Design and analysis of narratives enriched with artificial intelligence. UNED - UTMACH transfer project

Diseño y análisis de narrativas enriquecidas con inteligencia artificial. Proyecto de transferencia UNED - UTMACH

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ABSTRACT

This article analyzes the results of a Transfer Project developed by the Universidad Nacional de Educación a Distancia (UNED, Spain) for the Universidad Técnica de Machala (UTMACH, Ecuador) on the integration of Artificial Intelligence (AI) in the elaboration of 22 educational narratives by university students, evaluating its impact on the clarity, coherence, and personalization of academic content. AI facilitates the creation of clear and coherent educational materials tested by analyzing university students' performance and needs, allowing adaptation of the content to their level of understanding and correcting errors. AI also enables the personalization of teaching, tailoring narratives to individual interests and learning styles and increasing learners' relevance and engagement. Incorporating AI materials in virtual learning scenarios such as sNOOCs makes learning more dynamic and participatory. A mixed-methods approach was employed, combining data collection, statistical analysis, and evaluations by Peer Evaluation Circles comprising 200 researchers. The study results indicate a strong correlation between educational relevance and content clarity, as narratives rated as relevant tend to be perceived as clear and coherent. The study underscores the importance of a strong ethical foundation in using AI to ensure adequate and equitable understanding of content, even though sometimes ethics and clarity are not entirely aligned.

Keywords: artificial intelligence; digital narratives; visual design; ethical design.

RESUMEN

Este artículo analiza los resultados de un Proyecto de Transferencia desarrollado desde la Universidad Nacional de Educación a Distancia (UNED, España) para la Universidad Técnica de Machala (UTMACH, Ecuador) de integración de la Inteligencia Artificial (IA) en la elaboración de 22 narrativas educativas por alumnado universitario, evaluando su impacto en la claridad, coherencia y personalización del contenido académico. La IA facilita la creación de materiales educativos claros y coherentes que se comprueba al analizar el rendimiento y necesidades del alumnado universitario, permitiendo adaptación del contenido a su nivel de comprensión y corrigiendo errores. La IA también posibilita la personalización de la enseñanza, ajustando las narrativas a los intereses y estilos de aprendizaje individuales, lo que incrementa la relevancia y compromiso de las y los estudiantes. La incorporación de materiales con IA en escenarios virtuales de aprendizaje como los sNOOC hace que el proceso de aprendizaje sea más dinámico y participativo. El método utilizado ha sido mixto basado en la recolección de datos, análisis estadístico e interpretación que han proporcionado los Círculos de Evaluación por Pares formados por 200 investigadores. Los resultados del estudio indican una fuerte correlación entre la relevancia educativa y la claridad del contenido con las narrativas valoradas como relevantes tendiendo a ser percibidas como claras y coherentes. El estudio subraya la importancia de una base ética sólida en el uso de la IA para garantizar una comprensión adecuada y equitativa del contenido, a pesar de que a veces la ética y la claridad no están completamente alineadas.

Palabras clave: inteligencia artificial; narrativas digitales; diseño visual; diseño ético.

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INTRODUCTION

Enriched narratives are stories where the text is part of the story and relies on other interactive resources to create a more immersive and dynamic experience. These stories in the digital realm have traditionally combined images, videos, sounds, animations, or even hyperlinks, transforming specific narratives into hyperlinked navigation. Artificial Intelligence (AI) has revolutionized multiple sectors, and its application in education is presented as one of the most promising innovations to improve the quality of learning (Romero, 2024). In particular, the creation of narratives using AI (Moscoso et al., 2024) offers a novel approach that can transform how academic content is presented and assimilated, thus moving away from the potential risks associated with the curricular integration of AI in learning processes (Abbas et al., 2024).

AI can help create more transparent and coherent narratives by analyzing large amounts of data on learners' performance and needs (Van-Vaerenbergh, 2024). This allows AI systems to generate content that follows a logical structure tailored to the learner's level of understanding. AI can identify and correct errors or inconsistencies in educational content, improving the quality of the material presented. Beyond these applications, another significant advantage of AI in education is its ability to personalize learning (López et al., 2023) in virtual learning environments. AI systems can also adapt educational narratives to the specialized topics offered by specific models such as Nano Open Online Courses (Clark, 2013; Basantes Andrade, et al., 2020), particularly its sNOOC typology (Gil-Quintana, 2024), bearing in mind the individual needs of the students who consume these products, their interests, learning styles, and previous knowledge levels; AI can create more relevant and engaging learning experiences. This is especially true when combined with the minimalist sNOOC model, which can help avoid high dropout rates in mass training (Ratnasari et al., 2024). If we add to these models practices of innovative pedagogies, collective knowledge construction, and student empowerment, where the students create these contents, they generate interactivity and engagement (Fondevila-Gascón et al., 2024; Tamayo, 2019). The learning path through which these contents are presented enhances not only their design and even the accessibility of the resources but also their dissemination in specific post-digital contexts (Escaño, 2023), including social networks and narrative quality.

This mixed study analyzes the results of the transfer project "Product design, planning and educational evaluation with AI" developed in the academic year 2023/2024 by the Universidad Nacional de Educación a Distancia (UNED, Spain) for the Universidad Técnica de Machala (UTMACH, Ecuador). The purpose of this project was the integration of AI in the creation of educational narratives by university students; narratives serve as the basis for the subsequent development of sNOOC (Gil-Quintana, 2024) on the tmooc.es platform. The transfer of knowledge between Spanish universities and foreign private universities is of great importance for academia, and the industrial and scientific sectors of both countries. As a result of this collaboration, distance learning innovation is boosted, and training processes are improved, promoting educational quality and international prestige. The integration of AI in narrative development presented in this study stems from a collaborative learning experience (Tan et al., 2022), evaluating its impact on fundamental aspects such as clarity, coherence, and personalization of learning (Baidoo-Anu & Ansah, 2023). In more detail, this study examines through a blended approach, using Peer Analysis

Circles (Schön, 1983; Boud, et al., 2021), how these materials collaboratively created with AI influence the educational relevance and clarity of the narratives generated, highlighting a strong correlation between the two.

