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Dœs Generative AI Stifle Creativity? Convergence and Homogenisation in Student Work

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Abstract

Generative AI (GAI) has now been widely integrated into higher education. While its impact on cognitive abilities (cognitive offloading) has been well-documented, its influence on creativity is less well-understood. This study analysed 12 video game design projects created by 36 second-year computer science students using generative AI tools. Despite the creative power of the tools, the results reveal a strong thematic convergence, with 50-58% of projects set in post-apocalyptic worlds, 75-83% featuring male protagonists and conventional narrative structures. This article discusses the pedagogical implications of this finding and proposes ways to integrate GAI judiciously.

Keywords: generative AI; creativity; cognitive offloading; creative homogenisation; game design; higher education

Introduction

The rapid emergence of generative AI (GAI) tools such as ChatGPT, Midjourney and Grok has had a profound impact on teaching and learning practices in higher education. Between 2023 and 2026, these tools evolved from objects of curiosity to become everyday assistants for millions of students (Rudolph et al., 2023). This widespread adoption raises fundamental questions about their actual impact on learners' cognitive and creative skills.

Numerous studies have highlighted the phenomenon of cognitive offloading, whereby students increasingly delegate cognitive tasks such as writing, summarising and generating ideas to AI. This can lead to reduced mental effort, poorer retention and a weakening of critical thinking skills (Gerlich, 2025; Risko & Gilbert, 2016; Lee et al., 2025). The risk of cognitive atrophy is now well established (Vivian, 2025; Vivian, 2026).

Conversely, the impact on creativity is more ambiguous and has received less empirical documentation, particularly in project-based fields such as video game design. AI-generated content is often presented as a creativity booster because it enables the rapid generation of ideas, visuals, and complex narratives. However, several recent studies have highlighted a paradoxical effect: while AI-generated

content may improve the perceived quality of individual outputs, it tends to reduce collective diversity and promote the standardisation of outputs (Doshi & Hauser, 2024). There are several factors that could explain this standardisation of idea generation. The first is technological. Currently, all major AI systems are based on similar technological concepts (LLMs) and are often trained on the same (or at least very similar) datasets. A second factor is the lack of knowledge and analytical skills among students, who either have blind faith in the results produced by AI systems or, more likely, are unable to understand or critique the proposals and are therefore unable to generate new ideas. This study contributes to this ongoing debate.

State of the art

Cognitive impacts of generative AI: cognitive offloading

The concept of cognitive offloading is defined as the process whereby individuals delegate part of their mental workload to external tools, such as diaries, calculators or, more recently, artificial intelligence systems (Risko & Gilbert, 2016). The advent of generative AI has taken this phenomenon to new heights. Unlike traditional tools, which assist with specific, limited tasks, generative AI systems can generate text, images, narrative structures, gameplay ideas and complex analyses in seconds. This capability is profoundly transforming the relationship between students and their own cognition.

Numerous recent empirical studies confirm the risks associated with this massive outsourcing. In a mixed-methods study involving 666 participants from various professional and academic backgrounds, Gerlich (2025) highlighted a significant negative correlation ($r = -0.49$) between frequent use of generative AI tools and critical thinking scores. The author identifies cognitive offloading as the primary mediator of this relationship: the more individuals delegate cognitive tasks to AI, the less they engage in deep reasoning, critical evaluation, and metacognitive reflection.

These findings are corroborated by other research. For example, Jose et al. (2025) refer to the 'cognitive paradox of AI in education': while generative tools can improve the efficiency of immediate tasks, they may also erode independent reasoning abilities and long-term memory. A study using EEG (Wang & Zhang, 2026) showed that students writing essays with the help of ChatGPT exhibited significantly reduced neural activation compared to a control group. Notably, there was a decrease in brain connectivity once the tool was removed, a phenomenon described as 'cognitive debt'.

