with a teacher, and she gives you a report, and they can kick you out. They call you dirty or something like that. Maybe it's something that the teacher thinks is silly, but you would like to know [Boy5GD1].

Very little, the previous teacher [addressed different topics in class]. He is the one who guides us the most in everything. If we have to talk about sexual orientation, he has no problem; if we have to talk about equality, he has no problem. About anything, we have enough confidence to talk about anything [Boy7GD5].

### *Information Search on Sexuality*

The adolescent population demands more sexual education. They not only have concerns but also lack training and hold distorted and biased beliefs about reality. They attempt to counteract this lack of education by seeking information through various available sources. Families and teachers are two of the most important sources, but they do not always appear in the adolescent imagination as the first to whom they should turn. Consequently, other socialising agents emerge as sources of information, including the Internet, friendship networks and other individuals in their environment. Therefore, the lack of Comprehensive Sexuality Education (CSE) at home and in educational institutions may contribute to seeking information through channels beyond parental and pedagogical control, such as peer groups and pornography.

My mother already told me things as they are, she was teaching me about life from a certain stage [Boy5GD1].

I haven't learned about these things from my parents; it has been from external people, with friends [Boy4GD1].

I've told my tutor most things this year, maybe I've had an issue, I don't know, with anything, a relationship... [Boy6GD12].

For example, [teacher's name] has been my tutor since 1st grade, and I have always told her everything because she conveys trust, and I tell her. So, she helps me [Girl1GD12].

By people, by your friends, by your friends who know about the subject [Boy8GD2].

Or by people who have also had that experience and, well, they tell you about it. So, you realise what you shouldn't do [Girl3GD2].

Anything with three Xs [referring to pornography] [Boy4GD5].

Those with experience, [they explain] what it's really like [to have romantic-sexual relationships]. The older ones tell you, and it has nothing to do with what comes in the videos. It's very different, not like 'hello, let's do it', no [Boy7GD5].

## DISCUSSION AND CONCLUSIONS

The effectiveness of comprehensive sexuality education from an early age has been examined in various contexts (Goldfarb and Lieberman, 2021). As an essential dimension of human beings, sexuality manifests in different ways at each stage of development (Caricote, 2008; UNESCO, 2018). Therefore, the educational approach to sexuality contributes to sustainable human development and democratic citizenship (UNESCO, 2014, 2022). Comprehensive sexuality education (CSE) is grounded in the entirety of sexuality, promoting a transformative and scientific approach within the framework of human rights, gender equality and inclusion (Haberland and Rogow, 2015; Leung et al., 2019; UNESCO, 2018, 2022, 2023; UNESCO and UNFPA, 2023a, 2023b). The implementation of CSE is particularly relevant during adolescence, as it is the stage when individuals initiate romantic and sexual relationships (Collins et al., 2009), often lacking the necessary knowledge and tools (Calvo et al., 2018). Therefore, this research has analysed how sexual education is addressed in families and educational institutions in Castilla-La Mancha.

The characteristics of romantic experiences in adolescence have varied over time (Flores-Hernández et al., 2021). The study by González et al. (2021) showed that although romantic relationships currently play a significant role in adolescent development, there is considerable variability not only in the age of initiation of these relationships but also in their number and duration. Academic literature indicates that romantic relationships begin in the early stages of adolescence (González and Molina, 2018; Seiffge-Krenke, 2003), with the percentage of adolescents and young people engaging in such relationships increasing with age (Youth Institute, 2021). The results of the current research align with this, as approximately half of the sample of adolescents in Castilla-La Mancha had initiated their romantic lives at age 14 or earlier, and this percentage progressively increased until ages 17–18. Furthermore, romantic relationships in adolescence tend to be brief, although the duration of relationships also increases with age (Seiffge-Krenke, 2003).

Information on romantic and sexual relationships in certain specific populations, such as rural populations, remains limited (Flores-Hernández et al., 2021). This research provides evidence that during adolescence, the size of the residential municipalities may have some influence on the initiation and duration of romantic relationships but is not a determining factor. The differences in the percentage of adolescents who had initiated their romantic lives in each of the analysed zones (urban, semi-urban and rural) were small, exceeding 50% in all three contexts. The most notable differences were found in the current relationship status at the time of questionnaire completion, where a lower

percentage of adolescents in rural areas had a partner compared to urban and semi-urban areas. In contrast, the duration of romantic relationships did not vary based on the size of the municipalities.

