

STUDY ON THE FACTORS AFFECTING THE BEHAVIORAL INTENTION OF STUDENTS MAJORING IN ART DESIGN TO USE AIGC AIDED DESIGN

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Abstract

This study aims to discuss the factors affecting the behavioral intention of students majoring in Art Design at the College of Chinese & ASEAN Arts, Chengdu University to use AIGC aided design. Based on the Unified Theory of Acceptance and Use of Technology (UTAUT), this paper identifies five factors that affect the willingness of students majoring in art design to use Artificial Intelligence Generated Content (AIGC) aided design, and analyzes their relationship with the Behavioral Intention (BI). A model containing five latent variables, including Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Condition (FC) and Attitude (ATT), is constructed to test the significant impact of students on Behavioral Intention (BI). By adopting the mature scale design questionnaire and quota sampling method, 500 questionnaires were distributed among 818 students majoring in art design in three directions (Visual Communication, Environmental Art Design and Product Design) from four grades (grades 2020-2023) at a rate of 61%, and 476 valid questionnaires were recovered, and corresponding data were analyzed by Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM). The results of data analysis show that all independent and mediating variables have a significant impact on the Behavioral Intention (BI) of the dependent variable, in which Social Influence (SI) and Performance Expectancy (PE) have the greatest impact. Therefore, the teaching management institutions in the field of art design should evaluate and improve the current teaching mode of AIGC aided design based on the results of this study and strengthen the application of AIGC in art and design courses in order to obtain more ideal teaching results.

Keywords: AIGC, UTAUT, Art Design, Behavioral Intention

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Introduction

With the advent of the era of Artificial Intelligence (AI), advanced AI technology has been widely used in many fields, including education and research. The development and application of various powerful modeling technologies such as text, language, images and video offers exciting opportunities for students and educators. At present, the Artificial Intelligence Generated Content (AIGC) has been quietly implemented in the classroom of art design major. Therefore, the educational potential of artificial intelligence provides a huge opportunity to implement such a personalized learning (Panigrahi & Joshi, 2020). AI-assisted learning contributes to students' knowledge acquisition, ability improvement and emotional development (Wang et al., 2022). However, the behavioral intention of students majoring in art design towards AIGC aided design is ignored. In order to better guide and improve the design ability and work quality of students majoring in design, this paper studies the behavioral intention factors that affect the use of AIGC aided design by college students.

Artificial Intelligence Generated Content (AIGC) refers to the use of Generative Artificial Intelligence (GAI) technology to automatically generate new content, rather than the content created by human authors. A lot of content can be automatically created in a short time (Cao et al., 2018). It can be understood as a new production mode that makes use of AI technology to automatically generate content, following Professional Generated Content (PGC)

and User Generated Content (UGC). Early AIGC technology mainly focused on simple content production and output based on predetermined templates or rules, and could only generate simple lines, texts and melodies.

For example, through a large number of text Q&A records, the computer can generate simple answers through retrieval and matching. By defining complex functional equations, the computer can draw a function curve with a certain aesthetic pattern, etc. Now the continuous iteration of deep neural network in learning paradigm and network structure has greatly improved the learning ability of AI algorithms, thus promoting the rapid development of AIGC technology. For example, ChatGPT (Mostafizer & Yutaka, 2023), a large language model developed by OpenAI, has been able to shift from complex text Q&A communication to human-computer interaction and communication that accepts text, audio, images, and video, and can respond to audio conversations in 232 milliseconds, similar to human response. The graphic model DALL-E is able to generate the corresponding images based on the input text prompts, and the VincentVideo model Sora is also able to generate high-definition videos of various sizes with a resolution of up to 2048*2048 pixels for 60 seconds based on the input texts. The VincentVideo model W. A. L. T, developed by Stanford University, is capable of generating 3.6 seconds of realistic videos with a resolution of 512*896 pixels, at a rate of 8 frames per second, based on the text prompts (Agrim et al., 2023). Moreover, AI image tools such as

Midjourney and Stable Diffusion can also automatically generate beautiful images. From October 2014 to 2016, funded by ING (International Netherlands Groups) and led by J. Walter Thompson, Microsoft, TU Delft, Mauritshuis and Rembrandthuis provided technical, intellectual and resource support to jointly complete “The Next Rembrandt” project. Through the data base of machine learning and training, a “New Rembrandt” was finally generated, and 13 layers of oil painting materials were printed by a special 3D printer to create a real oil painting. In 2018, the work Edmond de Belamy, created by the Obvious group formed by three French college students using AIGC technology, was ultimately sold for a high price of \$432,500 at Christie’s Auction in Rockefeller Center, New York. This was the first AIGC work to be auctioned in human history. AIGC has shown great potential in design creativity generation, graphic generation and image processing, and has been paid attention and applied by more and more designers. In 2022, Jason M. Allen from the United States generated more than 900 AIGC images using Midjourney, and selected three of them to participate in the Colorado State Fair Art Competition after modification, in which the work named “Space Opera House” won the first prize.

