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METHODOLOGY OF USING ARTIFICIAL INTELLIGENCE AND DIGITAL TECHNOLOGIES IN VISUAL ARTS EDUCATION

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Abstract

This thesis examines the methodological foundations and pedagogical possibilities of using artificial intelligence and digital technologies in visual arts education. Particular attention is paid to the role of AI-based image generation, digital drawing and painting applications, graphic design software, virtual learning environments, and interactive multimedia tools in developing students' artistic creativity, visual thinking, and digital competence. The study emphasizes that artificial intelligence should not replace the learner's creative activity but should function as a supportive instrument for generating ideas, experimenting with artistic forms, analysing visual materials, and developing individual creative projects. The importance of combining traditional artistic techniques with modern digital tools within an appropriate pedagogical framework is also discussed. Furthermore, the paper highlights the need for ethical, human-centred, and critically informed use of artificial intelligence in art education.

Keywords: artificial intelligence, visual arts education, digital technologies, art pedagogy, digital creativity, AI-generated images, visual thinking, digital competence, teaching methodology, creative learning.

INTRODUCTION

The rapid development of digital technologies and artificial intelligence has significantly transformed various spheres of human activity, including education, culture, design, and the visual arts. Contemporary students are increasingly surrounded by digital images, multimedia environments, mobile applications, virtual platforms, and AI-based creative tools. Consequently, visual arts education can no longer be limited exclusively to traditional drawing, painting, sculpture, and composition techniques. It increasingly requires the integration of digital resources that enable students to experiment with new forms of artistic expression and develop competencies necessary for participation in contemporary visual culture.Artificial intelligence represents one of the most rapidly developing technological directions within modern education. Generative AI systems can create images, offer visual concepts, analyse existing materials, suggest variations of compositions, and support different stages of the creative process. UNESCO emphasizes that the application of generative artificial intelligence in education should follow a human-centred approach in which technology supports human agency, creativity, ethical responsibility, and meaningful learning rather than replacing them [1]. Therefore, the introduction of AI into visual arts education requires not only technical access to new tools but also a clearly defined pedagogical methodology.

An important theoretical foundation for integrating technology into education is the Technological Pedagogical Content Knowledge (TPACK) framework developed by P. Mishra and M. J. Koehler. According to this approach, effective technology-supported teaching requires the integration of three major forms of teacher knowledge: subject content, pedagogy, and technology [2]. In the context of visual arts education, this means that an art teacher should possess not only knowledge of artistic techniques and teaching methods but also the ability to select and apply digital technologies according to specific learning objectives. Technology therefore becomes pedagogically meaningful only when it is appropriately connected with artistic content and educational methodology.Digital technologies provide significant opportunities for expanding the creative

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environment of visual arts education. Graphic tablets, digital painting programs, image-editing software, three-dimensional modelling applications, virtual galleries, augmented and virtual reality, as well as online creative platforms allow students to work with artistic images in ways that were previously difficult to achieve in a traditional classroom. Digital tools make it possible to revise compositions rapidly, experiment with colour combinations, analyse multiple artistic solutions, and combine photography, illustration, typography, animation, and multimedia within a single creative project.

Research in digital art education indicates that technology does not necessarily reduce students' creativity. On the contrary, when digital technologies are integrated through appropriate educational strategies, they can encourage experimentation, innovation, and new forms of artistic expression [3]. Black and Browning emphasize that incorporating digital technologies into art education can help students connect artistic activities with their contemporary experiences and provide additional opportunities for creative engagement. This suggests that digital tools should not be viewed merely as technical additions to traditional art lessons but as instruments capable of transforming the structure of creative learning itself.The emergence of generative artificial intelligence has further expanded these possibilities. AI-supported tools can be used during brainstorming, visual research, composition development, colour selection, style exploration, and preparation of preliminary sketches. For example, students may formulate textual prompts to generate multiple visual interpretations of an idea, critically compare the results, identify compositional advantages and weaknesses, and subsequently develop an original artwork based on their own artistic decisions. Such an approach can develop not only technological literacy but also critical thinking, visual analysis, and decision-making skills.

