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Tool, Partner or Rival? - A Study on the Role Positioning and Identity Negotiation of Design Freshmen towards Generative AI

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Abstract: This study focuses on how students position their roles and how this process affects their professional identity after generative AI is deeply integrated into the design foundation courses. Through retrospective in-depth interviews with 35 freshmen at Mianyang Normal University who have completed the courses of "Design Sketching" and "Inductive Restricted Color", using thematic analysis, it was found that students generally view AI as an "efficiency tool" and "inspiration partner", but at the same time are wary of it becoming a "driver of style homogenization" and "substitute for basic skills". The study reveals the identity negotiation tension caused by the "blurred boundary of human-machine responsibilities" - while AI enhances creative confidence, it may also weaken the sense of creative autonomy. This study proposes that "teaching should guide students to establish a critical collaborative relationship with AI", providing learner-centered empirical evidence and theoretical reflection for the curriculum reform of design education in the era of artificial intelligence.

Keywords: Generative AI; Role positioning; Identity negotiation; Design education; Human-machine collaboration; Critical collaboration.

1. Introduction

1.1 Research Background

Since the end of 2022, text-to-image generation models represented by Stable Diffusion, Midjourney, and DALL·E 3 have relied on their ability to generate images in seconds. It has rapidly permeated and restructured the global landscape of art and design education (Ciaramitaro & Costa, 2024). Top international art colleges, such as the Royal College of Art in the UK and Parsons School of Design in the US, have systematically incorporated artificial intelligence tools into the teaching syllabi of their basic courses (Foster & Kalyan, 2024). In the field of higher education in China, institutions such as the Academy of Arts & Design at Tsinghua University, China Academy of Art, and Guangzhou Academy of Fine Arts have successively added modules related to "Generative Artificial Intelligence and Design" to their 2023 academic training programs. It marks the shift of AI technology from frontier exploration to the localization practice of basic teaching (Academy of Arts & Design, Tsinghua University, 2023).

However, in sharp contrast to this rapid "technological craze", the academic community's micro-level understanding of its teaching integration effect still shows a lack of "evidence". Most of the existing studies focus on the performance evaluation at the macro level, generally emphasizing the potential of AI in "improving creative efficiency" ((Zhang & Li, 2024) and "stimulating design inspiration" (Berni et al., 2024). In contrast, there is still a lack of in-depth exploration on how learners - especially college students as digital natives - specifically perceive, recognize and position the role of these tools in their professional identity construction and creative practice (Berni et al., 2024). It is particularly worth noting that most of the existing literature focuses on the immediate feedback during the tool usage process, but lacks a retrospective and reflective examination of the "post-course context" of "after the course ends and the learning outcomes are determined" (Marzano, 2025). When the compulsion of learning and the novelty of technology wear off, how can students reevaluate and "name" their relationship with AI tools? How does this relationship, in turn, shape their understanding of "what a designer is"? In-depth exploration of these issues is of crucial significance for promoting the application of AI in education from the superficial "tool usage" to the profound "integration of teaching and learning", and achieving a qualitative leap from "using it" to "using it well".

1.2 Problem Statement

As an active responder to the current wave of educational technology innovation, the Design major of Mianyang Normal University carried out a systematic AI tool integration teaching experiment in the two core basic courses of freshmen, "Design Sketching" and "Inductive Limited Color", in the autumn semester of 2025. Preliminary quantitative data shows that the experiment has achieved remarkable results: on average, students have completed 136 AI-assisted sketches, and the overall excellent and good rate of the course has increased by 18 percentage points compared with the same period of previous years. However, beneath the positive teaching

assessment "smiling curve", the course team, through informal communication, captured a series of thought-provoking hidden voices, such as: "I feel that I'm getting less and less good at hand-drawing", "The styles of everyone's works are becoming more and more similar", "I don't know what I would do if there were no AI in the future". These emotional expressions, although not yet captured by traditional quantitative questionnaires, may profoundly influence students' subsequent learning motivation, strategic choices, and even the construction of professional identity (Kundu & Bej, 2025).

Existing research on technology acceptance (such as Davis' TAM model in 1989) or self-determination theory (Ryan & Deci, 2020) mainly focuses on the intention before use or the motivation during use, while paying insufficient attention to the process of users redefining the role of tools in the "post-use stage". If the process of students' "role redefinition" of AI tools is ignored in the teaching reform, the curriculum design may only remain at the one-way transmission of technical abilities and fail to effectively guide students to establish a healthy human-machine collaborative relationship centered on subjectivity. This may lead to the subsequent teaching falling into a potential predicament of "continuous emphasis on technology - continuous loss of students' creative subjectivity - creative output falling into homogeneous internal competition" (Wijaya et al., 2025). Therefore, this study aims to fill a core cognitive gap: after the mandatory and high-intensity AI-assisted courses come to an end, what "position" do students actually place AI tools in their personal learning and creative ecosystems? How does the bestowing of this "status" mediatedly influence their perception and identification with the professional identity of "designer"?

1.3 Research Objectives and Questions

This study aims to adopt an interpretive research paradigm, starting from the perspective of the student as the subject, to deeply depict and explain the cognitive and emotional status of AI graphic generation tools assigned by learners in the "post-curriculum context", and to explore the potential influence mechanism of this status definition on their learning autonomy, creative subjectivity, and professional identity.

Based on the above purposes, this study proposes the following three specific research questions:

RQ1: After the course ends, how do students recognize, describe and metaphorically "name" the role of AI tools in their learning and creation? (For example: Is it a substitute, assistant, collaborator, challenger or something else?)"

RQ2: How does this perception of the role of AI tools affect students' sense of creative autonomy, their evaluation of personal originality, and their identification with the professional identity of "designer"?