With the continuous development and application of artificial intelligence technology, Artificial Intelligence (AI) technology is used to improve learning and teaching efficiency (Lim, 2020). AI-assisted learning environments have been implemented in classrooms to

promote the innovation in teaching mode (Wu et al., 2022). The application of AIGC in the field of art design has become a trend, and the rise of this technology has aroused people’s attention to its impact and potential in the process of design and creation. Especially among undergraduates majoring in art design, as the new generation of designers, they will directly face and influence the application and development of AIGC. Consequently, rebuilding an interactive and intelligent AIGC aided design teaching environment has become a new task in the field of art design education. With the help of AIGC aided design learning environment, students’ learning behaviors and their interaction with teachers can be automatically recorded for further research (Yang et al., 2020). Furthermore, for the learning of AIGC aided design, it is also very important to study the learners’ attitude towards AIGC technology (Tahiru, 2021).

Providing creative sketches and concept drawings through AIGC technology can help students better understand the laws of artistic creation and the essence of innovation. At the same time, AIGC can also help students better understand the cultural, historical and philosophical significance of works of art by analyzing large amounts of data, thereby deepening their artistic understanding and better assisting art and design students in practical creation.

Many theories and models have been applied to the study of new technology acceptance (Al-Momani et al., 2019). The Unified Theory of Acceptance and Use of

Technology (UTAUT), integrated and proposed by Venkatesh et al. (2003) is considered as the basic theory of this study (Venkatesh et al., 2003). The UTAUT model has been applied to study the behavioral intention of various educational users (Uchenna & Oluchukwu, 2022). In this model, an individual's behavioral intention and behavior to use information technology or system depend on four core elements: Performance expectancy, effort expectancy, social influence and facilitating condition. Among them, performance expectancy, effort expectancy and social influence have a direct impact on individuals' behavioral intention to use information technology, and behavioral intention and facilitating condition directly affect the usage behavior of information technology (Wang, 2023). In addition, the age, gender, experience and voluntariness of individuals play a role in regulating the effects of various factors in the UTAUT model. Attitude is another important factor besides the four factors that affect the behavioral intention and behavior of using information technology. It is not only directly affected by performance expectancy, effort expectancy, social influence and facilitating condition, but also has a direct impact on behavioral intention, and regulates the relationship between the four core factors, the behavioral intention and the usage behavior

(Dwivedi et al., 2017). To measure students' Acceptance Behavioral Intention (ABI) towards AIGC aided design, this study adopts UTAUT authoritative model.

Objectives

1. Verify the relevant factors that affect the behavioral intention of students majoring in Art Design at the College of Chinese & ASEAN Arts, Chengdu University to use AIGC aided design.
2. Investigate the mechanism of action between latent variables that affect the students' behavioral intention.
3. Provide suggestions for students to use AIGC aided design to improve learning quality.

Literature Review

Based on the characteristics of UTAUT integrated model and AIGC aided design, the main factors that affect the behavioral intention of students majoring in art design to accept and use AIGC aided design in this study include Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Condition (FC), Attitude (ATT) and Behavioral Intention (BI). The hypothetical relationship between them is shown in Figure 1.