The results of this study suggest that narratives rated as relevant also tend to be perceived as clear and coherent. The high correlation between the effective use of AI and the personalization of learning indicates that AI positively impacts tailoring content to individual needs, which can increase engagement and practical training. The relationship between ethics and transparency in the use of AI also proves crucial, with a positive correlation suggesting that a strong ethical foundation facilitates a better understanding of how AI works. Despite progress, exceptions are noted where ethics and clarity of explanation are not always aligned, underscoring the need to improve these dimensions to provide a coherent educational experience. AI offers considerable potential to enrich personalized and precise narratives, but its implementation, as observed in the qualitative data, must be carried out with meticulous attention to ethics, clarity, and adaptation to individual needs to ensure effective and equitable integration.

METHOD

This study is presented from a multidisciplinary approach (Pereyra, 2022) to analyze the integration of AI in the creation of narratives for sNOOC environments. The study is carried out by analyzing different aspects such as relevance and clarity of the content, ease of use and accessibility, accuracy and relevance of the content generated, as well as ethical considerations and commitment to educational quality. Based on this premise, the following objectives are established:

- Objective 1 (O1): Evaluate the impact of AI on the personalization of educational content, analyzing how this cutting-edge technology improves the relevance and clarity perceived by participants in the sNOOC learning experience.
- Objective 2 (O2): Analyze how visual design and user experience influence usability and accessibility and how they affect the perception of accuracy and relevance in narratives created with AI.
- Objective 3 (O3): To examine whether transfer in collaborative narratives with AI strengthens ethical perception and clarity by exploring the relationship between ethics and understanding of AI functioning.

In order to respond more precisely to this study and bearing in mind the above objectives, the following hypotheses are presented:

- Hypothesis 1 (H1): Effective use of AI in the design of educational narratives enhances personalization of learning and perceptions of relevance and clarity.
- Hypothesis 2 (H2): Visual design and user experience significantly correlate with ease of use and accessibility, improving the perceived accuracy and relevance of AI-created narratives.
- Hypothesis 3 (H3): Narratives created from collaborative learning with AI demonstrate a strong commitment to ethics by being more transparent in explaining how they work, establishing a positive correlation between ethics and clarity.

The mixed-method study presents quantitative data collected and organized by a valuation matrix as a tool that allows us to evaluate and compare the information in a structured manner, enabling a more transparent and objective analysis. Through the instruments, we have also quantified the variables referring to quality, as educational materials of the narratives created, organized around categories presented in the results analysis section. The value of Cronbach's Alpha (Rodríguez & Álvarez, 2020), reflects the reliability of the assessment matrix as a whole. These values close to 0.98 indicate high internal consistency and support the validity and reliability of the measurements used in the study. Regarding the reliability and consistency of the measurements, the relationship between each specific item and the total score of the instrument is analyzed, with high values indicating a more significant contribution to the construct evaluated. In addition, qualitative data have been incorporated from the discourse generated in the discussion forums that were generated at the same time as the educational narratives were being created.

The data were obtained from the transfer project "Product design, planning and educational evaluation with AI", which was developed over 18 sessions from February to May 2024, to integrate AI in the development of educational narratives by university students in postgraduate education through the UTMACH Moodle platform, whose work was the basis for the subsequent development of sNOOC (Gil-Quintana, 2024) on the external platform of this institution: tmooc.es. These creations were designed with MyHeritage, Voki, Fotor, Canva, Dall-e, Padlet, Tome, and ElevenLabs applications. The data were collected through SPSS from 22 Peer Analysis Circles (CAP) formed by 200 people who developed 2110 analyses and contributions in 154 discussion forums. The KAP is a collaborative and democratic structure (Schön, 1983; Boud, et al., 2021) Expert researchers critically analyze a particular fact from the review principle but with a more interactive format, critical appraisal, and mutual enrichment. This set of experts, even with an Ecuadorian geographical location and socio-cultural context, at the level of representativeness, is linked to different levels of the educational system and years of experience in their different professions; in addition, their areas of specialization are related to Education, Humanities and Arts, Social Sciences, Business Education and Law, Sciences, Industrial Engineering, Agriculture, Health and Social Services. More specifically, the sample is drawn from an n-size > 200 research personnel and presented concisely and relevantly to inform the effectiveness and challenges of AI implementation in creating educational narratives around a given content intended for the development of the learning pathway in sNOOC. The selection of this sample may introduce several biases, such as being experts with experience in education that may influence the analysis according to more technical or pedagogical criteria, being homogeneous at a professional level sharing similar approaches and frameworks, being more critical or analytical, being used to the evaluation of academic works and, of vital importance, being conditioned by opinions about how AI can negatively or positively influence education.

Table 1 shows the interdisciplinary contents created by the students as part of their participation in the training activities. These resources have been generated and hosted on the online educational platform tmooc.es, where they are available for consultation and review as sNOOC, joining other experiences carried out with this perspective (Hueso-Romero, et al., 2024). The students' contribution has been key in constructing these materials, which are presented as an integral part of their collaborative learning process and are published openly within the learning itineraries of mass training.

Table 1
Peer narrative analysis circle

Creations Code	Created Narrative
A01	Motivating Creative Minds
A02	Educational Gamification
A03	Agricultural Production
A04	Creative Minds Smart Business
A05	Agronomy
A06	Cybersecurity
A07	Experimental Sciences
A08	App World - Dóminus
A09	Mental Health
A10	Biochemistry and Pharmacy
A11	Artificial Nursing Care
A12	Climate Change - Biodiversity Loss
A13	Health Medicine (Morphophysiology)
A14	Information Technology
A15	Physical Activity and Sport
A16	Accounting and Auditing Marketing
A17	FCE!
A18	Food Engineering
A19	Genius Alliance
A20	Civil Engineering
A21	Economy and Foreign Trade
A22	Making history

Source: prepared by the authors.

The normality test was performed with the Kolmogorov-Smirnov (K-S) test to evaluate the distribution of the data and verify if they follow a normal distribution (Tapia & Cevallos, 2021), presented in Table 2 and Figure 1 because N = 2110, with a reliability of 95% so ($\alpha = 0.05$). For the test, the following hypotheses are established:

- Null hypothesis: (H_0) = $p > \alpha = 0.05$;
- Alternative hypothesis: (H_1): = $p < \alpha = 0.05$.