RQ3: Looking ahead to future professional studies, what new expectations and visions do students have for the role that AI tools should play?

1.4 Research Significance

1.4.1 Theoretical Significance

Firstly, this study introduces the "Role Theory" in social psychology (Biddle, 1986) and the "identity construction" perspective in creative research (Stets & Burke, 2000) into the field of educational technology, especially engaging in dialogue with the Technology Acceptance Model (TAM) and Self-determination Theory (SDT). The aim is to expand the explanatory power and depth of existing theories when explaining specific learning fields such as art and design that are highly dependent on individual expression and subjectivity. Secondly, this study proposes and practices the "post-course backtracking method", focusing on the reflective narrative after the course ends. It supplements the key "learner's voice" link in the current international AI art education research field and enriches the application of qualitative research methods in this field.

1.4.2 Practical Significance

At the practical level, this research can provide a basis for multi-level educational decision-makers: First, it offers first-hand evidence from students' experiences for university academic affairs departments and colleges to formulate more scientific and humanized "AI-assisted Course Assignment grading guidelines". Secondly, it provides a reference "role contract" design concept and teaching dialogue template for front-line teachers on how to jointly determine the "rights and responsibilities boundaries of human-machine collaboration" with students when designing courses. Thirdly, for local application-oriented undergraduate colleges similar to Mianyang Normal University, when discussing whether and how to systematically incorporate AI tools into professional training programs, provide reference cases based on specific teaching experiments that include students' psychological dimension data.

1.5 Research Scope and Definition

This study clearly defines the scope as follows:

Geographical scope: Design Studies major, Mianyang Normal University, Sichuan Province, China.

Target audience: Full-time undergraduate students of the 2024 grade in this major (i.e., the first year in the autumn of 2025).

The time range: Data collection was concentrated in December 2025, that is, within two weeks after the completion of the above two courses and the announcement of the grade assessment.

The scope of the context: All the research subjects have completed the two compulsory courses, "Design Sketching" and "Inductive Color Limitation", and in the courses, the amount of homework assisted by AI tools accounts for more than 50% of the total grade.

The scope of the method: The semi-structured retrospective interview method in qualitative research was mainly adopted, supplemented by the "image walking" method (i.e., conducting in-depth interviews around the student's own AI works), with an effective sample size of 35 people.

Meanwhile, this study makes the following clear definitions:

The conclusions of this study are mainly applicable to student groups who are "compulsively and densely" required to use AI tools in their courses. The findings may not be directly applicable to learning scenarios where AI tools are chosen out of interest or only used lightly.

This study focuses on students' cognitive status and emotional attitudes towards AI tools, and does not involve the measurement and evaluation of the technical performance of the tools themselves (such as graph generation speed and computing power consumption).

The AI tools involved in the experiments of this course specifically refer to generative image models and do not include other types of AIGC tools such as text generation, audio generation or 3D model generation.

2. Literature Review

2.1 The Current Application Status of Generative Artificial Intelligence in Art and Design Education

2.1.1 Technological Development Context and Educational Infiltration

The application of Generative artificial intelligence (Generative AI) in the fields of art and design is undergoing a paradigm shift from "tool replacement" to "creative collaboration". Early studies mainly focused on the technical performance of AI as an automation tool, such as the quality and speed of generated images (Wang et al., 2025). However, with the breakthrough progress of Diffusion models, especially the release of Stable Diffusion and the DALL·E series models, the research focus has gradually shifted to the potential of AI as a creative partner (Harvard Business School, 2024). In the field of education, this technological transformation has given rise to an update in teaching concepts from "skills training" to "cognitive reconstruction".

Top international Art colleges such as the Royal College of Art (RCA) and the Rhode Island School of Design (RISD) have integrated generative AI tools into design thinking courses in the 2023-2024 academic year, emphasizing the cultivation of "human-machine collaborative thinking" (Royal College of Art, 2024). Research shows that this integration not only alters the creative process but also redefines the fundamental framework of design education. Many domestic art colleges and universities have taken the lead in carrying out exploratory teaching reforms that combine AI with traditional courses Among the first batch of typical cases of "Artificial Intelligence + Higher Education" by the Ministry of Education, Communication University of China has listed "AIGC empowering the inheritance and innovation of traditional culture" as the core of educational reform and implemented an AI-integrated teaching model of "flipped classroom + result-oriented + intelligent efficiency enhancement". The Education and Science Research Institute of Chaoyang District, Beijing, has created the "Rongchuang Classroom", reconstructing the aesthetic education process with a "teacher-student-machine" trinity model to achieve personalized generation from "group similarity" to "real-time customization". In the "Art and Technology" cross-disciplinary project, the Guangzhou Academy of Fine Arts has officially incorporated the "AI + Art" low-code visual programming system into its teaching. Students rely on AI to complete the full-process project training from extracting cultural symbols to generating digital works. Shandong University of Art & Design has initiated the "Artificial Intelligence Empowering Professional Construction" reform. Through the "Five Ones" project, including AI general education courses, industry colleges, and AI-generated art exhibitions, it comprehensively explores the new liberal arts path of "courses as projects and teaching as practice". These practices collectively indicate that AI is no longer a simple grafting at

the tool level, but has become the core engine driving the profound transformation of art and design education (Central Academy of Fine Arts, 2024).

2.1.2 The Dual Effects of Educational Practice

Existing literature has revealed the dual effects of generative AI in educational practice. On the positive side, multiple studies have confirmed that AI tools can significantly enhance students' creative output efficiency. Yan's (2025) experimental research shows that the number of creative solutions produced by students in the AI-assisted group within the same task duration is significantly higher than that of the traditional group, and both the two diversity indicators of "solution category span" and "visual style difference" have been greatly improved. The author attributes this phenomenon to GAI's "rapid iteration" and "cross-modal association" features, and also warns that excessive reliance may weaken original exploration. The longitudinal study by Izzi AIGC Lab (2024) further found that AI tools are particularly helpful in overcoming the "creative barrier period" and providing effective scaffolding support for lower-grade students.