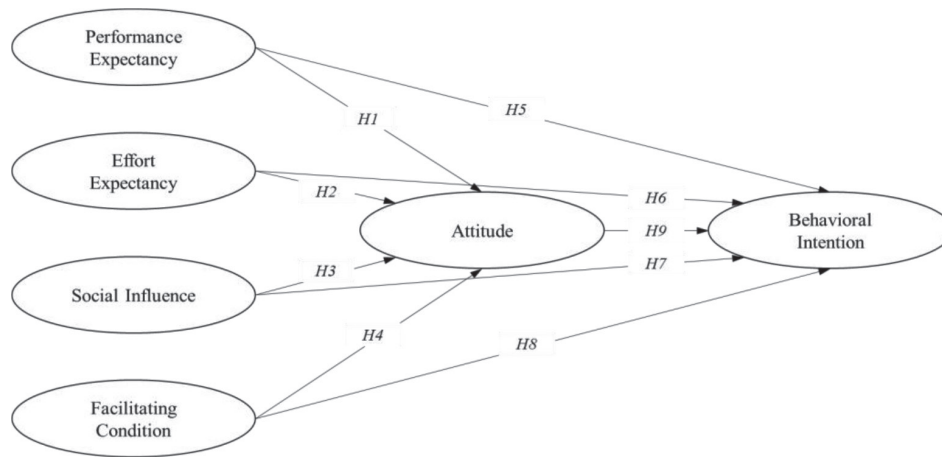


Figure 1 Conceptual Framework

Performance Expectancy and Effort Expectancy

In UTAUT model, Performance Expectancy (PE) refers to the degree to which an individual believes that the use of AIGC aided design can improve their work performance, and Effort Expectancy (EE) refers to an individual's perception of the difficulty of using information technology (Venkatesh et al., 2003). In the model that accepts and uses AIGC aided design, Performance Expectancy (PE) refers to students' expectancy that the acceptance and use of AIGC aided design can improve the quality of design results. According to existing research, Effort Expectancy (EE) plays an indispensable role in technology application (Liebenberg et al., 2018). Effort Expectancy (EE) is related to the ease of use and convenience of AIGC aided design perceived by students. Effort Expectancy (EE) has a positive impact on students' behavioral intention (BI) (Abbad, 2021). Performance expectancy and effort expectancy are technical factors, which are the most effective factors in predicting an individual's behavioral intention to accept and

use AIGC aided design (Venkatesh et al., 2003). This study proposes the following hypotheses based on this:

Hypothesis 1 (H1): Performance expectancy has a significant impact on students' behavioral intention to accept and use AIGC aided design.

Hypothesis 2 (H2): Effort expectancy has a significant impact on students' behavioral intention to accept and use AIGC aided design.

Social Influence and Facilitating Condition

Social influence refers to the extent to which an individual's behavioral intention to use information technology is affected by others (Venkatesh et al., 2003). Facilitating condition is that an individual believes that the use of information technology can be supported by organizations and technical facilities (Venkatesh et al., 2003). Both of them are important environmental influencing factors in the UTAUT model. Social influence is the most important prerequisite of behavioral intention to use AIGC aided design. Students' acceptance and use of AIGC aided design may be

affected by classmates, teachers or the Internet. Facilitating condition is that technical facilities, training level and resources (including computer software and hardware), etc. provided by the school can be obtained by using AIGC aided design, so that it can support and help students to complete high-quality design results more quickly and effectively. Therefore, social influence and facilitating condition play an important role in elaborating students' behavioral intention to accept and use AIGC aided design. This study proposes the following hypotheses based on this:

Hypothesis 3 (H3): Social influence has a significant impact on students' behavioral intention to accept and use AIGC aided design.

Hypothesis 4 (H4): Facilitating condition has a significant impact on students' behavioral intention to accept and use AIGC aided design.

Hypothesis 5 (H5): Performance expectancy has a significant impact on students' attitude towards accepting and using AIGC aided design.

Hypothesis 6 (H6): Effort expectancy has a significant impact on students' attitude towards accepting and using AIGC aided design.

Hypothesis 7 (H7): Social influence has a significant impact on students' attitude towards accepting and using AIGC aided design.

Attitude

Attitude usually refers to an individual's emotional response to the acceptance and use of information technology (Venkatesh

et al., 2003). In this study, attitude refers to students' positive or negative feelings about accepting and using AIGC aided design. Existing studies have found that attitude plays a crucial role in the acceptance and use of information technology (Dwivedi et al., 2017). On the one hand, performance expectancy, effort expectancy, social influence, and facilitating condition play a decisive role in attitude. On the other hand, attitude has a direct influence on behavioral intention. Therefore, this study proposes the following hypotheses:

Hypothesis 8 (H8): Facilitating condition has a significant impact on students' attitude towards accepting and using AIGC aided design.

Hypothesis 9 (H9): Attitude has a significant impact on students' behavioral intention to accept and use AIGC aided design.

Methodology

This study aims to analyze the impact of behavioral intention of students majoring in Art Design at the College of Chinese & ASEAN Arts, Chengdu University to use AIGC aided design. Researchers have completed the corresponding questionnaire construction based on the conceptual framework model, as shown in Table 1. The questionnaire adopts five-level Likert scale to evaluate the answers to the questions. In order to analyze the accuracy of the objectives proposed by the developer of this research tool, researchers invited three experts to evaluate the internal consistency reliability of the research scale.