At the same time, the use of AI in visual arts education raises important methodological and ethical questions. These include the problem of authorship, originality, copyright, algorithmic bias, dependence on automatically generated content, and the possible weakening of students' practical artistic skills. Therefore, the educational process should clearly distinguish between using AI as a supportive creative instrument and allowing technology to substitute for students' own intellectual and artistic activity. Students should be taught to evaluate AI-generated materials critically, modify them creatively, acknowledge technological assistance where appropriate, and understand the ethical implications of digital image production.Recent research also demonstrates that AI integration in visual arts education remains an emerging field. A 2026 systematic review of studies published between 2020 and 2025 found that although AI offers substantial opportunities for creativity and learning in visual arts, its pedagogical use often lacks sufficient connection with established learning theories and the specific epistemological foundations of artistic practice [4]. This indicates the necessity of developing a systematic methodology in which artificial intelligence is not introduced simply because it is technologically innovative, but because it contributes to clearly defined educational and artistic objectives.

From a methodological point of view, the use of artificial intelligence and digital technologies in visual arts lessons can be organised through several interconnected stages: explanation of theoretical concepts, demonstration of digital tools, guided practical activities, independent creative experimentation, presentation of students' works, and reflective evaluation. At each stage, traditional and digital artistic methods should complement one another. For instance, students may first prepare sketches manually, subsequently develop them through digital applications, use AI to explore alternative visual concepts, and finally create an individual composition that reflects their own artistic intention.Thus, the methodological integration of artificial intelligence and digital technologies into visual arts education should be based on a balanced relationship between artistic knowledge, pedagogical objectives, technological possibilities, and ethical responsibility. The central purpose of

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using these technologies is not to automate artistic production, but to expand students' opportunities for experimentation, strengthen their visual and digital literacy, stimulate creative thinking, and prepare them to participate consciously and independently in the rapidly evolving digital culture.

MAIN PART

The integration of artificial intelligence and digital technologies into visual arts education requires a systematic methodological approach rather than the occasional use of technological tools during lessons. The effectiveness of such integration depends on the relationship between educational objectives, artistic content, students' age and abilities, available technological resources, and the teacher's pedagogical competence. Digital technologies should therefore be selected according to their educational function and their potential to support creative thinking, artistic experimentation, visual analysis, and independent learning.One of the most important methodological principles is the combination of traditional artistic practices with digital tools. Drawing with pencils, working with paints, studying colour theory, composition, perspective, shape, and texture remain fundamental components of visual arts education. Digital technologies should not eliminate these activities. Instead, they can extend the possibilities of traditional artistic practice. For example, students may first create a hand-drawn sketch and then digitize it, experiment with alternative colour schemes, modify compositional elements, add digital textures, or transform the work into a multimedia project. In this way, students learn to perceive traditional and digital art-making as interconnected creative processes.

Generative artificial intelligence introduces an additional stage into this methodological system. AI image-generation tools can transform textual descriptions into visual representations and rapidly produce different versions of the same artistic idea. Such possibilities are especially useful during brainstorming and the preliminary stages of creative work. Research involving educators and students in higher arts education shows that generative AI is generally viewed as offering new possibilities for creativity and learning while simultaneously raising questions concerning its appropriate pedagogical use [5].A productive visual arts lesson involving AI may begin with the formulation of a creative problem. For instance, students can be asked to design an imaginary city, illustrate a literary character, create an ecological poster, interpret a historical event visually, or produce a composition based on a specific emotional concept. Before using artificial intelligence, students should analyse the artistic problem, determine the main idea, identify visual symbols, select an appropriate style, and prepare preliminary sketches. This prevents AI from becoming a substitute for the learner's own intellectual and artistic activity.

The next methodological stage may involve **prompt design**. Students formulate textual instructions describing the desired visual composition, including objects, artistic style, colour relationships, perspective, lighting, atmosphere, and other visual characteristics. Writing effective prompts requires learners to transform visual ideas into precise verbal descriptions. Therefore, prompt engineering can become not only a technological skill but also an exercise in visual literacy, vocabulary development, observation, and conceptual thinking. Research on text-to-image systems has demonstrated the educational potential of prompt-based interaction in visual arts, particularly because students are required to consciously consider how verbal concepts influence visual outcomes [6].After generating an image, the pedagogical process should not end with accepting the first AI-generated result. Students should compare several visual alternatives, identify successful and unsuccessful elements, explain why a particular composition is more effective, and determine whether the generated image corresponds to their original artistic intention. Such comparative analysis encourages students to develop aesthetic judgement and critical visual thinking. The teacher may ask questions such as: *Does the generated image accurately communicate the intended idea? Which compositional elements are effective? What should be changed? How is colour used? Is the*

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image original? What elements were created by the student and what elements were generated by the system?

