

Constructing an Empirical Model of Animation Students' Intention to Use Artificial Intelligence Drawing Tools

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Abstract:

This study constructs an empirical model of animation students' intention to use artificial intelligence (AI) drawing tools. It also describes the external variables influencing animation students' intention to use, mainly subjective norms, perceived enjoyment, and computer anxiety. The empirical model is intended to provide a theoretical framework and guidance for parsing student acceptance of AI drawing tools. In addition, the outlook for future research includes the hope that future researchers will empirically examine the model and add variables related to external factors and other mediating variables related to the technology acceptance model to deepen the understanding and research in this area.

Keywords:

Animation Student, Artificial Intelligence, External Variable, Intention to Use

1. Introduction

The primary goal of animation design creation is to realize the application to obtain commercial value. The traditional hand-drawn animation design technique is more about expressing the connotation of the image and the result of the mood, which is based on the publicity and promotion of paper media or television, making the animation effect dull and lack of originality, which restricts the development of animation to a certain extent. [1] In addition, the cost of labor in China is gradually increasing. It is difficult for animation company owners to recruit many highly skilled animation talents to work for them simultaneously because the salaries they need are generally high. Then, they need to recruit some laborers (animation students with little experience in animation skills and creation) to work for them at a low salary. However, to ensure that animation students can quickly produce work that can be applied and commercially promoted to be competitive, they need to reasonably use artificial intelligence technology to improve the quality and speed of animation works. This is because AI can provide assistive tools to help students streamline the process of animation production, as well as AI technology that can recommend and optimize

content based on audience feedback and behavioral patterns, assisting students to tweak their work to engage users better.

In addition, AI technology provides new favorable conditions for artists to create art. [2] For example, AI technology provides students with creative assistance and expansion. Students can get inspiration from the works generated by AI technology and explore new artistic styles and innovative techniques. AI tools can inspire creativity in animation students and help them tap into and expand their artistic imagination. Some junior art creators even believe that AI artworks (works that convert 2D or 3D graphics into computer-displayed painting art through computerized mathematical algorithms) can be comparable to those created by real artists and even that AI artworks sometimes exhibit higher levels of technological innovation and visual awesomeness. This makes the art of AI painting gradually move towards the mainstream art form. [3] With the updating and advancement of computer hardware and painting software technology, AI painting art's creative forms, techniques, means of expression, and stylistic features are gradually shifting towards diversification and rapid development. [4]

Although, at present, AI painting is becoming more and more popular, the mechanism of AI painting's expression makes it unable to achieve the diversification of painting styles. Its artworks can't accomplish the vividness and humanization of traditional painting's expression styles, which makes the digital images lack affinity and psychological recognition in the eyes of most artists. [5] However, it is undeniable that current technology and art interpenetrate with each other, promoting the development of painting and forms of innovation. Science and technology are also gradually becoming carriers for artists to communicate in the social, cultural, and spiritual world, thus providing a new way of thinking to create contemporary art. In addition, the application of artificial intelligence technology in the art of painting is gradually changing animation students' thinking and creative concepts and the process and expression of their painting creation. For example, animation students can use artificial intelligence technology to explore new creative methods and artistic styles. That is, after browsing through the rich database, creators can make their creative thinking no longer limited to specific subjects, further broadening the creative ideas.

In summary, although AI technology can help animation students create high-quality works faster, it may be affected by certain external factors; there are a lot of students who are reluctant to use AI painting tools to assist them in their creations. For example, for convenience and data capacity considerations, AI painting software will use existing models, which will inevitably lead to the problem of works with the same or similar styles, and the current phenomenon of art practitioners quickly recognizing AI paintings results from this. [5] To figure out more comprehensively the reasons why animation students do not accept AI technology, this article aims to explore the factors affecting animation students' acceptance of AI drawing tools through past literature and build an empirical model of animation students' acceptance of AI drawing tools based on past factors and theories.

2. Technology Acceptance Model

This study will borrow the technology acceptance model (TAM) to build an empirical model of the acceptance of artificial intelligence drawing tools for animation students. With the development of new technologies, researchers have been

studying consumers' adaptation to new technologies. Some well-known technology acceptance models are the Theory of Planned Behavior, [6] Technology Acceptance Model (TAM), [7] the Diffusion of Innovations Theory, [8] and the Unified Theory of Technology Acceptance and Use. [9] While each model has its strengths, the model used by Davis is the technology acceptance model, which explains the behavior of information technology users in accepting or rejecting technology. [7] Since AI is an advanced form of information technology, the researcher used this model in this study.

TAM consists of external variables: Perceived Usefulness (PU), Perceived Ease of Use (PEU), Attitude, Behavioral Intention to Use (BI), and Actual Use (AU). Based on the TAM, external variables directly influence the two components of cognitive beliefs, PU and PEU. PEU directly influences PU and attitude, and PU directly influences mood and BI, which affects AU. Although the external variable is a significant independent variable, there is no precise mention of the specific dimension or what variables are included in this concept (external variable) in the technology acceptance model. Therefore, to make the technology acceptance model more applicable to this study, the researcher needs to find out the external variables that apply to this study based on the context of animation students and AI drawing software.