Table 1 Research Scale on Factors Affecting the Behavioral Intention of Students Majoring in Art Design to Use AIGC Aided Design

Latent Variables	No.	Observed Variables
Performance Expectancy	PE1	The use of AIGC aided design will enhance my creative thinking ability in designing works.
	PE2	The use of AIGC aided design will improve my performance in art design projects.
	PE3	The quality and efficiency of works completed by AIGC aided design are high.
	PE4	The use of AIGC aided design will increase my competitiveness in the future design field.
Effort Expectancy	EE1	I am willing to invest more time and effort in learning AIGC aided design.
	EE2	I believe that learning the use of AIGC aided design will have a positive impact on my design skills.
	EE3	I am willing to try to use AIGC aided design to complete new design tasks.
	EE4	I believe that using AIGC requires additional learning and training, and that this effort will bring long-term benefits.
Social Influence	SI1	The Ministry of Education proposes to incorporate AIGC aided design into the classroom.
	SI2	My teacher supports me to use AIGC aided design.
	SI3	My classmates support me to use AIGC aided design.
	SI4	The use of AIGC aided design will be recognized and respected by peers.
	SI5	Surrounding environment makes me think that I should take the initiative to learn AIGC aided design.

Table 1 Research Scale on Factors Affecting the Behavioral Intention of Students Majoring in Art Design to Use AIGC Aided Design (Cont.)

Latent Variables	No.	Observed Variables
Facilitating Condition	FC1	Some software/tools that use AIGC have higher requirements on computer hardware.
	FC2	I feel it is technically challenging to use some AIGC tools.
	FC3	Professional teachers provide AIGC aided design teaching.
	FC4	The tutorials on installing and using AIGC aided design are available on the Internet.
	FC5	It is more convenient and faster to use AIGC aided design for design projects than to use traditional methods.
Attitude	ATT1	I have a positive attitude towards the use of AIGC aided design.
	ATT2	I will add computer hardware configuration to accommodate AIGC aided design.
	ATT3	I will actively learn to use AIGC aided design online and offline.
	ATT4	I think AIGC aided design is better and faster than my own design.
Behavioral Intention	BI1	I intend to continue to use AIGC aided design.
	BI2	I would like to recommend friends around me to use AIGC aided design.
	BI3	I would like to incorporate AIGC aided design into the design workflow.
	BI4	The use of AIGC aided design will increase my interest and enthusiasm for design work.
	BI5	AIGC allows me to better express and realize my design ideas and creativity.

After the researchers determined that the research scale had ideal validity and reliability, 500 students majoring in Art Design at the College of Chinese & ASEAN Arts, Chengdu University were selected by quota sampling method for attitude test. The attitude test data passed KMO and Bartlett sphericity test and the second round of internal consistency reliability evaluation to further test its validity

and reliability. For the determination of content validity, the consistency test of project objectives is an important evaluation criterion, and the research scale should be evaluated by three or more experts with doctoral degrees, and the score of each item should not be lower than 0.5 (Rovinelli & Hambleton, 1997). To ensure the validity of this study, the researchers invited three experts with doctoral degrees

and senior professional titles to test the consistency of project objectives on the research scale. The three experts mainly study the field of art design and have more than 8 years of teaching experience. After testing, all observed variables have a score of no less than 0.67, which proves that the measuring tools used in this study have good validity. At the same time, the researchers completed the corresponding descriptive statistical analysis. Subsequently, through Confirmatory Factor Analysis (CFA), the researchers further analyzed the factor loading, composite reliability, average variance extracted and discriminant validity of the corresponding variables. When all the above indicators were up to standard, the researchers ultimately carried out the hypothesis testing and path model analysis using the Structural Equation Modeling (SEM).

This study focuses on a total of 818 students majoring in art design in three

directions (Visual Communication Design, Environmental Art Design and Product Design) from grades 2020 to 2023 at the College of Chinese & ASEAN Arts, Chengdu University. To obtain valid statistical results in Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM), the sample size should not be less than 200 people (Halabi & Miore, 2017). As a result, this study will adopt quota sampling and select 500 people from all target groups at a rate of 61%.

For the reliability test, a relatively accurate reliability index can be obtained based on a small scale test with a sample size of at least 30 people (Isaac & Michael, 1995). Therefore, 40 students were invited to take a small scale test for this study. After data collection and SPSS analysis, the Cronbach's α of all latent variables was greater than 0.7, as shown in Table 2. This indicates that the research tool has internal consistency reliability.

Table 2 Internal Consistency Reliability Test (n = 40)

Latent Variables	Number of Questionnaires	Cronbach's α
PE	4	0.903
EE	4	0.781
SI	5	0.925
FC	5	0.917
ATT	4	0.846
BI	5	0.957

According to the results of project objective consistency and internal consistency reliability tests that meet the standards, the researchers conducted a research process of large-scale

data collection and testing. 500 questionnaires were distributed, including 108 for freshmen, 196 for sophomores, 127 for juniors and 144 for seniors. Finally, 476 valid questionnaires

were collected. The reliability and validity of the second stage were tested again. SPSS was used again for internal consistency validity analysis. The results showed that among 476

data, the Cronbach's α of all latent variables was greater than 0.8, as shown in Table 3. The verification shows that the corresponding data has satisfactory validity and reliability.