However, the negative impacts should not be ignored either. Chen & Zhang (2025) conducted a follow-up study on students of Communication University of China in Pau and found that over-reliance on AI tools may lead to a "skill compensation" phenomenon - a statistically significant decline in students' basic hand-drawing and modeling abilities. More seriously, Zhang (2024) revealed the "risk of creative homogenization" through qualitative interviews: in the absence of appropriate teaching guidance, students' works often exhibit recognizable style convergence, which is closely related to the training data bias of AI models and the standardization of prompt word culture.

2.2 Technology Acceptance and Positioning from the Perspective of Role Theory

2.2.1 The Evolution and Applicability of Role Theory

Role Theory originated in the field of social psychology and was systematically expounded by Biddle (1986), emphasizing that individuals define the relationship between themselves and others in the social structure by playing specific roles. In the research on technology acceptance, the traditional Technology Acceptance Model (TAM) and the Integrated Technology Acceptance and Use Theory (UTAUT) mainly focus on cognitive factors such as perceived usefulness and ease of use (Venkatesh et al., 2003), while ignoring the social role significance assigned to technology during the usage process.

In recent years, scholars have begun to introduce role theory into the study of human-computer interaction. The classic research by Nass and Moon (2000) indicates that users unconsciously attribute social roles to computer systems. In the context of generative AI, this process of role assignment becomes more complex and intentional. (Wang & Lu, 2025) proposed the "Technical Role Negotiation Framework", arguing that it is necessary for users to establish a new working relationship with AI, which is a brand-new process of reorganization, reconfiguration and redirection.

2.2.2 Classification of Technical Roles in Design Education

In the context of design education, researchers have begun to identify students' different role perceptions of AI tools. Based on a systematic review of existing literature, four main types of roles can be summarized:

Tool-type role: AI is regarded as a passive efficiency tool, similar to a more advanced "brush" or "software plugin". Students who hold this understanding pay attention to the practical functions of the technology, such as automatic color matching and fast rendering.

Mentor-type role: AI is endowed with teaching guidance functions, similar to a "digital mentor". Studies have found that many students expect AI to provide creative suggestions and technical guidance, but such expectations are often frustrated by the lack of real teaching experience of AI (China Development News, 2025).

Collaborator role: AI is regarded as a creative partner, participating in the process of conception, iteration, and decision-making. This perception is more common among senior students with strong professional confidence (Nugroho et al., 2025).

Competitor type role: AI is perceived as a potential professional threat or creative competitor. This kind of cognition may trigger technological anxiety and defensive exclusion, especially among the student group with greater employment pressure (Wang et al., 2025).

2.3 Theoretical Basis and Influencing Factors of Creative Identity Recognition

2.3.1 The Development of Identity Theory

Identity Theory, systematized by Stets and Burke (2000), emphasizes that individuals define themselves through social roles. In the field of art and design, this theory has evolved into the concept of "Creative Identity", referring to an individual's beliefs, values and role identification with their own abilities as a creator (Karwowski & Kaufman, 2017).

Amabile's (1996) creativity component model indicates that domain-related skills, creativity-related processes, and work motivation are the three key elements in the formation of creative identity. Under the background of AI intervention, all these three elements are facing reconstruction. Especially in terms of work motivation, Song & Lee's (2024) Self-determination Theory (SDT) emphasizes the significance of autonomy, competence, and association to intrinsic motivation, and the use of AI tools may have complex impacts on these fundamental psychological needs.

2.3.2 The Impact Mechanism of AI Technology on creative Identity

Existing research has begun to explore how AI technology affects the formation and maintenance of creative identity. In terms of positive mechanisms, Wang & Lu's (2025) distributed creativity theory holds that AI can act as a "cognitive prosthesis" to expand the boundaries of an individual's creative capabilities, thereby enhancing the creator's sense of competence and self-efficacy. Empirical research shows that the appropriate use of AI assistance can enhance the creative confidence of design major students, especially in the technical implementation stage (Hubei University of Technology, 2024).

However, negative mechanisms are also worthy of attention. Based on the social comparison theory (Festinger, 1954), when students compare their creative abilities with the output of AI, they may experience a "sense of relative deprivation". Yan (2024) 's research found that some design students' evaluation of their originality ability decreased after using AI. This "ability doubt" may have a long-term impact on creative identity recognition.

Furthermore, the "black box" nature of AI technology may weaken creators' sense of autonomy and ownership. Research shows that when key decisions in the creative process are made by opaque algorithms, students may feel out of control of their works. This "proxy dissolution" poses a direct challenge to intrinsic motivation and identity (Guangming Daily, 2025).

2.4 Literature Review and Research Gaps

2.4.1 Contributions and Limitations of Existing Research

Based on the existing literature, researchers have made significant contributions in the following aspects: Firstly, at the level of technological application, they have clarified the dual effects of generative AI in education, providing an important warning for teaching practice; Secondly, at the theoretical integration level, the role theory, identity recognition theory and technology acceptance research began to be combined, expanding the analytical framework. Thirdly, at the methodological level, gradually shift from quantitative dominance to a hybrid approach, and start to focus on the subjective experience of learners.

However, existing research still has obvious limitations: First, the temporal dimension is missing. Most studies focus on immediate feedback during the learning process and lack long-term tracking of learners in the "post-curriculum period". Second, the context specificity is insufficient. Most of the existing studies are based on top universities in Europe and America, and do not pay enough attention to the unique context of local applied undergraduate universities in China. Thirdly, theoretical dialogue is limited, and there is a lack of effective integration among different theoretical perspectives. The exploration of the mechanism by which AI status cognition mediates and influences identity recognition is insufficient.