The interviewed families supported the quantitative data from the first study, as they believe that romantic relationships occurring in adolescence are brief and start at early ages. In line with other research (Tienda et al., 2022), families agree that the Internet and social media play a role in the emergence and establishment of such relationships. All groups (families, teachers and adolescents) concur that societal values surrounding sexuality and romantic and sexual relationships have changed. However, the discourse analysis reveals that these relationships are still influenced by inequality and oppression and that violence against women and LGBT individuals continues to be present today.

Educational models addressing sexuality determine the objectives, content, key topics, duration and approach of sexual education provided in different contexts (UNESCO, 2014). In this research, the prevailing model in the family context was the risk model since the approach to sexuality tended to be limited to contraceptive methods and health risks associated with sexual relationships. The main concerns of mothers and fathers were unwanted pregnancies, STIs/STDs and the dangers of social media. However, some families also addressed topics such as pleasure, consent, sexual diversity, respect and gender violence. Thus, albeit to a lesser extent, comprehensive models (integrative and developmental) were also present in the family context. Within educational institutions, while the risk model still persists, the perspective on sexual education presented by the interviewed teaching staff is more aligned with the principles of comprehensive sexuality education models (UNESCO, 2014), supporting a comprehensive and gradual approach to sexuality that can adapt to each stage of human development (UNESCO, 2018).

Coeducation advocates for a transformative type of education that moves away from sexist attitudes and promotes a society based on gender equality and social justice (Álvarez et al., 2019; Méndez et al., 2017). However, this requires coeducational actions to extend to emotions, affections and sexuality (Ferreiro, 2017; Venegas, 2013). Unlike traditional sexual education, which focuses more on the biological dimension of sexuality, affective-sexual education is framed within the coeducation approach because it encompasses the social-relational dimension implicit in sexuality (Venegas, 2017). In this regard, teaching staff and families who support the risk model would be more aligned with traditional sexual education, while those who advocate for comprehensive models in addressing sexuality would be more aligned with affective-sexual education. This is because they present a vision of sexuality that includes topics such as emotions, relationships, wellbeing, gender perspectives and access to rights.

Sexuality is not openly addressed in all families (Braga and Alcaide, 2010; Caricote, 2008; Venegas, 2017). Providing sexual education in homes not only depends on the educational model adopted by families but also on their predisposition to addressing sexuality. This standpoint has allowed the identification of three educational profiles: consistent, moderate and evasive. Families with a consistent profile take the initiative and openly discuss sexuality with their children, but this does not seem to be the norm (Venegas, 2017); families with an evasive profile represent the epitome of taboo by avoiding discussions of sexuality; and families with a moderate profile are aware of the importance of sexual education but do not take the initiative, thus assigning the responsibility for their children's education to their children. These latter two profiles indicate that sexuality is still perceived as a taboo in the family sphere, as suggested by previous studies (García-Vázquez et al., 2012, 2014; Venegas, 2013). Nevertheless, individuals learn and internalise attitudes and values about sexuality, even if the topic is not openly or directly addressed (Caricote, 2008; UNESCO, 2014). If families associate sexuality with fear, shame or danger, these values may be transmitted to their children.

Regardless of the model or approach adopted by educational institutions, their interventions addressing adolescent sexuality can be grouped into two types of programmes (Barriuso-Ortega et al., 2022): programmes integrated into the educational curriculum and programmes that are sporadically developed. The former are not limited to a specific time or a single action but seek a comprehensive approach to sexuality throughout the entire schooling period by integrating it across different subjects and within tutorial hours. The latter sporadically addresses sexuality with isolated actions that occasionally occur in specific subjects or during tutorial sessions. The findings of the current research indicate that the implementation of sexual education in educational institutions often takes place through sporadic programmes. This makes interventions integrated into the curriculum contingent on the willingness and personal commitment of the teaching staff. As highlighted by Fernández et al. (2022), non-explicit content of the official curriculum ends up becoming optional or voluntary. Therefore, if sexuality is not explicitly addressed in schools, students may acquire prejudices, biases and distorted beliefs through the hidden curriculum (UNESCO, 2014).

The focus group discussions reflect that the adolescent population demands more sexual education (Lameiras et al., 2006; Venegas, 2013). However, this education should not be a taboo until adolescence (Caricote, 2008) but rather a gradual process that starts at an early age and adapts to the needs of each successive stage (UNESCO, 2018). In many cases, if families and educational institutions are absent in this task or provide limited information, then their role as educators may be replaced by other agents (Venegas, 2017). In line with academic literature (Alonso-Ruido et al., 2022; García-Vázquez et al., 2014; Roldán, 2022; Vélez, 2022),

adolescent discourses highlight that peer groups, the Internet and pornography are recurring sources of information at these ages. In conclusion, it is crucial for families and educational institutions to provide sexual education that offers a comprehensive view of sexuality (Calvo et al., 2018; Caricote, 2008; Fernández et al., 2022; García-Vázquez et al., 2012, 2014; Goldfarb and Lieberman, 2021; UNESCO, 2014, 2018, 2022; UNESCO and UNFPA, 2023a) and aligns with coeducation principles (Barriuso-Ortega et al., 2022; Venegas, 2013, 2017).