Table 3 Internal Consistency Reliability Test (n = 476)

Latent Variables	Number of Questionnaires	Cronbach's α
PE	4	0.877
EE	4	0.857
SI	5	0.895
FC	5	0.895
ATT	4	0.857
BI	5	0.923

The detailed descriptive statistics of 476 test samples are organized in Table 4, which covers three groups of information statistics: gender, grade and major direction. In the final sample: 36.55% are men and 63.44% are women; 21% are students of Grade 2020, 23.52% are students of Grade 2021, 25.21%

are students of Grade 2022 and 30.25% are students of Grade 2023; in terms of major direction, students majoring in visual communication design account for 33.82%, students majoring in environmental art design account for 32.35%, and students majoring in product design account for 33.82%.

Table 4 Demographic Information (Major, Gender, and Year 2020-2023)

Demographic Information (n = 476)		Frequency	Percentage
Major	Male	174	36.55%
	Female	302	63.44%
Gender	2020	100	21%
	2021	112	23.52%
	2022	120	25.21%
	2023	144	30.25%
Professions	Visual Communication Design	161	33.82%
	Environmental Art Design	154	32.35%
	Product Design	161	33.82%

As shown in Table 5, in this CFA data analysis, all factor loading values exceeded 0.500, all T values were above 1.980, all P values were below 0.001, all CR values were above 0.700, and all AVE values were above 0.500. Therefore, all important confirmatory factor

analysis results, composite reliability and average variance extracted in this study are within a relatively ideal range, indicating that the survey scale used in this study has good convergence validity.

Table 5 Data Statistics of Confirmatory Factor Analysis Results, Composite Reliability (CR) and Average Variance Extracted (AVE)

Variable	Factor Loading	S.E.	T-value	CR	AVE
SI1	0.786	-	-	0.883	0.603
SI2	0.780	0.055	17.551 ***		
SI3	0.865	0.055	19.484 ***		
SI4	0.748	0.062	16.723 ***		
SI5	0.695	0.057	15.302 ***		
PE1	0.604	-	-	0.886	0.625
PE2	0.678	0.065	17.010 ***		
PE3	0.894	0.101	14.590 ***		
PE4	0.935	0.101	14.661 ***		
EE1	0.630	-	-	0.861	0.618
EE2	0.897	0.105	15.748 ***		
EE3	0.602	0.086	11.634 ***		
EE4	0.952	0.103	15.929 ***		
ATT1	0.637	-	-	0.854	0.601
ATT2	0.911	0.097	15.496 ***		
ATT3	0.621	0.069	14.390 ***		
ATT4	0.884	0.095	15.358 ***		
FC5	0.728	-	-	0.896	0.634
FC4	0.794	0.074	16.746 ***		
FC3	0.815	0.065	17.183 ***		
FC2	0.795	0.064	16.780 ***		
FC1	0.846	0.066	17.832 ***		
BI1	0.784	-	-	0.924	0.709
BI2	0.916	0.050	22.776 ***		
BI3	0.846	0.051	20.585 ***		
BI4	0.830	0.052	20.056 ***		
BI5	0.829	0.054	20.040 ***		

Note: ***represents $P < 0.001$, the same below.

The discriminant validity data used in this study are organized in Table 6, and the correlation coefficients of any two latent variables in the scale are less than 0.800, except for Behavioral Intention (BI); the diagonal of the scale is the square root of the AVE value, which is also greater than the square of the correlation coefficient of any latent variable. All data meet the test requirements, which fully demonstrate that the data statistics of this study have good discriminative validity.

All test data of confirmatory factor analysis in this study have reached a relatively ideal state. The goodness-of-fit indicators in the Structural Equation Modeling (SEM) of this study meet the ideal standard, which thus can ensure a good match between the latent variables, the observed variables and the obtained data to make sure that the results of hypothesis testing and path analysis conducted based on Structural Equation Modeling (SEM) are true and reliable.

Table 6 Discriminant Validity Data Statistics

Constructs	PE	EE	SI	FC	ATT	BI
PE	0.791					
EE	0.167	0.786				
SI	0.203	0.027	0.777			
FC	0.011	0.126	0.039	0.796		
ATT	0.355	0.185	0.244	0.483	0.775	
BI	0.395	0.203	0.350	0.257	0.463	0.842

Moreover, in order to verify whether the hypotheses in the causal matrix of this study are valid, the goodness-of-fit index and Chi-square test are used to evaluate the overall fitness of the hypothesis relationship model. Since Chi-square test only evaluates the sensitivity to sample size, other commonly used fit indexes are also measured in this study, including Goodness-of-Fit Index (GFI), Adjusted Goodness-of-Fit Index (AGFI), Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), Normed Fit Index (NFI) and Tucker-Lewis Index (TLI), respectively.