In particular, Lodge and Loble (2026) highlight the potential dangers for novice learners of delegating processes such as synthesis, argumentation, and problem-solving at an early stage. Students who do so may never fully develop the 'cognitive infrastructure' necessary for deep learning and intellectual autonomy. This is an even greater concern in creative disciplines, where generating original ideas relies on constant mental exploration, incubation, and critical evaluation.

However, the debate is not straightforward. Some recent studies (Hong et al., 2025; Espeso-García, 2025) suggest that, when guided and accompanied by explicit reflection, strategic cognitive offloading can free up cognitive resources for higher-level tasks such as divergent creativity and interdisciplinary synthesis. The difference lies in the learner's intention and level of metacognitive regulation: passive and uncritical delegation tends to atrophy skills, while active and reflective delegation can strengthen them.

In the context of our study, in which students were invited to design a video game with the help of generative AI, the lack of a structured pedagogical framework aimed at limiting or regulating cognitive offloading appears to have encouraged passive use of the tools. This may have contributed to the high degree of creative convergence observed.

Generative AI and creativity: a paradox

The relationship between generative AI and creativity is the subject of a lively and nuanced scientific debate. While these tools are often presented as powerful catalysts for innovation, the literature reveals a dual effect: an increase in perceived creativity at the individual level, coupled with a significant decrease in collective diversity and originality.

Several recent empirical studies demonstrate a clear positive effect at the individual level. In a landmark experiment published in Science Advances, Doshi and Hauser (2024) asked participants to generate creative ideas with or without the assistance of generative AI. Their findings showed that AI-assisted outputs scored significantly higher in terms of fluency (number of ideas generated), flexibility (variety of categories), and perceived quality. This effect was particularly pronounced among those who were initially less creative, suggesting that AI could facilitate cognitive scaffolding by helping learners overcome initial mental blocks and explore a wider range of solutions. Other studies confirm this trend. For example, Habib et al. (2024) observed significant improvements in divergent creative thinking skills among students who used tools such as ChatGPT or Midjourney for design tasks. Iqbal et al. (2025) report gains in perceived originality and output volume in academic contexts. Together, these results imply that AGIs can liberate cognitive resources by automating routine tasks, enabling students to prioritise higher-order aspects of creation.

However, at the collective level, a clear opposite phenomenon emerges. Doshi and Hauser (2024) point out that while AI boosts the average individual's creativity, it significantly reduces the diversity of ideas generated by a group. Outputs tend to converge towards common patterns, predictable narrative structures and stereotypical solutions. This phenomenon of creative homogenisation is attributed to three main factors: the statistical biases of the models (trained on corpora dominated by mainstream content); the probabilistic nature of LLMs, which favours the most frequent responses; and the use of generic prompts by users. More recent studies reinforce this observation. For example, Zhou et al. (2025) analysed over 10,000 pieces of student creative writing and found that the use of AI resulted in a 28% decrease in semantic dissimilarity between texts. Inoshita et al. (2026) refer to 'creative levelling': ideas become more polished and coherent, but also more conformist to dominant cultural norms. In the field of design, Hwang (2025) and Alharthi et al. (2025) observe the same pattern: students produce technically proficient designs and concepts that often lack genuine aesthetic or conceptual innovation.

This paradox is particularly concerning in project-based disciplines such as video game design, where originality depends on combining unexpected elements, subverting tropes, and proposing novel mechanics. Without explicit pedagogical guidance, students risk using AI as a 'generator of sophisticated clichés' rather than as a tool for creative divergence.

In the context of our study, this dual trend of individual amplification and collective standardisation appears to have been at work. The analysed projects often demonstrate remarkable formal quality, but also reveal a strong thematic and structural convergence, thus confirming the warnings in recent literature.