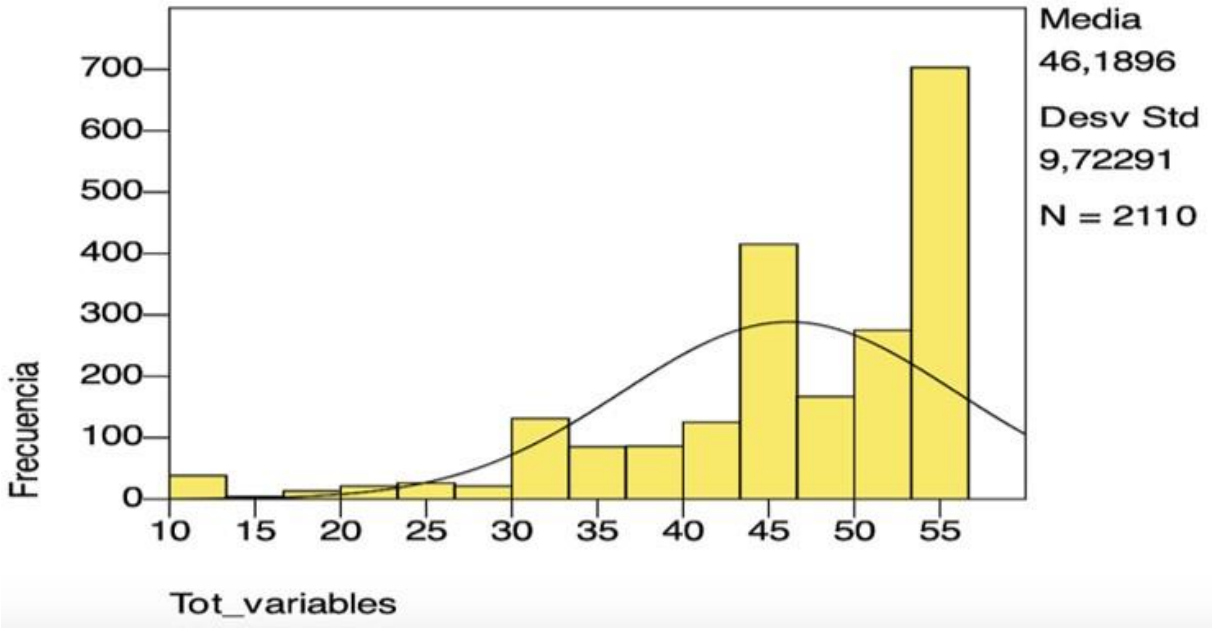
The test result yielded a value of $p = 0$, indicating that the data are unlikely to follow a normal distribution. The null hypothesis is rejected since the p-value is less than the standard significance threshold ($\alpha = 0.05$), suggesting that the data do not follow a normal distribution. This result justifies the use of nonparametric methods in subsequent analyses. This finding has important methodological implications as the statistical procedures assume the normality of the data. Since this condition is not met, the use of nonparametric tests for this study's analysis is justified since the data distribution normality is not required.

Table 2
Kolmogorov-Smirnov test results

N		Variable
		Motivating Creative Minds
Normal Parameters	Average	46,19
	Standard Deviation	9,72
More Extreme Differences	Absolute	,18
	Positive	,18
	Negative	-,15
Kolmogorov-Smirnov's Z		8,38
Asymp. Sig. (2-tailed)		,000

Source: prepared by the authors.

Figure 1
Histogram results normal curve



Source: prepared by the authors.

Normality analysis is a key step in selecting the statistical techniques used. Since the K-S test indicated a non-normal distribution, nonparametric approaches have been chosen to allow a valid analysis of the variables studied. The lack of curve fit presented in Figure 1 strengthens the validity of the methodological option, ensuring statistically sound and appropriate results.

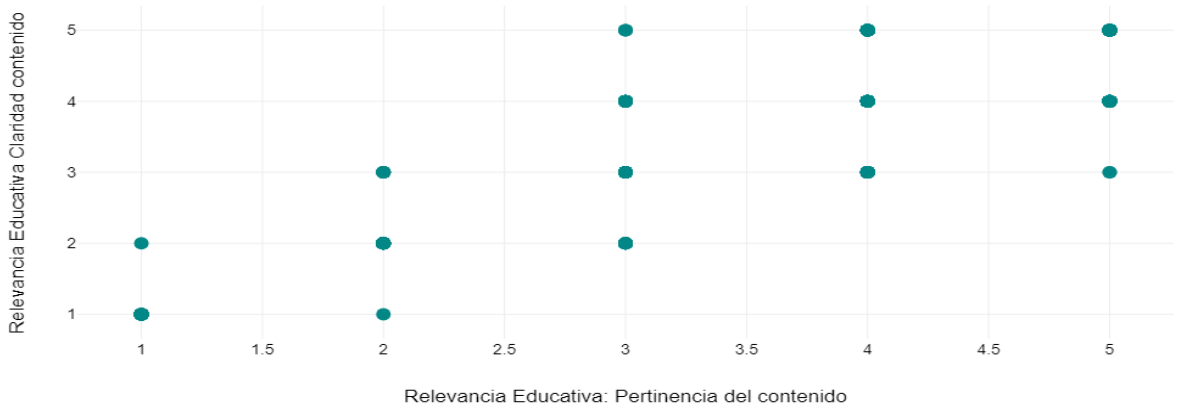
RESULTS

Category 1: AI-enriched narrative design: clarity and personalization

The correlation between educational relevance and content clarity is 0.91, indicating a strong positive relationship between the two variables and statistical

significance. KAPs consider narratives as relevant and appropriate and also tend to perceive them as clear and coherent. KAPs, referring to A01 and A11, show this consistent and favorable relationship. In contrast, groups A15 and A17 have lower scores on both variables, indicating more significant variability in views of clarity and relevance, as indicated in Figure 2.

Figure 2
Scatterplot: educational relevance and content clarity



Source: prepared by the authors.