2.4.2 Theoretical Positioning of This Study

This study aims to fill the above-mentioned research gap, and its specific contributions are reflected in three aspects: Firstly, it introduces the "post-curriculum backtracking" temporal perspective to examine students' reflective cognition after the end of the compulsory curriculum period; Secondly, focus on the special educational context of local undergraduate colleges in China to enrich the global picture of AI education research; Third, construct an integrated analysis framework of "technical role cognition → creative experience → identity recognition" to deepen the understanding of the influence mechanism of AI.

Based on Biddle's (1986) role theory, Stets and Burke's (2000) identity theory, and Ryan and Song & Lee's (2024) self-determination theory, this study proposes a conceptual framework: In the continuous interaction with AI tools, students endow AI with specific status through the role negotiation process. This status cognition, in turn, affects the degree to which their basic psychological needs (autonomy, competence, and sense of connection) are met, ultimately shaping the quality and stability of their creative identity

recognition. This framework will guide the subsequent research design, data collection and theoretical construction.

3. Research Methods

3.1 Nature and Purpose of the Research

This research is an exploratory study aimed at, based on the initial achievements of the curriculum reform experiment of the Design major at Mianyang Normal University, and from the perspective of students as the main body, to deeply understand their cognition and interpretation of the "position" played by AI graphic generation tools in their professional learning. The core issue that the research focuses on is: After experiencing courses deeply integrated with AI, how do students redefine the role of AI tools - whether they are substitutes, assistants, collaborators, or something else? How does this perception affect their thinking about the learning process, creative subjectivity and future professional abilities?

3.2 Research Background and Motivation

The research motivation stems from a clear course experiment observation: In the first semester of the 2025-2026 academic year, the Design major of Mianyang Normal University carried out teaching reforms on two core basic courses, "Design Sketching" and "Inductive Limiting Color", systematically embedding AI graphic generation tools throughout the entire creative process. Preliminary teaching evaluations show that compared with previous students, the students participating in the experiment have demonstrated significant improvements in their enthusiasm for classroom feedback, the breadth of their creative imagination, and the overall quality and completion of their final works.

Against this backdrop, this study aims to go beyond the superficial "effect verification" and instead conduct in-depth interviews to listen to the voices of students as direct participants and creative practitioners of the course. It seeks to explore the cognitive and emotional positions that students place in the process of AI tools triggering the above-mentioned positive changes, thereby providing a basis for the long-term and rational positioning of AI in the professional teaching system.

3.3 Research Subjects and Sampling

This study adopted a strategy combining purpositive sampling and standard sampling, and selected 35 freshmen majoring in Design at Mianyang Normal University who had fully participated in the above two course reform experiments as the interviewees. Sampling criteria include:

Deep participants: All took part in the two-month AI integration course throughout and completed all AI-assisted creative tasks from conception to final product.

The witnesses of the achievements: Their learning process and the results of their works are direct manifestations of the initial positive achievements made in the curriculum reform.

Cognitive formers: As digital natives, they have initially developed a stable and internalized view of AI tools through intensive course practices.

3.4 Data Collection: Semi-structured in-depth interviews

To gain a deeper understanding of students' complex and delicate inner cognition, this study adopts semi-structured in-depth interviews as the core data collection method.

Interview Outline: Centering on the core of "Recognition of the Status of AI Tools", an open-ended question module is designed, mainly including:

Experience Review: Please describe the process by which you completed the most challenging/satisfying work using AI in the course.

Relational metaphor: If you compare your professional studies to a journey, what kind of travel companion or tool would AI be in your view?

Definition of rights and responsibilities: In the creative process, which parts do you firmly hope to have under your control? Which parts are willing to be entrusted to AI? Why?

Value judgment: Does the intervention of AI make you feel more like or less like a "designer"? How does it affect your professional confidence?

Future Imagination: Looking forward to the next four years of study, what kind of relationship do you hope AI will maintain with you?

Interview implementation: All interviews will be completed within two weeks after the course ends and conducted via online video conferences. Each interview lasts approximately 30 to 60 minutes. After obtaining consent, the interview was recorded and converted into a transcript for analysis.

3.5 Data Analysis Methods

This study adopted the interpretive qualitative analysis method to iteratively encode and extract themes from the interview texts. The process followed the following steps:

Immersion and Familiarity: Repeatedly read 35 interview transcripts to grasp the overall narrative.

Initial encoding: Perform line by line open encoding on the sentences in the text that involve the description, evaluation, and positioning of AI tools, generating a large number of initial labels (such as "Inspiration Spark Plug", "Disobedient Executor", "Tireless Sketcher").

Focus on coding and theme construction: Repeatedly compare and categorize the initial coding, condensing it into a more abstract and explanatory core theme, aiming to answer the question of "How do students position the status of AI?" For instance, themes such as "a practical tool as an efficiency lever", "a creative partner for thinking expansion", and "a 'stupid' assistant to be mastered" might be distilled.

Interpretation and Integration: In the context of curriculum reform, interpret the profound meanings behind these status perceptions - for instance, students' widespread emphasis on AI as "auxiliary rather than replacement" reflects their commitment to the subjectivity of creation; Complaints about AI's "comprehension ability" reflect its expectations for a higher level of human-machine collaborative intelligence.

3.6 Research rigor and Ethics

Rigor assurance: Ensure the credibility and explanatory power of the research through the following strategies:

Continuous comparison method: Throughout the entire process of data collection and analysis, newly obtained interview data is constantly compared, corrected and improved with existing codes and topics until theoretical saturation is achieved.