The research provides relevant information on the current topic of sexuality education in adolescence, but it is not without limitations that should be considered: a) the analyses focus on specific aspects of sexuality, so the findings may not be generalisable to broader aspects; b) unlike the quantitative study, the sampling in the qualitative study was intentional, meaning the sample is not representative of the region; c) both quantitative and qualitative information was collected at a single point in time (cross-sectional design), so changes in opinions over time cannot be evaluated; and d) responses may be biased by social desirability even though measures were implemented to ensure a safe environment and the importance of truthfulness was explained.

In the future, research could be built upon the results of this work by evaluating the effectiveness of comprehensive sexuality education programmes integrated into the curriculum. Longitudinal designs could be developed to address attitudinal, relational and behavioural changes in the adolescent population. If the nature of the work allows, it would also be advisable to consider implementing participatory research approaches involving families and teachers in comprehensive sexuality education training programmes, thus expanding the impact of the training.

## ACKNOWLEDGMENTS

Both studies forming part of this research are part of the CATEDRA2019-002 project, funded by the Institute of Women of Castilla-La Mancha.

## REFERENCES

- Alonso-Ruido, P., Sande-Muñiz, M., & Regueiro, B. (2022). ¿Pornografía al alcance de un clic? Una revisión de la literatura reciente sobre adolescentes españoles. *Revista de Estudios e Investigación en Psicología y Educación*, 9(1), 1-18. <https://doi.org/10.17979/reipe.2022.9.1.8653>
- Álvarez, A., Vizcarra, M.T., & Lasarte, G. (2019). El significado y la evolución del término «coeducación» con el cambio de siglo: el caso de los centros escolares de



- Vitoria-Gasteiz. *Tendencias Pedagógicas*, 34, 62-75. <https://doi.org/10.15366/tp2019.34.006>
- Barriuso-Ortega, S., Heras-Sevilla, D., & Fernández-Hawrylak, M. (2022). Análisis de programas de educación sexual para adolescentes en España y otros países. *Revista Electrónica Educare*, 26(2), 1-21. <https://doi.org/10.15359/ree.26-2.18>
- Braga, E. R. M., & Alcaide, C. (2010). Una investigación sobre la importancia de la educación afectivo-sexual en las escuelas. *Revista Ibero-Americana de Estudos em Educação*, 5(3), 262-279.
- Brar, P., Boat, A. A., & Brady, S. S. (2023). But he loves me: teens' comments about healthy and unhealthy romantic relationships. *Journal of Adolescent Research*, 38(4), 632-665. <https://doi.org/10.1177/07435584221079726>
- Calvo, G., Sierra, J., & Caparrós, E. (2018). Derechos humanos y educación afectivo-sexual en la adolescencia: el programa educativo Forma Joven. *Educació Social, Revista d'Intervenció Socioeducativa*, (68), 80-101.
- Caricote, E. A. (2008). Influencia de los padres en la educación sexual de los adolescentes. *Educere*, 12(40), 79-87.
- Cerretti, G., & Navarro-Guzmán, C. (2018). Análisis de las diferencias de género en cuanto a las relaciones sexuales y afectivas en parejas adolescentes. *Feminismo/s*, 31, 23-38. <http://dx.doi.org/10.14198/fem.2018.31.01>
- Collins, W. A., Welsh, D. P., & Furman, W. (2009). Adolescent romantic relationships. *Annual Review of Psychology*, 60, 631-652. <https://doi.org/10.1146/annurev.psych.60.110707.163459>
- Fernández, M., Alonso, L., Sevilla, E., & Ruíz, M.E. (2022). Inclusión de la diversidad sexual en los centros educativos desde la perspectiva del profesorado: un estudio cualitativo. *Revista Internacional de Educación para la Justicia Social*, 11(2), 81-97. <https://doi.org/10.15366/riejs2022.11.2.005>
- Ferreiro, L. (2017). (Co)Educación afectivo-emocional y sexual, para despatriarcalizar la escuela y caminar hacia la igualdad. *Atlánticas*, 2(1), 134-165. <http://dx.doi.org/10.17979/arief.2017.2.1.1771>
- Flores-Hernández, B. G., Guzmán-Pimentel, M., Martínez-Ruiz, L., Jiménez-Castro, M. P., Rojas-Solís, J. L., & Preciado, P. N. (2021). Caracterización de las (nuevas) relaciones románticas de adolescentes. *Revista Avances en Psicología*, 29(1), 47-58. <https://doi.org/10.33539/avpsicol.2021.v29n1.2349>
- García-Vázquez, J., Lena, A., & Suárez, Ó. (2012). Evaluación de proceso del programa de educación afectivo-sexual Ni ogros ni princesas. *Global Health Promotion*, 19(2), 78-86. <https://doi.org/10.1177/1757975912441224>
- García-Vázquez, J., Ordóñez, A. L., & Arias-Magadán, S. (2014). Educación sexual: opiniones y propuestas del alumnado y profesorado de los institutos de secundaria de Asturias, España. *Global Health Promotion*, 21(4), 74-82. <https://doi.org/10.1177/1757975914528727>

