

Professional development for the use of digital games in schools: changes in the pedagogical practice?

(Formação de professores a distância para o uso de jogos digitais na escola: mudanças na prática pedagógica?)

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Abstract

Digital games integrated into pedagogical practice can result in a more engaging, contextualized and active learning. However, it is essential to offer education for the teachers ensuring contributions to the teaching and learning process. Therefore, an e-learning course on digital games directed to teachers was analyzed to evaluate if the education process favored the effective integration of digital games in school contexts. The study is characterized as a field survey with quantitative and qualitative approach accomplished with undergraduates after one year of the conclusion of the course. The results revealed that factors such as time spent playing and time experience did not indicate a significant effect on the scores related to pedagogical practices, and only the educational level could be associated to the scores of pedagogical practices with games after the course. It was observed the increase in the frequency that teachers use digital games in their pedagogical practices and a significant difference among the practices performed by teachers before and after the course. The conclusion is that there is strong evidence that the educational process caused changes in pedagogical practices, reinforcing the importance of policies and investments in teacher professional development.

Keywords: distance education; educational policy; educational games; educational technology.

Resumo

Os jogos digitais integrados à prática pedagógica podem resultar em uma aprendizagem mais envolvente, contextualizada e ativa. Para tanto, revela-se fundamental a formação dos professores para garantir contribuições ao processo de ensino e aprendizagem. Diante disso, analisou-se um curso a distância sobre jogos digitais, direcionado a professores, para avaliar se o processo de formação favoreceu a integração dos jogos digitais nos contextos escolares. O estudo caracteriza-se como um levantamento de campo de abordagem quantitativa e qualitativa realizado com egressos após um ano de conclusão do curso. Os resultados revelaram que fatores como tempo dedicado a jogar e tempo de experiência não têm um efeito significativo sobre as práticas pedagógicas com jogos digitais, apenas o nível de escolaridade pôde ser associado às mudanças nas práticas após o curso. Observou-se o aumento da frequência com que os professores utilizam jogos digitais ao comparar as práticas realizadas pelos professores antes de realizar o curso e após realizá-lo. Conclui-se que há fortes evidências de que o processo de formação provocou mudanças nas práticas pedagógicas, reforçando a importância de políticas e investimentos na formação de professores.

Palavras chave: educação a distância; política educacional; jogos educacionais; tecnologia educacional.

Among the many technologies present in modern life, digital games have played a prominent role in culture (Kirriemuir & Mcfarlane, 2004). These games involve interactive and engaging environments that capture the attention of the player and offer challenges that require increasing levels of skills and dexterity (Balasubramanian & Wilson, 2006). This constitutes an adequate and coherent resource for new forms of learning, since they present valuable contexts and provide experiences in virtual worlds where it is possible to increase knowledge (Gee, 2003).

Digital games are characterized by rules, challenges, quantifiable results and immediate feedback (Jull, 2003; McGonigal, 2012), interactivity (Kirriemuir & Mcfarlane, 2004; Santaella, 2013) and immersion (Murray, 2003). Although they share many of the characteristics of analog games, actions and decisions in digital games are limited by a set of rules and by a universe governed by a computer program (Schuyttema, 2008).

Many scholars and researches show evidence of the contributions that the use of digital games can offer to learning, highlighting it in the assimilation of content in a playful way (Schubtet, 2008; Grubel & Bez, 2006) In this paper we present the development of motor coordination and spatial skills (Gros, 2003) in the development of executive functions (Thorell et al., 2009; Diamond & Lee, 2011), in the regulation of emotions (Granic, Lobel, & Engels, 2014), in improving working memory and information processing speed (Nouchi et al., 2013) and motivation (Hsiao, 2007; Balasubramanian & Wilson, 2006). Nevertheless, in the pedagogical practices of Brazilian schools, there are still few proposals for the use of digital games.

Active and participatory gaming environments encourage different learning (Hsiao, 2007). When interacting with a digital game, it is necessary to reflect and find solutions in complex situations, thus exercising weight, resource management and decision making (Gee, 2009). According to Balasubramanian and Wilson (2006), in educational contexts games can generate interest and motivation in students, through environments that enable challenges and activate curiosity, interaction, and fantasy. In this way, the use of the game in school can potentialize the construction of knowledge by motivating, challenging and creating playful experiences (Ritchie & Dodge, 1992).

