

Potential Risks of Artificial Intelligence in Teaching and Relevant Avoidance Strategies

Yaqi Zhang *

Sichuan Normal University, Chengdu, China

* Corresponding Author Email: 2762086089@qq.com

Abstract. Against the backdrop of digital and intelligent transformation, generative AI tools including drawing software, 3D modeling systems and rendering engines have been widely adopted in university design teaching. AI streamlines design workflows, improves teaching efficiency, diversifies creative expression, and breaks the constraints of traditional design education in terms of time, space and physical materials. Nevertheless, excessive reliance and improper application of AI among teachers and students have given rise to prominent educational risks. Based on authentic teaching scenarios and practical cases, this paper analyzes various latent risks brought by AI adoption, and explores internal and external contributing factors from four dimensions: teaching administration, student psychology, disciplinary characteristics and industrial norms. Centering on curriculum iteration, teaching reform, academic norms, assessment mechanisms and value cultivation, it proposes feasible strategies for risk prevention and control. This paper clarifies the rational application boundary of AI in design teaching, advocating that technology serves as an assistant rather than a substitute for manual creation and independent thinking. It upholds the core values of design education featuring practice, emotional expression, cultural inheritance and personalized creation, and promotes sound long-term integration between AI and modern design education.

Keywords: Artificial Intelligence; Design Major; Educational Teaching Application; Potential Risks; Risk Prevention; Original Design Education.

1. Introduction

Driven by big data, deep learning and generative AI, diverse intelligent teaching and creative tools reshape traditional classrooms and deepen smart education reform. Traditional design training relies on sustained practice in sketching, rendering, handcrafting and scheme iteration to strengthen students' basic design skills. Widely used in university courses such as stop-motion animation, graphic, interior and product design, AI quickly produces layouts, renderings and 3D models. It lowers creation barriers, improves efficiency, inspires ideas and facilitates personalized teaching.

However, growing overreliance on AI poses challenges. Students handing in fully AI-generated work lose basic skills and independent thinking, producing formulaic creations lacking emotion and cultural depth. AI outputs also risk copyright conflicts, academic misconduct and unfair evaluation.

Taking practice, emotional expression, cultural inheritance and personalized creation—the four core values of design education—as its framework, this paper analyzes AI-related risks and proposes measures to regulate AI use and cultivate outstanding design talents.

2. Main Potential Risks of Artificial Intelligence in Design Teaching Application

2.1. Continuous Degradation of Students' Core Basic Practical Skills

This risk erodes the core practical value of design education rooted in long-term hands-on practice. Designers gain competitiveness from fundamental skills such as sketching and colouring, developed through freshman and sophomore training including sketching and model building. Such professional literacy cannot be rapidly acquired via AI.

Popular AI design tools disrupt this systematic training system and encourage lazy learning. In stop-motion animation courses, students skip clay sculpting, prop making and frame-by-frame shooting, merely generating videos through AI prompts. Lacking essential hands-on practice, they lose sensitivity to animation rhythm and cannot create independently without AI.

Likewise, in graphic and drawing classes, students over-rely on AI for line drafts and colour layouts and abandon regular hand-drawing practice. Their line control, colour perception and structural understanding decline severely. These hidden skill gaps hinder career growth and deprive them of vital core professional competence.

2.2. Serious Deficiency of Independent Original Creative Thinking and Homogenization

This risk damages design education's core values of personalized creation and emotional expression beyond AI algorithms' imitation. The artistic side of design is critical: to provide objects, interactions and services that delight as well as inform, that are joyful [1]. Rooted in personal experience, aesthetics and inner feelings, fine design works feature unique ideas formed through designers' repeated reflection and emotional devotion that AI cannot reproduce.

Generative AI merely reorganizes existing online design resources, lacking authentic emotion and original thought. Students simply input keywords to produce coursework, resulting in uniform styles across assignments and competitions due to identical algorithmic outputs. Over-reliance on AI makes students neglect research, observation and brainstorming. Their thinking grows rigid, losing independent creativity and failing to meet design education's goal of fostering innovative designers.