The analysis of the question on the relevance of the narratives shows a mean rating (MV) of A01 (4.25) and A11 (4.1), with high and consistent ratings. KAPs A06 (4.63) and A07 (4.54) also stand out for their high mean values and low variability; A03 (4.5) and A04 (4.13) show positive ratings but with higher dispersion; A18 (4.67) and A08 (4.67) perceive the narrative as highly relevant; A15 (3.96) and A17 (3.93) have lower and more dispersed scores.

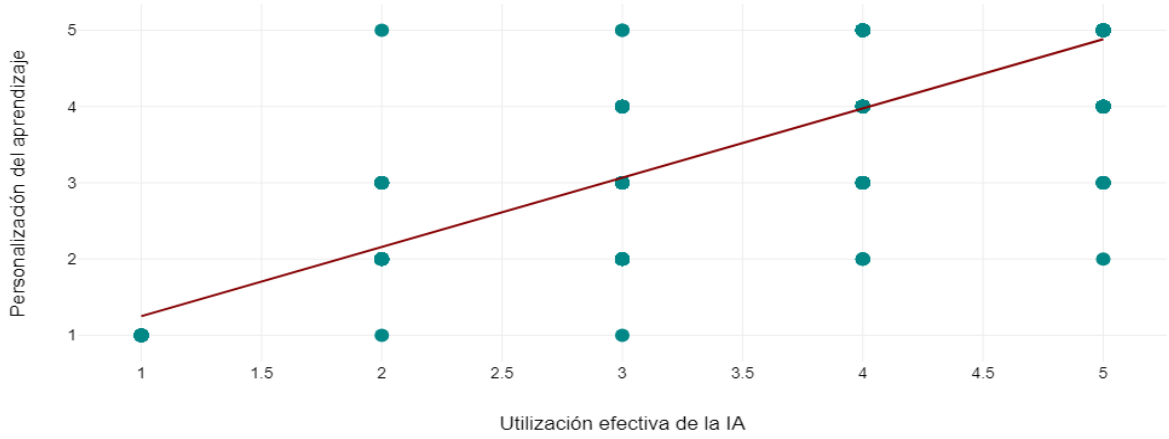
Regarding the clarity and coherence of the narratives created, A06 (4.59) and A07 (4.47) have high mean ratings with low variability. A01 (4.25) and A11 (4.09) also have positive ratings. A03 (4.56) and A10 (4.07) show high ratings, but with more variability. A18 (4.67) and A01 (5) have very high ratings, while A15 (3.92) and A17 (3.88) have lower scores and greater diversity of opinion.

The effective use of AI in education improves the clarity and coherence of the content presented through narrative and allows for a personalization of learning tailored to individual needs. According to the analyzed results, KAPs positively evaluate the effectiveness of AI in terms of content clarity and coherence, such as A08 (MV 4.75), A06 (MV 4.51), and A10 (MV 4.36), also show high acceptance of learning personalization with AI, with mean scores of 4.58, 4.51 and 4.29, respectively. Thus, effective AI integration contributes significantly to tailoring learning processes to the individual needs of participants, enhancing the educational experience in a personalized way.

The high correlation of 0.88 between effective AI utilization and learning personalization underscores this positive relationship. Those who experience effective AI implementation tend to perceive more effective tailoring of content in narrative form to their needs, resulting in a more customized and practical learning experience. However, some variations in perceptions, such as in A17 (MV 3.75) and A04 (MV 1.00), indicate that certain narratives experience difficulties in AI implementation, showing

a greater diversity of opinions and, in some cases, a less positive perception of the educational relevance of AI. These results highlight the importance of a carefully tuned implementation of AI to maximize both content clarity and learning personalization. While most rate AI integration positively, cases with lower scores suggest that specific areas must be addressed to enhance the personalized learning experience and ensure that everyone benefits equitably, as shown in Figure 3.

Figure 3
Scatterplot: personalization of learning and effective use of AI



Source: prepared by the authors.

The regression analysis examines how interactivity and feedback (X) and effective utilization of the AI-created narrative (M) influence the learning outcome (Y) through two different models that illustrate these relationships. The mediator figure shows the effective use of AI (M) as a mediating variable in the relationship between interactivity and feedback (X) and learning outcomes (Y). From the mediator figure, two models are proposed to be analyzed. In the first model, M = aX + iM, M is the dependent variable predicted from X with R = 0.88, the independent variable, with the equation M = aX + iM, as presented in Table 3.

Table 3
Summary of the model

R	R^2	Adjusted R^2	Standard error of the estimate	F	p
0.88	0.77	0.77	0.42	6866.57	<.001

Source: prepared by the authors.

The correlation coefficient (R = 0.88) indicates a strong relationship between (X) and (M). The coefficient of determination (R^2 = 0.77) shows that 77% of the variability in effective AI utilization (M) can be explained by interactivity and feedback (X). The regression coefficient of X on M is 0.87 (B=0.87), and the standardized coefficient (Beta = 0.88), meaning that an additional unit in interactivity and feedback increases effective AI utilization by 0.87 pc. A standard error of the estimate of 0.42 reflects the accuracy of the model predictions. The F-value of 6866.57 and a p < .001

confirm that the model is highly significant and that the relationship between X and M is statistically robust.

The second model investigates the impact of X and M on the learning outcome (Y), with the equation Y = c'X + bM + iY. In this model, (R = 1) and (R^2 = 1) indicate a perfect correlation, and the model explains 100% of the variability in the learning outcome (Y). The coefficient for interactivity and feedback X is 1 (B = 1), and the standardized coefficient 1 (Beta = 1) indicates that each unit of improvement in X directly improves one unit in Y. However, the coefficient for effective AI utilization (M) is 0 (B = 0), suggesting that M does not contribute additionally to the learning outcome Y when interactivity and feedback (X) are present. The total effect of X on Y is 1, the direct effect of X on Y is also 1, and the indirect effect of X on Y through M is 0, indicating that there is no significant indirect influence of X on Y through M.

Both models demonstrate that interactivity and feedback have a direct and determinant effect on learning outcomes. The first model highlights that the quality of interactivity and feedback enhances the effective utilization of AI. In contrast, the second model reveals that, once controlled for interactivity and feedback, the effective utilization of AI does not add significant additional value to the learning outcome. Therefore, to optimize the impact of the AI-created narrative, it is crucial to focus on improving the interactivity and feedback aspects, as these factors are more relevant to learning success than the effective utilization of AI itself.

