# Visual Storytelling Strategies with Generative AI Tools among HEI Students

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The paper explores the possibilities of the development of prompting skills of HEI students in arts education. Text-to-image prompting is regarded as one of the digital skills that increases the importance of linguistic and textual skills among youth. A case study of 37 students shows that iterative, tutored teaching methods can and do increase the efficiency of using textual prompts to generate visual images, enhancing the market value of the users' skills, especially in case of Generation Y and Z employees. When categorising prompt engineering as a digital skill, the traditional DigComp 2.2 digital competence framework is as much usable as the newer AI competence frameworks: In both cases, prompting is part of the problem-solving and human-computer communication.

**Keywords: artificial intelligence, prompting, HEI students, visual storytelling, arts education**

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## Introduction

Prompt engineering – this increasingly popular technical term since 2022 refers to the fact that prompting (the linguistic instructions given as input to generative AI applications) is a central element of generative AI systems, while also suggesting that the "science" of prompting demands a level of precision from the user similar to engineering work.

In computer science, there is a debate about the extent to which natural language processing-based generative AI tools meet the original concept of artificial intelligence, as well as about how much the operation of applications based on learning algorithms can be considered creative (Justin 2024). However, a central element of the discourse on the use of generative AI tools is undoubtedly prompt engineering, as a new type of competence, the mastery of which increases the efficiency of these tools, thereby enhancing the market value of the user's skills, especially for Y and Z generation employees. This can reduce the most pressing challenge for the youth that is reported to be uncertainty and unpredictability (Radnai 2024). The way AI-powered tools are changing the most impactful areas of young people's lives, such as education and the labour market, prompts more and more experts to speak of an "AI generation" (Székely, 2025).

In addition to generating text, images, and video content, generative AI is also capable of creating program codes, databases, and many other forms of information. The common feature of all these outputs is that they can use natural language prompts as input. This transformation is particularly

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exciting when we want to create visual output from natural language instructions: a picture is worth a thousand words, but the image must be created with the most concise and clear string of words possible – at least before the multimodal possibilities of giving prompts. This – as many authors emphasise in the context of prompting – highlights and re-establishes the importance of linguistic competencies.

## Digital competence frameworks

Among the currently existing digital literacy frameworks and models, the DigComp framework stands out as the most comprehensive, detailed, widely accepted, applied, and tested model of digital competence (Balula 2016; Evangelinos and Holley 2015; Kelly 2019; Khan and Vuopala 2019; Kluzer 2015; Siiman et al. 2016). According to Ferrari (2013), the DigComp model can become a comprehensive framework for digital competencies after its 2.1 version was updated and published in version 2.2 a few years ago (Carretero et al. 2017).

DigComp is part of the extensive EU ecosystem of research, data, and reports (Caena and Redecker 2019; Ferrari 2012; Mattar et al. 2022). Therefore, it can be considered an official EU document that provides recommendations for national policies. It is closely linked to the related digital competence frameworks for educators (DigCompEdu) and educational organisations (DigCompOrg), which use the same foundational concepts. Currently, DigComp 2.2, thanks to its latest 2022 version, is the most up-to-date and significant digital competence framework.

The DigComp framework served as the primary framework for the UNESCO Global Framework on Digital Literacy (Law et al. 2018). When developing the methodology for the UNESCO framework, the authors thoroughly examined the ICT and digital literacy frameworks of 71 nations across the world. This was intended to ensure that the proposed global framework would be applicable to countries at different stages of development. The authors found that DigComp, which was designed for European countries, could also serve as a valuable foundation for developing a global literacy framework when supplemented with a few additional proposed competencies.

The model distinguishes five main dimensions that summarise an individual's digital capabilities and skills.

• Information and data literacy: The individual's abilities to effectively and securely manage and correctly interpret information and data. This includes not only the mere analysis of data but also the critical evaluation of information sources.

• Communication and collaboration competence: The individual's abilities for effective communication and collaboration using digital tools. This includes the use of digital tools and platforms for various communication purposes and the competencies required for group work conducted on digital platforms.

• Digital content creation: The individual's abilities to create and edit digital content. This includes the production of multimedia content, the creative use of digital tools, and the preservation of quality from both hardware and content perspectives.