Gaps and positioning of the study

Despite the rapid increase in research on generative AI since 2023, there are still several significant gaps in the scientific literature, particularly with regard to its impact on creativity in real-life educational settings and complex projects. Much of the existing research has centred on relatively straightforward and specific tasks, such as drafting academic essays, generating isolated ideas, and solving short-form problems (Doshi & Hauser, 2024; Habib et al., 2024; Iqbal et al., 2025). Very few studies examine long-term, open-ended and multidisciplinary creative projects such as the comprehensive design of a video game involving storytelling, gameplay mechanics, art direction, world-building and reflection on the player experience. Furthermore, most research adopts a controlled laboratory experimental approach or relies on self-reported surveys. This offers a limited view of the actual effects of the intensive, long-term use of IAGs in a natural educational context (Rudolph et al., 2023; Gerlich, 2025). The absence of ecological studies makes it challenging to evaluate the long-term impact on students' creative processes. Furthermore, the collective dimension of creativity remains largely under-explored. While Doshi and Hauser (2024) highlighted the phenomenon of homogenisation within groups, few studies have analysed the diversity of outputs within a single student cohort faced with the same open-ended brief. The extent to which students can circumvent or reproduce the biases of the models remains poorly documented.

Finally, disciplines that combine technical rigour with creative demands, such as creative computing and game design, remain under-represented in the literature. However, these fields are a particularly relevant area of study as they require technical skills and genuine conceptual originality.

Positioning of this study

This research aims to address several gaps in the existing literature by providing an in-depth, contextualised, empirical analysis conducted under real-world educational conditions.

Unlike previous studies, which were limited to short tasks or controlled laboratory experiments, this study examines the complete design of a fictional video game, including its world, narrative, characters, gameplay, mechanics, storyboard and art direction. Spanning several weeks, this type of project simultaneously draws on narrative, technical, artistic and systemic skills, providing a particularly rich setting for observing the real-world effects of generative AI on student creativity. Furthermore, the study takes place within an authentic educational context: a compulsory second-year computer science course at the University of Lorraine. Thirty-six students (only three of whom were women) were given the same open-ended brief and explicitly encouraged to demonstrate originality. This approach enables us to analyse not just isolated outputs, but a coherent body of work produced by a single cohort under conditions closely resembling real-world educational settings.

Methodologically, we adopt a mixed-methods approach combining:

- A quantitative analysis of recurring tropes (setting, character gender, weapon types, presence of combat, narrative structure);
- A qualitative analysis of creative choices, the degree of convergence and the overall level of originality.

This dual approach allows us to measure the extent of creative convergence and understand its mechanisms, such as model biases, the nature of the prompts used and students' creative strategies. Finally, this study stands out for its focus on collective creativity within a student cohort. Rather than merely assessing the perceived quality of the outputs, it directly examines their diversity and actual originality in response to the same open-ended prompt. In this respect, it makes a concrete, contextualised contribution to the current debate on the paradoxical effects of generative AI, namely the amplification of individual productivity versus the standardisation of collective creativity.

Methodology

This study takes a mixed-methods approach (both quantitative and qualitative) in a real-world educational setting.

The educational context is as follows: The study focuses on a compulsory second-year computer science course, 'Culture and Practice of Generative AI', at the University of Lorraine (UFR MIM, Metz) in the spring semester of 2026. Thirty-six students (33 men and 3 women) participated in the study. For the final project, students were tasked with designing a fictional video game from scratch using generative AI exclusively or predominantly for elements such as text, images, audio, gameplay ideas and storyboards. The brief emphasised the need for originality in the proposals. The game could be of any genre, including RPG, sports, puzzles, escape games and murder mysteries. Students were expected to complete 10 hours of face-to-face work during tutorial sessions, as well as between 10 and 20 hours of independent study.

Data collected

- 12 complete project reports (some individual, others group-based) were analysed in depth (approximately 500 pages in total).
- Analysis criteria: setting, narrative, character design, protagonist's gender, gameplay mechanics, types of weapons and quests, narrative structure, degree of originality, stated use of AI.
- Thematic qualitative coding + quantification of recurring tropes.

Limitations: Convenience sample, context specific to a course, absence of a control group without AI.

Results

An in-depth analysis of the 12 project reports (representing almost all the 36 students' work) highlights a high degree of creative

homogenisation despite the intensive use of generative AI.