This process leads to the concept of **human–AI co-creation**. In visual arts education, the student should remain the main author and decision-maker, while artificial intelligence functions as an auxiliary instrument. The student formulates the concept, evaluates generated alternatives, selects useful elements, modifies them, combines them with personal drawings or photographs, and creates the final artistic solution. Studies of children creating digital art with generative AI indicate that creative work emerges through interaction among the learner, technological system, available materials, ideas, and social learning environment [7]. Thus, educational attention should be directed not only to the final image but also to the process through which students make creative decisions.Another important component of the methodology is the use of digital drawing and painting technologies. Graphic tablets and digital painting applications provide students with opportunities to experiment with brushes, layers, transparency, colour combinations, textures, masks, and visual effects. One of the advantages of these technologies is the possibility of revising artistic decisions without completely destroying the original work. Students can compare several versions of a composition and analyse how particular modifications influence its visual meaning.

Digital image-processing software can also be incorporated into visual arts lessons to teach composition, photography, typography, poster design, illustration, and mixed-media art. Students can learn how cropping, contrast, saturation, scale, balance, and visual hierarchy affect perception. However, technical mastery of software should not become the main objective of the lesson. The central purpose must remain artistic development: learning how technological possibilities can be used to communicate an idea effectively.Three-dimensional modelling technologies represent another important direction in contemporary art education. Through digital 3D environments, students can create virtual sculptures, architectural forms, product prototypes, exhibition spaces, and spatial compositions. This develops spatial thinking and allows learners to observe objects from different angles. Combining traditional modelling activities with digital three-dimensional design may also strengthen students' understanding of volume, proportion, structure, and perspective.

Augmented reality and virtual reality can further expand the learning environment. Virtual museum tours provide access to artworks and cultural heritage objects that students may not be able to visit physically. Learners can examine paintings, sculptures, architecture, and exhibitions from different cultural contexts and subsequently discuss artistic styles, techniques, and historical conditions. In this sense, digital technology creates opportunities to connect classroom instruction with wider cultural and artistic environments.A particularly effective methodological strategy is **project-based learning**. Within this approach, students may complete an artistic project through several stages: defining the problem, researching visual references, producing sketches, experimenting with AI-generated alternatives, creating digital or traditional artwork, presenting the final product, and reflecting on the creative process. Project-based activities enable learners to combine artistic knowledge with technology, communication, problem-solving, and independent decision-making.

For example, a visual arts project entitled *"The City of the Future"* may begin with discussions about architecture, ecology, transportation, and urban design. Students can produce initial drawings manually, generate alternative architectural ideas using AI, critically evaluate these images, select appropriate elements, and develop an original final composition. In this process, artificial intelligence does not produce the final educational outcome independently; rather, it functions as one component of a wider creative and analytical activity.Collaborative learning can also be supported through digital technologies. Students may work in groups to prepare digital exhibitions, illustrated stories, posters, animations, virtual galleries, or multimedia presentations. Each learner can perform a

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specific role, such as illustrator, designer, researcher, photographer, digital editor, or project coordinator. Such activities develop communication skills, responsibility, the ability to evaluate the work of others, and respect for different artistic perspectives.

Assessment methods should also change when artificial intelligence is incorporated into visual arts education. Evaluating only the final image may not accurately reflect the student's contribution because certain elements may have been generated automatically. Therefore, assessment should consider the entire creative process. Important criteria may include originality of the initial concept, quality of preliminary sketches, appropriate use of digital tools, effectiveness of prompts, critical evaluation of AI-generated materials, modifications introduced by the student, artistic composition, technical execution, and the learner's ability to explain creative decisions.The student may also maintain a **digital portfolio** containing initial ideas, sketches, prompts, generated alternatives, rejected versions, revisions, final artworks, and personal reflections. Such a portfolio makes it possible to observe the development of the creative process and clearly distinguish the student's intellectual and artistic contribution from automatically generated content.