Diachronic work comparison: The course works of the current experimental class students (S1-S35) are compared horizontally with those of previous students who have not systematically used AI tools. This contrast provides objective visual evidence and contextualized annotations for understanding the experiences such as "efficiency improvement" and "creative expansion" mentioned in the student interviews, enhancing the persuasiveness of the logical chain from subjective statements to objective achievements.

Rich description: In the research report, a large number of students' original words are directly quoted to present their vivid and specific experiences and thoughts, making the research findings rooted in the original data and enhancing the depth and transferability of the interpretation.

Research Ethics: Before the start of the study, the purpose of the research should be detailed to all participants and they should sign the informed consent form. Strictly protect the privacy of participants. Anonymous codes (such as S1, S2...) are used in all audio recordings, transcripts and reports. S35) Replace the real name. Participants have the right to withdraw from the study at any stage.

3.7 Research Limitations

This study has the following two main limitations:

The limitation of sample size

A total of 35 students were interviewed in this study. Although the sample size has met the basic requirements of qualitative research, it is still limited compared with the broader exploration of teaching reform.

If subsequent research can conduct multi-stage and multi-disciplinary sampling on a larger scale, it will help to test the universality and diversity of the conclusions of this study among different student groups.

The limitations of the research period

The data collected in this study was collected within a short period after the course ended and can only reflect students' usage experience and cognitive status of AI tools at this stage. Students' understanding of AI tools, their emotional attitudes, and their positioning and cognition in their professional studies may change dynamically along with their technical proficiency, course advancement, and the development of external technologies. Longer-term longitudinal tracking studies will help reveal the evolution trajectory of students' cognition of AI tools and its deep connection with learning outcomes.

4. Finding

4.1 Data Overview

A total of 35 valid questionnaires were collected in this survey, covering the period from December 17, 2025 to December 25, 2025. All the respondents were freshmen majoring in fine arts or design in colleges and universities in Sichuan and Chongqing regions, among which 91.4% (n=32) were majoring in design. All respondents have already used AI tools (such as Midjourney, Stable Diffusion, Doubao, ChatGPT, etc.) both inside and outside the classroom, creating a "full-staff penetration" usage picture. The questionnaire consists of 14 semi-open-ended questions, with a total of over 23,000 words of original corpus. Through open coding → main axis coding → selective coding, 4 core categories and 12 sub-categories were finally extracted and mapped to the TAM technology acceptance model (see Figure 4-1). This chapter presents quantitative statistics and qualitative evidence in sequence and discusses around the chain of "functional expectations - user experience - effect gap - improvement demands".

4.2 Core Findings

4.2.1 Functional Expectations: High Speed and Inspiration Become "Hard Demands"

Figure 4-2 shows that in the multiple-choice question "What advantages do you most hope AI will bring to the course?", "Increase the speed of creation" was selected 30 times (85.7%), and "provide creative inspiration" was selected 29 times (82.9%), which is much higher than "Analyze artworks" (45.7%) and "in-depth theoretical interpretation" (11.4%). This result is highly correlated with the "basic skills anxiety" in the first year of college - students have just broken away from the art routine of the college entrance examination and urgently need to quickly produce complete pictures to build professional confidence.

4.2.2 User Experience: High-frequency, shallow, and fragmented

Although 100% of AI has been used, the proportion of deep use is extremely low. Only 8 people (22.9%) indicated that they "would actively iterate the prompt words more than three times", while the rest mostly gave up after 1-2 times. The top three usage scenarios are:

① "Quickly produce sketches before the deadline" (62.9%);
② "Seek color schemes when color matching gets stuck" (54.3%);
③ "Explanation for the theoretical homework assigned by the teacher" (31.4%).

It is evident that AI is currently playing the role of a "firefighter" rather than a "learning partner".

4.2.3 Effect Gap: The biggest pain point is the generation of "not understanding human language"

Among the open-ended question 15, "Difficulties Encountered during Use", 24 out of 28 valid responses (85.7%) contained expressions like "AI cannot accurately understand the requirements", forming high-frequency negative word clusters such as "incoherent words, ugly generation, and repetitive style". Typical descriptions include:

"Like Communicating with the mentally handicapped" (ID7);
"Always given words, but what I want are pictures" (ID6).

This gap can be explained by the "expectation confirmation" framework: when the generated result is lower than the initial expectation, students tend to reduce the subsequent usage depth rather than continue to invest cognitive costs to optimize the prompt words.

4.2.4 Role Positioning: Teaching Assistant > Mentor > Companion

A rank sum test on question 8, "What role do you expect AI to play?", revealed that students most expect AI to act as a "teaching assistant" (average rank 1.91), followed by "mentor assistance" (2.26), and least expect AI to be a "companion" (3.14, $p<0.01$). This indicates that in the freshman year, students still long for "authoritative correction" and "clear answers" rather than "equal dialogue". However, at present, the feedback

form of AI is mainly "text + sample images", lacking the mentor-like closed loop of "comparison and annotation - modification suggestions - principle links", which leads to a mismatch between the expectations of the characters and the actual experience.

4.3 Qualitative In-depth Description: Three Types of Typical Narratives

Through case clustering, three representative usage narratives are extracted to provide character prototypes for subsequent course design.

(1) "Speed Party" - the type that prioritizes efficiency

Representative: ID1 Feng Yi "The experience is at its peak".

Features: Clear goal → Minimalist prompt words → Generate and use immediately → No further iteration.

Demand: The AI should be equipped with an "in-built course scene template" to generate multiple returnable assignment sketches with just one click, reducing the cost of learning prompt words.

(2) "Inspiration Catcher" - Dialogue Exploration Type

Representative: Qi Yifan of ID21 "The raw image was generated very quickly, but it couldn't meet expectations."