Among the seven goodness-of-fit indexes of the Structural Equation Modeling (SEM), the acceptable criteria of five parameters, namely CMIN/DF, GFI, AGFI, RMSEA and NFI, are the same as those of confirmatory factor analysis. The ideal thresholds of TLI and CFI coefficients should also not be lower than 0.900 (Hair et al., 2006). All AMOS-adjusted fit indexes are recorded in Table 7, from which we can see that the overall fit index of the hypothesis relationship model is satisfactory, and all indexes are within the range of standard values.

Table 7 Goodness-of-Fit Data Statistics of Structural Equation Modeling

Index	Criterion	Before Adjustment	After Adjustment
CMIN/DF	<3	3.141	2.002
GFI	≥ 0.90	0.853	0.963
AGFI	≥ 0.80	0.824	0.891
RMSEA	<0.05	0.067	0.046
CFI	≥ 0.90	0.920	0.963
NFI	≥ 0.90	0.887	0.929
TLI	≥ 0.90	0.911	0.958

Results

The matrix model used in this study is based on weighted regression and R^2 variance analysis to calculate the significance of all latent variables. The P-values of all hypotheses in this study are below 0.001, so all hypotheses are considered to be valid after testing.

For the hypotheses H1 to H9 that have a direct impact, among the five latent variables that directly affect the Behavioral Intention (BI), Social Influence (SI) has the greatest impact, and its standard path coefficient (β) is 0.339 and T-value is 6.422. Next is Performance Expectancy (PE), and its standard path coefficient (β) is 0.321 and T-value is 5.495. Attitude (ATT) ranks third, and its standard path coefficient (β) is 0.265 and T-value is 4.709. Facilitating Condition (FC) ranks fourth, and its standard path coefficient (β) is 0.248 and T-value is 2.407. Effort Expectancy (EE) has the lowest

impact, and its standard path coefficient (β) is 0.123 and T-value is 2.190.

Furthermore, within the framework of technology acceptance model, among the four latent variables that directly affect the Attitude (ATT), Facilitating Condition (FC) has the greatest impact on Attitude (ATT), and its standard path coefficient (β) is 0.474 and T-value is 8.476. It also has the strongest impact among the latent variables in this study. Next is the impact of Performance Expectancy (PE) on Attitude (ATT), and its standard path coefficient (β) is 0.227 and T-value is 4.767. Then the next one is the impact of Social Influence (SI) on Attitude (ATT), and its standard path coefficient (β) is 0.158 and T-value is 3.449. Effort Expectancy (EE) has the weakest impact on Attitude (ATT), and its standard path coefficient (β) is 0.116 and T-value is 2.624, as shown in Table 8.

Table 8 Hypothesis Test Results of Direct Impact between Latent Variables

Hypotheses	Path	Standardized Path Coefficient (β)	T-Value	Tests Result
H1	ATT $\leftarrow$ PE	0.227	4.767***	Supported
H2	ATT $\leftarrow$ EE	0.116	2.624**	Supported
H3	ATT $\leftarrow$ SI	0.158	3.449***	Supported
H4	ATT $\leftarrow$ FC	0.474	8.476***	Supported
H5	BI $\leftarrow$ PE	0.321	5.495***	Supported
H6	BI $\leftarrow$ EE	0.123	2.190*	Supported
H7	BI $\leftarrow$ SI	0.339	6.422***	Supported
H8	BI $\leftarrow$ FC	0.248	2.407*	Supported
H9	BI $\leftarrow$ ATT	0.265	4.709***	Supported

The results of path analysis show that Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI) and Facilitating Condition (FC) have a significant indirect impact on the Behavioral Intention (BI) through the mediating variable attitude (ATT). Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI) and Facilitating Condition (FC) have a significant direct impact on the attitude towards using AIGC aided

design. Hypotheses 1, 2, 3 and 4 are valid. Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Condition (FC) and Attitude (ATT) have a significant direct impact on the Behavioral Intention (BI) to use AIGC aided design. Hypotheses 5, 6, 7, 8 and 9 are valid. Fig. 2 is a structural model of factors affecting the behavioral intention of students majoring in art design to use AIGC aided design.