- Goldfarb, E. S., & Lieberman, L.D. (2021). Three decades of research: the case for comprehensive sex education. *Journal of Adolescent Health, 68*(1), 13-27. <https://doi.org/10.1016/j.jadohealth.2020.07.036>
- González, E., & Molina, T. (2018). Relaciones románticas tempranas y su asociación con comportamientos de riesgo en salud durante la adolescencia. *Revista Chilena de Obstetricia y Ginecología, 83*(4), 368-376. <http://dx.doi.org/10.4067/s0717-75262018000400368>
- González, T., Finn, C., & Neyer, F. J. (2021). Patterns of romantic relationship experiences and psychosocial adjustment from adolescence to young adulthood. *Journal of Youth and Adolescence, 50*, 550-562. <https://doi.org/10.1007/s10964-020-01350-7>
- Haberland, N., & Rogow, D. (2015). Sexuality education: emerging trends in evidence and practice. *Journal of Adolescent Health, 56*(1), S15-S21. <https://doi.org/10.1016/j.jadohealth.2014.08.013>
- Youth Institute (2021). *Informe Juventud en España 2020*. INJUVE.
- Leung, H., Shek, D. T. L., Leung, E., & Shek, E. Y. W. (2019). Development of contextually-relevant sexuality education: lessons from a comprehensive review of adolescent sexuality education across cultures. *International Journal of Environmental Research and Public Health, 16*(4), 621. <https://doi.org/10.3390/ijerph16040621>
- Lameiras, M., Carrera, M.V., Núñez, A.M., & Rodríguez, Y. (2006). Evaluación de un programa de educación sexual con adolescentes: una perspectiva cualitativa. *Diversitas: Perspectivas en Psicología, 2*(2), 193-204.
- Martínez, I. (2016). Construcción de una pedagogía feminista para una ciudadanía transformadora y contra-hegemónica. *Foro de Educación, 14*(20), 129-151. <http://dx.doi.org/10.14516/fde.2016.014.020.008>
- Méndez, M. J., Villar, M., & Permuy, A. (2017). A coeducación no sistema educativo español: reflexions e propostas. *Atlánticas, Revista Internacional de Estudios Feministas, 2*(1), 192-215. <http://dx.doi.org/10.17979/arief.2017.2.1.2011>
- O'Brien, H., Hendriks, J., & Burns, S. (2021). Teacher training organisations and their preparation of the pre-service teacher to deliver comprehensive sexuality education in the school setting: a systematic literature review. *Sex Education, 21*(3), 284-303. <https://doi.org/10.1080/14681811.2020.1792874>
- Pan American Health Organization and World Health Organization (2000). *Promoción de la salud sexual: recomendaciones para la acción*. <https://bit.ly/49ecGtJ>
- Roldán, P. (2022). Pornografía, sexualidad y redes: ¿nuevas violencias o nuevas máscaras? *Revista de Estudios de Juventud, 125*, 77-94.
- Seiffge-Krenke, I. (2003). Testing theories of romantic development from adolescence to young adulthood: evidence of a developmental sequence.