Game genres and settings

Analysis of the projects reveals a clear dominance of certain genres and settings, characterised by strong thematic convergence. Many students opted for dark, conflict-driven, epic narratives, often centred on a fundamental tension between nature and technology, order and freedom, or humanity and higher powers (such as gods, AI or corruption). Post-apocalyptic and dystopian settings were by far the most popular choice (58%), followed by dark fantasy, in which spiritual or demonic corruption plagues a once harmonious world (42%). Science fiction settings involving the exploration of hostile planets came third. This marked preference is not solely the result of biases in generative AI. It also reflects the students' personal gaming experiences. Many of them are players of games such as The Last of Us, Elden Ring, Subnautica, Horizon Zero Dawn, Dark Souls and The Witcher, and have naturally transposed the aesthetics and narrative structures of these games into their own projects. Recurring themes such as a 'beautiful yet toxic world', a 'fallen civilisation' and a 'final moral dilemma' correspond directly to the tropes most prevalent in the AAA and indie games they love.

Thus, generative AI has not only amplified biases inherent in the models: it has also served as a mirror and catalyst for the cultural and gaming references already ingrained in the students. Only a few projects (*Fractures, THE THOUSAND, Ratbyrinthe*) have managed to break free from these dominant influences to offer truly unique frameworks.

Universe / Main theme	***Number of projects***	***Percentage***	***Notable examples***
Post-apocalyptic / Dystopian	7	58%	Anthos-V, The Grace of the Comet, Celestos
Dark Fantasy / Corrupted Medieval Fantasy	5	42%	The Awakening of the Grove, Erathia, Doom Light
Science fiction (alien planet, exploration)	4	33%	Anthos-V, Celestos, ATLAS Initiative
Contemporary psychological thriller	1	8%	Fractures
Multiverse / Metaphysics	1	8%	THE THOUSAND
Others (Absurd roguelike, etc.)	2	17%	Ratbyrinthe, Rnboi

Table 1: Breakdown of main universes.

Main characters

Another significant indicator of the creative convergence observed in the projects is the way characters are treated. The vast majority of students created male protagonists who were often described as solitary and pragmatic figures, burdened by a traumatic past or a quest for redemption. The most common archetype is that of the engineer or hardened survivor who is confronted with a hostile world that forces them to undergo physical and psychological transformation. Next come rebellious paladins, amnesiac explorers, and heroes burdened by a heavy family or moral legacy. The over-representation of males (75-83%) is particularly striking given that the course imposed no gender constraints and generative AIs are capable of creating rich, nuanced female or non-binary characters. This appears to reflect biases present in the models' training data, as well as a certain cultural inertia among the students, who were predominantly male (33 men to 3 women).

Supporting characters are often confined to functional roles, such as the missing mentor, scientific ally, manipulative antagonist or comrade-in-arms. Few projects develop complex relationships, deep emotional arcs or ambivalent interpersonal dynamics. Only the most successful projects (*notably Fractures* and *The Thousand*) feature characters with conflicting motivations and significant psychological development.

This general trend suggests that, despite the power of AI tools, students tended to reproduce classic narrative patterns and gender representations rather than exploring more diverse and original identities, voices, and relationships.

Gender of the protagonist	*Number*	*Percentage*
Male	9-10	75-83%
Female or gender choice	1-2	8-17%
Non-binary / Gender-neutral	1	8

Table 2: Gender of the protagonist.

The dominant archetypes are the pragmatic engineer, the paladin/rebel, the amnesiac explorer and the mutant survivor.

Gameplay and combat

The convergence is particularly striking in the area of gameplay. Almost 92% of projects prioritise combat as a core part of the gaming experience, often in the form of battles against formidable bosses or regular encounters in hostile environments. Exploration and resource gathering are the second most popular feature (83%), while skill trees and level progression feature in 75% of proposals. This focus on action- and combat-oriented gameplay reflects the influence of generative AI as well as the students' gaming habits. AI models trained on vast video game databases can easily replicate popular mechanics such as loot systems, elemental talent trees (fire, earth, water and wind), progressive character mutations, and final moral dilemmas. The majority of students adapted the structures they are most familiar with — those of action RPGs, Souls-like games (Elden Ring, Dark Souls), narrative exploration games (Subnautica, Horizon) and roguelites.