The qualitative study shows that AI significantly improves the personalization of educational content, adapting to students' individual needs [F5:1]. This fact increases relevance and perceived clarity, optimizing the learning process and allowing it to be efficient and effective [F7:12]; "Personalization of learning through AI improves the relevance and clarity perceived by students by adapting to their learning styles and rhythms" [F3:12]. Visual design and user experience are key to the usability and accessibility of AI-created narratives [F10:22]. An attractive, intuitive, and well-structured design improves the perception of accuracy and relevance [F9:12], encouraging participation [F7:19] and ensuring an inclusive experience for all people [F11:23]; "Clarity in narrative and visual design influences the perception of accuracy and relevance of educational content created with AI" [F5:16].

Category 2: Perception of visual design and user experience in AI-created narratives

Visual design and user experience (UX) are crucial to the effectiveness of educational platforms, directly influencing usability and user satisfaction. The results indicate that A01 and A02 have high ratings (MV 4.50, SD 0.00), reflecting an excellent perception of visual design and UX. Likewise, A03 and A04 show high ratings (MV 4.50, SD 0.00; MV 4.23, SD 0.00), respectively. A05 has a rating (MV 4.35, SD 0.78) that reflects high satisfaction and a uniform experience. A06 (MV 4.55, SD 0.78) stands out, indicating a very positive perception of the visual design and UX. A07 (MV 4.46, SD 0.77) and A08 (MV 4.36, SD 0.76) suggest a positive and adequate visual design and UX assessment. A09 (MV 4.22, SD 0.97) and A10 (MV 4.20, SD 0.98) show generally satisfactory perceptions, although with some variability. A11 (MV 4.00, SD 0.89) indicates a positive perception with room for improvement. A12 (MV 4.13, SD 0.90) indicates a positive appreciation with a need for more specialized interfaces. A13 (MV 4.24, SD 0.90) reflects a good perception with some variability. A14 (MV 4.22, SD 1.00) indicates a positive perception with variability in tools and platforms. A15 (MV

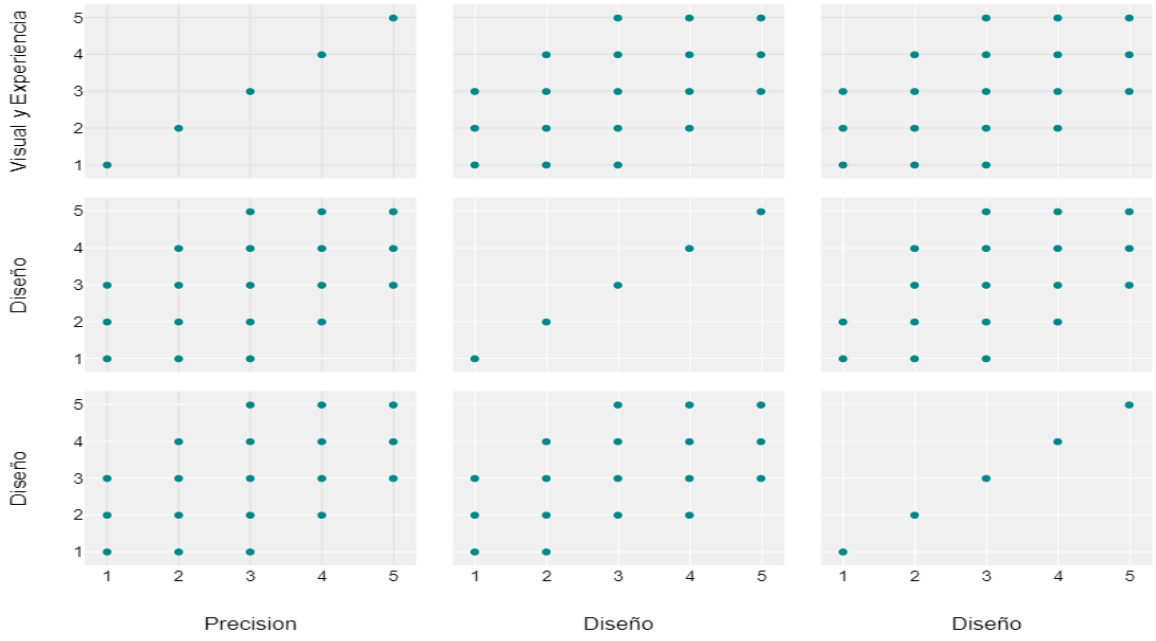
3.97, SD 0.91) and A16 (MV 3.96, SD 0.95) reflect positive perceptions but with room for improvement. A17 (MV 3.76, SD 1.16) evidences a relatively low and mixed perception. Others, such as A18 (MV 4.22, SD 0.85), A19 (MV 4.16, SD 0.91), A20 (MV 4.20, SD 0.87), and A21 (MV 4.14, SD 0.88), have favorable scores, reflecting overall satisfaction with visual design and UX. Thus, the perception of visual design and user experience varies between some, showing high satisfaction, and others, showing areas with lower scores. Consistency in user experience and adapting the design to the specific needs of each domain are key to improving the effectiveness of AI-based educational tools.

The ease of use and accessibility of AI-based tools varies significantly between subject areas. The score for A01 (MV 4.18, SD 0.83) reflects a positive experience with some variation. A11 (MV 4.03, SD 0.84) shows overall satisfaction, but with more significant variability. A12 (MV 4.15, SD 0.92) shows the need for specific adjustments. A10 and A09 (MV 4.27, SD 0.94) and (MV 4.24, SD 0.89) show good perception with moderate variability. A06 (MV 4.51, SD 0.82) stands out with a uniformly satisfactory experience. In contrast, A16 (MV 3.93, SD 0.96) shows areas for improvement. A03 shows high scores (MV 4.39, SD 0.82), reflecting positive experiences. A18 and A17 have lower scores (MV 3.93, SD 0.98) and (MV 3.84, SD 1.05), indicating more difficulties. Thus, ease of use and accessibility vary widely, suggesting the need to adjust and customize AI tools to better meet the needs of each committee, improving consistency and adaptability.

