

# *The Effectiveness of Artificial Intelligence Teaching Methods in Art Subject Classrooms*

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**Abstract:** The subject of art is highly subjective, and each student has his or her own unique way of creation and expression. This makes teachers face certain challenges in the teaching process and need to flexibly respond to the individual needs of different students. This study explores the effectiveness of artificial intelligence teaching methods in art subject classrooms and evaluates its impact on students' academic performance and satisfaction. This study adopted an experimental design and randomly divided students into experimental groups and control groups. The experimental group used artificial intelligence-assisted teaching methods, including personalized learning support, real-time feedback, and independent learning opportunities; the control group used traditional teaching methods. The effectiveness of the artificial intelligence teaching method was evaluated by comparing the academic performance and satisfaction of the two groups of students. Experimental results showed that the effective teaching method of using artificial intelligence into art subject classrooms had a positive impact on students' academic performance. 80% of students in the experimental group expressed satisfaction with the artificial intelligence teaching method, which showed that students had a positive attitude towards it and believed that this teaching method could provide better learning experience and learning results.

## 1. Introduction

Artificial intelligence technology has profoundly affected various fields. As a creative and expressive subject, the art discipline has also begun to explore and apply artificial intelligence technology to improve teaching effects and learning experience. This article aims to explore the effective teaching methods of artificial intelligence in art subject classrooms, and evaluate its impact on students' academic performance and satisfaction through empirical research.

There have been some relevant studies that have explored specific measures for teaching effectiveness. Among them, Li Hongmei believes that the pursuit of efficiency is an eternal topic in

education and teaching, and focuses on the research of "effective teaching methods" to fully interpret its impact and role on music education [1]. Fu Yuyuan believes that it should focus on the role of deep learning in measuring the effectiveness of teaching methods, understand the original value of the curriculum from the general education goals, and understand that the multi-disciplinary characteristics of the student population determine the role of group cooperation in general courses [2]. Wu Yalan proposed measures and methods to improve teaching effectiveness from the four dimensions of teaching model, teaching content, teaching methods and teaching evaluation, and elaborated on the meaning of teaching effectiveness and its specific manifestations [3]. Although some related research has achieved positive results, there are some issues that require further research and exploration. These include how to effectively integrate artificial intelligence technology into art subject teaching and how to evaluate its impact on student academic performance and satisfaction.

This article uses experimental design to compare the effects of different teaching methods, especially the effectiveness of artificial intelligence-assisted teaching methods. This helps to understand the potential and limitations of artificial intelligence technology in art subject education and provides guidance and suggestions for educators. By assessing students' learning performance and satisfaction, an objective evaluation of the effectiveness of artificial intelligence teaching methods can be obtained, which helps to determine which aspects of teaching methods have a positive impact on students' learning outcomes, and provides a basis for further improvement and optimization of teaching methods.

## **2. Teaching in Art Subject Classes**

### **2.1 Teaching Methods**

The art discipline emphasizes practice and creation, and its practical teaching methods are very important [4-5]. Students develop artistic skills and perceptual abilities through practical artistic creation activities such as painting, sculpture, music performance, and dance performances. Students need to learn to reflect and criticize their own works of art. Teachers guide students to participate in discussions and dialogues to help them develop critical thinking and art appreciation skills. Arts subjects can be integrated with other subjects to promote interdisciplinary learning. The combination of art and science, art and technology can enhance learning experience and creative abilities through technological innovation and digital media. Teachers adopt student-oriented learning methods and encourage students to explore and learn independently, including project-based learning, cooperative learning and personalized learning to meet students' interests and learning needs. The subject emphasizes visual expression and observation skills, so visual learning and presentation are important teaching methods. Teachers organize the observation and analysis of visual materials, as well as the display and discussion of students' works, thereby promoting students' observation and artistic thinking [6-7]. Students visit art exhibitions, museums, theaters and other art venues for fieldwork and study. Such teaching methods can broaden students' horizons and cultivate their art appreciation abilities and cultural awareness.