2.3. Frequent Copyright Disputes and Increasing Academic Ethics Risks

This risk undermines personalized original creation, a core value of the design industry and teaching assessment. Copyright norms are essential in design, but most commercial AI systems are trained on unlicensed artworks, making students' AI outputs highly vulnerable to unintentional copyright infringement.

Teachers and students generally lack copyright awareness. Students often submit AI-generated works as original for coursework and competitions, which risks legal action and damages the institution's academic reputation.

Replacing independent design with AI also constitutes hidden academic misconduct. Harder to detect than ordinary plagiarism, it undermines academic fairness, distorts evaluation criteria and prevents students from developing proper professional ethics.

2.4. Weakened Humanistic Literacy Cultivation and Deviated Teaching Value Orientation

This risk weakens the spiritual core of design education featuring cultural inheritance and humanistic expression, which grant designs enduring appeal. High-quality design education attaches importance to humanistic literacy and social responsibility. Excellent works achieve profound artistic influence by integrating traditional culture, folk characteristics and humanistic care.

Nevertheless, AI design tools generate visuals merely via algorithms and data. Obsessed with delicate visuals and mainstream aesthetics, they struggle to endow creations with profound cultural heritage and genuine human emotions. Students only focus on whether AI outputs satisfy assignment requirements and neglect reflections on cultural contexts, emotional expression and social value, eroding their cultural reserves and humanistic design literacy.

Besides, AI's efficient creation model distorts teaching orientation. Overemphasis on AI operations squeezes courses on design theories and cultural studies. Such utilitarian teaching prioritizes rapid technical results over cultural depth and restricts students' all-round development.

2.5. Educational Equity Risks Caused by Uneven Intelligent Resource Allocation

The extensive application of AI in design teaching triggers equity risks arising from unequal resource distribution. Premium paid AI design tools come at a high cost. Students with better financial conditions can create high-quality works, while economically disadvantaged students only have

access to limited free tools. This gap prevents equal opportunities for practical training, personalized creation and cultural literacy cultivation, hindering the full realization of the four core values of design education.

In the long run, disparities in accessing intelligent resources will widen academic gaps among students within the same major and lead to unbalanced development. This violates the long-standing principle of educational equity and creates new challenges for differentiated teaching management in design majors.

3. Targeted Avoidance Paths and Comprehensive Response Strategies for AI Teaching Risks

3.1. Strictly Standardize Teaching Management and Consolidate Basic Skill Training

This strategy targets the degradation of students' practical ability, aiming to restore and consolidate the core value of hands-on practice in design education through rigid teaching management and compulsory manual training. The specialist professionals we educate for this work need two kinds of education. One is specialty training in the advanced skills of specific design practice. The other is a broad training that involves the kinds of thinking and knowledge designers need for a wide range of professional engagements [2]. Colleges and professional teaching management departments need to formulate unified and clear management specifications for the use of artificial intelligence tools in design majors, divide the use boundaries and use scenarios of AI tools in different courses in detail, and clarify the forbidden scope and auxiliary use scope of intelligent tools. In all basic compulsory courses such as hand-drawing sketching, color basic training, perspective drawing, manual production and basic hand-painting creation, it is clearly stipulated that students are prohibited from using any AI generation tools to complete homework and classroom training tasks. All basic skill assessment results are based on on-site independent hand-drawing and on-site manual creation results, forcing students to return to traditional basic skill training and restore the daily learning habit of persistent hand-drawing practice.

Visual intelligence, ethical sensibility, and aesthetic intuition can be developed and strengthened through some kind of basic design education [3]. In professional practical courses such as stop-motion animation creation, product design and environmental space design, teachers should clearly define the auxiliary functions of AI tools. It is allowed to use artificial intelligence to collect design materials, sort out creative inspiration, simulate preliminary effect references and optimize later detail revisions, but the core links such as design theme conception, overall scheme planning, original manuscript independent creation, core scene layout and key frame shooting must be independently completed by students themselves. Teachers should increase the inspection frequency of students' manual creation process in class, supervise students to complete practical operation links in place, and ensure that basic practical ability training is fully implemented in place.