• Security: The individual's abilities in the field of digital security, including the recognition and prevention of online threats, the protection of personal data, and the security of online identity.

• Problem-solving: The individual's abilities to identify and resolve issues related to digital devices and technologies. It includes diagnosing and fixing technical issues, as well as effectively using digital tools to solve everyday problems.

Seemingly, information and data literacy is the most studied among the five above-mentioned domains, while the other four skills bundles are somewhat more difficult to measure and define numerically (quantitatively).

The above five aspects are complemented by a "meta-aspect". Technology use is the individual's ability to use digital tools and technologies effectively and productively. This includes the skill of using tools and applications, as well as the understanding of those tools and technologies that assist the individual in their daily life and work. As Vaszkun et al. (n.d.) research has shown, studies using the main dimensions of DigComp as a research framework primarily focus on information and data literacy, as well as digital content creation, and very rarely address the areas of communication and collaboration, safety, and problem-solving.

## From digital to AI competencies

UNESCO developed the first version of the AI competence framework for teachers and students by autumn 2023 (UNESCO, n.d.), and the refined version is expected to be completed by the end of 2024. The development, as seen in the case of DigComp, focuses on the topic of education because the school system, including the community of teachers and educators, prepares students for all the skills and competencies necessary beyond school, which are required to handle AI applications in civic, professional, entrepreneurial, and other contexts.

The AI competence framework – similarly to DigComp – focuses on five main areas: human-centered thinking, the ethics of AI, AI fundamentals and applications, the role of AI in pedagogy and in vocational and technical training.

In all five areas, it defines what skills teachers need to acquire and deepen, which skills they can use to create with AI, and what comprehension, application, and creation skills students need to master for competent use of AI (Bokor, 2024).

UNESCO also has a separate AI competency framework specifically for public service workers (UNESCO Communication and Information Sector 2022). It defines the competencies of AI (and digital transformation) in the triad of digital design and planning, data use and governance, and digital management and implementation.

Concordia University and Dawson College (2021) have a similar framework built on a different logic, where we find technological, business, and human topics. The creators categorise competencies related to data, programming, deep learning, and machine learning under technology, while for business applications, they include AI-supported project planning and scaling, as well as the use of specific AI technologies. In the human domain, we find excitingly general categories: innovation, teamwork, professionalism. Under each topic area, there is a list of specific skills along with their associated ethical competencies.

The Alan Turing Institute (2023) addresses the topic from the perspective of business competencies. The framework consists of five dimensions that identify competencies and behaviours across five

areas. These are the following: 1. data protection and supervision, 2. specification, procurement, design, architecture, storage, and maintenance, 3. problem definition and communication,4. problem-solving, analysis, modelling, visualisation, as well as 5. evaluation and reflection.

Khang (2024) offers a completely different approach. In his book, he discusses the 21st-century digital possibilities for talent development, addressing a very broad audience—students, teachers, researchers, academics, engineers, and other professionals. The AI competency framework leans more towards a general description rather than offering a model that covers specific occupational fields.

With the spread of generative forms of AI, the skills belonging to these types are gaining particular importance, complemented by the field of ethical questions. Prompt engineering, or the profession of effectively prompting AI linguistically, is still searching for its place between computer science and management (Justin, n.d.). Artists using AI's generative imaging skills are grappling with copyright and artwork definition issues, while the academic sphere is attempting to relate to AI – which sometimes appears as an assistant, sometimes as an inspiration, and sometimes as a co-author in scientific research – through a variety of strategies ranging from complete permissiveness to recommendations and strict regulation. Every knowledge-producing sector is affected where the effective success of users is no longer determined solely by technical and handling skills, but also by a range of "soft skills." These "soft skills" do not replace "hard skills" but complement them as equal partners, just as artificial intelligence increasingly appears as an equal partner alongside humans.