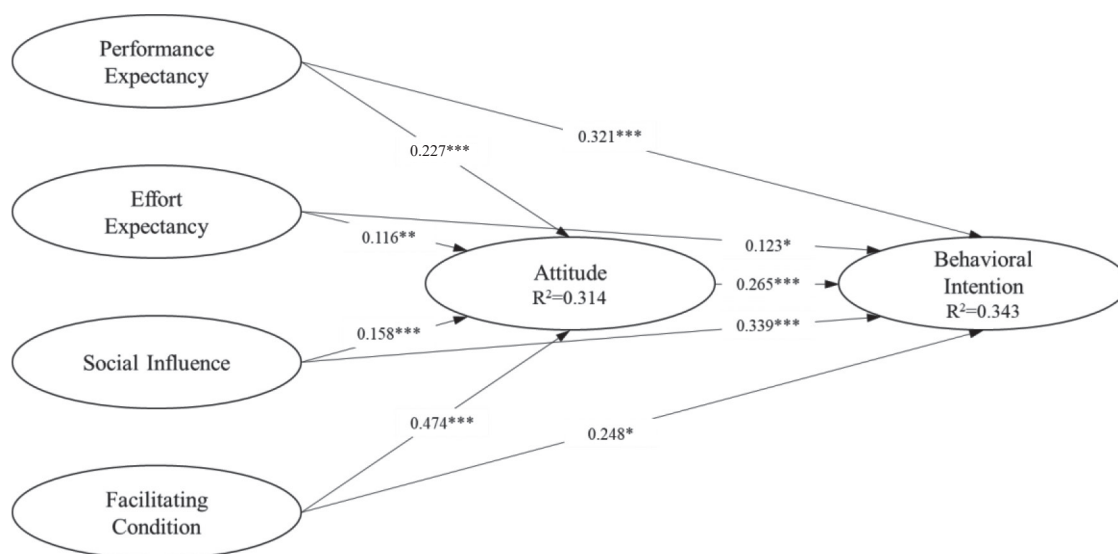
**Figure 2** Path Diagram Consequences

Table 9 Direct, Indirect, and Total Effects

IV						
DV	Effect	FC	EE	PE	SI	ATT
ATT	DE	0.474***	0.116**	0.227***	0.158***	-
	IE	-	-	-	-	-
	TE	0.474***	0.116**	0.227***	0.158***	-
	R ²			0.314		
BI	DE	0.122*	0.092*	0.261***	0.297***	0.265***
	IE	0.126*	0.031*	0.060***	0.042***	-
	TE	0.248*	0.123*	0.321***	0.339***	0.265***
	R ²			0.343		

Firstly, the R² value of the Attitude (ATT) is 0.314, which indicates that 31.4% of the variance is jointly affected by Facilitating Condition (FC), Effort Expectancy (EE), Performance Expectancy (PE) and Social Influence (SI). Among them, Facilitating Condition (FC) has a significant direct impact on the Attitude (ATT), and its influence value is 0.474; Effort Expectancy (EE), Performance Expectancy (PE) and Social Influence (SI) also have a significant direct impact on the Attitude (ATT), and their influence values are 0.116, 0.227 and 0.158, respectively.

Secondly, the R² value of Behavioral Intention (BI) is 0.343, which indicates that 34.3% of the variance is jointly affected by the other five latent variables. Among them, Facilitating Condition (FC), Effort Expectancy (EE), Performance Expectancy (PE), Social Influence (SI) and Attitude (ATT) have a significant direct impact on the Behavioral Intention (BI), and their influence values are 0.122,

0.092, 0.261, 0.297 and 0.265, respectively; Facilitating Condition (FC), Effort Expectancy (EE), Performance Expectancy (PE) and Social Influence (SI) have a significant indirect impact on the Behavioral Intention (BI), and their influence values are 0.126, 0.031, 0.06 and 0.042, respectively.

Discussion

This study focuses on students majoring in Art Design at the College of Chinese & ASEAN Arts, Chengdu University, and aims to study and verify the main factors that affect the behavioral intention of students majoring in art design to use AIGC aided design. Based on the establishment and hypothesis of conceptual framework model, Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Condition (FC) and Attitude (ATT) are tested to have a significant positive impact on the Behavioral Intention (BI). The research shows that performance

expectancy, effort expectancy, social influence, facilitating condition and perceived interest have a direct impact on the attitude, which confirms previous findings (Locke, 1969).