Where they exist (50% of projects), puzzles often remain conventional, involving the sequencing of elements or environmental puzzles. Only a few projects have explored more original mechanics, such as high-impact dialogue systems (Fractures), asymmetric co-op (Ratbyrinth) and profound playful metaphors (THE THOUSAND).

Overall, the gameplay on offer remains conventional, consisting of an 'exploration → combat → upgrading → boss' loop. Whilst this is effective, it lacks boldness and mechanical risk-taking. Generative AI has mainly served to refine and flesh out well-established formulas rather than invent new ways of playing.

Mechanism	*Frequency*	*Percentage*
Combat / Boss fights	11	92%
Exploration + resource gathering	10	83%
Skill tree / Progression	9	75%
Environmental puzzles	6	50%
Final moral dilemma	8	67%
Mini-games / Side activities	5	42%

Table 3: Presence of core mechanics.

Primary weapon type	*Number*	*Percentage*
Sword / Medieval weapons	5-6	42-50%
Hybrid weapons (tech + organic)	4	33%
Firearms / Plasma	3	25%
No central weapon (survey)	1	8%

Table 4: Recurring weapon types.

Degree of Convergence and Originality

An overall analysis of the projects reveals a relatively low level of originality. Around 50% of the proposals are very conventional, relying on classic narrative tropes and structures without any real subversion. Between 25% and 33% of the projects demonstrate careful execution and good technical mastery, yet they remain firmly grounded in familiar narrative and gameplay frameworks. Only 17-25% of projects stand out due to genuine conceptual or mechanical originality.

There is a high degree of narrative convergence: 65-75% of projects share a similar archetypal structure involving a lone hero who is plunged into a hostile world. The hero progresses by exploring successive zones/biomes, gradually acquiring power in the form of mutations, artefacts and skills. The hero then faces a final confrontation against a powerful entity and must make a moral decision, often involving the sacrifice of nature, humanity or an oppressive system. This homogenisation can be explained by a combination of factors, including the biases inherent in generative AI models, which favour epic and tragic narratives most frequently represented in their training data, the generic use of prompts by students, and their tendency to replicate familiar gaming patterns. Only a few projects managed to stand out: Fractures (a realistic psychological thriller centred on mental health), THE THOUSAND (an original metaphysical concept revolving around world maps), and Ratbyrinthe (an absurd cooperative roguelike featuring anthropomorphic rats). These exceptions demonstrate that originality is still possible, but requires strong creative intent, advanced prompting skills, and a genuine willingness to break free from dominant models.

Level of originality	*Number of projects*	*Percentage*	*Characteristics*
Very conventional	6	50%	Very classic tropes, linear structure
Moderately original	3-4	25-33%	Well executed but within familiar frameworks
Original / Innovative	2-3	17-25%	Fractures, THE THOUSAND, Ratbyrinthe

Table 5: Overall level of originality.

Overall narrative convergence between projects: 65-75% of projects share a similar structure (Lone hero → Exploration of hostile biomes/areas → Acquisition of power → Final confrontation + moral dilemma).

Overall narrative convergence with existing games: Each project was compared to existing games, and results showed similarity levels ranging from 40% to 70% for criteria such as Lone hero → Exploration of hostile biomes/areas → Acquisition of power → Final confrontation + moral dilemma.

