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# Artificial Intelligence Practices and its Integration to Art Education: Basis for an Innovative Development Plan

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**Abstract**

This study explores the integration of artificial intelligence (AI) in art education within selected universities, aiming to propose an innovative development plan. The study evaluated AI practices in terms of learning content, learning activities, and assessment methods. Through a quantitative method approach, data were collected from 220 art teachers and 713 art students via survey to assess the current state of AI integration in art education. Findings revealed that AI practices in learning content were perceived as very satisfactory. Specifically, art professors' familiarity with formal content training and knowledge of resources and materials to enhance content training was highly rated. Learning activities involving AI tools showed positive impacts on student engagement and creativity. However, challenges such as insufficient learning materials, lack of support for teachers' professional development, and time constraints were noted. Assessment methods incorporating AI, like automated grading systems and AI-driven feedback, were found to be efficient but required improvements in aligning with curriculum standards and addressing individual learning needs. The study highlighted the significant role of AI in transforming art education by offering personalized learning experiences and fostering creative skills. Based on the findings, the study proposes a comprehensive development plan emphasizing the need for curriculum development, investment in AI technologies, and continuous professional development for educators. The recommendations aim to enhance the effectiveness of AI integration in art education, ensuring that it meets the evolving needs of students and the educational landscape.

**Keywords:** artificial intelligence (AI), art education, AI integration, learning content, learning activities, assessment method, development plan



## INTRODUCTION

Since time immemorial, art education has been pivotal in promoting creativity, critical thinking, and cultural appreciation. Hence, art education is crucial to human growth. As modern society approaches the age of artificial intelligence (AI), the need for innovative art education methods to stay current is growing. As AI technologies permeate more and more aspects of life, including the arts, questions have been raised regarding how they may impact traditional approaches to teaching and learning in the arts. AI offers possibilities for creativity and advancement in art education, from AI-powered creative tools to machine learning algorithms that track aesthetic trends.

Educators have employed diversified art education methods, including visual arts instruction, art history and criticism, interdisciplinary integration, and multicultural and global perspectives. These methods have inspired creativity, critical thinking, and cultural awareness among learners of all ages. Each of the diversified techniques offers a unique opportunity for learners to discover and engage with the arts; this, in turn, fosters personal growth, self-expression, and a lifetime appreciation for artistic expression and experience.

Since its rapid development, AI technology has become increasingly widely and deeply used in higher education. It is directly linked to the progress of higher education and plays a significant role in promoting the effect of teaching in higher education (Yang, 2020). Since it plays a crucial part in higher education, it has

become an essential support in the promotion of professional talents in art.

In compliance with the requisites of contemporary information-oriented society, current trends have been emerging in higher art education. The wide-ranging utilization of modern technologies, services, and digital content has ushered in a new stage in expanding the information field, dubbed a "smart society." It was assigned this name at the 2010 G20 Summit in Seoul, during which tactical paths should be taken to develop artificial intelligence technology in the world's major economies such as Germany, South Korea, the Netherlands, etc. Quick alterations in the surroundings of the intelligent society are a sign of the external environment adapting to new situations and independent development. Hence, higher education's missions, tasks, and responsibilities must keep up with these changes and challenges (Yefimenko et al., 2020).

Artificial intelligence indeed creates new creative ecology and new career opportunities. However, the reality that many professions are on the brink of replacement cannot be denied. The question of the kinds of changes that the field of design arts will face must be answered immediately. Despite the increasing incorporation of artificial intelligence (AI) in education, its utilization in art education is still inadequately examined, with few empirical research assessing its effects relative to conventional teaching techniques. Current research predominantly examines AI as a medium for creative production, rather than as an educational instrument, resulting in a deficiency in comprehension about AI's potential to augment creativity, critical thinking, and artistic expression in higher education. Moreover, there is an absence of organized frameworks and recommendations for educators to proficiently incorporate AI into art courses, presenting problems concerning teacher training, resource accessibility, and pedagogical coherence. Moreover, few research investigate educators' perspectives, preparedness, and the obstacles they encounter in using AI-driven techniques. The promise of AI to revolutionize art education remains ambiguous in the absence of definitive implementation methodologies. This paper examines deficiencies by evaluating AI practices in art education, identifying obstacles, and suggesting a novel development strategy to update pedagogical approaches while maintaining creative integrity.