For the use of games in schools to be effective, in addition to the technical and infrastructure conditions, it is essential to educate teachers in order to guarantee contributions to the teaching and learning process based on pedagogical intentionality and a constructive and critical perspective.

Taking that into consideration, this study analyzes distance education on digital games aimed at teachers, looking for evidences to answer the question: can the process of teacher education in a distance course contribute to the change and integration of digital games in pedagogical practices?

This study aimed to broaden the understanding of the pedagogical practices of the teachers of the Digital Games and Learning Center of the Specialization Course in Education in Digital Culture, aiming to evaluate if the training process favored the effective integration of digital games in the contexts of schools.

DIGITAL GAMES IN EDUCATION AND PROFESSIONAL DEVELOPMENT

Teachers' knowledge is rooted in different social sources, such as family, school and university, and is acquired in different social times, such as: childhood time, during school, in vocational training, in joining the profession, and link the dimensions of professional work, previous experience and the person (identity) of the teacher (Tardif & Raymond, 2000). However, these dimensions can interconnect in different ways. For example, some teachers use technologies in their daily lives and interact with games, knowing their characteristics and even possibilities, but not incorporating them in their pedagogical practices.

As teachers understand the reality of teaching and its problems, they become able to handle existing factors more skillfully, thus creating conditions for students to fulfill their abilities (Santos, 2004). In this way, we can understand that when digital games are incorporated into the school reality, it becomes possible, through the reflexive practice of the

teacher, to recognize the capacities and weaknesses of this resource for the teaching and learning process. The reflexive practice itself, according to Santos (2004), produces knowledge that results in the development of the pedagogical competence of the teacher.

Given this, the importance of formations that favor the relationship between theory and practice based on reflection is highlighted. The study described by Hrtoňová, Kohout, Rohlíková, and Zounek (2015) analyzed the factors that affect the acceptance of a course in distance education in a broader perspective for the integration of technologies into pedagogical practice of distance education, aimed at the use of modern technologies in education, aimed at teachers of primary education schools in the Czech Republic. The survey involved 228 who answered a questionnaire. The results showed that the factors with the most significant impact on course acceptance are the voluntary participation of teachers, positive expectations regarding the course ($p < 0.001$) and autonomy in the studies. Factors such as age, gender, type of school, previous experience in distance education (ED) and involvement in discussions did not have a statistically significant impact ($p > 0.05$).

To better prepare students for modern life, schools have invested in teacher training processes, which includes encouraging the integration of digital technologies. Given this, Neghavati (2016) investigated a training program in Malaysia for teachers considered to be non-literate to prepare these teachers to develop their students. In this sense, he monitored the online behavior of teachers, applied a questionnaire and conducted interviews six months after the end of the project. The results show that teachers have become more vigilant concerning life-skills for the 21st century and the application of technology in their teaching context. Positive feedback on assessment, active online presence, and mutual collaboration on the platform was highlighted as a part of the course that helped them feel more confident in preparing their students for modern life.

The training process analyzed in this study was based on the knowledge and previous experiences of teachers to propose practices in their professional contexts and take them for analysis and reflection based on the knowledge addressed. This process was based on the valorization of the interactive experiences with the games so that the analysis that the individual carried out a posteriori on the process of their actions could reconstruct and modify their practices (Schön, 2000).

Many types of research investigating the developmental processes on digital games in education reveal contributions related to the change in conception about the use of games for teaching (Souza, Bertini, & Passos, 2015) and more pedagogical articulation and recognition of the importance of teacher mediation (Jong, 2009).

In one of the studies analyzed, it was evidenced that, after participating in a blended level of extension training, teachers began to conceive of games not only in terms of fun and motivation but with the potential to address content and promote learning (Souza, Bertini, & Passos, 2015).

On the other hand, Jong (2009) carried out an exploratory investigation with 254 students and 28 teachers, including the proposal of teacher training, and concluded that facilitation, mediation, and articulation contribute to transforming interaction with the game into real learning experiences.