3.2. Optimize Teaching Mode and Stimulate Students' Original Creative Consciousness

This strategy responds to the homogenization of design works and rigid thinking, focusing on stimulating personalized independent creation and authentic emotional expression, two core values suppressed by over-reliance on AI keywords. Teaching involves much more than exposition. Like learning, it is an activity in which the social and the material—not just the epistemic—are consequential. Some careful forethought, imagination, empathy and planning will often tilt the balance towards success [4]. A variety of tasks will call upon the designer's skills and creativity: interpreting the vast quantities of information that will serve to define the problem; ensuring that root causes are addressed; monitoring implementation; and developing strategic modifications or even making significant changes when implementation is not generating the expected result [5]. Design teachers should actively reform the traditional single classroom teaching mode, increase the proportion of creative brainstorming, design scheme demonstration, market research analysis and

cultural theme exploration in classroom teaching, and guide students to take life observation, social perception and cultural accumulation as the source of creative inspiration, so as to form their own unique creative thinking system. It is our responsibility as teacher educators to provide opportunities to participate in inquiries that capitalize on the power of empathy so that they can use these experiences with their students [6]. In the setting of daily homework and design assessment themes, teachers should try to adopt personalized, differentiated and localized design themes, reduce universal and homogenized creative themes that are easy to generate with keywords, and increase the difficulty and uniqueness of independent conception of design themes, so as to reduce the application space of lazy creation of AI tools.

Schools should reform assessment systems, replacing final-work-only evaluation with full-process appraisal covering drafts, thinking records, revisions and mid-term outputs. Teachers judge students' independent design capacity based on the whole creation procedure instead of AI-generated visuals, stimulating their willingness to create original designs.

3.3. Popularize Copyright and Academic Norms and Build a Good Academic Atmosphere

This strategy establishes institutional norms to safeguard the core value of personalized original creation and address hidden copyright infringement and covert academic misconduct resulting from unregulated AI applications. Universities should regularly organize special lectures on design intellectual property, copyright popularization and academic ethics for design majors. They need to systematically inform teachers and students about copyright ownership, commercial restrictions and legal liabilities of infringing involving AI-generated designs. This helps students distinguish proper AI-assisted creation from academic plagiarism and infringing creation and build sound awareness of legal risk prevention.

Professional teaching teams shall formulate clear marking standards for AI-aided work. All students are required to attach detailed notes to submitted designs, separating self-completed content from sections optimized with AI, and truthfully labeling tool types, application stages and scope. Works relying heavily on AI outputs to replace independent creation will face severe point deductions and academic warnings to curb hidden academic misconduct. Meanwhile, outstanding student original works should serve as models to foster a classroom culture that respects originality, advocates hand-drawn creation and observes academic standards, so as to improve the study ethos of design majors.

3.4. Integrate Humanistic Cultural Education and Correctly Guide Intelligent Learning Values

This strategy remedies the loss of humanistic connotation in AI-generated works, taking cultural inheritance and human emotional expression as the core of design education value guidance to balance technical tool learning and cultural cultivation. To cope with dynamisms and complexities of AI developments, we need to adopt humanistic participatory design approaches, whilst drawing on future-oriented methods and frameworks that support complex educational design conversations [7]. HCD is the design approach that centers people and their needs, motivations, emotions, behavior, and perspective in the development of a design. HCD requires viewing humans as people. People with different prior experiences, needs, desires, ambitions, interests, irrational decision making, and lifestyles embedded within specific cultural contexts [8].

In the process of design professional teaching, teachers should integrate traditional excellent culture, regional intangible cultural heritage, folk art elements, public welfare design concepts and other humanistic contents into professional courses, combine cultural inheritance with design creation, encourage students to dig deep into cultural connotation from local characteristic culture and traditional art, and integrate emotional thoughts and humanistic care into design works, so as to enrich the ideological connotation and spiritual value of students' design works.