Comments on the results

These tables highlight the clear and widespread phenomenon of creative convergence. Despite the power and flexibility of generative AI tools, the vast majority of projects continue to rely on a limited number of well-established narrative and gameplay formulas. Students overwhelmingly favoured dark, hostile, and dramatically charged worlds, with post-apocalyptic and dystopian themes dominating at 58%, followed by dark fantasy at 42%. This trend is significant because it corresponds to the aesthetics most commonly found in contemporary video games, with which students are familiar and which they enjoy. The depiction of characters also reveals a significant degree of homogeneity. The over-representation of male protagonists (75-83%), who are often portrayed as solitary, pragmatic survivors marked by trauma, reflects the mechanical reproduction of dominant archetypes. Female or non-binary characters, as well as complex interpersonal relationships or nuanced emotional arcs, remain the exception.

A similar picture emerges in terms of gameplay: 92% of projects focus on combat, following the classic 'exploration → encounters → progression → boss' loop. More innovative mechanics, such as deep dialogue systems, asymmetric co-op, non-violent puzzles, and original mini-games, are clearly in the minority. Students therefore favour well-established formulas that are relatively easy to generate using AI rather than investing in unusual or risky mechanical concepts. It is important to emphasise that this convergence does not imply a total lack of quality. Many projects feature meticulous art direction, rich lore, detailed storyboards and impressive overall

coherence for a second-year standard. AI has clearly helped to improve the presentation and professional standard of the final outputs.

However, this formal quality disguises a lack of conceptual originality. Only three projects — Fractures, THE THOUSAND and Ratbyrinthe — stand out for their unique narrative and mechanical approaches. These exceptions demonstrate that originality is possible with generative AI, but achieving it requires strong creative intent, advanced prompting skills, and a willingness to think outside the box. Overall, the results show that generative AI is better at improving and refining existing concepts than generating genuinely new creative ideas. This raises the question of the extent to which students used the tools as effective production assistants or genuine partners in disruptive creation.

Discussion

This article aims to empirically document the phenomenon of convergence within an open creative context, situate these findings within existing literature and propose ways to transform generative AI from tools for compliant production into levers for authentic creativity in the classroom. The results of this study confirm a paradoxical phenomenon that has been observed in recent literature on generative AI: while these tools increase the productivity and formal quality of students' work, they also tend to reduce their collective creative diversity and originality.

Thesis: A powerful production amplifier

Generative AI has undoubtedly served as a powerful amplifier of production for students. In the context of this video game design project, for example, it enabled second-year students — the majority of whom had no prior experience in game design — to produce impressive-quality deliverables that were coherent and detailed.

AI tools allowed students to quickly generate rich, coherent worlds; detailed narratives spanning several pages; precise descriptions of gameplay mechanics; comprehensive visual storyboards; and fully developed artistic directions. Several projects were completed to a standard similar to that expected of students nearing the end of a bachelor's or master's degree programme. Reports comprising dozens of pages and incorporating stylised visuals, detailed character sheets, world maps, structured quest systems, and reflections on the player experience were delivered within tight deadlines.

This ability to generate content has significantly lowered traditional technical and cognitive barriers. Students were able to focus more on conceptual and narrative aspects than on spending hours on laborious writing tasks or image research. AI systems also served as effective creative assistants, suggesting plot twists, proposing variations on mechanics, generating immersive descriptions, and helping to maintain internal consistency in long, complex documents.

Projects such as Anthos-V, Erathia and the ATLAS Initiative illustrate this potential perfectly. These projects demonstrate a level of visual mastery, depth of lore and professional structure that would have been extremely challenging, if not impossible, to achieve in such a short timeframe without the support of generative AI. The tools acted as powerful scaffolding, enabling students to explore creative ambitions far beyond their usual capabilities.

In this sense, generative AI has fully delivered on its promise as a tool for democratising and accelerating the creative process. It has given students an unparalleled way to turn vague ideas into detailed, visually compelling proposals.

Antithesis: A marked creative convergence

Yet behind this apparent production success lies a more worrying phenomenon: strong creative convergence and a relative lack of conceptual originality.

