

Article

Generative AI in Higher Education: Student Perceptions and a Teaching Framework for Creative Interactive Content Design

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Abstract

This study examines the role of generative artificial intelligence in higher education, focusing specifically on creative degree programs and students' perceptions of its academic and creative value. Employing a mixed-methods design, data were collected from 555 university students enrolled in communication- and design-related degrees in Spain. By combining an online survey with focus groups, the research analyzed the frequency, purposes, and meanings of AI use in academic tasks. The results show that students primarily use generative AI to clarify concepts, develop ideas, review literature, and support academic production. Although they acknowledge its utility as a learning tool, participants also raised concerns regarding overreliance, reduced creative effort, unreliable outputs, and potential threats to originality and authorship. Consequently, the study concludes that while generative AI is already influencing learning practices in higher education, its educational potential relies heavily on clear pedagogical guidance, ethical implementation, and active teacher mediation. Based on these findings, the article proposes a ten-step teaching framework for AI-supported creative interactive content design, aimed at fostering pedagogical innovation while preserving critical thinking, creativity, and student authorship.

Keywords: education; higher education; research; generative artificial intelligence; creativity; digital literacy

1. Introduction

Creativity occupies a central position in university programs oriented towards content production and design, constituting a key competence for generating ideas, aesthetic forms, and meaningful narratives in rapidly changing professional contexts. Consequently, creativity should not be understood as an exceptional gift, but rather as a developable capacity emerging from the interaction between the individual, the process, and the context, and is shaped by cognitive, affective, environmental, and cultural factors (Guilford, 1959; Torrance, 1969; Csikszentmihalyi, 1996; Amabile, 1996; Romo, 1997; Pérez Alonso-Geta, 2009). Against this background, the rapid emergence of generative artificial intelligence (AI) poses new questions about how creative competences are learned, mediated, and evaluated in higher education.

The proliferation of AI has introduced tools capable of producing texts, images, sounds, prototypes, and other conceptual solutions with unprecedented speed and flexibility. This paradigm shift is reshaping both the relationship between humans and technology and the modes of teaching and learning in creative degree programs (Alier et al., 2024; Aldreabi et al., 2025; Pérez-Escoda et al., 2026). The recent literature has started to consider these systems



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not only as automation technologies, but also as potential supports for ideation, divergent exploration, and human-machine co-creation (Holzner et al., 2025; Mamonov, 2024).

However, the use of generative AI in higher education also raises significant tensions. Among these are concerns regarding overreliance on technology, gaps in digital literacy, the homogenization of outputs, reduced creative effort, and doubts surrounding authorship and originality in processes supported by models trained on massive datasets (Holzner et al., 2025; Muñoz Martínez et al., 2025; Torun, 2025; Özer, 2024; Pérez-Escoda et al., 2022). In parallel, the integration of these tools requires rethinking assessment criteria, ethical frameworks, and the role of teaching staff in contexts where AI directly influences academic and creative production processes (Alier et al., 2024; Muñoz Martínez et al., 2025).

Although research on AI in higher education has grown considerably, few studies simultaneously address generative AI, creativity, and concrete learning practices in communication and digital design degree programs, particularly from the perspective of Generation Z students (Castillo-Martínez et al., 2024; Pérez-Escoda et al., 2026; Gaspar & Mabic, 2015; Scolari et al., 2018). Existing work has predominantly focused on general attitudes towards AI, on academic integrity and assessment, or the technical affordances of AI tools, leaving the actual integration of generative AI into the everyday learning and creative workflows of students in creative disciplines largely underexplored.

This demographic is especially relevant as it combines a high familiarity with digital environments and an active participation in practices of content creation and circulation. However, this digital fluency is not always accompanied by the sufficiently consolidated critical literacy required to integrate AI in a reflective way into their learning (Jenkins et al., 2009; Ito et al., 2013; Bermejo, 2021). Therefore, Generation Z students in creative programs therefore constitute a critical test case for understanding how generative AI reshapes the human, personal, and creative dimensions of technology-enhanced learning in higher education.

In response to this gap, the present study offers a twofold contribution. Empirically, it provides mixed-methods evidence on how Generation Z students in communication-related and video game design programs utilize generative AI, how they perceive its impact on creativity, autonomy, and authorship, and how these patterns relate to different academic activities. Practically, it articulates a teaching framework for AI-supported creative interactive content design. This framework is grounded in students' perceptions and in prior design-based experience, serving to inform innovation in technology-enhanced learning within creative higher education (Scolari et al., 2018; Mainer Blanco & Vega Rodríguez, 2019).

To achieve this twofold contribution, the research pursues three objectives: to analyze students' perceptions of the academic use of generative AI, its intensity of use, and the correlations between them; to explore in depth how students perceive its influence on creativity, autonomy, and authorship; and, finally, to establish a basis for designing an innovation-oriented teaching framework for creative learning environments in higher education.

2. Materials and Methods

The present study employs a mixed-methods design combining a descriptive and exploratory quantitative approach with a qualitative focus-group methodology. This methodological choice is particularly suitable for addressing an emerging and complex phenomenon such as the use of AI in academic settings by social sciences students, specifically regarding its usage patterns, students' perceptions, and its associated benefits and drawbacks. Such an approach facilitates the integration of the descriptive breadth of the quantitative strand with the interpretative depth of the qualitative strand, as highlighted

by Fetters et al. (2013) and McKim (2017), this synergy underscores the value of mixed methods in studying evolving processes and constructing more robust meta-inferences.