The accuracy and relevance of narratives created by AI vary across subject areas. A01 (MV 4.18, SD 0.82) denotes high perception with some variability. A11 (MV 4.03, SD 0.84) reveals more significant variability in perceptions. A12 (MV 4.15, SD 0.92) suggests a need for adjustments. A10 and A09 (MV 4.27, SD 0.94) and (MV 4.24, SD 0.89), respectively, indicate good perception with variability. A06 (MV 4.51, SD 0.82) shows consistent and satisfactory perception. A16 (MV 3.93, SD 0.96) indicates accuracy and relevance concerns. KAP A03 and A22 show high scores (MV 4.39, SD 0.82) and (MV 4.44, SD 0.79), indicating relevance and accuracy. A18 and A17 have lower scores (MV 3.93, SD 0.98) and (MV 3.84, SD 1.05), indicating the need to improve the alignment of the content presented in the narrative. With these results, AI-generated content's perceived accuracy and relevance vary widely, suggesting the need to customize and tailor content to improve satisfaction in different subject areas. Improving accuracy and relevance is crucial to ensure the educational value of AI tools.

The correlation analysis of these three variables: "visual design and user experience," "ease of use and accessibility," and "content accuracy and relevance," reveals that visual design and user experience have a strong positive relationship with ease of use and accessibility (0.73), indicating that an improvement in these aspects tends to make the tools easier to use and more accessible. The correlation with content accuracy and relevance is moderate (0.68), indicating that good visual design also contributes to a better perception of the narrative, although not as much as ease of use. On the other hand, ease of use and accessibility show a moderate correlation with content accuracy and relevance (0.67), indicating that, although they influence the perception of content, their impact is minor compared to visual design. These results highlight that visual design and user experience are the most determinant factors for a good overall perception of AI-based educational tools, as indicated in Figure 4.

Figure 4
Scatter plot of the variables visual design and user experience in relation to ease of use and accessibility, accuracy, and content relevance



Source: prepared by the authors.

The evaluation of the originality and creativity of the narrative generated by AI shows a variety of perceptions among the different narratives, reflecting significant differences in the appreciation of the innovation and creativity of the content provided. To deepen this assessment, the Bland-Altman Diagram (BAD) is used to analyze the concordance between the perceptions of originality and creativity among the different narratives created. This diagram illustrates the relationship between the means of the originality and creativity scores and their respective standard deviations (SD). Overall, the narratives created by A01 and A06 have high originality and creativity scores, with means of (MV 4.14, SD 0.85) and (MV 4.48, SD 0.85) respectively. These creations offer innovative and creative content and are positively perceived by the participants. The BAD reveals that the low SD in A06 suggests a uniform perception of creativity among participants, while in A01, the deviation is somewhat higher, indicating a slight variability in perception. Groups A09 and A10 also have outstanding scores (MV 4.32, SD 0.83) and (MV 4.28, SD 0.85), respectively. These results show a high valuation of originality and creativity of content, although the DT is somewhat higher, suggesting some diversity in the perception of content creativity. The BAD confirms that the variability in perception is higher in these groups, compared to A06, but still within an acceptable range.

On the other hand, A11 and A12 present more modest mean scores (MV 3.93, SD 0.92; MV 4.01, SD 0.94), respectively. Although people find the content helpful, there is a lower perception of originality and creativity. The high DT indicates higher variability in perception, suggesting that the content could benefit from more innovative approaches. BAD shows high variability in these scores, which may contribute to the lower perception of creativity. Meanwhile, A16 shows a mean score

(MV 4.04, SD 1.03), indicating a moderate perception of creativity with high variability in user response. That points to the fact that, while some people find the content creative, others may feel that innovation is lacking. The diagram reinforces the idea of high variability in perceptions for A16.

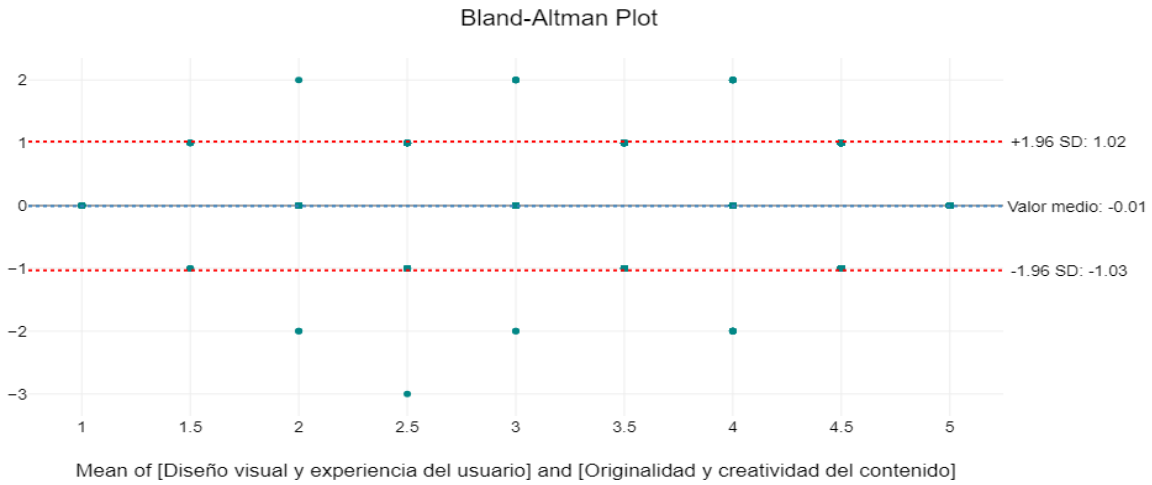
In contrast, A08 and A03 are placed with high scores (MV 4.41, SD 0.80; MV 4.39, SD 0.78), respectively. Most of the people forming the KAPs perceive the narratives created as highly original and creative, with a consistent perception of their innovative quality. A03 and A01 also stand out for their scores (MV 4.33, SD 0.78; MV 4.57, SD 0.65), respectively, indicating a strong appreciation for the originality and creativity of the content. The low DT in A01 suggests a uniform perception of content creativity, as confirmed by the BAD.