When the students majoring in art design use AIGC aided design, four dimensions have a greater impact on students' acceptance attitude: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI) and Facilitating Condition (FC). The results show that: firstly, the use of AIGC aided design has the greatest direct impact on students' attitude towards the facilitating conditions such as AIGC's software and hardware, network and professional teacher guidance. Based on this, professional teachers need to choose some better AIGC tools for students and provide necessary installation and technical guidance when advising students on computer software and hardware configuration; special emphasis is placed on the high configuration of computer graphics card to meet the requirements of large model graphics software such as Stable Diffusion for graphics card configuration. Secondly, students have strong expectancy for using AIGC aided design to improve their creative thinking ability and work quality. Based on this, more emphasis should be placed on cultivating students' aesthetic consciousness and creative thinking ability in professional courses, and allowing students to learn more about and watch AIGC works. Thirdly, the positive impact of social influence on students' acceptance attitude is attributed to the active support of the Ministry of Education for the application of AI in

education. On March 9, 2024, Minister of Education Huai Jinpeng stated that, For the education system, AI is a golden key, which affects not only the education in future, but also the future of education. There are opportunities and challenges. To better seize opportunities and cope with challenges, we must actively embrace the changes in technology and industry, and actively embrace the era of AI (Wu & Cao, 2024). Finally, effort expectancy also directly affects their positive attitude towards using AIGC aided design. For this reason, teachers should encourage students to actively embrace AIGC, invest more time and energy in learning to talk to computer correctly so that the computer can generate higher quality images based on the input prompt words for their own use, or train their own unique basic models to generate distinctive images for their own use.

Another aspect of this study is to analyze the impact of Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Condition (FC) and Attitude (ATT) on Behavioral Intention (BI) in the technology acceptance model. The findings show that the vast majority of students believe that Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Condition (FC) and Attitude (ATT) have a strong positive impact on Behavioral Intention (BI).

Performance expectancy, effort expectancy and facilitating condition also have a direct impact on students' behavioral intention to accept and use AI technology on

mobile devices to learn English vocabulary. The findings are consistent with the results of previous studies (Dwivedi et al., 2017). Therefore, for students majoring in art design, if AIGC aided design is useful for design and easy to operate, and professional teachers can provide students with software, hardware and technical support, and improve their creative thinking ability and work quality when they use it, then it will be well received and promoted by students, and further promote students' positive attitude towards AIGC aided design. In turn, this positive attitude will be the direct driving force for students' behavior intention to accept and use AIGC aided design.

Conclusion

This study focuses on students majoring in Art Design at the College of Chinese & ASEAN Arts, Chengdu University, and aims to study and verify the main factors that affect the behavioral intention of students majoring in art design to use AIGC aided design. Based on the establishment and hypothesis of conceptual framework model, Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Condition (FC) and Attitude (ATT) are tested to have a significant positive impact on the Behavioral Intention (BI). The research shows that performance expectancy, effort expectancy, social influence, facilitating condition and perceived interest have a direct impact on the attitude, which confirms previous findings (Locke, 1969).

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Recommendation

The students attach great importance to the facilitating condition of using AIGC aided design. Therefore, the following suggestions are proposed: firstly, professional teachers should pay attention to good AIGC aided design tools recognized by the design circles all over the world, such as text tool Chat GPT, Midjourney with beautiful graphic effect, large graphic models with powerful interaction function such as Stable Diffusion, dynamic tools Runway and Pika, video tool Sora, audio tool Stable Audio, etc. Secondly, in view of the fact that the vast majority of AIGC aided design tools have an English interface, teachers should guide students to use them more to reduce their strangeness and resistance toward AIGC aided design tools. Teachers should focus on cultivating learners’ ability to apply information technology and helping them establish a correct understanding of information technology application (Huang & Cao, 2021). Finally, according to the characteristics of art design major, the purpose of using AIGC as an auxiliary design is to provide students with some new ideas or thoughts, and students have to create AIGC graphics for

the second time, which is the final work. The original AIGC graphics cannot be directly used as the final work without secondary creation, which is more conducive to the development of students.

The introduction of AIGC-assisted design has brought unprecedented convenience and efficiency improvement to the field of art design. First of all, the application of AIGC technology in art design has greatly improved the design efficiency and quality. In the traditional design process, designers need to spend a lot of time on drawing, modification and optimization, while AIGC technology can handle these tedious tasks through intelligent algorithms, allowing designers to focus more on the conception and realization of creativity.

This can greatly improve the creative efficiency of art design and reduce the workload of designers. This provides a reference for educational policies. Curriculum settings may need to consider how to integrate technical tools including AIGC to cultivate students' creative ability. Secondly, AIGC technology also provides more innovative content for the integration of technology and art. AIGC not only generates creative solutions, but also optimizes design solutions. This shows that future art design education should not only focus on interdisciplinary integration, but also pay more attention to cultivating students' comprehensive skills in technology and art. These all need to be fully considered in policy making and educational practice.

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