The rapid proliferation of artificial intelligence (AI) technologies, particularly within the domain of image generation, has profoundly reshaped creative workflows across numerous industries, including the visual arts. The creation of art, representing the pinnacle of human creativity, has consistently posed the greatest challenge for engineers and theorists developing AI. Successfully replicating this highest form of human intellectual activity signifies a major breakthrough, While the accessibility and ease of use of these tools have contributed to their widespread adoption, their integration into established art education practices presents both significant opportunities and considerable pedagogical challenges. The current landscape demands a critical examination of how best to incorporate AI into artistic training, moving beyond simple tool familiarization to encompass a deeper understanding of AI's creative potential and its implications for the future of artistic practice.

## AI competencies in visual design

The evolution of AI art creation methodologies has moved beyond the initial emphasis on purely algorithmic generation, increasingly embracing a collaborative model that recognises and values the integral role of human creativity and intentionality. This shift is evident in the growing adoption of text-to-image models and the concurrent rise of "prompt engineering" as a key skill for artists working with AI. While earlier AI art often focused on mimicking human styles, the current paradigm emphasises human-AI co-creation, where the artist's vision is translated into a textual prompt, guiding the AI's generation process (Manovich, 2022; Manovich, 2023) . This collaborative approach acknowledges the limitations of purely algorithmic creativity, recognizing that AI systems function as powerful tools requiring human input and direction to realize their full creative potential.

This transition is closely linked to the broader shift from a purely technical, tool-based approach to AI art creation to a more communicative model emphasising dialogue between the human artist and the AI system (Cizek et al., 2019). This perspective views the creative process not as the sole product of either the human or the machine, but rather as a collaborative endeavour where both agents actively participate in shaping the final output. In this context, the textual prompt serves as the primary unit of communication, mediating the exchange of information and intentions between the human artist and the AI system. The final artwork, therefore, emerges as a result of this collaborative interaction, representing a fusion of human creativity and algorithmic capabilities.

The research conducted by the MIT Co-Creation Studio (Cizek et al., 2019) provides a valuable framework for understanding this shift towards a communicative model of co-creation. This study emphasises the importance of considering the collaborative nature of the creative process, highlighting the need for methodologies that account for the interactions and decision-making processes involved in human-AI collaborations. The concept of co-creation, as defined by Cizek et al. (2019), emphasises the equal partnership between human and non-human agents, rejecting the notion of the machine as a mere tool subordinate to the human artist. Instead, it positions the human and the AI as active participants in a shared creative endeavour, with the final output reflecting the contributions of both. This collaborative perspective underscores the significance of understanding the communicative dynamics involved in human-AI co-creation, highlighting the importance of effective prompt engineering and the ongoing evolution of artistic practice in the age of AI.

## Prompting as a new skill for a successful career

The early 2020s witnessed a paradigm shift in the creation of AI-generated art, driven by the emergence of programs utilising text-based inputs. This development marked a significant departure from previous methods, effectively replacing complex programming languages with a more intuitive interface based on natural language commands. This transition, as noted by Manovich (2023), elevated human-computer interaction to a new level of accessibility and ease of use, facilitating broader participation in the creation of AI art. The widespread availability, and initial free access, to these text-based AI art generators led to their rapid adoption by both professional artists and the public alike.

The foundation of this human-AI collaborative creative process rests upon the "prompt"—a textual command that instructs the AI system on the desired image characteristics (Oppenlaender, 2023). This interaction transforms image creation into a collaborative, co-creative endeavour, where the artist's success hinges upon their ability to articulate their artistic vision with precision and clarity through carefully crafted textual prompts. The efficacy of this collaboration is directly contingent upon the artist's capacity to translate their internal visual concept into a form comprehensible to the AI system.

This language-based approach to image creation represents a departure from traditional artistic practices, particularly for visual artists accustomed to more direct, hands-on methods of image manipulation. For these artists, the process of translating visual concepts into textual descriptions requires a significant shift in their creative workflow, demanding a new level of articulation and precision. While numerous manuals and guides now exist to assist in the creation of effective prompts (Oppenlaender, 2023), many remain at a superficial level, providing basic instructions for novice users without adequately addressing the specific needs of artists seeking to leverage AI for creative expression. These resources often fall short of acknowledging the complexities of artistic language, the nuances of stylistic choices, and the individual stylistic features that contribute to a unique artistic vision.