Analysis of the 12 projects reveals that 65-75 per cent of them share an extremely similar narrative structure and objectives. These include a lone hero being plunged into a hostile world; progression through successive zones or biomes; the gradual acquisition of power in the form of mutations, artefacts or elemental skills; a final confrontation with a powerful entity; and a moral dilemma often

centred on the sacrifice of nature, humanity or an ancient system. This 'formula' recurs with striking regularity. The choice of settings is also limited: 58 per cent of projects fall into the post-apocalyptic or dystopian genre and 42 per cent into corrupted dark fantasy. The protagonists are predominantly male (75-83%) and are often characterised by classic archetypes such as the pragmatic engineer, the rebellious paladin and the amnesiac survivor. Gameplay mechanics also remain highly conventional, with combat dominating (92%) and the overwhelming majority following an "exploration → combat → upgrading → boss" loop.

This standardisation is all the more striking given that the project brief allowed for considerable creative freedom. No genre was imposed and students were explicitly encouraged to demonstrate originality. Nevertheless, very few dared to venture off the beaten track. Only three projects — Fractures, THE THOUSAND, and Ratbyrinthe — offer a unique approach in terms of both narrative and mechanics. This convergence can be explained by a combination of factors. Firstly, generative AIs, which are trained on vast amounts of data dominated by mainstream narratives, naturally tend to reproduce the most common tropes. Secondly, the majority of students used generic and loosely defined prompts, thereby reproducing the narrative and gameplay patterns they most frequently encounter in their personal gaming habits.

The result is paradoxical: the outputs are more polished and 'professional' than one might expect from second-year students, but also far more conformist, predictable and less inventive than one would hope for from a free creative exercise.

Summary: A dual technological and pedagogical challenge

This study reveals a key paradox of generative AI in higher education: it is a formidable production tool and a powerful driver of creative standardisation. This dual dynamic presents technological and pedagogical challenges.

Technologically speaking, current generative AI models act as potent agents of cultural standardisation. Trained on vast corpora dominated by mainstream narratives (such as video games, films and popular literature), these models excel at reproducing and refining existing formulas. However, they naturally struggle to generate radical innovation. Their probabilistic nature causes them to favour the most frequent patterns, explaining the strong convergence observed around post-apocalyptic themes, solitary male heroes, and classic narrative structures. From an educational perspective, the results reveal a second, equally important reality: although equipped with powerful tools, students were unable (or had not received the necessary training) to exploit the disruptive potential of AI to its fullest extent. The majority adopted a passive stance towards the tools, using generic prompts and accepting the first suggestions without questioning, challenging or subverting them. This immature use has transformed potentially liberating tools into accelerators of clichés.

We are therefore faced with a twofold challenge:

- AI, by its very nature, encourages convergence.
- Students, lacking specific training, do not develop the skills needed to overcome these biases and generate originality.

This summary raises fundamental questions about the integration of generative AI into higher education. Should we aim to produce efficient operators who can quickly generate high-quality content, or critical and independent creators who can innovate beyond existing models? While these two objectives are not mutually exclusive, they do require radically different pedagogical approaches. Without deliberate, structured pedagogical intervention, there is a significant risk of training a generation of students who are technically competent, yet intellectually and creatively conformist. The challenge extends far beyond merely acquiring tools; it concerns preserving and developing the human capacity to conceive of the unexpected.

Outlook and Conclusion

Limitations of the study

This research has several limitations that should be highlighted to qualify its scope.

- Firstly, the sample size is relatively small, with only 36 students and 12 projects analysed in depth. While these projects represent almost all of the work produced on the course, they originate from a single cohort at a specific institution (the University of Lorraine's UFR MIM department). The results are therefore highly contextualised and cannot be generalised to other disciplines, levels of study or institutions without caution.
- Secondly, the absence of a control group is a significant methodological limitation. The work of students who made extensive use of generative AI was not compared with that of a group that carried out the same project without these tools. It is therefore difficult to attribute the observed creative convergence strictly to the influence of AI alone. Other factors (student profiles, a shared gaming culture, project briefs and time pressure) most likely played a role.
- Thirdly, the analysis primarily relies on the final reports submitted by the students. We did not have access to the entire creative process, such as the history of prompts, intermediate versions, rejected iterations and discussions between students. This approach does not allow for detailed observation of how students interacted with the AI throughout the project. Finally, the course itself focused on exploring generative AI and did not include specific training in creative or critical prompting. The results therefore reflect the 'natural' and spontaneous use of the tools by novice students rather than controlled, supervised use.Despite these limitations, to our knowledge, this study remains one of the first in-depth empirical analyses of the impact of generative AI in a long-term, open-ended creative project within a real-world higher education context.