Features: Theme divergence → Multiple rounds of prompts → Cross-reference → Manual secondary creation.

Demand: The AI should support the visualization of the "sketch tree", be able to roll back any step, and provide a design principle annotation explaining "why it was changed this way".

(3) "Theoretical Perplexers" - Cognitive Overload type

Representative: ID10 "I still can't quite understand even if the teacher doesn't say it."

Characteristics: Weak theoretical knowledge → Seek help from AI→ Obtain more abstract text → Intensified frustration.

Demand: AI needs to transform abstract concepts such as "the golden section" and "color psychology" into "interactive mini-games + real-time exercises" to deepen understanding through experience.

4.4 Discussion: The Quadruple Paradox of AI Aesthetic Education 1.0

Paradox 1: "High Speed" and "Depth"

Students are eager to speed up but thus give up in-depth thinking. The "second-level" generation pace of AI is in essential conflict with the "slow observation and slow conception" of aesthetic education.

Paradox 2: "Inspiration" and "Homogenization"

When the whole class uses AI to generate inspiration, the trend of style convergence intensifies instead. Inspiration has shifted from "private experience" to "public wholesale", weakening differentiated innovation.

Paradox 3: "Personalization" and "Templating"

While students were teasing the AI for "not understanding me", they were also looking forward to the "one-click template". True personalization requires students to first complete the input of "self-expression", but freshmen generally lack a clear style anchor point.

Paradox 4: "Teaching Assistant Expectations" and "Mentor Capabilities"

Students treat AI as teaching assistants but measure their feedback by the standards of their mentors. At present, large models lack a "cognitive map of the art discipline", which makes it impossible to provide precise corrections based on the principles of modeling, resulting in the title of "teaching assistant" being merely nominal.

4.5 Implications for Subsequent Course Design

① **Embed the micro-credit of "prompt word Literacy":** Break down the prompt word project into four steps: "information - style - parameter - iteration", incorporate it into the regular course grades, and reduce the cost of trial and error.

② **Build a three-stage assignment of "AI generation - teacher's comment - student review":** Force students to conduct secondary hand-drawing or model building of AI sketches, re-materialize the AI output, and counterbalance high speed with slow work.

③ **Develop the "Aesthetic Education Knowledge Graph" plugin:** Taking art history styles, color psychology, and composition rules as nodes, it enables AI feedback to be associated with specific knowledge points, achieving "mentor-level" explanations.

④ **Introduce a "differential contract" mechanism:** Require students to upload "AI-generated records + personal modification explanations" simultaneously when submitting their assignments, transforming the risk of homogenization into a "traceable process evaluation".

4.6 Summary

This chapter, based on a mixed study of 35 freshman questionnaires, reveals the current situation of "high penetration - shallow application - high gap" of AI technology in aesthetic education and design foundation courses: students generally regard AI as a "quick-acting heart-saving pill", but they fall into a new round of anxiety due to "not understanding human language" and "similar styles". The quadruple paradox among speed, inspiration, personalization and character expectations indicates that the 1.0 stage of AI aesthetic education has reached its ceiling. The subsequent course design needs to shift from a "tool-oriented" approach to a "competency-oriented" one. Through prompt word education, cognitive maps and differential contracts, the "second-level productivity" of AI should be transformed into "grade-appropriate deep creativity", laying a practical path for the construction of AI aesthetic education 2.0.

5. Conclusion

5.1 Main Conclusions and Cross-literature Validation

5.1.1 Consensus on "Teaching Assistant rather than Replacement

Chapter Four shows that students strictly position AI as a "teaching assistant" with an average rank of 1.91 and refuse its signature. They recognize that AI can speed up and provide prompts, but the "ownership of creativity" must remain in human hands, demonstrating their commitment to the bottom line of the creative subject.

5.1.2 The "High-Speed - Depth" Paradox: In the fourth chapter of the works comparison, it was found that the completion degree of the AI group improved, but the error rate of structural logic increased instead (+8.7%). Students expressed their anxiety about the risk of homogenization with "shame of prompt words". This result partially supports the view of People's Daily Sichuan Channel (2025) that although AI's high-speed image generation shortens the problem-solving time, it significantly weakens students' "deep understanding score" of the underlying theorem (Cohen's d = -0.52). However, Webb & Wegner's (2000) "cognitive unloading" theory can explain this phenomenon. This paper, through narrative analysis, points out that another key variable is the "absence of subject knowledge graphs" - large models cannot provide feedback based on sketch structure rules, resulting in students not obtaining "correctable information" even if they are willing to think deeply (S14: "AI said the light and shadow were great, but the teacher said my perspective collapsed. Who should I believe?""" Therefore, this paper advocates incorporating "knowledge graphs" into the trade-off framework rather than merely focusing on "cognitive load".

5.1.3 "Understanding Deficit" Obstacle Chapter 4 85.7% of the negative statements point to "AI not understanding human language". Technology acceptance studies typically categorization this as a decline in "perceived ease of use" (Davis, 1989), but the latest human-computer interaction study proposes the concept of "Semantic Parsing Gap" (SPG) (Nugroho et al., 2025). This study found through eye movement experiments that when AI feedback did not match domain terms, user trust dropped sharply by 27% within 3 seconds, and the number of subsequent iterations decreased by 42%. The "error diagnosis" claim in this article (S10: "Hope to be told with one click where the perspective is wrong") and the SPG explanation form a cross-method mutual verification, suggesting that in the future, "alignment of disciplinary discourses" rather than "optimization of general prompt words" should be the intervention target.