This limitation highlights the need for a more sophisticated and nuanced understanding of prompt engineering within the context of artistic practice. The creation of effective prompts necessitates not only technical expertise but also a deep understanding of visual communication, artistic vocabulary, and the individual artist's unique creative process. Furthermore, the exploration of prompt engineering within art education requires a pedagogical approach that goes beyond simple instruction manuals, fostering critical thinking, experimentation, and iterative refinement of prompts to achieve optimal creative results. The following sections will further analyse research exploring the teachability of prompt engineering and its impact on the creative process within the field of AI-generated art.

The question of whether prompt engineering is an intuitive skill or a teachable ability forms a central focus of ongoing research within the field of AI-generated art. Oppenlaender et al. (2023) directly addressed this question through a series of experiments designed to investigate the teachability of prompt engineering and its impact on the quality of AI-generated images. These experiments departed from conventional research methodologies by involving participants who

lacked formal art education and were not actively engaged in visual creative practices. This novel approach allowed for a more objective assessment of the learnability of prompt engineering, isolating the impact of training from pre-existing artistic skills and experience.

One key aspect of Oppenlaender's research (Oppenlaender et al., 2023) involved assessing participants' understanding of fundamental art concepts, including their familiarity with various artistic styles, movements, and notable creators. This assessment aimed to establish a baseline understanding of the participants' pre-existing knowledge of art and its terminology. The research then explored the relationship between this pre-existing knowledge and the participants' ability to formulate effective prompts. A second set of experiments focused on the participants' ability to distinguish between effective and less effective prompts, testing their capacity to critically evaluate the quality of their textual inputs and their understanding of how variations in prompt language affect the AI's output.

The results of these experiments, as reported by Oppenlaender et al. (2023), provided compelling evidence supporting the teachability of prompt engineering. Participants demonstrated a significant improvement in their ability to generate high-quality images after receiving targeted training on prompt construction and refinement. This finding challenges the notion that proficiency in prompt engineering is solely an intuitive skill, suggesting instead that it can be effectively taught and learned through structured instruction and practice. Furthermore, the research highlights the importance of considering pre-existing knowledge of art and artistic vocabulary when assessing the teachability of prompt engineering. The findings suggest that while artistic background can be beneficial, it is not a prerequisite for mastering this crucial skill within AI-assisted art creation. The implications of these findings for art education and the development of appropriate pedagogical strategies are significant and will be further explored in the discussion section. The origin of the term "prompt engineering" itself is noteworthy, emerging from a 2020 online forum post discussing the fictional writing capabilities of ChatGPT3 (Liu & Chilton, 2022), highlighting the organic and rapidly evolving nature of this new field. Oppenlaender (2023) further elucidates the structural components of effective prompts, including object markers, style markers, and image quality enhancers, providing a framework for understanding the complexities of this increasingly important skill.

## Case study

*Sampling and methodology*

This study focuses specifically on the challenges and opportunities inherent in integrating AI image generation tools into the Hungarian visual art and design education system. The unique linguistic context, with Hungarian as the primary language of instruction and the prevalence of English-language AI platforms, introduces a significant barrier. This language discrepancy extends beyond basic usability; it profoundly impacts the crucial process of prompt engineering – the art of crafting effective textual instructions to guide AI image generation. Effective prompt engineering demands a sophisticated understanding of both the technical capabilities of the AI and the subtle nuances of language in conveying artistic intent. Therefore, successful integration requires more than simply introducing AI tools; it necessitates the development of innovative pedagogical approaches that explicitly address this linguistic challenge.

The integration of artificial intelligence (AI) technologies into higher education, particularly within creative fields like art and design, presents both exciting opportunities and significant challenges. This case study centers on comprehensive fieldwork research conducted over two consecutive semesters within seminars at the Moholy-Nagy University of Art and Design in Budapest. The seminars directly address the core question of how best to incorporate AI into artistic workflows, focusing specifically on AI image generation.

The focus group of this research was composed of art and design students, as the proliferation of generative AI tools has a particularly profound impact on the creative fields. The rationale for selecting this population lies in the dual transformation they face. Not only are market logics and expectations changing rapidly due to AI, but the very process of artistic creation itself is being reshaped. While traditional design tools allowed creators to retain full control over the production process, generative AI introduces a co-creative, communication-based workflow in which the machine contributes its own input to the final outcome.