Other studies point to factors associated with the non-use of digital games in teachers' pedagogical practices, such as the lack of training for the use of games in educational contexts (Jong, 2009), lack of time to plan and implement their use, few examples of classes available, high cost of equipment and difficulties to customize a game and to follow student progress in it (Justice, 2012).

From this, it is reinforced that the use of games in pedagogical practices presupposes the acquisition of different knowledge and the acceptance of teachers (Bourgonjon & Hanghoi, 2011). Digital games can be a viable component within the curriculum, and the importance and the need for policy development are recognized to provide financial resources for teacher training in this area (James, 2007).

Nousiainen, Kangas, Rikala, and Vesisenaho (2018) examine, more specifically, the types of skills that teachers need to develop in game-based pedagogy, which contemplates the use of educational games or entertainment games, game production and gamification learning. To do so, they performed documentary analysis, conducted interviews and applied

questionnaires, which resulted in the identification of four primary areas of competence: pedagogical, technological, collaborative and creative. The results can guide the development of teacher education.

De Grove, Bourgonjon and Looy (2012), when analyzing the possible influences of the use of classroom games with 409 teachers, observe that when teachers know how to implement digital games in class, they can assess the opportunities offered by them, which tends to positively influence the adoption decision in their pedagogical practice. These aspects reinforce the conclusions of the study by Wu (2015), which indicated that most teachers, because they do not have a knowledge base about digital games, do not understand their pedagogical possibilities.

Therefore, it is revealed that teacher training for the use of digital games in educational contexts is fundamental for their integration into teaching and learning processes, based on substantial evidence of changes in the practice of teachers that use this resource in class (Wu, 2015, Sanders, 2016, Foster, Shah, & Duvall, 2015).

METHODOLOGY

The study can be considered a field survey (Gil, 1999) using both quantitative and qualitative approaches (Minayo, 2001). Its context is the offer of the Specialization Course in Education in the Digital Culture, produced and offered by the Federal University of Santa Catarina (UFSC, Brazil) in partnership with the Ministry of Education (MEC) of Brazil, the Secretary of Education of the State of Santa Catarina and the National Union of Municipal Leaders of Education.

This course was attended by professionals in the Santa Catarina state public school, who work in as teachers, managers, and trainers on the state and municipal technology centers, in order to contribute to the integration of digital technologies in school curricula (MEC, 2017).

The course was organized through study modules, allowing each school to carry out its training project, aiming at fostering collective discussion of technology integration. Thus, the curriculum contemplated some elective modules so that the students could choose the themes that would suit their area of study and interests. The modules were classified into three types: the base module, which explored the theoretical-conceptual assumptions; the specific module; and the advanced module (MEC, 2017).

Enrollment for the course was held collectively, including teachers, members of the public school directive teams and trainers of the PROINFO Network (MEC, 2017). Thus, there was a distinctive aspect in the offer of the course which is the valuation of the collective, enabling the students to carry out work in groups, to share study and discussion moments in schools and to develop intervention projects in the school.

The activities proposed throughout the modules that composed the course aimed to sought to the educational practices experienced by the students enrolled in the school, taking the reality for analysis and reflection as a basis for proposing actions to give meaning to the adequate knowledge in the educational process. The activities linked to the study module aimed to link theory and practice through real experiences and good examples, encouraging reflection and effective implementation in the school context. Thus, teachers were encouraged to reflect on their practices to assign meaning to new knowledge and to propose interventions that integrate reality into digital technologies.

The guiding proposal of the course was that teachers, while theoretically studying the resources, could carry out the practical implementation of technologies in their classroom, and then exercise collective reflection in the school regarding improvements. (MEC, 2017).

Among the research groups that worked on the course, we highlight the Digital Games and Learning Module, which aimed to stimulate readings and activities to deepen and discuss the inclusion of digital games in the school space. It was organized in four phases that included objectives, content and specific activities.