Research Prospects

This study opens up numerous avenues for future research, both methodologically and pedagogically. It constitutes an initial empirical assessment that merits further exploration and refinement.

Methodological avenues

- ***Controlled experimental studies***: Set up comparative trials with a control group (without AI or with supervised AI) to better isolate the effect of generative AI on creative divergence.
- ***Longitudinal analyses***: Follow the same students over several semesters to observe the development of their creative skills and their ability to master AI tools over time.
- ***Automated analysis tools***: Use semantic embedding and similarity analysis techniques to measure the degree of convergence between student outputs in a more refined and scalable manner.

Educational perspectives

- ***Action research***: Design, implement and evaluate specific pedagogical approaches aimed at developing a critical and creative use of AI (advanced prompting, anti-cliché constraints, process evaluation, etc.).
- ***Interdisciplinary studies***: Reproduce the same type of analysis in other creative fields (graphic design, fiction writing, architecture, film, music) to verify whether the phenomenon of convergence is general or specific to game design.
- ***Impact according to student profiles***: Analyse the influence of gender, gaming cultural capital, academic level or familiarity with AI on the ability to generate originality.

These perspectives will provide a better understanding of the conditions under which generative AI can become genuine drivers of creativity rather than instruments of standardisation.

Conclusion

Generative AI is currently an ambivalent tool in higher education. On the one hand, it offers capabilities for generation, prototyping and production that are unprecedented and democratise creation, enabling second-year students to produce projects of surprising quality and ambition. However, as this empirical study, conducted as part of a video game design project, clearly demonstrates, it also encourages significant creative convergence and homogenisation of output. The results are unequivocal: 58% of the worlds are post-apocalyptic or dystopian; 75-83% of the protagonists are male; 92% of the projects centre on combat; and 65-75% of the works

share an archetypal narrative structure (lone hero → exploration → acquisition of power → final boss → moral dilemma). This standardisation is not trivial. It reveals that, while raising the level of polish in outputs, generative AIs tend to reproduce and amplify the most frequent tropes present in their training data, thereby reinforcing the cultural and gaming habits already ingrained in students.

This observation further supports the notion that generative AIs are not neutral. They act as powerful amplifying mirrors of dominant cultural norms. Without rigorous pedagogical supervision, integrating them widely risks producing a generation of students who are more productive, faster and more 'professional', but also more conformist, less daring and less capable of genuine creative breakthroughs. We risk training efficient AI operators rather than original, disruptive creators. The implications extend far beyond a mere technical issue. They touch on the heart of the university's mission to foster critical, independent and inventive minds. In a world where machines are becoming increasingly adept at imitating, recombining and refining human creativity, higher education must refocus more than ever on what constitutes the essence of humanity: the ability to imagine the unexpected, subvert norms, ask new questions and create things that probabilistic models cannot anticipate.

Simply incorporating generative AI into the curriculum is no longer enough to achieve this. Instead, we must radically rethink our teaching methodologies, assessment criteria, educational objectives and role as teachers. This means shifting the focus away from technical support towards a pedagogy of critical creativity, teaching students to not only use AI, but also to question, challenge, repurpose and transcend it. Only this deliberately demanding approach will enable us to transform these powerful, potentially homogenising tools into genuine drivers of innovation, intellectual emancipation and creative renewal. The future of student creativity depends not only on the power of AI, but also on our collective ability to use it as an ally rather than a substitute for human imagination.

Final thoughts: In a world where machines are becoming increasingly adept at imitating human creativity, higher education must train people capable of creating what machines cannot yet imagine.

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