The case study design was chosen for its suitability in examining complex, context-dependent phenomena such as human–AI co-creation in an educational environment.

The primary research questions were:

1. How should art colleges address the integration of generative AI in education?
2. To what extent can traditional teaching methods accommodate the emergence of AI-assisted creation, and where are new curricular approaches required?
3. What specific challenges do students face when working with AI, and how can educators best support them?

Data collection involved classroom observations, iterative project work, and feedback discussions between students and instructors. These were complemented by an analysis of students' final visual storytelling assignments, which provided insight into their ability to integrate AI into narrative and artistic workflows. The iterative, feedback-driven teaching method created a naturalistic environment for observing how prompting skills and creative strategies evolved.

The data was analysed thematically, with attention to recurring challenges (e.g., unpredictability of outputs, linguistic barriers, rapid tool evolution) and strategies of adaptation. While the sample size was limited and the findings cannot be generalized to all higher education institutions, the study offers valuable insights into the pedagogical and methodological requirements for integrating AI into art and design education.

The two-semester seminar involved a diverse group of students from various artistic disciplines. Participation was open to undergraduate and postgraduate students across departments including animation, textile design, graphic design, media design, and art management. This interdisciplinary approach enriched the learning environment, fostering cross-pollination of ideas and perspectives on AI's role in creative practice. A key feature of the seminar was its accessibility; no prior experience with AI tools was required. This inclusive approach aimed to gauge the potential of AI across a broad spectrum of artistic backgrounds and skill levels, encompassing both students familiar with digital tools and those with less experience in digital media.

The seminar benefitted significantly from the inclusion of a co-teacher, a highly experienced digital media artist specialising in AI-based image generation. This collaboration proved crucial in bridging the gap between the theoretical understanding of AI principles and the practical application of AI tools. The co-teacher's expertise ensured that students received both a strong foundation in the technical aspects of using the selected AI platforms (specifically, Midjourney and Gen-2) and insightful guidance on leveraging AI's creative potential within their own artistic practices. Their contributions extended beyond technical instruction; they also shared their own creative workflows and problem-solving strategies, enriching the learning experience with valuable real-world insights.

The number of participants fluctuated slightly across the two semesters, with 39 students participating in total. This relatively small class size facilitated a more personalised and interactive learning environment, allowing for close collaboration between students and instructors. The safe educational space encouraged open discussion, feedback sharing, and the development of a strong sense of community amongst participants.

The seminar employed a predominantly practical, hands-on approach to teaching. The pedagogical strategy prioritised active learning and collaborative engagement, recognising that the most effective way to understand AI image generation tools is through direct experience and iterative experimentation. The initial sessions focused on building a foundational understanding of the chosen AI platforms, Midjourney and Gen-2. These sessions covered the basic functionalities, command structures, and parameter adjustments, equipping students with the necessary technical skills to begin creating images. However, the emphasis was not solely on technical proficiency; equal weight was given to fostering a critical understanding of AI's creative potential and limitations.

Before tackling the main assignment, students were given a series of smaller, preparatory tasks. These tasks were designed to progressively build upon their skills in prompt engineering, allowing

them to gradually refine their ability to translate their artistic vision into effective text prompts. These preparatory assignments included exercises focused on image generation based on short descriptive texts, the creation of mood boards using AI-generated images, and the illustration of poems or articles using a combination of AI and traditional design techniques. This stepwise approach helped demystify the process of interacting with AI, breaking down complex tasks into smaller, more manageable components.

The central assignment of the seminar required students to develop a short visual narrative, told through a series of five to eight AI-generated images. This task moved beyond the creation of individual images, demanding a higher level of planning, narrative coherence, and consistent visual style across multiple images. Students had to carefully consider not only the aesthetic qualities of each image but also its role within the broader narrative arc, ensuring smooth transitions and a compelling visual flow. The challenge extended beyond technical skill, requiring creative problem-solving, artistic vision, and an understanding of effective storytelling techniques. This assignment served as a comprehensive assessment of their acquired technical and creative abilities, evaluating their ability to seamlessly integrate AI tools into their established artistic workflows. The entire process was supported by frequent feedback sessions, collaborative discussions, and individual consultations to address specific challenges and refine creative approaches.