2.1. Quantitative Procedures and Participants

The quantitative phase was conducted through an ad hoc questionnaire administered online via Google Forms, with the aim of examining university students' perceptions of the academic use of AI. Data were collected between December 2025 and February 2026. Given the exploratory nature of the study and its focus on students enrolled in degrees closely related to communication, creativity and digital content production, a non-probabilistic convenience sampling strategy was considered the most appropriate. This approach facilitated access to a broad group of participants who were directly relevant to the research objectives, as they belong to academic fields in which generative AI is increasingly present in tasks such as ideation, writing, audiovisual production, digital design and interactive content creation. Convenience sampling was therefore not used merely for practical reasons (Stratton, 2021), but also because it allowed the study to capture perceptions from students situated in educational contexts where the opportunities and tensions associated with AI are especially salient. The final sample consisted of 555 students enrolled in degree programs in communication, advertising, journalism, digital communication, audiovisual communication, and video games at several Spanish universities. Regarding gender, the sample included 185 men, 366 women, and 4 students who self-identified with another category. Participants' ages ranged from 17 to 28 years, with a mean age of 20. While the questionnaire included 89 variables, the current analysis focuses on a block of 10 items designed to assess perceived benefits and risks, thus capturing the dual nature of students' experiences with these technologies. To ensure the internal consistency of this block of items, Cronbach's alpha was calculated, yielding a value of 0.87, which is above the 0.70 threshold commonly accepted for studies of this kind. Data were analyzed using the Statistical Package for the Social Sciences (SPSS), version 29.

The questionnaire was conducted in accordance with the ethical requirements established for research involving human participants. The study received prior approval from the University Ethics Committee, and all participants were informed about the aims of the research, the voluntary nature of their participation, the anonymous treatment of their responses, and the confidential use of the data. Before completing the questionnaire, each participant provided informed consent, thereby confirming their willingness to take part in the study.

2.2. Qualitative Procedures and Participants

The qualitative phase was designed to gain a deeper understanding of how students interpret the role of generative AI in their creative processes. While the questionnaire provided an overview of general patterns of use, the focus groups allowed us to explore the meanings, tensions and everyday practices that students associate with AI in a more situated context. This method was considered particularly appropriate because it encourages participants to exchange views, compare experiences, and collectively reflect on emerging issues. In this study, this was especially relevant, as the use of AI in creative education involves not only practical benefits, but also questions related to originality, authorship, autonomy, effort, and confidence in one's own creative abilities. Four focus groups were conducted with students from the Video Game Design degree, each comprising eight participants ($n = 32$; 24 men, 8 women). This profile was selected because creativity plays a central role in video game education, where narrative, visual, technical, and interactive dimensions are combined throughout iterative design processes. In this context, generative AI may be understood both as a tool that supports ideation, prototyping and production,

and as a technology that raises concerns about dependence, creative ownership, and the development of students' own skills. The groups were organized around a semi-structured discussion guide. The main topic included students' uses of AI in academic and creative tasks, their perceptions of its usefulness for ideation and production, and their concerns regarding dependence, authorship, originality, and the effects of AI on learning and creative effort. This method was selected because it makes it possible to explore not only individual opinions but also shared meanings and collective reflections that emerge through peer interaction.

All sessions were audio-recorded with participants' informed consent, transcribed verbatim, and anonymized before analysis. The transcripts were examined through qualitative content analysis, using a combined deductive and inductive approach (Thayer et al., 2007). An initial coding framework was developed from the research objectives, including categories such as usefulness, originality, autonomy, creative effort, authorship, learning and confidence, while allowing additional codes to emerge from the participants' discourse. Coding was carried out by members of the research team. In the first stage, two researchers independently coded part of the material and compared their interpretations. Discrepancies were discussed to refine the codebook and ensure a shared understanding of the categories. The resulting framework was then applied systematically to the full corpus. The dual-step analysis was carried out with NVivo 14 SQR Software (Release 2.0).

Five thematic clusters were generated by grouping related codes according to their semantic proximity, recurrence across the focus groups, and relevance to the research objectives. These clusters were not defined solely on the basis of frequency, but also by their explanatory value for understanding the main tensions in students' experiences with AI-mediated creativity; accordingly, main categories and subcategories were established. Analytical credibility was supported through researcher triangulation, discussion of coding discrepancies, systematic revision of the themes against the original transcripts, and comparison with the quantitative findings.

2.3. Teaching Framework for AI-Supported Creative Interactive Content

This study collected mixed-methods data and drew on established instructional design practices. On this basis, the research develops a methodological framework for designing interactive content supported by artificial intelligence (AI). The framework rests on three foundational elements, which are distinguished here to ensure methodological transparency and a meta-inference consistent with design-based research: prior practice-based experience, the empirical findings of the current study, and the resulting normative pedagogical synthesis.

First, the structural architecture of the proposed framework derives from prior practice-based experience. It consists of the ten sequential phases that define the interactive content creation pipeline. This scaffolding rests on a methodology that the research team has previously implemented and iteratively refined across more than 20 interactive, informational, and serious game projects. These initiatives were deployed across various digital platforms and national media outlets, including several linked to the *Legendario Español* project with a digital humanities and educational outreach focus (Descubre Leyendas, 2025; Mainer Blanco & Vega Rodríguez, 2019). This portfolio informs the logical, industry-aligned progression of the framework, which moves systematically from initial project scoping through documentation, prototype implementation, and final publication.

Second, while the structural sequence originates from field practice, the specific guidelines governing how, when, and to what extent generative AI should be integrated into these phases are derived from the interpretation of the empirical data collected in the present study. The framework's internal logic is shaped by the quantitative patterns of

AI adoption observed among the 555 Generation Z participants. For example, students frequently use AI for conceptual clarification but rarely for final text production and programming, and this empirical contrast constrains the AI interventions permitted across different design stages. The framework is further informed by the five qualitative thematic clusters identified in the focus groups: functional uses, perceived limits on creativity, doubts about reliability, risks of cognitive dependence, and an explicit demand for teacher-led pedagogical guidance.

Third, the methodological framework represents a deliberate synthesis of these two components, applying the empirically informed constraints directly onto the pre-existing design phases. From an ethical standpoint, this synthesis operationalizes three core criteria that respond directly to the students' qualitative feedback: rigor in information verification to address reliability concerns; prudence in delimiting AI use to mitigate the perceived risk of technological dependence; and responsibility in preserving student authorship to safeguard authentic human creativity. The framework therefore moves beyond descriptive analysis to offer an evidence-informed, normative blueprint for teaching innovation. It positions generative AI as an instrument of collaborative co-creation that supports iterative design without displacing the student's cognitive responsibilities, critical reflection, or authorial agency.