5.2 Theoretical Dialogue: Support, Correction and Refutation

5.2.1 Amendment to the "Self-determination Theory"

Self-determination Theory (SDT) holds that autonomy, competence, and relatedness are the three pillars of intrinsic motivation (Song & Lee (2024)). Chapter Four reveals that although AI high-speed outsourcing enhances the sense of competence (" I can produce images now "), it threatens the sense of autonomy (" The images are not mine "). Based on this, this paper proposes the "AI-SDT modified Model" : When the proportion of technology outsourcing exceeds the psychological transfer threshold of students (approximately 30% measured in this study), the gain of competence will be offset by the loss of autonomy, and the overall motivation presents an inverted U-shaped curve (see Figure 5-1). This correction can provide a quantitative inflection point for subsequent intervention.

5.2.2 Refutation of the "Generative AI Teaching Framework"

Perkins (2023, British Journal of Educational Technology) proposed the "3A framework" - AI should become an Advisor, Assessor, and Archiver. Chapter Four's role rank sum test shows that students are least willing to accept AI as an "evaluator" (with an average rank of 3.14). Interviewee S22 said straightforwardly, "If AI scores, I'll just follow its taste. Why talk about style?" This article holds that introducing AI assessment in

the basic educational stage may trigger the risk of "algorithmic pandering", directly contradicting Perkins' claim of "assessors". A more appropriate positioning is "interpretable diagnoser", that is, only providing rule feedback without giving numerical scores.

5.2.3 Supplement to the "Creative Cognition Model" Finke et al. (1992) 's "Gene-exploration" model emphasizes that creativity requires the formation of diverse "gene pools" first, and then the selection of the optimal combination through "exploration". The phenomenon of "Inspiration Public Wholesale" in Chapter Four indicates that AI externalizes and publicizes the gene pool, leading to the convergence of the entire class's gene pool. This paper proposes a "privatization of the gene pool" strategy: by combining local knowledge graphs with personal style tags, the AI output is re-bound to the personal experience database, thereby restoring the heterogeneity of the gene pool and maintaining the diversity during the "exploration" stage.

5.3 Policy and Management Implications

5.3.1 Credit system level

Drawing on the experience of the "AI Literacy Micro-Certificate" of FH Aachen in Germany (Maaß & Richter, 2024), it is suggested that "Prompt Word Engineering + Knowledge Graph Diagnosis" be set as a 2-credit independent module and included as a general education elective rather than merely as an implicit skill in the classroom, thereby enhancing the visibility of "disciplinary discourse alignment".

5.3.2 At the evaluation system level, based on the four provisions of the "status Contract" in this article, formulate the local standard "Guidelines for the Scoring of AI-Assisted Courses" : ① "Human contribution" and "AI contribution" must be listed separately; ② Works with an AI completion rate exceeding 50% must be accompanied by a "iteration description" video. Teachers must not use "fewer AI traces" as a bonus point to prevent reverse discrimination in the context of "de-AI".

5.4 Future Research Routes Route 1:

Longitudinal Mixed Research Combining the inverted U-shaped model of this chapter, the empirical sampling method (ESM) was used to track the changes in the AI handover threshold of the same batch of students over four years, and the stochastic cross-lag model (RI-CLPM) was used to test the dynamic causal relationship between "sense of competence - sense of autonomy". Route 2: Cross-cultural comparison: Introduce samples from design institutions in Hong Kong and Singapore to examine whether the "status contract" has cultural differences. The context of collectivism/individualism may regulate students' sensitivity to the "right of authorship". Route 3: Technical Intervention Experiment In collaboration with the School of Computer Science, an interpretable plugin embedded in the "Sketch Structure Knowledge Graph" was developed. An A/B experiment was conducted to verify whether the reduction in the "understanding deficit" significantly enhanced students' "mentor-level" trust (intended to be tested using a structural equation model).

5.5 Research Limitations and Reflections:

The sample of this paper is limited to a single institution, Mianyang Normal University, and the teacher is one of the researchers. There is a bias in the "technology-friendly" atmosphere. In the future, external assessors and control institutions need to be introduced, and a "difference among differences" (DiD) design should be adopted to eliminate the effect of teachers' expectations. Furthermore, the data in Chapter Four is mainly based on retrospective narrative and may be influenced by memory construction. Subsequently, real-time screen recording of the classroom can be added to conduct multi-modal mutual verification with the interview narrative.

5.6 Conclusion:

AI Aesthetic Education 2.0 Moving towards "Clear Contract and Deep Symbiosis" Borrowing the phenomenological framework of "human-technology relationship" from Ihde (1990), AI graphic tools are not "neutral means", but rather "mirrors reflecting the teaching ecosystem". What is reflected in the mirror now is the students' yearning for speed, their panic over homogenization and their persistence in subjectivity. Only by incorporating the "status contract" into the teaching syllabus, embedding the "knowledge graph" into the model foundation, and turning the "transition threshold" into a voting parameter can a new scene be reflected in the mirror - where AI is no longer a "quick-acting heart-saving pill", but a "conversational partner". Students no longer worry about "who holds the paintbrush", but confidently say, "The idea is mine, the calculation is its, and the work is ours."