On the other hand, the narratives created by A17 and A11 have lower scores (MV 3.81, SD 1.08; MV 4.09, SD 0.94), respectively, reflecting a lower and more variable perception of the originality and creativity of the content. These narratives could benefit from revisions to increase innovation and creativity. As shown in the diagram, the creations were perceived differently by different groups of people, indicating specific areas for improvement that need to be addressed.

Finally, narratives created with extremely high and low scores, such as A19 with a perfect score of 5 and A20 with a score of 1, underscore the extreme variability in perceptions of creativity, and originality. The BAD states that some narratives are considered exemplary in these aspects while others do not meet user expectations, showing significant variability in perceptions of originality and creativity, as reflected in Figure 5.

Figure 5

Bland-Altman plot: visual design and user experience / originality and creativity of content



Source: prepared by the authors.

Qualitative data provide us with interesting information about this category. AI for participants improves the personalization of educational content, adapting to individual needs and improving the relevance and clarity of content [F12:6]. Digital storytelling, with an attractive and well-structured visual design, fosters communication and collaboration skills, enriching the learning experience [F5:4; F8:9]. In the same way, it is highlighted in the contributions how the teacher's role is

key to success in these innovations; "The role of the teacher as a guide is fundamental for the success of teaching innovation experiences in digital contexts" [F7:5]. Referring to visual design and user experience, they are considered fundamental for the usability and accessibility of narratives created with AI [F10:5]; an intuitive, attractive, and well-structured design improves the perception of accuracy and relevance, while a clear and coherent narrative encourages participation [F10:8]; "Visual design and user experience should be intuitive and accessible, encouraging usability and participation" [F11:3].

Category 3: Ethics, responsibility, and commitment

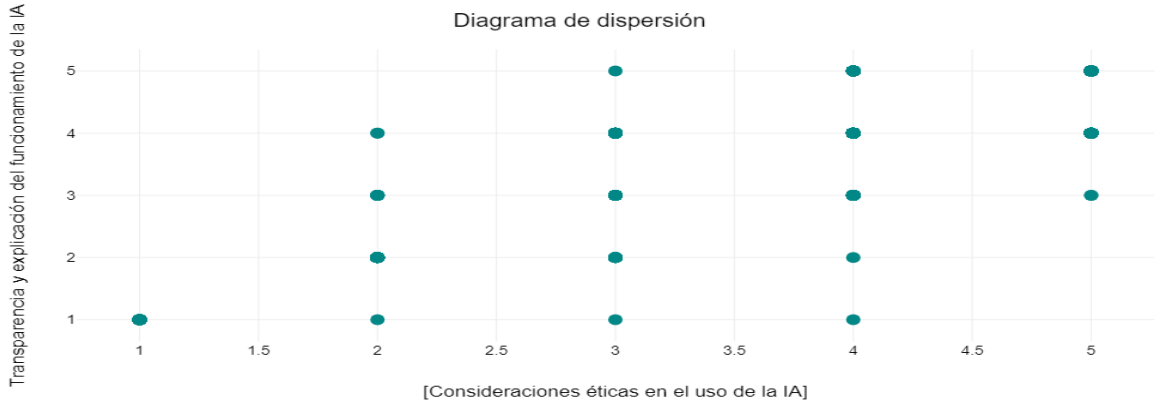
The analysis of ethical considerations and clarity in explaining the functioning of artificial intelligence (AI) in the narratives reveals significant differences in perception among the participants. In terms of ethics, narratives A07 and A06 stand out with high scores (MV 4.55, SD 0.76) and (MV 4.54, SD 0.83), respectively, indicating a strong commitment to ethical standards in AI. The low standard deviation (SD) in A07 shows a consistent perception, while in A06, there is slight variability, although still positive. Narratives A09 and A10 also obtained high scores (MV 4.44, SD 0.83; MV 4.49, SD 0.79), demonstrating a strong focus on ethics. In contrast, A11 and A12 have lower scores (MV 4.15, SD 0.95; MV 4.21, SD 0.96), with greater variability in perception. Narratives A08 and A03, with their respective scores (MV 4.46, SD 0.73; MV 4.33, SD 0.78), show effective ethics management, while A17 and A16 present moderate scores (MV 4.07, SD 1.03) and (MV 3.99, SD 1.04), with higher variability. Narratives such as A19 and A20 obtain the maximum score of 5, reflecting excellent perception, while A21 and A13 have low scores of (MV 2.00, SD -) and (MV 3.00, SD -), indicating deficiencies in ethics management.

In terms of transparency and explanation of AI functioning, narratives A07 and A06 have the highest scores (MV 4.51, SD 0.78; MV 4.52, SD 0.87), demonstrating effectiveness in clarity. The low SD in A07 reflects uniform perception, while in A06, there is slight variability. Narratives A09 and A10 (MV 4.38, SD 0.82; MV 4.44, SD 0.83) show good transparency perception. A08 and A03 (MV 4.46, SD 0.7; MV 4.44, SD 0.70) indicate high transparency, while A01 and A13 (MV 4.50, SD 0.74; MV 4.18, SD 0.88) reflect satisfaction with the AI explanation. Narratives A16 and A17 (MV 4.08, SD 0.95; MV 3.93, SD 1.03) show more significant variability in the perception of transparency. Finally, narratives such as A19 and A20 obtain the maximum score of 5, indicating excellent perception, while A21 and A13 have low scores of (MV 2.00, SD -; MV 3.00, SD -), suggesting a lack of clarity in explaining AI.

The correlation between ethical considerations and transparency in explaining how AI works is visualized in the scatter plot. Narratives scoring high on ethics also clearly explain how AI works. For example, narratives A07 and A06, which excel in ethics (MV 4.55, SD 0.76; MV 4.54, SD 0.83), also score high on transparency (MV 4.51, SD 0.78; MV 4.52, SD 0.87), respectively. This demonstrates a strong positive correlation between a strong ethical approach and clear communication of AI. However, the diagram also points out exceptions. Narratives such as A11 and A12, which have lower ethics scores (MV 4.15, SD 0.95; MV 4.21, SD 0.96), show similar variability in transparency (MV 4.08, SD 0.95; MV 3.93, SD 1.03) in explaining AI, respectively. These narratives show less consistency between ethics and clarity in explanation, demonstrating that although ethics and transparency often align, some narratives do not develop these dimensions equally. Specifically, A07 and A06 excel in

ethics and transparency, while A17 and A21 require improvement in integrating these themes. The positive correlation observed in the scatterplot reinforces the importance of simultaneously addressing ethical considerations and clarity in explaining how AI works to provide a complete and coherent educational experience.