3. Results

The results are presented in three subsections: quantitative findings regarding the intensity and academic uses of generative AI; qualitative insights derived from the focus groups; and the methodological proposal developed from the integrated empirical data.

3.1. Quantitative Results

Given the exploratory nature of the study, the quantitative analysis employed descriptive statistics (means, standard deviations, frequencies, and cross-tabulations) and correlational analysis (chi-square tests), aligning with the categorical and Likert-type nature of the variables.

The first variable examined was the intensity of generative AI use among the sampled students. The results ($M = 3.59$; $SD = 0.93$) show that 17.3% report using it daily (i.e., every day), 37.7% use it three to four times per week, 32.8% use it two to three times per week, and 12.3% state that they use it rarely or never. Collectively, these data reveal that nine out of ten students use AI to some extent.

Examining specific academic applications, the ten items related to the use of generative AI in university learning contexts point to a moderate and functionally diversified use of these tools, displaying notable differences depending on the type of academic activity (Table 1). Overall, the means range from 1.99 to 3.62, suggesting that AI is not used uniformly across tasks, but is instead incorporated selectively based on specific academic purposes.

Table 1. Descriptive statistics for variables related to the use of generative AI in academic contexts.

As Part of My Studies, I Use AI to . . .	Media	SD	Never	Rarely	Sometimes	Often	Always	N
. . .conduct research and literature review	3.07	1.053	47	107	199	162	40	555
. . .develop concepts and ideas	3.23	1.067	49	75	174	213	44	555
. . .analyse data and create visualisations	2.80	1.175	100	122	151	154	28	555
. . .solve problems and support decision-making	2.52	1.205	141	145	135	105	29	555

Table 1. Cont.

As Part of My Studies, I Use AI to . . .	Media	SD	Never	Rarely	Sometimes	Often	Always	N
. . .clarify doubts and explain subject-specific concepts	3.62	1.107	31	58	126	217	123	555
. . .translate texts	2.28	1.199	192	134	137	63	29	555
. . .produce written texts	2.90	1.188	86	118	161	145	45	555
. . .analyse and process texts	2.88	1.177	86	119	170	136	44	555
. . .prepare for exams	3.10	1.306	90	91	135	152	87	555
. . .support programming and simulations	1.99	1.275	295	93	74	61	32	555

Note. Higher bars indicate a higher reported frequency of AI use for each academic activity across levels of overall AI use. All patterns point to a positive association: higher overall AI use is consistently linked to higher academic use across activities.

The highest level of use is observed in the category “clarifying doubts and explaining subject-specific concepts”, which shows the highest mean score ($M = 3.62$; $SD = 1.11$). This result suggests that students primarily turn to AI as a tool for conceptual support, on-demand tutoring, and course content clarification. It is also the activity with the greatest concentration of responses in the categories of frequent and constant use: 217 students reported using it “often” and 123 “always”, pointing to a widespread perception of AI as a valuable resource for reinforcing understanding and supporting autonomous learning.

The next most frequent uses are related to concept development ($M = 3.23$; $SD = 1.07$), exam preparation ($M = 3.10$; $SD = 1.31$), and research and literature review ($M = 3.07$; $SD = 1.05$). These data indicate that AI is particularly integrated into the initial and intermediate stages of academic work, such as idea generation, content organization, thematic orientation, and knowledge revision. Regarding exam preparation, the higher standard deviation reflects greater heterogeneity in students’ practices: while a substantial group reports using AI “often” or “always”, another group states that they use it rarely or not at all.

Uses related to text creation ($M = 2.90$; $SD = 1.19$), text analysis and processing ($M = 2.88$; $SD = 1.18$), and data analysis/visualization ($M = 2.80$; $SD = 1.18$) show intermediate values. This pattern can be interpreted as a moderate adoption of AI for tasks involving the production, revision, or processing of information. Although these are not the predominant uses, they nonetheless represent a significant presence, especially in activities linked to the development and transformation of academic content.

To examine the relationships between the intensity of generative AI use and its specific academic and learning-related uses in higher education, chi-square tests of independence were performed, given the ordinal and categorical nature of the variables (Table 2).

Table 2. Correlation between the variable “How often do you use AI?” (V1) and variables related to the frequency of AI use in academic contexts (V2).

[Variable 1]	[Variable 2] I Use AI to . . .	<i>d</i>	χ^2	<i>p</i>	<i>C</i>	ρ	N
How often do you use AI?	(V2.1) Conduct research and literature review	16	151.83	<0.001	0.463	0.411	555
	(V2.2) Develop concepts and ideas	16	225.59	<0.001	0.538	0.451	555
	(V2.3) Analyse data and create visualisations	16	138.89	<0.001	0.447	0.410	555

Table 2. Cont.

[Variable 1]	[Variable 2] I Use AI to ...	<i>d</i>	χ^2	<i>p</i>	<i>C</i>	ρ	<i>N</i>
How often do you use AI?	(V2.4) Solve problems and support decision-making	16	130.15	<0.001	0.436	0.407	555
	(V2.5) Clarify doubts and explain subject-specific concepts	16	185.89	<0.001	0.501	0.455	555
	(V2.6) Translate texts	16	93.17	<0.001	0.379	0.327	555
	(V2.7) Produce written texts	16	164.55	<0.001	0.478	0.420	555
	(V2.8) Analyse and process texts	16	154.67	<0.001	0.467	0.407	555
	(V2.9) Prepare for exams	16	129.85	<0.001	0.435	0.395	555
	(V2.10) Support programming and simulations	16	57.79	<0.001	0.307	0.255	555

Note. Coefficients correspond to the contingency coefficient (*C*). All associations are statistically significant at $p < 0.001$. Higher coefficients indicate a stronger association between overall AI use and specific academic uses.