Students should be fully aware of ethical challenges when AI is misused. At the same time, they should be mindful that they are the ones who shape and develop AI. AI will learn what they say to

AI and how they behave to AI and that learning results will come back to them [9]. Teachers must always adhere to the correct design education value orientation, correctly guide students to rationally view the functional attributes of artificial intelligence tools in classroom teaching, and clearly let students understand that AI is only an efficient auxiliary tool to optimize the design production process, simplify the post-production link and expand creative inspiration, and can never replace independent thinking, manual creation and emotional expression which are the core souls of design creation. In daily teaching, balance the teaching proportion of intelligent software operation skills and design humanistic literacy courses, avoid excessive emphasis on technical skills and neglect cultural education, take cultivating high-quality design talents with both solid skills and profound cultural heritage as the core teaching goal, and realize the healthy integration of intelligent technology and humanistic design education.

3.5. Optimize Intelligent Resource Allocation and Narrow the Gap of Educational Learning Conditions

This strategy eliminates the digital divide in intelligent learning resources, providing equal learning conditions for all students to practice hands-on creation, develop personalized ideas and absorb cultural knowledge, laying a fair foundation for realizing all four core values of design education. The digital divide presents a significant challenge in the effective integration of AI in education, as students who lack access to technology or reliable internet connectivity may be excluded from participating fully in AI-enabled learning experiences and may fall behind their peers without sufficient digital learning resources [10]. Education management departments and colleges can integrate free high-quality public intelligent design learning resources, uniformly open professional auxiliary AI tool channels suitable for design major teaching for all students, reduce the learning resource gap caused by different family economic conditions, let every design major student enjoy equal intelligent auxiliary learning conditions, effectively balance the educational equity problem brought by intelligent resource differences, and create a fair and consistent intelligent teaching learning environment for all students.

4. Conclusion

The integration of artificial intelligence into digital design education represents an irresistible trend. While AI innovates teaching models and lowers barriers to creation, over-reliance on it will erode the four core values — practice, emotional expression, cultural inheritance and personalized creation, giving rise to five major educational risks. This paper analyzes the value losses caused by these risks and puts forward supporting countermeasures to preserve the aforementioned core values. Educators ought to regulate the application of AI, strengthen hands-on training, reform evaluation systems, popularize copyright standards, incorporate humanistic teaching, and balance the allocation of intelligent resources. Education always takes precedence over technology, and artificial intelligence should function merely as an auxiliary tool. By upholding the four core values, we can cultivate well-rounded design talents and advance the sustainable development of design education.

References

- [1] Norman, D. (2010). Why design education must change. *core77*, 26, 92–95.
- [2] Friedman, K. (2012). Models of design: Envisioning a future design education. *Visible language*, 46(1/2), 132.
- [3] Findeli, A. (2001). Rethinking Design Education for the 21st Century: Theoretical, Methodological, and Ethical Discussion. *Design Issues*, 17(1), 5–17.
- [4] Goodyear, P. (2015). Teaching as design. *Herdsa review of higher education*, 2(2), 27–50.
- [5] Meyer, M. W., & Norman, D. (2020). Changing design education for the 21st century. *She Ji: The Journal of Design, Economics, and Innovation*, 6(1), 13–49.

- [6] B. Bush, S., Edelen, D., Roberts, T., Maiorca, C., Ivy, J. T., Cook, K. L.... & Cox Jr, R. (2024). Humanistic STE (A) M instruction through empathy: leveraging design thinking to improve society. *Pedagogies: An International Journal*, 19(1), 60–79.
- [7] Carvalho, L., Martinez-Maldonado, R., Tsai, Y. S., Markauskaite, L., & De Laat, M. (2022). How can we design for learning in an AI world. *Computers and Education: Artificial Intelligence*, 3, 100053.
- [8] J. Auernhammer. (2020). Human-centered AI: The role of human-centered design research in the development of AI. In S. Boess, M. Cheung, S. Cain (Eds.), *Synergy — DRS International Conference 2020*, 11–14 August, held online. <https://doi.org/10.21606/drs.2020.282>
- [9] Kim, J., Lee, H., & Cho, Y. H. (2022). Learning design to support student-AI collaboration: Perspectives of leading teachers for AI in education. *Education and information technologies*, 27(5), 6069–6104.
- [10] Eden, C. A., Chisom, O. N., & Adeniyi, I. S. (2024). Integrating AI into education: Opportunities, challenges, and ethical considerations. *Magna Scientia Advanced Research and Reviews*, 10(2), 006–013.