Figure 6
Scatterplot: correlation, ethical considerations, transparency, and explanation of AI operation



Source: prepared by the authors.

The qualitative research in the forums reinforces the quantitative data presented in this category. It is clear from these data that AI transforms education by personalizing learning, adapting to the learner's needs, and providing immediate stimulation [F3:3; F7:4; F10:14]. We cannot forget that the implementation of this resource must be ethical, ensuring transparency, privacy and avoiding bias [F3:7; F5:7; F14:3]. It is observed in the contributions of the participants the demand for the democratization of access to AI to ensure educational equity, betting on the development of processes that help mitigate the digital divide and encouraging the work of educational agents to raise awareness of responsible use, critical thinking and justice in education [F4:16; F8:8]. As some contributions in the forums point out, "Ethics in AI poses challenges such as transparency, equity, and fairness in its application, especially in data collection and use" [F1:4]; "Regulatory frameworks and oversight mechanisms are needed to ensure ethical and responsible use of AI in education" [F3:6]; "Ethics in AI represents one of the most important challenges of our digital era, requiring attention and regulation to avoid bias and discrimination" [F6:8].

DISCUSSION

The results of this study highlight the importance of AI in creating interdisciplinary educational narratives (Yusuf, et al., 2024) for sNOOC environments (Hueso-Romero, et al., 2024), evidencing both its benefits and associated challenges. The strong correlation between content clarity and educational relevance indicates that AI-generated narratives effectively communicate concepts, perceived relevance, and clarity at the linguistic level (H1). This is consistent with previous research that emphasizes clarity as essential for learning (Ahmad, et al. 2023; Baidoo-Anu, & Ansah, 2023). However, variations in narrative scores indicate that not all AI implementations

are equally effective, highlighting the need for a careful approach in their design and selection, thus requiring further evaluation (Félix & Webb, 2024).

The training of educators in the use of these tools is essential to maximize their potential and align them with pedagogical objectives, as well as to improve teaching and learning outcomes in university education (Eager & Brunton, 2023), collectively constructing knowledge (Lee, et al., 2023) and betting on the eradication of the digital divide (Forero-Corba & Negre Bennasar, 2024).

From an ethical perspective, the strong correlation between moral considerations and transparency in explaining how AI works is remarkable (H3). AI personalizes learning and improves education, but it must be used ethically, ensuring transparency and fairness (Gallent-Torres, 2024). Narratives that prioritize ethical principles also tend to be more comprehensible, suggesting that a strong focus on ethics can facilitate understanding by learners. The exceptions, however, demonstrate that ethics and clarity do not always coincide, highlighting the need to address these discrepancies.

The high relationship between the effective use of Artificial Intelligence and the personalization of learning suggests that technology can tailor content to individual needs, improving student engagement (H1) with learning (Bond, et al., 2020). The data revealed a strong correlation of 0.88, which supports the idea that an educated implementation of AI provides adaptability in individualized learning processes; the more effective the use of AI, the more personalized the experience. However, difficulties in its implementation are also evident, indicating that adjustments are required to maximize clarity and personalization (H3).

Visual design and user experience are influential factors in the perception of AI-created materials (H2) from collaborative learning (Tan, et al., 2022). This factor shows a strong positive relationship between ease of use and accessibility, suggesting a positive perception of visual design to improve it (0.7); although this design contributes to improving the accuracy and relevance of the content (H2), its influence is more moderate (0.68). These data suggest the need for intuitive interfaces and attractive designs to achieve the maximum potential of AI-generated narratives.

This study also suggests the need for future research on the effectiveness of AI in various educational contexts and its comparison with traditional methods. In fact, originality and creativity are perceived in different ways within the narratives analyzed. The variability in this perception leads us to consider that not only does the fact of using AI make a narrative innovative, but it is also essential to focus on the diversification and adaptability of the content generated. Further research is recommended on how to optimize the use of AI to improve educational practices (Arango Pérez, et al., 2024).

In summary, the integration of AI in educational narratives presents great potential, but its review must be critical (Delgado, et al., 2024) and its implementation must be thoughtful, carefully designed, and ethical to ensure optimal educational outcomes. The effectiveness of the use of AI depends on its clarity, personalization (Guzmán Matute, et al., 2024), and visual design; therefore, the interactivity and feedback of these narratives emerge as key factors in the success of learning processes. We cannot forget that this success will always be conditioned by didactic strategies that encourage participation and collective construction of knowledge, such as personalized learning (Luckin et al., 2016), gamification (Sailer & Homner, 2020) , Problem-Based Learning, Collaborative Learning (Dillenbourg, 2015), Formative Assessment, etc.

CONCLUSION

The integration of AI in the creation of educational narratives has proven to be a valuable tool for improving the clarity and personalization of learning in a post-digital environment. AI has enabled these narratives to be more personalized, interactive, accessible, and dynamic, opening multiple possibilities in the way narratives are presented, storytelling, and experimenting with novel additions to them. In this way, these narratives integrated into sNOOC environments not only facilitate the empowerment of students but also transform this training model into an immersive experience.

The results of this study indicate that narratives created with AI facilitate the understanding of complex concepts and are adapted to the individual needs of students. However, it is critical to address variations in the effectiveness of these narratives, underscoring the need for careful design and ongoing training of university teaching staff in the use of these tools. Consideration of personalization of learning and ethical principles in the implementation of AI is crucial to ensure a comprehensible and engaging educational experience, aspects that could be consolidated through qualitative studies.

It is recommended that future research explore the effectiveness of AI in different educational contexts and its comparison with traditional methods, thus ensuring a thoughtful and ethical integration that enhances the quality of learning. Future research should focus on the development of normative frameworks, more transparent AI tools and improved user experience in the narratives created. This new language can be enriched at the educational level with co-creation, multimodality, dynamic content, etc., which will help improve educational quality and learning pathways.

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