The chi-square tests applied to the variables “intensity of AI use” (V1) and “frequency of AI use for academic tasks” (V2) showed statistically significant differences across all analyzed variables ($p < 0.001$). To examine the strength of these associations, the contingency coefficient (*C*) was inspected, revealing a moderate degree of association ranging from $C = 0.307$ to $C = 0.501$, except for the last variable, which showed a weaker association ($C = 0.307$). Although the chi-square test showed a statistically significant association, the contingency coefficient (*C*) indicated that this association was weak. Given that the variables have a natural order, the analysis was supplemented with Spearman’s correlation coefficient to determine whether there was a monotonic trend between the two variables as shown in Table 2. Spearman’s rho coefficients show positive rank-order correlations in all cases, suggesting that students who use AI more frequently also tend to use it more often for specific academic purposes.

The strongest positive correlations were found for clarifying doubts and explaining subject-specific concepts ($\rho = 0.455$) and developing concepts and ideas ($\rho = 0.451$). Moderate positive correlations were also observed for producing written texts ($\rho = 0.420$), conducting research and literature review ($\rho = 0.411$), analyzing data and creating visualizations ($\rho = 0.410$), solving problems and supporting decision-making ($\rho = 0.407$), and analyzing, and processing texts ($\rho = 0.407$). The weakest positive correlations appeared for translating texts ($\rho = 0.327$) and supporting programming and simulations ($\rho = 0.255$).

Finally, grouped bar charts were generated to visualize the descriptive evidence of the associations between these variables (Figure 1).

In Figure 1, a positive association can be observed across all variables: the higher the overall intensity of AI use, the higher the specific intensity of academic use across different activities (V2.1–V2.10).

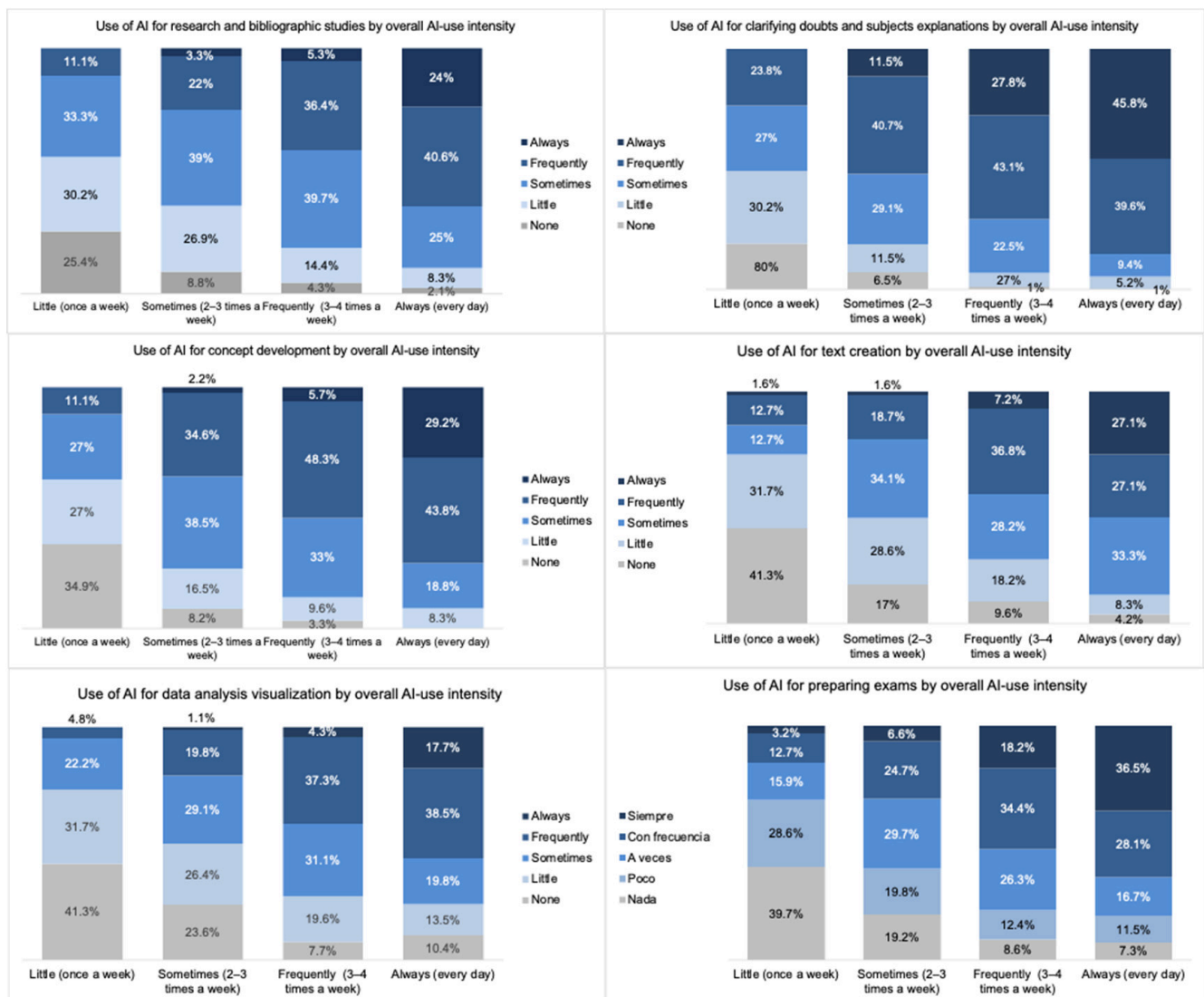


Figure 1. Patterns of specific AI use by students' overall AI-use intensity. Source: Authors' own elaboration.

3.2. Qualitative Results

The analysis of the focus groups was conducted following the three-stage framework proposed by Miles et al. (2014): data reduction, data display, and conclusion drawing and verification. First, the transcripts were reduced by segmenting the discourse into meaningful units and identifying recurrent ideas, which were coded and grouped according to their conceptual proximity and relevance to the study's aims. This process led to the definition of the main analytical categories and, subsequently, to the development of subcategories that captured more specific dimensions within each thematic area. Second, the data were organized in an analytical matrix, allowing comparisons across focus groups and facilitating the identification of shared patterns, differences, and tensions in students' experiences. Third, the emerging findings were verified through an iterative review of the coded material, ensuring consistency between the categories, subcategories, participants' discourse, and the objectives of the study. Moreover, for a better understanding of qualitative results, Table 3 offers a detailed category and subcategory system with the qualitative codebook used.