### **2.2 Necessity**

Teaching art subjects can help students develop creativity and expression skills. Through activities such as art making and performance, students can develop unique ways of thinking and creative problem-solving skills, and express their thoughts and emotions through works of art. It not only focuses on the cultivation of artistic skills, but also focuses on cultivating students' comprehensive qualities, involving aesthetics, culture, history, society and other fields. Through

learning, students can improve their understanding and appreciation of art and culture, and develop interdisciplinary comprehensive literacy [8-9]. It helps students develop aesthetic awareness and art appreciation ability. By learning the appreciation and analysis of artistic works, students can improve their perception and understanding of beauty, and develop their ability to appreciate and evaluate different art forms. As a form of cultural expression, art can promote communication and understanding between different cultures, help students understand and respect the artistic traditions and expressions of different cultures, and cultivate cross-cultural communication and understanding abilities [10-11].

### 2.3 Difficulties and Challenges

Art is highly subjective, and each student has his or her own unique way of creation and expression. This provides teachers with challenges in the teaching process. They need to flexibly respond to the individual needs of different students and encourage them to develop their own artistic styles while ensuring the achievement of teaching goals. The evaluation and evaluation of works of art is relatively subjective, as the value and quality of works of art often depend on the subjective feelings of the viewer. Teachers need to weigh objective criteria and students' personal expressions when evaluating students' artistic works to ensure fairness and accuracy in assessment. Art subjects require certain resource support [12], such as art materials, equipment, and venues. The resource conditions of different schools and regions may vary, which limits teachers' choices and implementation in teaching. Teachers need to creatively use existing resources to provide opportunities and experiences for teaching art subjects under limited resources. The integration of art subjects with other subjects can broaden students' learning horizons, but teachers need to work closely with teachers of other subjects to coordinate the teaching content and goals between different subjects to ensure the smooth progress of the integration [13-14].

### 3. The Role and Function of AI in Art Disciplines

Some online learning platforms and educational technology companies have begun to develop and launch artificial intelligence-assisted teaching tools and platforms for art subjects. These tools can provide personalized learning suggestions and feedback to help students improve their skills and creativity in art subjects. At the same time, technologies such as virtual reality and augmented reality are also used in the field of art education to provide an immersive learning experience and creative environment. Figure 1 shows the number of universities where artificial intelligence has entered art disciplines in recent years [15-16].