The ethical dimension of AI-based art education is particularly important. The rapid spread of generative AI raises questions related to authorship, copyright, training data, originality, cultural representation, bias, and academic integrity. Recent research in higher art education emphasizes that generative AI creates valuable opportunities for creative exploration while simultaneously requiring explicit pedagogical attention to authorship, ethics, visual culture, and critical reflection [8].For this reason, students should be taught that generating an image through AI does not automatically make them the sole creators of every visual element contained within it. Teachers should discuss when and how AI assistance needs to be acknowledged, why directly presenting generated content as entirely personal work may be problematic, and how existing artistic styles and visual materials may influence AI outputs. These discussions can help students develop responsible digital citizenship alongside artistic competence.

Another methodological concern is the risk of excessive dependence on artificial intelligence. If students use AI to generate every initial idea, composition, or visual solution, their independent imagination and practical drawing skills may receive insufficient development. Therefore, teachers should deliberately design activities in which AI use is limited or introduced only after students have produced their own ideas. For example, learners may first create three independent sketches and only afterwards compare them with AI-generated alternatives. Such a sequence preserves the central role of human creativity.The role of the visual arts teacher is therefore changing. The teacher is no longer only a demonstrator of artistic techniques but also becomes a facilitator of creative inquiry, a curator of digital resources, a guide in critical visual analysis, and an educator in AI ethics. The teacher must determine when technology contributes to the learning objective and when traditional artistic practice is more appropriate. Effective methodology does not require artificial intelligence in every lesson; rather, it requires purposeful use when AI can deepen understanding, provide new opportunities for experimentation, or support creative reflection.

The proposed methodology can consequently be organised into the following educational sequence: **creative problem → theoretical preparation → manual sketching → selection of digital tools → prompt formulation → AI-based experimentation → critical comparison → artistic modification → creation of an original final work → presentation → reflection and assessment**. This sequence keeps the learner at the centre of the educational process while allowing artificial intelligence to function as a supportive creative instrument.Thus, artificial intelligence and digital technologies can significantly enrich visual arts education when they are integrated through pedagogically justified methods. Their greatest educational value lies not in producing aesthetically impressive images quickly, but in enabling students to experiment, analyse, compare, revise,

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communicate, and reflect. The ultimate objective should be the development of a learner who possesses artistic skills, digital competence, visual literacy, critical thinking, ethical awareness, and the ability to use emerging technologies creatively and responsibly.

CONCLUSION

The integration of artificial intelligence and digital technologies into visual arts education represents an important stage in the transformation of contemporary teaching and learning. The development of generative AI, digital painting software, graphic design applications, three-dimensional modelling, virtual environments, and interactive platforms has expanded the possibilities available to both teachers and students. However, the educational value of these technologies depends primarily on how they are incorporated into the pedagogical process rather than on the technological tools themselves.The effective use of artificial intelligence in visual arts education requires a balanced methodology that combines traditional artistic knowledge with digital competence. Fundamental skills such as drawing, painting, composition, colour theory, perspective, observation, and visual analysis should remain central to art education. Digital technologies and AI should complement these skills by providing additional opportunities for experimentation, creative exploration, visual comparison, and the development of alternative artistic solutions.

Generative artificial intelligence can be particularly valuable during the early stages of the creative process. Text-to-image systems allow students to transform verbal descriptions into visual concepts, compare multiple interpretations, experiment with styles, and analyse different compositional approaches. At the same time, students should not become passive consumers of AI-generated content. The learner must remain the principal creator who formulates the artistic idea, evaluates generated materials, modifies them, makes aesthetic decisions, and takes responsibility for the final artistic product.The proposed methodology demonstrates that AI-supported visual arts education can be organised as a sequence of interconnected activities: **creative problem identification, theoretical preparation, traditional sketching, selection of digital tools, prompt development, AI-assisted experimentation, critical analysis, artistic modification, final artwork production, presentation, and reflection**. Such a structure enables technology to support creativity without replacing the student's independent artistic thinking.