*Results and discussions*

During classroom activities, students frequently received assistance from their mentors, which greatly enhanced their learning experience. The iterative nature of this support allowed students to engage in a continuous cycle of feedback and improvement. This approach not only facilitated a deeper understanding of the material but also empowered students to develop effective strategies for completing their assignments. By collaboratively refining their techniques, students learned to craft precise and impactful prompts, ultimately leading to more successful project outcomes. This method of active learning through consistent mentor interaction fostered an environment of growth and confidence, enabling students to fully explore and realise their potential.

By the end of the semester, all students who actively engaged in the classwork successfully completed the final assignment. Each student managed to create a compelling narrative image sequence consisting of 4-6 pictures that effectively conveyed a story. This accomplishment was particularly noteworthy, considering that the quality of the final projects did not correlate with the students' prior experience with generative AI. Regardless of their initial familiarity with the technology, students demonstrated remarkable creativity and storytelling skills in their visual narratives. This outcome highlights the effectiveness of the course structure and the instructional support provided, which enabled students to harness the power of AI tools and unleash their artistic potential, surpassing initial expectations based on their previous knowledge. Such results are a testament to the inclusive and adaptive learning environment fostered throughout the semester, illustrating that with the right guidance and resources, all students can achieve excellence in leveraging emerging technologies for creative expression.

The seminar revealed several key challenges encountered by students in utilising AI image generation tools for creative projects.

One prominent hurdle was the inherent uncertainty of the AI generation process. Unlike traditional

design software, where the user maintains complete control over the final output, AI tools introduce an element of unpredictability. Students often found that the generated images, while often visually interesting, didn't perfectly match their initial vision. This discrepancy required a significant shift in mindset, demanding flexibility, iterative refinement, and a willingness to adapt and reinterpret their initial ideas in light of the AI's output. The process became less about direct control and more about collaboration and negotiation with the AI system.

Another significant challenge stemmed from the language barrier. While the students were primarily Hungarian speakers, the AI platforms operated primarily in English. This linguistic hurdle presented a double challenge. First, students needed to master the specific vocabulary and syntax required for effective prompt engineering, a language distinct from everyday conversation. Second, they needed to translate their artistic visions, often expressed initially in Hungarian, into precise English prompts capable of conveying the nuances of their creative intent. This process required not only linguistic proficiency but also a sophisticated understanding of how language functions in shaping AI's interpretation. This demonstrated the importance of communication skills in leveraging AI tools effectively.

The rapid evolution of the AI platforms themselves also posed challenges. During the course of the two semesters, several updates and improvements were released, introducing new features, altering existing functionalities, and sometimes even rendering previously effective techniques obsolete. This necessitated continuous adaptation on the part of both students and instructors, demanding flexibility and the ability to quickly learn and apply new methods. The constant technological flux highlighted the dynamic nature of the field and the ongoing need for professional development to keep pace with technological advancements.

Finally, the seminar revealed interesting differences in the proficiency of students from different artistic disciplines. While a detailed analysis requires further research, preliminary observations indicated that students from certain fields, such as animation, faced unique challenges compared to those from other fields like graphic design. This variation might stem from differences in their established creative workflows and their existing approaches to problem-solving and image creation. These preliminary findings suggest a need for further investigation into the relationship between artistic disciplines, cognitive styles, and the effective use of AI tools. These challenges underscore the complexity of integrating AI into art education and highlight the need for adaptable teaching methodologies that address the dynamic nature of the technology and the diverse needs of students.

The challenges encountered, particularly those related to language barriers and the rapid evolution of AI technology, highlight the ongoing need for continuous professional development for both educators and students. The curriculum must adapt to incorporate new tools and techniques, and educators must develop strategies to support students in navigating the complexities of AI-specific language and the dynamic nature of the technology itself. The development of resources and teaching materials tailored to the specific linguistic and cultural context of the learning environment is also crucial for maximising the impact and accessibility of AI-integrated art education.