Therefore, this study sought to investigate the innovative development of art education methods in the era of artificial intelligence, exploring the implications of AI on traditional pedagogical approaches, curriculum design, and the role of educators. Then, this study identified recent advancements, industry best practices, and challenges related to integrating AI into art education. This will provide educators, policymakers, and stakeholders with information regarding the potential benefits and ramifications of using AI to improve critical thinking, artistic creativity, and cultural awareness and answer China's educational conditions on a national scale.

**Theoretical Framework.** The theoretical framework for developing innovative art education methods in artificial intelligence can be developed by considering the two interrelated theories: the Augmented Creativity Framework (ACF) and the Technological Pedagogical Content Knowledge Framework (TPACK).

The Augmented Creativity Framework posits that AI technologies and tools can augment human creativity by expanding the possibilities for ideation, exploration, and innovation. In the context and application of art education, the Augmented Creativity Framework proposes that AI tools can serve as collaborators that inspire, generate ideas, and aid in realizing artistic visions. AI-driven creative tools can help students explore new creative frontiers and push the boundaries of their imagination. Examples of these tools include generating art algorithms, style transfer algorithms, and virtual reality settings. The ACF Framework will be used to evaluate the art education professors' inclination and preparedness to utilize innovative approaches to art education,

integrate technology into their teaching practices, and ultimately prepare art students for success in the age of artificial intelligence. Lubart (2005) introduced the Augmented Creativity Framework (ACF), emphasizing AI's capacity to augment human creativity; nonetheless, its use in formal art education remains empirically unverified.

The Technological Pedagogical Content Knowledge Framework, or TPACK, was designed by American professors Kohler and Ponya (2005). It emphasizes the integration of technology, education, and topic knowledge. This framework offers a prism to examine how teachers' subject-specific topic knowledge, pedagogical approaches, and technical competence affect their information literacy competencies.

The TPACK model can be utilized as a theoretical foundation to thoroughly understand teachers' information media use, giving the researcher an overview of the art teachers' knowledge of AI. The theory can also be used to make a comprehensive assessment of the extent to which teachers use information media in the classroom, examine teachers' abilities and levels from the perspectives of technological knowledge, pedagogical knowledge, and subject knowledge, and focus on the degree of integration of technological, pedagogical, and subject knowledge.

**Statement of the Problem.** This study aims to assess the artificial intelligence (AI) practices of students and teachers and determine their integration into the Art Education in order to propose an innovative development plan. Specifically, this study sought answers to the following questions:

1. What is the demographic profile of the two groups of respondents in terms of:
   1.1 Students
      1.1.1 age;
      1.1.2 sex; and,
      1.1.3 level
   1.2 Teachers
      1.2.1 age;
      1.2.2 sex; and,
      1.2.3 grade level handled?
2. What is the extent of artificial intelligence practices in the selected universities in terms of:
   2.1 learning content;
   2.2 learning activities; and,
   2.3 assessment?
3. What are the challenges in teaching art education in terms of:
   3.1 limited resources;
   3.2 limited time; and,
   3.3 lack of teacher training?
4. Is there a significant difference in the extent of artificial intelligence practices when respondents are grouped according to their demographic profile?
5. Is there a significant difference in the challenges in teaching art education when respondents are grouped according to their demographic profile?
6. Is there a significant relationship between the demographic profile of the respondents and the extent of artificial intelligence practices in the selected universities?
7. Based on the study's results, what innovative development plan can be suggested in teaching art education?

## METHODOLOGY

**Research Design.** This study utilized a quantitative research design because it aimed to assess the extent of artificial intelligence practices as well as the challenges in teaching art education serving as basis in the development of art education methods in the era of artificial intelligence in colleges and universities in China. The descriptive research method validates data collection since it covers the present or existing behavior of a particular group or subject (Nassaji, 2019). The method also involves the interpretation, meaning, and significance of what will be discussed and evaluated. Specifically, it employed descriptive comparative to compare the views of the

respondents on their extent of artificial intelligence practices and challenges in teaching art education as to their demographic profile. Further, it also employed descriptive correlation to determine if relationship exist between the demographic profile of the respondents and their extent of artificial intelligence practices.