Table 1. Topics and objectives of the phases of the Digital Games and Learning Module

Phase	Topic	Objectives	Activities
First	The World of Digital Games arrives at the School	To recognize the educational possibilities from the articulation of the digital games to the educational environment.	1. Knowing the world of games 2. Planning with Casual Games
Second	Digital Games and the Educational Context	To develop a critical view on digital games, recognizing their pedagogical potential.	3. Playing
Third	Digital Games and Learning Processes	To know the principles of learning good videogames presented by Gee.	4. Analysis of games
Fourth	Gamification: a New Educational Possibility	To understand the proposal of gamification and its development in the school context.	5. Living the change

Source: Prepared by the authors based on Ramos et al. (2013).

Sample

The sample of the research was composed for convenience by the graduates of the course that took the Digital Games and Learning Module. Of the total of 91 students who took the Module, 58 accepted to participate in the research and answered the questionnaire.

Because it involved the participation of the students, the project was submitted and approved by the ethics committee of the Federal University of Santa Catarina, in compliance with the ethical procedures related to the research.

Participants were 74.1% (n = 43) females and 25.9% (n = 15) males, ranging from 23 to 57 years old. Regarding education background, 87.9% (n = 51) had a graduate level of specialization, 6.9% (n = 4) had a complete undergraduate level and 5.2% (n = 3) had a Master's degree. The educational areas are diverse, with the majority having pedagogical studies, corresponding to 36.2% (n = 21) of the participants, followed by computer education indicated by 13.8% (n = 8) and 10.3% (n = 6) had a degree in mathematics.

Instruments and procedures

The instrument used to collect data was an online questionnaire sent to all who had taken the Digital Games and Learning Module after a year of completion of the course. The development and application of the questionnaire complied to the following procedures: research (analysis of objectives and problem), development of the questionnaire, testing, distribution and application, data categorization and subsequent analysis and interpretation (Labes, 1998).

The closed questions aimed to collect information to build the profile of the students, addressing aspects such as name, gender, age, and schooling. Another aspect that guided the organization of the questionnaire was previous experiences both as teachers and game players. As an example, the students were asked about their time as teachers and their respective areas of activity. They were also asked whether they were digital game players.

Multiple choice questions tried to identify how often the students used the digital games in their pedagogical practice before taking the Digital Games and Learning Module and how often the students began to use the digital games in their pedagogical practice after taking the course.

Still considering the participation on the Digital Games and Learning Module, assertions were elaborated through a multiple-choice grid, containing Likert Scale response options to evaluate the level of agreement. After the assignment of scores for each choice of agreement, we calculated the total for each category, which generated scores of the dependent variables of the research.

Table 2. Assertions of the questionnaire by category of analysis

Category	Assertion
Practices of the students before taking the Digital Games and Learning Module	I already used digital games in the process of teaching-learning with my students.
	I already used digital games as a method of assessment in my course.
	I have always had a critical view on digital games, understanding their pedagogical potential for my practice.
	I already used strategies of gamification in education before taking the Module.
	I have always recognized the pedagogical affordances of the use of digital games applied to the process of teaching and learning.
Practices of the students after taking the Digital Games and Learning Module	I consider that I developed during the course a critical view of digital games, better recognizing its pedagogical potential for my practice.
	I understood how to use strategies of gamification in education.
	After taking the course, I proposed activities of teaching gamification in my practice.
	After taking the course, I started to use the games in learning more frequently in my field.
	After taking the course, I recognize more readily the educational possibilities of the articulation of digital games to the educational environment.

Source: Prepared by the authors

Concerning the educational experience in the Module, the questionnaire sought to evaluate through an open question the contributions that the course offered to the professional performance of the students.

Data analysis

The quantitative analysis followed descriptive and inferential statistics. Descriptive statistics characterized the profile of the students, the previous experiences related to their practices regarding the use of digital games and their practices after the participation on the module activities, through the presentation of the averages and frequency distribution. In inferential statistics, the variables were cross-checked to verify the factors that may influence the change in pedagogical practice and to analyze whether the difference identified before and after the educational process was statistically significant.

The data were analyzed using SPSS software (Statistical Package for the Social Sciences), version 24. Based on the normality of the data, using the Kolmogorov & Shapiro Wilk tests, as well as the values of Skewness and Kurtosis, the following statistical tests were performed: Kruskal Wallis test for non-parametric data and ANOVA for parametric, assigning the 95% confidence interval.