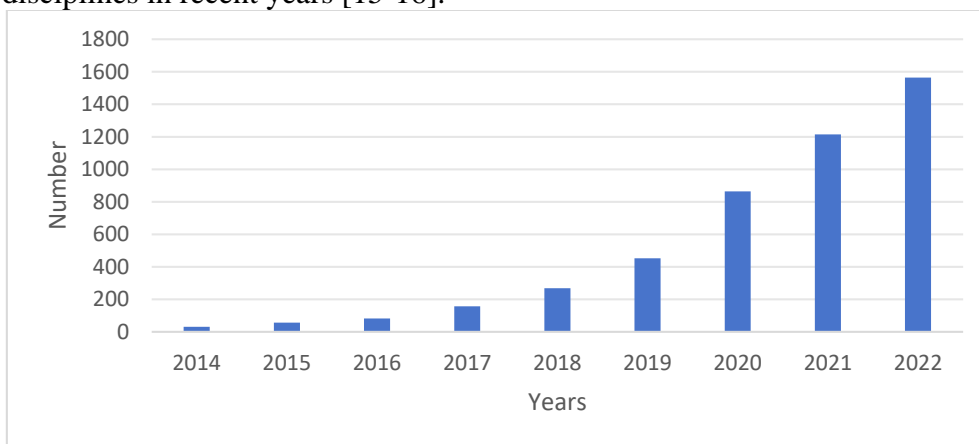


Figure 1: The introduction of artificial intelligence into art classrooms

### 3.1 Creative Assistance

In terms of creative assistance, artificial intelligence can generate variations and creative inspirations of artworks through generative adversarial networks, students input some initial artworks or style samples, and through artificial intelligence algorithms, new artworks or style variations are generated, thereby helping students expand their creative ideas. This approach stimulates students' imaginations and helps them explore different creative directions and styles. It can provide various design aids to help students realize their creativity more efficiently in the art design process [17-18]. Smart drawing software can automatically generate more accurate and detailed paintings based on students' sketches or simple guidance. This tool can reduce students' labor burden, improve their creative efficiency, and can also apply image processing technology to realize the migration and transformation of artistic styles. Students can apply an artistic style to their own works and achieve style conversion through artificial intelligence algorithms. This approach helps students explore different artistic styles and inject new ideas and expressions into their work.

### 3.2 Improving Teaching Efficiency

Regarding teaching efficiency, artificial intelligence can automatically evaluate students' work and performance and provide instant feedback. By using machine learning and computer vision technology, the characteristics, composition, and color use of students' works are analyzed, and professional evaluations and suggestions are given. This kind of automated assessment and feedback can help teachers save a lot of time and energy, improve the accuracy and efficiency of assessment, and provide personalized learning paths and teaching resources based on students' learning situations and needs. By analyzing students' learning data and performance, artificial intelligence can understand students' weaknesses and strengths and provide corresponding learning materials and guidance based on their individual differences. This personalized learning path can improve students' learning efficiency and motivation, allowing each student to develop at his or her own pace and ability. Artificial intelligence provides a variety of intelligent auxiliary tools to help teachers and students teach and learn more efficiently. For example, intelligent drawing software can provide automatic correction and drawing suggestions to help students master drawing skills faster. Intelligent creation tools can automatically generate soundtracks, typesetting and editing, reducing students' tedious work in the art creation process and improving efficiency [19]. It can also help teachers automatically organize and retrieve a large number of teaching resources. Through natural language processing and image recognition technology, artificial intelligence can automatically label and classify teaching materials, and provide recommendations and retrieval of relevant resources according to teachers' needs. This saves teachers time in organizing and searching resources, allowing them to focus more on teaching and guiding students.

### 3.3 Promoting Educational Equity

Artificial intelligence can provide various intelligent auxiliary tools to help students learn and create more efficiently. Smart drawing software can provide automatic corrections and drawing suggestions to help students master drawing skills faster. Intelligent creation tools can automatically generate soundtracks, typesetting and editing, reducing students' tedious work in the art creation process and improving efficiency. The intelligent nature of these tools allows students to obtain professional-level accessibility without relying on expensive equipment or expertise, thereby promoting educational equity. Through online education platforms and applications, the coverage of art education is universalized. Whether in cities or remote areas, students can access high-quality art education content through the Internet. It can provide an interactive learning experience, dialogue

and communication with students through speech recognition and natural language processing technology, and provide real-time guidance and answers. In this way, artificial intelligence expands the scope of popularization of art education, gives more students the opportunity to contact and learn art design, and achieves the goal of educational equity [20].

## 4. Validity Test

### 4.1 Test Methods

Testing the effectiveness of artificial intelligence in arts subject classrooms and design experiments to evaluate its impact on student learning outcomes and learning experiences. The students participating in the experiment were randomly divided into two groups. One group received artificial intelligence-assisted teaching as the experimental group, and the other group received traditional teaching methods as the control group to ensure that the initial levels and other relevant factors of the two groups of students are as consistent as possible. Using standardized learning outcome assessment methods, students in the experimental group and the control group were evaluated, and the learning outcomes of the two groups were compared to see if there were any significant differences. Recording the learning time, learning progress and learning efficiency of students in the experimental group and the control group. The learning efficiency of the two groups of students can be evaluated by observing students' learning behavior data, such as the number of clicks, learning duration, and learning trajectories. A questionnaire was designed to interview students in the experimental group to understand their subjective feelings and satisfaction with artificial intelligence-assisted teaching, and to ask them about their views on personalized learning, feedback and auxiliary tools provided by artificial intelligence. The statistical results were collected using questionnaires. The survey groups are as shown in Table 1:

Table 1: Class situation of the survey group

Class	Male	Female	Total
1	38	26	64
2	40	29	69
3	32	35	67
4	36	31	67
5	33	35	68

### 4.2 Discussion of Results

The survey results are shown in Figures 2 and 3. Figure 2 shows the comparative data of learning effects, and Figure 3 shows the satisfaction survey results.