Table 3. Categories, subcategories, and core findings in each main category.

Main Category	Core Finding	Subcategories to Report
1. Functional uses of AI	AI is mainly interpreted as a practical support tool rather than an autonomous creative agent.	1.1 Summarizing and conceptual clarification 1.2 Searching and organizing information 1.3 Technical problem-solving 1.4 Use under creative block or deadline pressure 1.5 Selective and goal-oriented use in advanced stages
2. Perceived limits on creativity	Students see AI as useful but limited in relation to originality, intuition and sustained creative effort.	2.1 Recombination rather than originality 2.2 Irreplaceability of personal experience and intuition 2.3 Basic, generic, or search-engine-like outputs 2.4 Creative narrowing through overuse
3. Doubts about reliability	AI outputs are treated as provisional and require verification	3.1 Need for external verification 3.2 Perceived satisfaction-over-truth bias 3.3 Verification as routine practice
4. Risks of dependence	Dependence is framed as a threat to thinking, investigation, and creative autonomy.	4.1 Cognitive shortcut and easy-answer logic 4.2 Reduced time for thinking, investigation and exploration 4.3 Dependence conditioned by user maturity and self-regulation 4.4 Evolution towards critical and compatible use
5. Need for pedagogical guidance	Students demand explicit frameworks that regulate AI use without eliminating its educational value.	5.1 Explicit guidelines for when, why and how to use AI 5.2 Boundaries of authorial control 5.3 Fairness, merit and assessment equity 5.4 Process-oriented assessment

Source: Own elaboration.

Based on these results obtained in the first phase of the qualitative data analysis, a more in-depth content analysis is presented below in five subsections, corresponding to the five main categories. It should be noted that each participant was coded with a letter corresponding to group (A, B, C, or D) and an assigned number from 01 to 32, since the total sample at this stage consisted of 32 students.

3.2.1. Functional Uses of AI

In terms of uses, students primarily perceive AI as a functional tool for summarizing notes, understanding concepts, searching for and organizing information, and solving technical problems related to programming and art.

A01: If I have a doubt, I use it to solve it. Basically, I use it to help me solve problems.

A02: I think it helps me especially with concepts; I ask it to summarize them or explain them in a way that makes it easier for me to understand what I do not understand.

A04: I basically use AI to solve programming problems, not to be creative. In programming, there are many options that are either right or wrong, and sometimes you don't spot them. AI really helps a lot with that frustration. I used to use AI to summarize things so I could study them faster and more effectively. You could say I use it to solve programming problems.

They use it much less for idea generation, as they consider this phase to require greater personal control and oversight; they tend to resort to AI mainly when facing creative blocks or deadline pressure, and usually cross-check its responses with books, articles, and specialized forums.

A02: *If I notice any contradictions, I try to verify the information on other websites, and if, for example, two websites tell me the opposite of what the AI says, I'll most likely end up not trusting the AI.*

A06: *AI undoubtedly diminishes creativity and originality, because ultimately, I believe that in the creative process, the problems you face help you enhance your creativity and the originality of the idea you've come up with. If we rely on AI from the start, our ideas lose their value.*

In addition, senior-year students report a more nuanced and selective perception: they transition from indiscriminate usage to more reflective use oriented towards specific goals.

B01: *I think that when it comes to using AI, we should each take a moment to reflect and decide what we're using it for, rather than having it constantly available as a go-to solution for everything that comes up. We need to be more selective in how we use it.*

3.2.2. Perceived Limits on Creativity and Doubts About Reliability

Regarding limitations and reliability, participants consistently state that AI does not generate truly original ideas but rather recombines existing material. Consequently, it is deemed incapable of replacing human dimension of creativity, which is inherently linked to personal experience, intuition, and sustained effort.

B15: *AI doesn't create new ideas; it just pulls bits and pieces from here and there. In the end, it's like it takes things that already exist and gives them to you. It's not that it does a better job of the creative process; it simply takes the creative process that someone else has already done before and gives it to you.*

B18: *I believe that AI lacks the ability to be original in the same way that humans are, because although people use similar methods, we are all different in a way that allows us to be original; therefore, I don't think AI is comparable—much less on par—with a human being in terms of originality.*

Several students note that AI outputs can be overly basic or similar to the top results of a search engine, which they see as a source of creative homogenization when the tool is overused. This is compounded by doubts about reliability: students report needing to verify AI-generated answers through additional searches, as they perceive that AI optimizes the likelihood of satisfying the user rather than the truthfulness of the information.

3.2.3. Risks of Dependence

Dependence emerges as another key theme. Across all groups, the idea appears that AI “makes you dumber” or encourages the search for easy answers, reducing the time devoted to thinking, investigating, or exploring one's own alternatives.

C25: *I think humans always choose to be as lazy as possible, so AI is the perfect excuse to be as lazy as possible—it's something we're naturally drawn to.*

D30: *By nature, we tend to take the easy way out, and AI makes everything easier and faster for us. But when you use AI, that ease doesn't actually get you anywhere—it just helps you quickly get a grade on an assignment, an exam, or whatever—but you haven't done anything other than provide an input, receive the output, and submit it. The moment you realize that you're not learning that you're not gaining any value for yourself, and that you're not achieving anything, you realize that relying on AI makes you, in a way, dumber.*

Participants agree that the impact of AI depends largely on the user's maturity, critical thinking, intentionality, and self-regulation. Several students describe how, after intensive use in earlier stages such as upper secondary education, they now employ AI only for specific functions, suggesting a shift towards more critical uses that are more compatible with creative competences requiring effort and experimentation.

C23: The only time I ever felt like I was relying too much on AI was in high school with math—I was never good at math, so I'd give up the problems I couldn't solve the AI, and it would solve them for me. There came a point when I realized in class that I wasn't learning anything, so I cut back on that reliance a bit.

D29: There was a moment when I realized I was pretty dependent on it. In high school, I had to do a lot of research papers and used AI a ton. When I got to college, I realized it had become my first instinct; there came a point where everything I turned in was done with AI. I felt bad inside, thinking that nothing I turned in came from my own mind. Since then, I've tried to completely avoid turning in anything that's entirely written by AI. It's complicated.