The qualitative data were analyzed using content analysis as described by Bardin (2009), as a set of communication analysis techniques that aim to obtain indicators that allow the inference of knowledge, through procedures such as floating reading, classification, coding, and categorization. This process of analysis was performed with the use of NVivo 11 software.

RESULTS

The survey carried out with the students that took the Digital Games and Learning Module characterized the profile of the participants, which could also be used as factors to verify whether they exerted influence on the pedagogical practices with the use of digital games before and after taking the Module.

A first factor analyzed through the ANOVA one-way test was level of schooling, with the results suggest a significant effect, $F = 4.42$, $p < 0.05$, in the educational level on the scores of pedagogical practices with use of games after the course. It could be noted that the higher the level of schooling, the more the students started to use digital games in their practices after completing the course. However, the results obtained do not suggest a significant effect, $p > 0.05$, on the level of schooling on practices using games before the course, nor on the difference between the scores obtained.

Table 3. One-way ANOVA test result for the schooling factor

Dependent Variables	G1 Mean (SD)	G2 Mean (SD)	G3 Mean (SD)	F	p
Practice of the students before completing the Module	10,00 (4,16)	16,90 (5,87)	14,33 (2,51)	3,00	0,058
Practice of the students after completing the Module	14,25 (6,39)	21,56 (4,75)	20,66 (2,08)	4,42	0,017*
Difference in practice before and after the Module	4,25 (7,67)	4,66 (5,33)	6,33 (4,50)	0,162	0,851

(SD) Standard Deviation; (*) $p < 0.05$; (G1) Undergraduate; (G2) Graduate Certificate; (G3) Masters and PhD.

Source: Prepared by the authors.

The analysis of the experience time factor, through ANOVA one way, likewise did not suggest a significant effect, $p > 0.05$, on the scores related to the pedagogical practices using digital games, as seen in table 4.

Table 4. One-way ANOVA test result for the time of experience

Dependent Variables	G1 Mean (SD)	G2 Mean (SD)	G3 Mean (SD)	G4 Mean (SD)	F	p
Practice of the students before completing the Module	16,94 (6,21)	19,06 (4,55)	13,00 (6,50)	17,00 (4,18)	0,821	0,679
Practice of the students after completing the Module	21,05 (5,10)	21,46 (5,24)	20,12 (5,21)	21,70 (4,78)	0,797	0,696
Difference in practice before and after the Module	4,11 (6,06)	2,40 (4,40)	7,12 (5,94)	4,70 (3,33)	1,281	0,262

(SD) Standard Deviation; (G1) From 0 to 7 years; (G2) From 8 to 12 years; (G3) From 13 to 20 years; (G4) More than 20 years.

Source: Prepared by the authors.

Table 5 shows that, even though the longer the students dedicate themselves to playing, the higher their scores related to the use of the games in their pedagogical practices before the course, that is, the more they play, the more they use games in their practices, this association is not statistically significant according to the results of the one-way ANOVA test, $F = 0.754$, $p > 0.05$. After the course, there is no regularity in the association between the frequency of use of games for entertainment by the students and the use in pedagogical practices, but an increase in the score is observed in all frequencies, indicating a greater use after the course. A significant effect was also not identified on the differences on the practices before and after, $p > 0.05$.

Table 5. One-way ANOVA test result for the frequency factor in which you play digital games

Dependent Variables	G1 Mean (SD)	G2 Mean (SD)	G3 Mean (SD)	G4 Mean (SD)	G5 Mean (SD)	F	P
Practice of the students before completing the Module	19,55 (3,74)	16,07 (5,07)	15,50 (8,00)	16,00 (5,37)	14,90 (6,22)	0,754	0,560
Practice of the students after completing the Module	23,55 (2,18)	21,42 (3,41)	18,00 (8,12)	21,33 (4,97)	21,30 (2,90)	1,80	0,142
Difference in practice before and after the Module	4,00 (3,67)	5,35 (4,92)	2,50 (5,90)	5,33 (5,39)	6,40 (6,61)	0,689	0,603