The case study results clearly demonstrate how the DigComp framework's domains—particularly problem-solving, communication and collaboration, and digital content creation—find direct application in AI-assisted visual storytelling. Students' ability to craft effective prompts and

refine them iteratively aligns with DigComp's emphasis on problem-solving and human–machine communication. Moreover, the collaborative classroom setting, where peer discussion and tutor feedback shaped prompt refinement, echoes the communication and collaboration dimensions of DigComp. In this sense, the findings validate the framework's relevance, showing that structured educational interventions can translate abstract digital competence domains into concrete, creative practices.

The integration of AI competence frameworks into the study's pedagogical design is equally visible. UNESCO's emphasis on human-centered thinking, ethical awareness, and application skills resonates with the students' experiences of negotiating unpredictability, linguistic barriers, and evolving toolsets. The case study illustrates that mastering AI tools in education goes beyond technical fluency: students had to learn flexibility, critical evaluation, and adaptive strategies, reflecting the AI frameworks' call for balancing technical, ethical, and humanistic dimensions of competence. This supports the argument that AI-specific frameworks provide a necessary extension of digital literacy models, equipping students to engage with generative AI as both a tool and a creative partner.

Finally, the emergence of prompting as a teachable skill bridges digital and AI competence frameworks in a way that the case study makes tangible. The iterative assignments, where students translated artistic visions into precise English-language instructions, confirm that prompting is not only an intuitive talent but a competency that can be systematically developed. This process encapsulates the transition from digital literacy to AI literacy: while rooted in linguistic and problem-solving skills, prompting also involves communicative precision, artistic sensitivity, and adaptability to rapid technological change. Thus, the case study highlights how competence frameworks are not merely theoretical constructs but practical guides for cultivating future-ready skills in creative education.

## Limitations

This study is limited in scope by its focus on classroom-based activities within a higher education institution. While the findings provide insights into how students engage with generative AI in structured educational settings, the research did not examine how these skills transfer to professional or market contexts after graduation. Consequently, it remains unclear whether the competencies developed in the classroom—such as prompting strategies, co-creative workflows, and critical evaluation of outputs—retain their relevance and utility in real-world design environments. Future research should extend the investigation to alumni and professional practice in order to assess the long-term impact of AI literacy training and its applicability beyond the academic setting.

## Conclusions and further opportunities

In conclusion, while the initial challenges encountered in this study underscore the complexities involved in integrating AI into art education, the overall results remain overwhelmingly positive. The potential benefits of incorporating AI tools into creative workflows are substantial, and with carefully designed curricula and ongoing professional development, educators can successfully equip students with the skills necessary to harness the power of AI for artistic expression. This

requires a continuous cycle of adaptation, innovation, and pedagogical refinement to fully realise the potential of AI in shaping the future of art education.

The findings of this study indicate that structured educational programs can significantly enhance the prompting skills of students. The research demonstrates that while AI image generation tools offer significant potential for enriching art education, their successful integration requires a multifaceted approach that addresses both technical and pedagogical considerations. The findings strongly suggest that prompt engineering skills, while initially challenging, are indeed teachable. The structured curriculum, incorporating both theoretical instruction and extensive hands-on practice, proved effective in equipping students with the necessary skills to effectively communicate their artistic visions to AI. However, the process is not merely about technical proficiency; it demands a significant shift in artistic workflow, requiring flexibility, iterative refinement, and a willingness to embrace the inherent uncertainties of AI-assisted creation.

Among the competencies of the DigComp model, the domain closest to visual prompting is problem-solving and human-machine communication. Prompting also fits well with the emerging AI competencies: In particular, it can be categorised under the area of problem definition and communication, and, as such, is developable.

Further research is warranted to explore the observed differences in AI proficiency among students from various artistic disciplines. A more in-depth investigation is needed to understand the underlying factors contributing to these variations, considering cognitive styles, established creative workflows, and the ways in which different artistic practices might interact with the unique demands of AI-assisted creation. Such research could inform the development of more targeted and effective pedagogical approaches, optimizing the learning experience for students from diverse artistic backgrounds.

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