3.2.4. Need for Pedagogical Guidance

Finally, participants call for clear guidelines from teaching staff on when AI may be used, for what purposes, and in which stages of the work students should retain authorial control. Their main concern is how to recognize students' merits and assess their performance fairly. They criticize situations in which some students may obtain better grades with less effort because of AI, which strains implicit norms of fairness and recognition. As a result, they stress that assessment should consider not only the outcomes of creative tasks but also the process, authorship, and degree of student involvement.

A08: We need guidance on how to use it better—we need help realizing that if you use it a lot, you'll eventually end up depending on it. In other words, we need to be made aware of what it means to use it so much.

C16: Teachers should try to help us make the most of AI in our learning, because it's clear that AI doesn't replace human work. For example, it would be helpful if a teacher gave us tips or guidelines on what to feed into the AI to avoid wasting time and getting no results. They could guide us on how to use more specific prompts that might be more useful. We need them to help us think, because AI is designed to keep us from thinking.

These demands align with the creativity-related aims of the article by underscoring that, for AI to become an ally rather than a substitute for authorial effort, explicit pedagogical frameworks are needed that integrate AI literacy, design ethics, and reflection on the creative process. Such frameworks should help students learn not only how to use AI tools, but also when, for what purposes, and to what extent they should integrate them into their projects.

The analysis of the focus groups identified five thematic clusters, summarized in Figure 2: functional uses of AI, perceived limits on creativity, doubts about reliability, risks of dependence, and the need for pedagogical guidance.

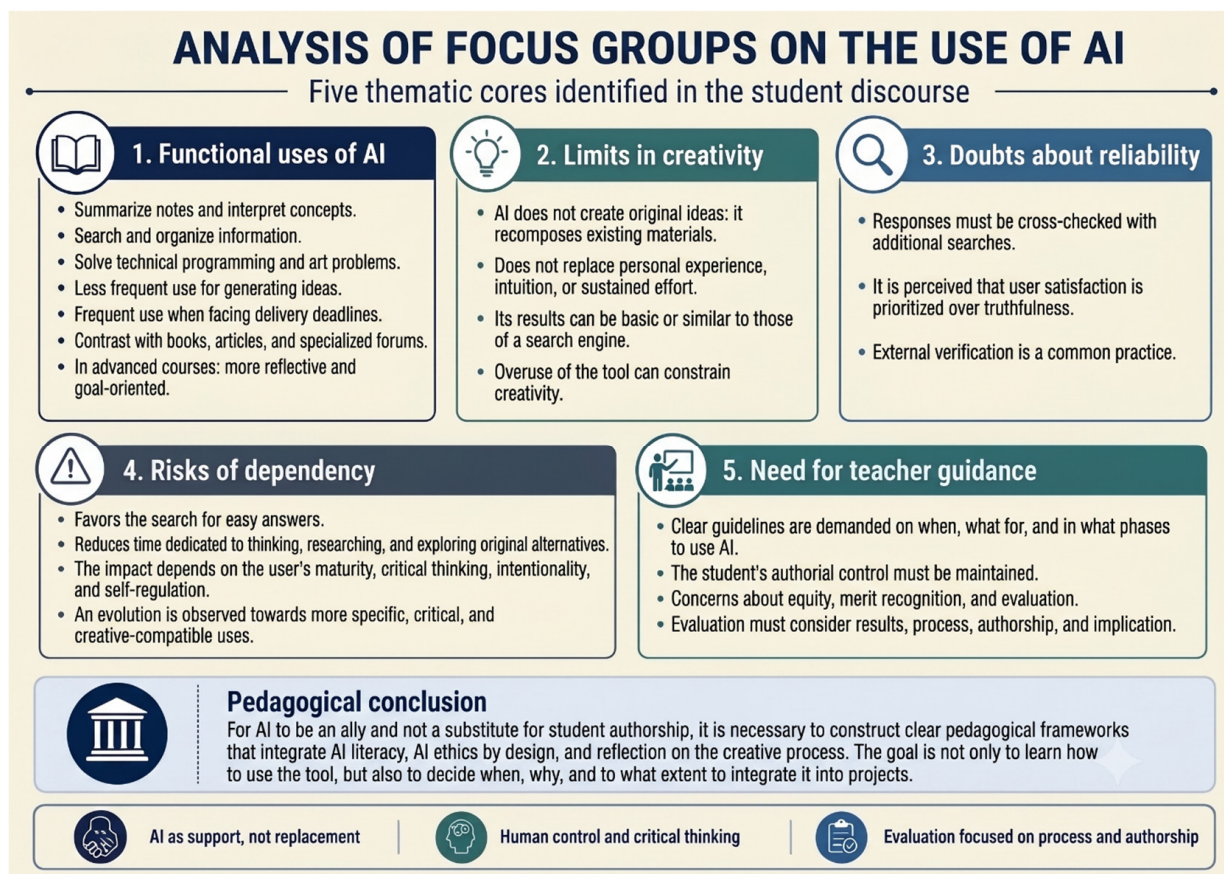


Figure 2. Summary of students' perceptions gathered during the focus groups. Source: Authors' own elaboration with support from ChatGPT-4.

3.3. Design Proposal for AI-Supported Creative Content

Building on the epistemological distinction outlined in Section 2.3, the following ten-step methodological proposal is formulated for the design of interactive, AI-supported content in higher education.

The framework builds on a design that has already been validated across more than twenty informational serious games published in media outlets such as 20 Minutos, RNE, Telecinco, Onda Cero, and Diario de Navarra, as well as on game platforms such as Itchio and Android. These titles include games addressing environmental conservation, such as *Crabfinder* (2024); social issues, such as *Paw Frontier* (2025); cultural topics, such as *La Tumba de Tutankamón* (2022); health, such as *Operación Mosquito* (2021); and the dissemination of Spanish legends with a pedagogical and digital humanities orientation, such as *Girls in Time* (The Last Sign Productions, 2024) and *Caminos Legendarios* (The Last Sign Productions, 2022). While the sequential phases of the project lifecycle are grounded in the authors' design-based research across 20 prior serious game projects, the instructional principles governing AI interaction within each step are derived from the quantitative frequencies and qualitative thematic clusters identified in Sections 3.1 and 3.2. This ensures that the framework responds to the operational practices and ethical considerations of contemporary Generation Z students.