In Figure 2, the learning effects of five classes 1, 2, 3, 4, and 5 in the art discipline are investigated respectively. The survey method is to divide each class into two groups of equal numbers, one of which is the experimental group and the other is the control group, and the average score of each group's academic performance in each class is calculated. I represents the experimental group, which uses artificial intelligence to assist teaching, and II is the control group, which represents traditional teaching methods. Judging from the data in Figure 2, the average scores of the five classes in the experimental group were 95, 98, 93, 96, and 95 respectively, and the average scores of the control group were 89, 91, 87, 89, and 90 respectively. The average score of the experimental group was significantly higher than that of the control group, indicating that artificial intelligence-assisted teaching can significantly improve the teaching effectiveness of art subject courses.

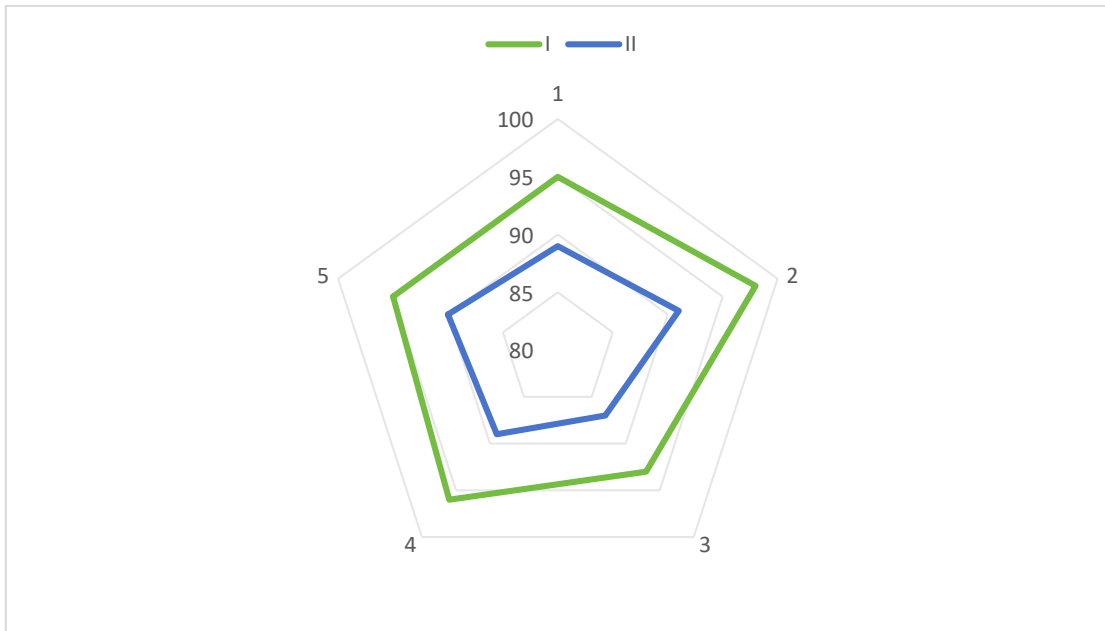


Figure 2: Comparison of learning effects

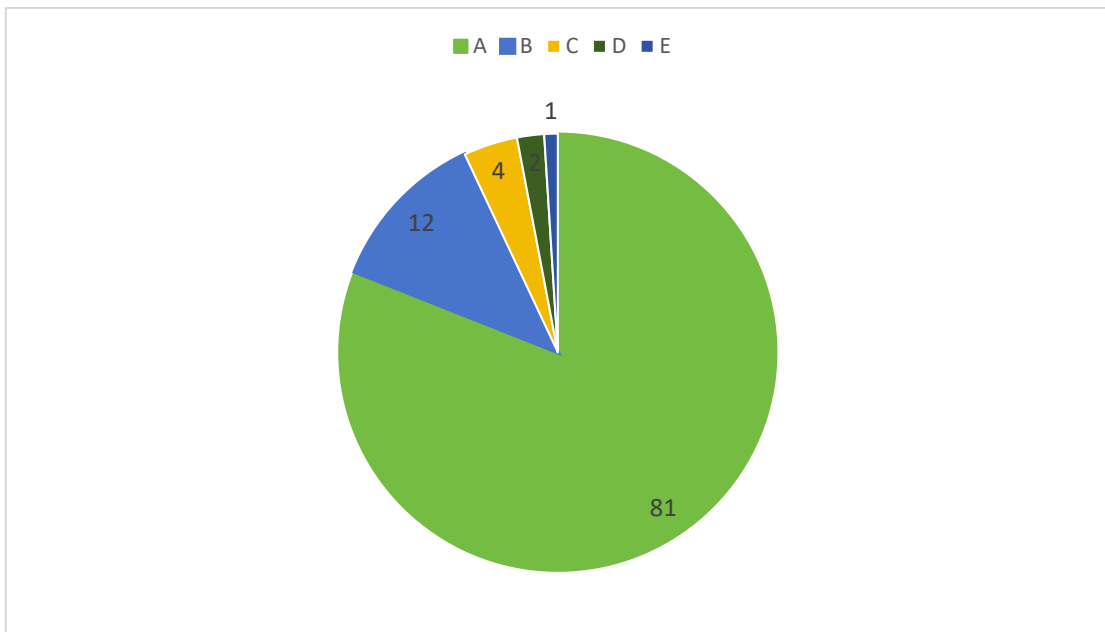


Figure 3: Satisfaction survey

In the satisfaction survey in Figure 3, this article randomly selected 100 art students to participate in this experiment and let them experience the classroom teaching of artificially assisted teaching art courses. And a questionnaire will be collected from them after one semester to collect their satisfaction with artificial intelligence-assisted teaching. The questionnaire divides the degree of satisfaction into 5 levels: A\B\C\D\E, where A represents very satisfied, descending in descending order, and E represents very dissatisfied.

The survey results show that 81 people are very satisfied with artificial intelligence-assisted teaching, 12 people are relatively satisfied, 4 people maintain a neutral attitude, 2 people are relatively dissatisfied, and 1 person is dissatisfied. It can be seen from the survey results that most of the students are very satisfied with the artificial intelligence-assisted teaching of art subject

classes, which shows that artificial intelligence technology can provide a better learning experience in art subject teaching, making students more willing to participate and invest in learning.

## 5. Conclusion

In a study of the effectiveness of artificial intelligence teaching methods in art subject classrooms, the experimental group's academic performance was higher than that of the control group. This demonstrates that the use of AI-assisted teaching methods has a positive impact on student learning outcomes in arts subjects. Because artificial intelligence technology provides more personalized, real-time learning support, it helps students better understand and apply art knowledge, thereby improving their academic performance. In the experimental group, 80% of students were satisfied with the teaching method using artificial intelligence in the classroom. This shows that students have a positive attitude towards the application of artificial intelligence in art subject teaching and believe that this teaching method can provide better learning experience and learning outcomes. High satisfaction stems from personalized learning support, real-time feedback and opportunities for self-directed learning, as well as students' trust and acceptance of AI technology. Research experiments on the effectiveness of artificial intelligence teaching methods in art subject classrooms show that the use of artificial intelligence-assisted teaching methods can achieve positive results in terms of academic performance and student satisfaction, and can greatly improve teaching effectiveness. This provides certain basis and support for the application of artificial intelligence technology in art subject teaching, and also provides inspiration for the education field to explore more innovative teaching methods and educational technology.

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