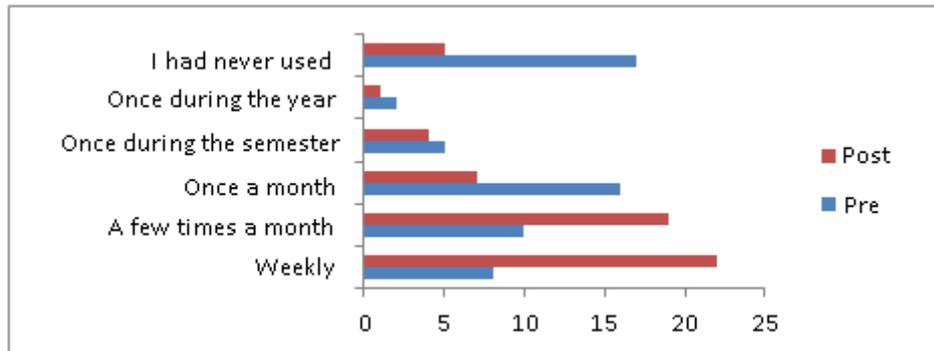
(SD) Standard Deviation; (*) $p < 0.05$; (G1) Every day; (G2) 2 to 3 times per week; (G3) once a week; (G4) 2 to 3 times per month; (G5) I do not play.

Source: Prepared by the authors.

Otherwise, when analyzing the frequency of the use of digital games in the classes before and after the course, there has been a significant increase. Figure 1 shows an increase in the number of students who started to use digital games weekly in their classes. The weekly use of classroom games increased from 13.8% ($n = 8$) to 37.9% ($n = 22$) and the use a few times in the month increased from 17.2% ($n = 10$) to 32.8% ($n = 19$).

The results obtained with frequency analysis also revealed that 29.3% ($n = 17$) of the students reported never having used the games in their pedagogical practices before taking the course, which decreased to 8.6% ($n = 5$) of those who reported were still not using.

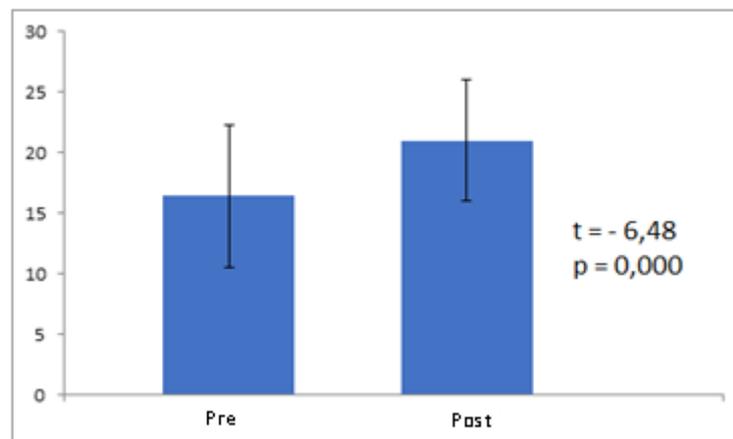
Figure 1. Comparative graph of the frequency of the use of digital games in classes before and after the course



Source: Prepared by the authors.

In order to analytically compare the difference of practice using digital games before and after the Module of Digital Games and Learning, after verifying that the data did not follow a normal distribution, the Kruskal Wallis nonparametric test was performed. The results revealed a significant difference, $t = -6.48$, $p < 0.001$, among the practices performed by the teachers before taking the Digital Games and Learning Module, with a mean score of 16.41 (standard deviation = 5,92), and after taking the Module, with a mean of 21.01 (standard deviation = 5.02).

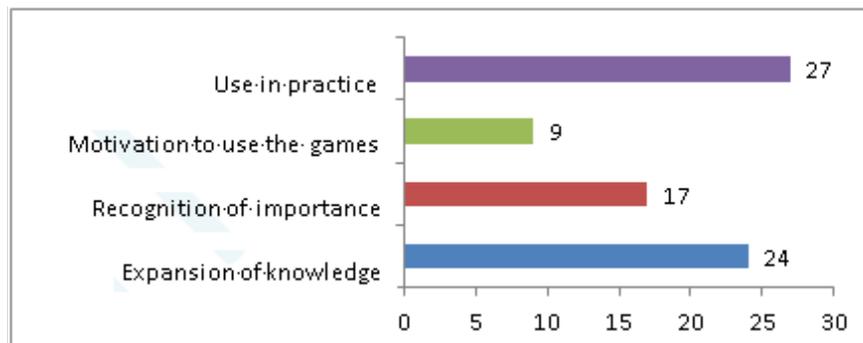
Figure 2. Graph of the scores regarding the use of digital games before and after the course



Source: Prepared by the authors.