Step 1: Scope. Define the mission of the game or interactive content and the success criteria, for example, the level of understanding achieved. Based on prior project experience, this phase traditionally involves extensive brainstorming to align narrative goals with mechanical possibilities. The quantitative data reveal that students utilize AI most frequently for clarifying doubts and explaining subject-specific concepts, presenting the highest mean

score across all variables ($M = 3.62$). This indicates a strong, normalized preference for utilizing algorithmic models as initial conceptual sounding boards. Simultaneously, the qualitative focus groups highlighted a pressing demand for explicit pedagogical guidance from teaching staff to prevent aimless technological drift. Therefore, AI can be used selectively to generate preliminary lists of objectives, target audiences, and potential success indicators from an initial project description. However, directly addressing the qualitative demand for human mediation, these AI-generated parameters must be critically reviewed, selected, and reformulated by both teaching staff and students.

Step 2: Narrative Choice. Select the genre and story and delimit the narrative focus using the five key questions: what, who, why, when, and how. Prior experience in transmedia storytelling demonstrates that the emotional resonance of the final product hinges entirely on this foundational narrative decision. The qualitative findings consistently demonstrate a deep skepticism among students regarding AI's capacity for true creativity. Participants universally noted that AI does not generate truly original ideas but rather recombines existing material, leading to a "creative narrowing" or homogenization of outputs when the tool is overused. Furthermore, quantitative data indicate a moderately high reliance on AI for developing concepts ($M = 3.23$). To proactively safeguard the human dimension of creativity, an initial narrative proposal is developed without any AI intervention. AI may then be used to generate variants, alternative versions of the story, combinations of motifs or characters, and sketches of different narrative arcs. These suggestions serve as a basis for students to explore options and make informed decisions about the most appropriate narrative approach.

Step 3: Documentation. Identify and cite at least three objective sources that support the accuracy of the information. Interactive content, particularly serious games and digital humanities projects, requires the identification and integration of objective, highly accurate source material to ensure educational validity, a protocol established across all prior practice-based projects. The empirical dataset highlights significant student anxiety regarding the factual reliability of generative models. Focus group participants explicitly stated that they perceive AI as a system optimized to satisfy the user's prompt rather than guarantee the truthfulness of the information output. Despite these qualitative fears, quantitative results show students frequently utilize AI to conduct research and literature reviews ($M = 3.07$). Therefore, in this step AI is used as an exploratory support tool to locate sources, synthesize preliminary information, and organize or classify the collected materials. However, verification, in-depth reading, final selection, and formal citation remain the responsibility of students and teaching staff.

Step 4: Story Construction. Develop a precise and rigorous narrative that addresses the questions defined in the scope. During the qualitative phase, students expressed profound concerns regarding the "risks of dependence," articulating a collective fear that over-reliance on AI encourages the search for easy answers, reduces time devoted to deep thought, and ultimately "makes you dumber." Quantitatively, the use of AI for the direct production of written texts ($M = 2.90$) and text processing ($M = 2.88$) represents an intermediate rather than dominant practice. To preserve authorial integrity and enforce the necessary cognitive struggle, an original version must first be produced without AI; subsequently, AI can be consulted for alternative narrative structures and support in drafting dialogues and descriptions of settings and characters. Based on these suggestions, teams rewrite, refine, and edit the material, incorporating critical analysis, source triangulation, stylistic adaptation, and reflection on the process.

Step 5: Interactive Content Style. Developing a concise, concrete, and accessible aesthetic style is vital for user retention in short, mobile-friendly interactive experiences. Qualitative analysis indicates that as students mature in their degree programs, they shift

from indiscriminate, generalized AI usage toward highly targeted, functional applications, particularly when facing specific creative blocks. In alignment with this targeted functionality, AI can assist in polishing texts and proposing titles, subtitles, and alternative microcopy for interfaces. However, responding directly to the qualitative fear of aesthetic homogenization, final decisions on style, tonal coherence, and creative voice rest with the creative team, who validate and rewrite proposals according to the project's expressive goals.

Step 6: Game Design Document (GDD). The GDD is the foundational blueprint of interactive design to define the core mechanics, rules, and choices that will shape the experience: what actions the player can take, what consequences they have, and how the message is conveyed through rules as well as through the story. Quantitative data reveal a critical threshold: using AI to “support programming and simulations” is the least frequent academic use among the entire sample, showing the lowest mean score ($M = 1.99$; $SD = 1.27$). This indicates a strong hesitation among students to cede technical and systemic control to algorithms. Therefore, AI can be used to explore possible mechanics, generate lists of decisions and consequences, and simulate potential interactive paths or decision trees based on an initial scheme. It is the responsibility of teaching staff and students to ensure coherence between mechanics, message, learning objectives, and aesthetic experience.

Step 7: Production and Dissemination Plan. Establish a schedule and distribution of tasks within the team, as well as publication channels, such as media outlets, game platforms, and social networks. The qualitative clusters prominently feature students viewing AI as a highly effective functional and organizational tool, distinctly separate from its creative capabilities. Leveraging this perception, the pedagogical rule encourages the expansive use of AI in this administrative step. AI can support the drafting of work plans and timelines based on the structure and priorities previously defined by teachers and students.

Step 8: Implementation. Develop the playable prototype or interactive content. An urgent qualitative demand from the focus groups centered on fair academic assessment. Students explicitly criticized situations where peers might obtain higher grades with significantly less effort through undisclosed AI usage, straining implicit norms of fairness and merit recognition. To resolve this tension during the implementation phase, AI can assist with specific technical tasks, such as suggesting code, refactoring scripts, or generating adaptable text fragments for game events and variants of contextual dialogue. However, this must always occur under student and teacher supervision and with clear documentation of which parts have an automated origin. This transparency ensures that teacher evaluation can accurately assess actual student involvement and technical proficiency, directly satisfying the students' primary concern.