Another important finding is that the teacher plays a decisive role in the successful integration of digital technologies. Contemporary visual arts teachers need not only artistic and pedagogical knowledge but also sufficient digital competence to evaluate technological tools and select them according to educational objectives. This corresponds to the TPACK approach, which emphasizes the interaction between technological, pedagogical, and content knowledge [2]. Teachers should therefore act as facilitators of creativity, guides in digital environments, and mentors who help students use artificial intelligence critically and responsibly.Assessment practices should also be adapted to AI-supported art education. When generative technologies are involved, evaluation based exclusively on the final visual product may not accurately represent the student's contribution. Teachers should assess the entire creative process, including the originality of the concept, preliminary sketches, prompt formulation, critical evaluation of AI outputs, modifications made by the learner, technical execution, artistic quality, and ability to explain creative decisions. Digital portfolios can provide an effective mechanism for documenting these stages.

Ethical considerations are equally important. The use of AI-generated visual content introduces questions regarding authorship, copyright, intellectual property, originality, algorithmic bias, and academic integrity [1], [8]. Students should therefore learn how to identify the difference between human-created and AI-assisted work, appropriately acknowledge the use of generative tools, critically evaluate automatically produced images, and respect the intellectual contributions of other artists.

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Moreover, excessive dependence on artificial intelligence may negatively influence the development of independent imagination and practical artistic skills. For this reason, educators should maintain a reasonable balance between AI-assisted activities and traditional creative tasks. In many cases, students should first develop their own sketches and ideas before using artificial intelligence to explore alternative solutions. Such an approach ensures that technology remains an instrument for extending human creativity rather than replacing it.Overall, artificial intelligence and digital technologies have considerable potential to enrich visual arts education by supporting experimentation, visual literacy, creative thinking, digital competence, and student engagement [4], [5]. Their effective implementation, however, requires clearly defined pedagogical objectives, appropriate methodological strategies, competent teachers, ethical awareness, and continuous critical reflection. Therefore, the main purpose of integrating artificial intelligence into visual arts education should not be the rapid generation of visually attractive images, but the development of creative, independent, critically thinking, digitally competent, and ethically responsible learners capable of using emerging technologies as meaningful instruments of artistic expression.

REFERENCES

[1] Miao, F., & Holmes, W. (2023). *Guidance for Generative AI in Education and Research*. Paris: UNESCO. https://doi.org/10.54675/EWZM9535

[2] Mishra, P., & Koehler, M. J. (2006). Technological Pedagogical Content Knowledge: A Framework for Teacher Knowledge. *Teachers College Record, 108*(6), 1017–1054. https://doi.org/10.1111/j.1467-9620.2006.00684.x

[3] Black, J., & Browning, K. (2011). Creativity in Digital Art Education Teaching Practices. *Art Education, 64*(5), 19–34. https://doi.org/10.1080/00043125.2011.11519140

[4] Jiang, Y., Fan, Y., & Liu, Z. (2026). Generative AI in Art Education: A Systematic Review of Research Trends, Tool Applications, and Outcomes (2019–2025). *Education Sciences, 16*(1), 47. https://doi.org/10.3390/educsci16010047

[5] Sáez-Velasco, S., Alaguero-Rodríguez, M., Delgado-Benito, V., & Rodríguez-Cano, S. (2024). Analysing the Impact of Generative AI in Arts Education: A Cross-Disciplinary Perspective of Educators and Students in Higher Education. *Informatics, 11*(2), 37. https://doi.org/10.3390/informatics11020037

[6] Dehouche, N., & Dehouche, K. (2023). What's in a Text-to-Image Prompt? The Potential of Stable Diffusion in Visual Arts Education. *Heliyon, 9*(6), e16757. https://doi.org/10.1016/j.heliyon.2023.e16757

[7] Tang, M., Xing, B., Tang, Z., Zou, P., Yu, J., & Zhang, H. (2024). AI-Driven Interactive Painting Synthesis System for Children's Art Education. In *Design Studies and Intelligence Engineering*, pp. 216–224. IOS Press. https://doi.org/10.3233/FAIA231439

[8] Ansone, A., Zālīte-Supe, Z., & Daniela, L. (2025). Generative Artificial Intelligence as a Catalyst for Change in Higher Education Art Study Programs. *Computers, 14*(4), 154. https://doi.org/10.3390/computers14040154