- International Journal of Behavioral Development*, 27(6), 519-531. <https://doi.org/10.1080/01650250344000145>
- Tienda, M., Goldberg, R. E., & Westreich, J. R. (2022) Adolescents' partner search in the digital age: correlates and characteristics of relationships initiated online. *Journal of Youth and Adolescence*, 51, 393-408. <https://doi.org/10.1007/s10964-021-01557-2>
- United Nations Educational, Scientific and Cultural Organization (2014). *Educación integral de la sexualidad: conceptos, enfoques y competencias*. Oficina Regional de Educación para América Latina y el Caribe.
- United Nations Educational, Scientific and Cultural Organization (2018). *Orientaciones técnicas internacionales sobre educación en sexualidad: un enfoque basado en la evidencia*. Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura.
- United Nations Educational, Scientific and Cultural Organization (2022). *El camino hacia la educación integral en sexualidad: informe sobre la situación en el mundo*. Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura.
- United Nations Educational, Scientific and Cultural Organization (2023). *Seguridad, visibilidad e inclusión: diversidad e inclusión en educación en sexualidad. Nota informativa*. Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura.
- United Nations Educational, Scientific and Cultural Organization, & United Nations Population Fund (2023a). *Educación integral de la sexualidad: un análisis general de las evidencias disponibles a nivel internacional*. Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura.
- United Nations Educational, Scientific and Cultural Organization, & United Nations Population Fund (2023b). *Estudio bibliográfico sobre la efectividad y prácticas innovadoras de la ESI/EIS en América Latina y el Caribe (2011-2021)*. Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura.
- Vélez, M.T. (2022). La influencia de la pornografía en las relaciones sexuales entre jóvenes y adolescentes: un análisis del consumo de pornografía en Cantabria. *EHQUIDAD*, (17), 153-178. <https://doi.org/10.15257/ehquidad.2022.0006>
- Venegas, M. (2013). La educación afectivosexual en el marco de la educación para la ciudadanía democrática y los derechos humanos. *Revista de Sociología de la Educación-RASE*, 6(3), 408-425.
- Venegas, M. (2017). Coeducar las relaciones afectivosexuales para promover la igualdad sexual y de género y la justicia social. *Revista Internacional de Educación para la Justicia Social*, 6(2), 13-28. <https://doi.org/10.15366/riejs2017.6.2.001>
- Walker, R., Drakeley, S., Welch, R., Leahy, D., & Boyle, J. (2021). Teachers' perspectives of sexual and reproductive health education in primary and secondary schools: a

systematic review of qualitative studies. *Sex Education*, 21(6), 627-644. <https://doi.org/10.1080/14681811.2020.1843013>

Zimmer-Gembeck, M. J. (2002). The development of romantic relationships and adaptations in the system of peer relationships. *Journal of Adolescent Health* 31(6), 216–225. [https://doi.org/10.1016/S1054-139X\(02\)00504-9](https://doi.org/10.1016/S1054-139X(02)00504-9)

## GUIDELINES FOR SUBMISSION OF ORIGINAL ARTICLES

1. *Educación XX1* is an international scientific journal published by the Education Faculty of the Universidad Nacional de Educación a Distancia (UNED, Spain), which aims to encourage the diffusion of advances in educative research and innovation. All submitted articles must comply with the following criteria. They should:
  - a) Make a current and novel contribution to the scientific corpus of education.
  - b) Be coherent with the editorial policy defined by the editorial team.
  - c) Constitute an original article in its entirety, not published previously in any format.
  - d) Comply with criteria of methodological quality of scientific research.
  - e) Have a strong scientific base and internal unity.
  - f) Be written in good Spanish or English language
  - g) Comply with the available on the journal's website of this journal, available on the journal's website: <http://revistas.uned.es/index.php/educacionXX1/index>.
2. Papers will be submitted digitally through the OJS platform. The entire communication process with authors, reviewers and editors will take place through this platform.
3. All articles, including those written in Spanish and in English, will have between 5500 and 7000 words, excluding the title, summary and keywords. In review articles, the reference list will not be included in this word count either.
4. Manuscripts will have the following layout:
  - a) Title of article, in Spanish and in English.
  - b) Summary and keywords in Spanish and in English.
  - c) Text of article:
    - Introduction.
    - Method.
    - Results.
    - Discussion and Conclusions.
  - d) Bibliographic references.
  - e) Annex (if included).
5. Authors should prepare the manuscript following the publication instructions of the publication guidelines of the American Psychological Association, 7th edition.

6. Owing to the double-blind reviewing policy of *Educación XXI*, the article must not include any information that can identify the author.
7. Information about the authors must be entered, together with the other metadata relating to the article, on the platform during the submission process. It is mandatory to provide:
  - a) The first name and surname of all the authors in order of signing.
  - b) Organizational affiliation, the E-mail (preferentially of the institution), and the ORCID identifier of each author. The ORCID identifier must be updated and active.
  - c) The author to figure as the main contact for correspondence with the publishers. If not specified this role will be assigned to the first author.