**Population and Sampling.** To ensure that the sample is representative of the population, the researcher utilized a stratified random sampling technique. Stratified random sampling is essential for ensuring that every subgroup within a population is adequately represented in a sample, enhancing the reliability and validity of study outcomes. This method reduces potential bias and sampling errors, leading to results more accurately depicting the entire population. Through the division of the population into homogeneous subgroups, or strata, based on specific characteristics, followed by random sampling from each stratum, researchers can obtain a sample that better represents the diverse characteristics of the population compared to other sampling techniques such as simple random sampling or cluster sampling (QuestionPro, 2023; Statistics By Jim, 2023). In this case, the strata are the different schools and the two group of respondents (teachers and students). The respondents were 220 art teachers and 713 students from the following schools: Hebei Academy of Fine Arts, Hebei Jiatong Vocational and Technical College, and Shijiazhuang College of Applied Technology.

**Instrumentation.** The main instrument used to collect the necessary data of the study is a self-made questionnaire. The questionnaire covered all aspects of the study to evaluate the development of innovative art education methods in the era of artificial intelligence in China, which will be the basis of whether artificial intelligence may be used to leverage and enhance art education methods.

The questionnaire was divided into two parts. The first part gathered the demographic profile of the respondents, serving as a reference to support the discussion of the survey results. The second part mainly investigated the art education methods which were used to evaluate the problems stated in the 2nd and 3rd statement of the problems.

The data was collected using the survey management software questionnaire Star on the Internet. The Star on the Internet survey management software is an online tool that streamlines data collection, enabling respondents to easily complete and submit their answers electronically, thus minimizing manual errors and ensuring prompt and precise data aggregation. The four-point Likert scale (Table 1) was used to evaluate the respondents' level of familiarity with artificial intelligence.

**Table 1**

| Scale | Mean range | Word description | Verbal interpretation |
|---|---|---|---|
| 4 | 3.50 – 4.00 | Strongly Agree | Very High Level |
| 3 | 2.50 – 3.49 | Agree | High Level |
| 2 | 1.50 – 2.49 | Disagree | Low Level |
| 1 | 1.00 – 1.49 | Strongly Disagree | Very Low Level |

The reliability analysis in this study was conducted using Cronbach's Alpha statistic. It was used to validate the entire questionnaire and item analysis was used to find consistency in each item. The higher the reliability coefficient, the more consistent, stable, and reliable the test results are. The data from the 20 small samples from the preliminary questionnaire were analyzed using SPSS, and the Cronbach Alpha result is 0.998. The data indicated that the indicators' reliability is very high and therefore has passed the reliability test.

**Statistical Treatment.** The data gathered were treated using the Statistical Package for Social Sciences (SPSS) with specific use of descriptive and inferential statistics. Explicitly, the following tools were used:

1. **Percentage**. This was used to describe the rate of response by the respondents and to describe the profiles of the respondents.

2. **Weighted Mean**. This was used to describe the level of familiarity with AI and the

respondent's pedagogical approaches in art education. It was also used to evaluate the challenges in teaching art education.

3. **Pearson r Moment Correlation Coefficient or PMMC r.** This was used to analyze the absence or presence of correlation between the respondents' perception of artificial intelligence.

4. **T-test/ANOVA.** These were used to describe the difference on the extent of artificial intelligence practices and challenges in teaching art education based on respondents' profile.

## RESULTS AND DISCUSSION

**Demographic Profile of the Students.** Table 2 reveals the age of the student respondents. All 713 target student respondents were able to take part in the study. Of the student respondents, 197, or 27.6%, are aged 16 to 18. The lion's share of student respondents is 284, or 39.8%, aged 19 to 21. Finally, 232, or 32.5%, are in the age bracket of 22 and above.

**Table 2**
*Frequency and percentage distribution of students according to age.*

| Age | Frequency | Percentage |
|---|---|---|
| 16 – 18 | 197 | 27.6% |
| 19 – 21 | 284 | 39.8% |
| 22 and above | 232 | 32.5% |
| Total | 713 | 100% |

Table 3 shows the sex of the student respondents. There were more female student respondents, with 380 participants or 53.3%, while male student participants were 333 or 46.7%.