The analysis of the open questions, through analysis of content, generated categories and the codification of frequencies, after the classification of the description of the contributions of the course to the education and professional performance of the students. This process defined four categories of analysis: use in practice, motivation to use games, recognition of importance and expansion of knowledge. The contributions related to the use of games in the pedagogical practice of the students ($n = 27$) and the extension of the knowledge related to the subject matter ($n = 24$) stand out.

Figure 3. Chart of the codification by categories of educational contributions described by the students



Source: Prepared by the authors.

In the category of use of games in practice, contributions were codified as: “I learned the concepts that involve games as a pedagogical tool, the purposes of their application in learning” (trainer 56) and “supported the use of games in the activities, as I did not know how to use” (student 28). Another student also points out that he could have “a better view of how to use games adequately in class and also knowledge of new educational game platforms” (student 21).

Other descriptions of the contributions were related to the possibilities offered by the course to increase knowledge, including descriptions such as: “I believe that today I see more possibility of expanding knowledge through digital games and gamification, in addition to being more confident in using these resources for teaching and learning” (student 6).

The category of recognition of importance included statements such as: “Knowing the different abilities that the game develops and the principles of learning in digital games were essential for me to reflect on the pedagogical potential of games, its didactic and methodological value”(student 31).

Otherwise, the motivation category for the use of games included the description of contributions such as “the experience of learning from digital games was very motivating” (student 47) and “the RPG Game experience of the teacher [...], with his class, was really something very, very inspiring” (student 19).

DISCUSSION

The results of the factors that characterize the students could not be associated with the use of the games in the pedagogical practice before and after the course, except for the educational level, which revealed a statistically significant effect on the use of games in pedagogical practice after the course. Therefore, one can infer that the changes in pedagogical practices illustrated by the difference between before and after scores can be associated more specifically to the proposed educational process.

Similarly, the study by Hrtoňová et al. (2015) did not identify the influence of aspects such as age, gender, type of school and previous experience in teaching at a distance over the teacher’s learning in a distance learning course. This allows the conclusion that the pedagogical project and the experiences provided in the educational process have more impact than personal factors.

The increase in the use of games in the pedagogical practices of the students, demonstrated in the Kruskal Wallis test that analyzed the difference between the scores before and after the course related to practices and actions of game use, had a value of $p < 0.000$. Thus, we can infer that the course proposed in the Núcleo de Jogos Digitais e Aprendizagem contributed to the increase of the use of digital games in the pedagogical practices of the students. We highlight the reflexive pedagogical practice (Santos, 2004) evidenced in the methodology of the course, which turned to the practices carried out in the schools in which the teachers worked, proposing the analysis of reality, planning activities, their development, and reflection.

The expressive increase in the use rate of digital games in the pedagogical practices of teachers after the Module also reinforces the understanding that before the course certain factors possibly influenced teachers not to use. We can therefore reflect that many educators were still not confident about the use of technologies (Stansfield, 2010), did not have enough knowledge about game-based learning or did not understand more confidently the learning process through digital games (Jong, 2009).

At the same time, the course proposed a strong link between theories and pedagogical practice, through the proposition of activities that involved planning, the use of games in the classroom and reflection on the development of the experience. In the presentation of the course, the focus of the research in phase 1, the teachers elaborated a pedagogical planning foreseeing the use of a casual game. For that, it was necessary to research and select games based on learning objectives. In the following phases, an activity of interaction with games was proposed and analyzed. Finally, in phase 4 they planned and proposed a gamified activity at school. This relationship proves to be innovative in a context of distance learning that takes advantage of the characteristics of its target audience being professionally inserted in the school environment to propose practical actions to foster the development of competences and increase of knowledge. It takes advantage of the characteristics of adults that study at a distance who, for the most part, work (Buford, 2005) and need to know, are responsible for their choices and carry a set of previous experiences that need to be valued (Wilson, 2005).