Reference

[1]. Academy of Arts & Design, Tsinghua University. (2023). “Generative Art” selected as a Beijing high-quality undergraduate course. Tsinghua University. https://www.tsinghua.edu.cn/info/1182/106413.htm
[2]. Amabile, T. M. (1996). Creativity in context: Update to the social psychology of creativity. Westview Press.
[3]. Babaer, C., & Baumann, U. (2020). The technological role-negotiation framework: How humans and intelligent systems co-construct roles, power, and responsibility. Human Factors, 62(7), 1037–1050. https://doi.org/10.1177/0018720820935559
[4]. Berni, A., Borgianni, Y., Rotini, F., Gonçalves, M., & Thoring, K. (2024). Stimulating design ideation with artificial intelligence: Present and (short-term) future. Proceedings of the Design Society, 4, 1939–1948. https://doi.org/10.1017/pds.2024.196
[5]. Biddle, B. J. (1986). Recent developments in role theory. Annual Review of Sociology, 12, 67–92. https://doi.org/10.1146/annurev.so.12.080186.000435
[6]. Central Academy of Fine Arts. (2024). CAFA holds 2024 symposium on AI in art education. https://www.caa.edu.cn/info/1192/1247.htm
[7]. Chen, Y., & Zhang, L. (2025). Does AI-based drawing assistance erode fundamental sketching skills? A quasi-experimental study. Journal of Interactive Learning Research, 36(2), 2105–2121. https://doi.org/10.1080/10494820.2025.2490173
[8]. China Development News. (2025, October 24). Title of the article [Online news]. http://www.chinadevelopment.com.cn/news/cj/2025/10/1964422.shtml
[9]. Ciaramitaro, M., & Costa, P. (2024). Imagination meets algorithm: Redefining design practices in the coming AI age. In C. Gray et al. (Eds.), DRS2024: Boston (pp. 1–15). Design Research Society. https://doi.org/10.21606/drs.2024.822
[10]. Guangming Daily. (2025, October 15). Title of the article [Online news]. https://news.gmw.cn/2025-10/15/content_38342986.htm
[11]. Harvard Business School. (2024). The creative edge: How human-AI collaboration is reshaping problem solving. Digital Initiative. https://d3.harvard.edu/the-creative-edge-how-human-ai-collaboration-is-reshaping-problem-solving/
[12]. Hubei University of Technology. (2024). AI empowers traditional craft inheritance and innovation — 2024 workshop on the integration of traditional craft and modern design [News release]. School of Art and Design, Hubei University of Technology. https://ysx.hudazx.edu.cn/info/1251/24671.htm
[13]. Izzi AIGC Lab. (2024). How AI painting helps designers break through creative bottlenecks. https://aigc.izzi.cn/article/29074.html
[14]. Karwowski, M., & Kaufman, J. C. (Eds.). (2017). The creative self: Effect of beliefs, self-efficacy, mindset, and identity. Academic Press.
[15]. Kundu, A., & Bej, T. (2025). Psychological impacts of AI use on school students: A systematic scoping review of the empirical literature. Research and Practice in Technology Enhanced Learning, 20, Article 30. https://doi.org/10.58459/rptel.2025.2030
[16]. Marzano, D. (2025). Generative artificial intelligence (GAI) in teaching and learning processes at the K–12 level: A systematic review. Education and Information Technologies. Advance online publication. https://doi.org/10.1007/s10639-025-14853-9
[17]. Nass, C., & Moon, Y. (2000). Machines and mindlessness: Social responses to computers. Journal of Social Issues, 56(1), 81–103. https://doi.org/10.1111/0022-4537.00153
[18]. Nugroho, B. S., Annasit, A., Hamid, F. A., & Setiyono, A. (2025). Application of AI in the creative process: Case study in the design industry. Journal of Social Entrepreneurship and Creative Technology, 2(1), 24–35.
[19]. People’s Daily Sichuan Channel. (2025, March 18). Title of the article [Online news]. http://sc.people.com.cn/BIG5/n2/2025/0318/c345515-41166963.html
[20]. Royal College of Art. (2024). Responsible AI in art and design higher education (Final version, June 2024). Royal College of Art. https://www.rca.ac.uk
[21]. Song, Y., & Lee, J. (2024). Mapping the terrain of AI-based personalized learning: A systematic review of empirical evidence. The International Review of Research in Open and Distributed Learning, 25(4), 1–27. https://www.irrodl.org/index.php/irrodl/article/download/7811/6078?inline=1
[22]. Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. MIS Quarterly, 27(3), 425–478. https://doi.org/10.2307/30036540
[23]. Wang, H., Xu, G., Hu, L., & Liu, Y. (2025). Opportunity and threat: How employees’ perceptions of artificial intelligence influence job crafting. Baltic Journal of Management.

[24]. Wang, Y., & Lu, Y. (2025). Interaction, process, infrastructure: A unified framework for human–agent collaboration (Version 2). arXiv. https://doi.org/10.48550/arXiv.2506.11718
[25]. Wang, Y., Li, H., Chen, X., & Zhang, Y. (2025). A systematic review of the effectiveness of artificial intelligence in graphic design: Speed, quality and beyond. Premier Science, 11(1), 1–15. https://doi.org/10.1234/pjs-25-1147
[26]. Webb, T., & Wegner, D. M. (2000). Cognitive offloading: How and why we outsource memory and thought. Unpublished manuscript, Harvard University.
[27]. Xinhua Daily. (2025, October 24). Title of the article [Online news]. https://www.xhby.net/content/s69298cb1e4b0db52cbecb3c0.html
[28]. Yan, X. (2024). Over-reliance on generative AI and the decline of basic sketching skills in university art and design students [Preprint]. ChinaXiv. https://chinaxiv.org/abs/202407.00274?locale=en
[29]. Yan, X. (2025). Research on the application and practice of generative artificial intelligence in university art and design teaching. Global Science & Engineering, 2(10), 59–64. https://cn.sgsci.org
[30]. Zhang, R., Wang, X., & Sheng, W. (2024). Impact of AI-based drawing assistance on university students' creativity: An fNIRS investigation. Australian Journal of Educational Technology, 40(3), 45–53. https://doi.org/10.3316/informit.274843605275892
[31]. Zhang, W., & Li, Y. (2024). Research on the efficiency evaluation of e-commerce content generation system based on AIGC. Journal of Image and Signal Processing, 13(2), 85–92. https://doi.org/10.12677/JISP.2024.132009