Step 9: Iterative testing. First test the game internally, making successive adjustments, and then with users representing the target audience, collecting feedback and identifying errors or areas for improvement. The quantitative dataset supports the moderate use of AI for analyzing data and creating visualizations ($M = 2.80$; $SD = 1.18$). AI can help groups collate, classify, and synthesize user feedback and even suggest patterns for improvement, again under student supervision as part of the learning process.

Step 10: Publication and feedback. Publish the game or interactive content on open platforms and, where appropriate, in media outlets, enabling feedback channels through comments and basic metrics. The final qualitative cluster emphasized the necessity of evolving assessment criteria. Students stressed that university evaluations must consider not only the final polished outcome of creative tasks but also the integrity of the process, the authenticity of authorship, and the degree of personal involvement. In this concluding step, AI can support the exploratory analysis of reviews and metrics as material for the team's critical reflection. The students may then submit a final analysis assessing their own

technological dependence throughout the project, the evolution of their creative autonomy, and the overall efficacy of their AI-supported workflow. This final requirement brings the teaching framework full circle, directly addressing the core empirical concerns regarding digital literacy, authorship, and critical thinking in the algorithmic age.

From an ethical perspective, the proposal is grounded in three criteria: rigor in information verification, prudence in the use of AI, and responsibility in preserving student authorship. These criteria enable the integration of AI into the creative process without displacing the formative value of effort, critical reflection, and originality. Overall, this proposal is conceived as a flexible framework that can be transferred to different transmedia and interactive formats and remains open to future research aimed at empirically validating its implementation in specific teaching contexts.

4. Discussion

The results indicate that generative AI already holds a prominent position within creative learning environments in higher education (Guilford, 1959; Torrance, 1969; Csikszentmihalyi, 1996; Amabile, 1996; Romo, 1997; Pérez Alonso-Geta, 2009), although students' evaluations are clearly ambivalent. On the one hand, AI is perceived as a useful tool for understanding concepts, organizing information, and streamlining certain creative tasks; on the other hand, concerns emerge regarding dependence, reduced creative effort, the reliability of responses, and data security. This ambivalence is confirmed in the qualitative phase, where students recognize its instrumental utility but call for clear limits, teacher supervision, and explicit guidelines for its use. This directly addresses the first objective of the study, which sought to analyze students' perceptions and the intensity of academic generative AI use, revealing a highly functional but critically cautious adoption pattern.

These findings align with recent research that has highlighted both the potential of AI to support ideation and the risks associated with its use in higher education, particularly in relation to critical thinking, autonomy, and authorship (Alier et al., 2024; Holzner et al., 2025; Muñoz Martínez et al., 2025; Özer, 2024). However, the present study advances this literature by focusing on Generation Z students in creative disciplines and by detailing how generative AI is woven into specific academic and creative activities, rather than treating its usage merely as a generic attitude or frequency measure. Unlike previous quantitative studies that generalize technological adoption across broad, undifferentiated academic faculties (Alier et al., 2024; Holzner et al., 2025), this research contextualizes AI within the specific workflows of creative design, demonstrating that adoption is highly dependent on the cognitive demands of the task.

Addressing the second objective regarding the perceived influence of AI on creativity and autonomy, the qualitative phase shows that students do not conceive AI as a full replacement for human creativity, but rather as functional support for instrumental, documentary, organizational, or technical tasks (Castillo-Martínez et al., 2024; Pérez-Escoda et al., 2026; Gaspar & Mabic, 2015; Scolari et al., 2018). When activities demand original ideation, narrative construction, or the development of a distinctive voice, their reservations increase and the need for teacher guidance becomes more visible (Jenkins et al., 2009; Ito et al., 2013; Bermejo, 2021). This nuanced view of AI as both a creative aid and a potential threat to authorship underscores the importance of attending to students' own categories and practices when designing technology-enhanced learning experiences in creative programs.

Aligning with the third objective, a key contribution of the study is the methodological proposal derived from these findings, which translates students' perceptions into an actionable teaching framework for AI-supported creative interactive content design. Its value lies not in substituting creative activity, but in promoting a use that remains subordinated to explicit authorial decisions by both students and teachers, particularly in phases of

exploration, documentation, and prototyping. The incorporation of ethical criteria of rigor, prudence, and responsibility reinforces this orientation and situates the proposal within a controlled and educationally coherent framework of AI use.

Nevertheless, the results should be interpreted with caution. The quantitative sample was obtained through convenience sampling, which limits the generalizability of the findings to broader populations. The qualitative phase focused on Video Game Design students, a profile highly pertinent to the object of study but not necessarily representative of all communication-related degree programs. Finally, the methodological proposal has an applied and prospective character and still requires empirical validation in concrete teaching contexts.

Despite these limitations, the study offers an integrated view that combines empirical evidence on students' use of generative AI with a design-oriented framework that can inform teaching innovation in creative higher education. Future research should extend the sample to other degree programs, incorporate comparative analyses by gender, year of study, or level of experience with AI, and examine longitudinally how its use evolves in relation to creativity, autonomy, and digital literacy. It would also be relevant to test the effectiveness of the methodological proposal in specific courses and analyze its impact on the quality of students' creative outputs and their perceptions of authorship. Ultimately, to ensure that higher education remains a catalyst for human development, AI must be managed as a collaborative instrument governed by active teacher mediation.

5. Conclusions

The present study confirms that the educational integration of generative AI cannot be approached through a purely instrumental lens. While Generation Z students exhibit high adoption rates for AI as an exploratory and explanatory aid, they actively resist its use as a substitute for original human ideation and narrative construction. Therefore, the educational potential of these tools relies fundamentally on teaching and design frameworks that are sensitive to students' creative practices and that guide AI use in ways that remain compatible with authorship, critical thinking, and creativity.

The proposed teaching framework fulfills the study's applied objective by providing educators with an evidence-based blueprint for the ethical integration of artificial intelligence into digital media curricula. By explicitly mapping empirical data to specific design phases, the framework ensures that generative AI is managed as a collaborative co-pilot rather than an autonomous creator, safeguarding the core tenets of higher education.

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