Taking the course, teachers could experience using and analyzing digital games or to select games to be included in their plans. This aspect confirms the hypothesis that the teachers' experience with digital games is an extremely influential factor for the use in students' learning processes (Cojocariu & Boghian, 2014).

The analysis of the qualitative data obtained through the open question about the contribution of the course reinforces the evidence that, through the educational process, teachers felt confident in using digital games in their pedagogical practices. The contributions described further reinforce the results of studies such as de Grove, Bourgonjon and Looy (2012), which state that once teachers know how to implement digital games in the classroom, they will be able to evaluate better the opportunities offered by digital games, positively influencing the adoption decision in their practice.

The categories highlighted in the analysis of the contributions included the expansion of knowledge, recognition of the importance of the use of digital games, motivation and more disposition for use in pedagogical practices. These aspects validate the contributions identified by researches such as de Souza, Bertinie and Passos (2015), which pointed to an expansion of teachers' knowledge and recognition of their contributions to learning from an educational process. At the same time, they value aspects related to autonomy and voluntary participation, highlighted by Hrtoňová et al. (2015), what is evident in the possibility of choosing the thematic modules, such as the case analyzed, in which the student has the flexibility to compose his / her curriculum in the educational process, considering his / her experiences and interests.

The innovative proposal of distance learning for in-service teachers, taking their practice as a field of application and reflection on the knowledge addressed, and the results obtained in the study, reinforce the need for intervention in the curricula of future teachers and investment in educational actions. In the distance education proposal analyzed, learning was facilitated because concepts could be applied in solving problems or filling knowledge gaps, as well as knowledge could be related to everyday situations (Wilson, 2005).

In this sense, the results corroborate with the results described by Neghavati (2016), which revealed that the teachers who took a distance education course, aimed at integrating technologies into pedagogical practices, became more aware of the skills of learning for the 21st century. In our study, we showed changes in pedagogical practices, through the more frequent inclusion of digital games, revealing greater harmony with contemporary perspectives and previous experiences of students, as well as with the learning possibilities resulting from interaction with digital games.

It is also worth noting that continuing education is essential to face the current challenges, emphasizing that teachers' reflective practices, their pedagogical knowledge of

content and their previous experiences can assist them in the development of new and innovative approaches for the integration of digital games in their classrooms (Mukundan, Kalajahi, & Naghdipour, 2014). The education of teachers to integrate games was guided by the areas and competences described by Nousiainen et al. (2018), which include: the pedagogical - through the proposition of activities that are based on the planning and articulation of the use of games with the school curriculum; the technological - evidenced in the interaction, search and selection of the games; the collaborative - in the development of collective activities with other teachers of the same school to integrate the technologies and later reflection on the practices carried out; and the creative - in the combination of different possibilities of uses and learning objectives linked to digital games and in overcoming difficulties and resistances for the effective integration of technologies in schools. Throughout the educational process, the need for teachers to be immersed in continuous professional development, learning to integrate technologies into the curriculum to meet the needs of the students (Solórzano, 2013) was demonstrated.

CONCLUSIONS

Taking into consideration the described results, we stress that a theoretically and methodologically consistent education, especially in the distance modality directed to the teachers who work in the schools, must provide experiences and learning that substantially relate theory and practice. This relationship tends to generate more effective changes in teachers' practices, which, in the context of the research, ensured greater integration of the use of digital games in the pedagogical practice of the students of the course.

The study was based on students answering a questionnaire, so the results can be taken only as indicators that there were changes in the practice. Moreover, the quality of the resulting changes in pedagogical practice was not addressed at this stage, in a more in-depth way; for that, a more qualitative approach would be required, such as the accomplishment of interviews or observations that would allow better understanding the practices developed by the teachers.

In any case, it was possible to have instructor's notes after a year of conclusion, which offered indications of how to develop educational policies in the distance modality, which allow access to teachers who carry out professional activities and act in different ways, places and the opportunity to deepen their knowledge, in order to guide their practices and reflection, which tends to result in changes in pedagogical practices.

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