3. External Variables

External variables refer to influences that are outside a given context. These factors come from the external environment, conditions, or other relevant external sources. Based on its definition, previous researchers' summary and analysis of literature on external variables, and the characteristics of animation majors, the researcher summarized the current factors affecting animation students' use of AI drawing software: subjective norms, perceived enjoyment, and computer anxiety.

(1) Subjective Norms. It refers to the person's perception that most people who are important to him think he should or should not perform the behavior in question. [10] About the use of AI drawing software, subjective norms are not about social influences on decision-making (i.e., whether or not to perform a given behavior) but instead are related to how the opinions of peers, teachers, and educational institution policies influence students' propensity to use AI drawing software. Suppose a student believes that someone important to them (e.g., peers and teachers) believes that they should use the AI drawing software. In that case, that person will incorporate their beliefs into their belief system and thus find the software more valuable.

(2) Perceived enjoyment. The concept of enjoyment is based on intrinsic motivation, [11] and in the context of information systems use, it has been interpreted as the degree to which the activity of using a particular system is perceived to be pleasurable in and of itself, in addition to any performance consequences arising from the use of the system. [12] Perceived enjoyment can come from several sources, such as the tool's ease of use and innovative functionality. AI drawing tools can make the creative process fun for students while providing practical, creative assistance and technical support. In that case, students are more likely to use them consistently and apply them to their learning and creativity.

(3) Computer anxiety. Anxiety has been explained as causing stress or an emotional reaction while performing a behavior. [13] For some students, significantly those less technologically savvy or comfortable with AI-related software, using AI drawing

tools may trigger some anxiety. This anxiety may stem from the fact that AI painting may have surpassed real-life designers or artists in terms of productivity. They may worry that the advent of AI drawing tools will replace their work or reduce their value in the creative process. This discomfort may prevent them from actively learning and using these AI painting tools.

4. Empirical Model Construction

Based on the technology acceptance model mentioned above and the external factors affecting animation students' use of AI drawing, the dependent variable of the "empirical model of animation students' intention to use AI drawing tools" is the intention to use. The independent variables were subjective norms, perceived enjoyment, and computer anxiety. The mediating variable was perceived usefulness. As shown in Figure 1.

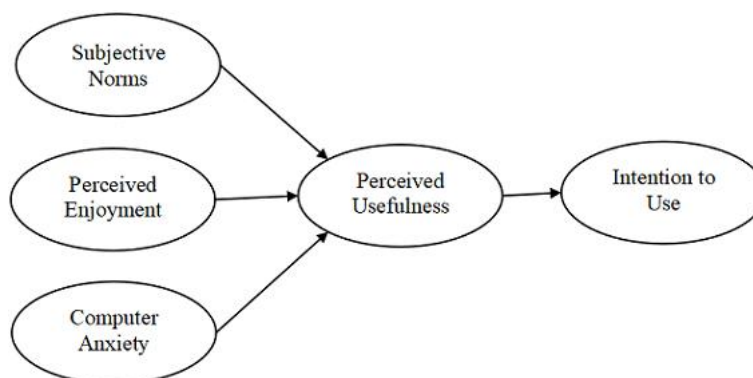


Figure 1. Empirical model of animation students' intention to use AI drawing tools.

5. Conclusions

An empirical model of animation students' intention to use an AI drawing tool was integrated from the literature, and the goal of this model was to consider the influence of multiple external variables on students' intention to use it. The independent variables are subjective norms, perceived enjoyment, and computer anxiety. Subjective norms consider the opinions of peers, teachers, and educational institutions on using AI drawing tools, which impact students' intentions to use them. Perceived enjoyment emphasizes students' pleasure from using the device, which may influence their continued use and application. On the other hand, computer anxiety reflects discomfort with new technologies and tools, which may prevent students from actively learning and applying AI drawing tools.

The mediating variable was perceived usefulness. This factor may bridge subjective norms, perceived amusement, computer anxiety, and intention to use. Increased perceived usefulness may promote more positive attitudes and use intentions toward AI drawing tools among students. The construction of this empirical model may provide a theoretical framework and guidance for understanding the acceptance of AI drawing tools by animation students, which in turn may lead to appropriate solutions and support measures.

6. Future Research

This study only hypothesized an "empirical model of animation students' intention to use AI drawing tools" based on the literature, which has not been empirically

investigated and could be quantitatively investigated by future researchers interested in this topic. In addition, because the concept of external variables is broad, future researchers can add to the independent variables of this model. Finally, technology acceptance models have evolved as researchers continue to enrich them. Therefore, in addition to perceived usefulness as a mediating variable, other mediating variables related to the technology acceptance model can be further explored.

Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this article.

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