**Table 3**
*Frequency and percentage distribution of students according to sex.*

| Sex | Frequency | Percentage |
|---|---|---|
| Male | 333 | 46.7% |
| Female | 380 | 53.3% |
| Total | 713 | 100% |

**Table 4**
*Frequency and percentage distribution of students according to age.*

| Grade Level | Frequency | Percentage |
|---|---|---|
| 1st year | 310 | 43.5% |
| 2nd year | 283 | 39.7% |
| 3rd year | 120 | 16.8% |
| Total | 713 | 100% |

Table 4 shows the year level of the student respondents. It is shown that the freshmen respondents are 310 or 43.5% of the total population, followed by the sophomores with 283 or 39.7%, and lastly, the third year with 120 or 16.8% of the total population. According to daxueconsulting.com, there is a rising demand for art students in the fields of design, animation, game design, and many others. However, in the table shown above, there is also a rapid decrease in the number of students enrolled in the arts program in the universities involved in this study as their year level progresses.

**Demographic Profile of the Teachers.** Table 5 reveals the age of the teacher respondents to this study. Art teachers between the ages of 20 and 25 are 14, or 6.36%; between the ages of 26 and 30 are 32, or 14.55%; between the ages of 31 and 35 are 48, or 21.82%; between the ages of 36 and 40 are 58 or 26.36%, and those who are 41 and above are 68 or 30.91%. Looking at the frequency and percentage of the art teachers' ages, it can be gleaned that their population also increases as the art teachers advance in age. Hence, the number of seasoned art teachers in the universities involved in this study increases over time.

**Table 5**
*Frequency and percentage distribution of teachers according to age.*

| Age | Frequency | Percentage |
|---|---|---|
| 20 – 25 | 14 | 6.36% |
| 26 – 30 | 32 | 14.55% |
| 31 – 35 | 48 | 21.82% |
| 36 – 40 | 58 | 26.36% |
| 41 and above | 68 | 30.91% |
| Total | 220 | 100% |

**Table 6**
*Frequency and percentage distribution of teachers according to sex.*

| Sex | Frequency | Percentage |
|---|---|---|
| Male | 132 | 60% |
| Female | 88 | 40% |
| Total | 220 | 100.00% |

Reflected in Table 6 is the sex of the teacher respondents. 132 or 60% of the respondents are males, while 88 or 40% are female. The number of art professors in universities in China varies significantly, considering factors such as the size of the institution and the specific art program.

**Table 7**
*Frequency and percentage distribution of teachers according to grade level handled.*

| Year Level | Frequency | Percentage |
|---|---|---|
| 1st year | 77 | 35% |
| 2nd year | 79 | 35.91% |
| 3rd year | 64 | 29.09% |
| Total | 220 | 100.00% |

Table 7 shows teacher respondents and the number of year levels they handle. The third year has the fewest art teachers, 64, or 29.09%. This is followed by the first-year level, with 77, or 35%, and the second year has the most art professors, 79, or 35.91%.

**Extent of artificial intelligence practices in the selected universities.** Table 8 presents the data on artificial intelligence practices. The student-respondents perceive the AI practices in learning content as very satisfactory, with particular emphasis on the art professors' familiarity with formal content training and knowledge of resources and materials. In terms of learning activities, they find activities, including the incorporation of technology and diverse assessment approaches, to be very satisfactory, aligning with recommendations for enhancing Art Appreciation Courses through engaging and interdisciplinary activities. Additionally, for the assessment, the students view the assessment practices involving AI as very satisfactory, particularly in recognizing the benefits and opportunities in the arts and creative practices. The teacher-respondents generally have the same view on the extent of artificial intelligence practices in the selected universities. Overall, the respondents find the AI practices to be very satisfactory.

**Table 8**
*Mean distribution of artificial intelligence practices, (n=933)*

| Dimensions | Mean | SD | VI |
|---|---|---|---|
| Learning Content | 2.97 | 0.87 | Very Satisfactory |
| Learning Activities | 2.92 | 0.81 | Very Satisfactory |
| Assessment | 2.85 | 0.86 | Very Satisfactory |

*Legend: 3.50 – 4.00: Outstanding / 2.50 – 3.49: Very Satisfactory / 1.50 – 2.49: Satisfactory/ 1.00 – 1.49: Not Satisfactory*

**Challenges in teaching art education.** Table 9 reflects the data on artificial intelligence practices. Based on the results, the challenges in teaching art education are multifaceted and primarily revolve around three core issues: limited resources, limited time, and lack of teacher training. Students perceive the challenge of limited resources as significant, with all related statements indicating a great extent of difficulty. This includes insufficient materials and financial support for art projects, which negatively impacts students' mental wellbeing well-being and overall educational experience.

**Table 9**
*Mean distribution of challenges in teaching art, (n=933)*

| Dimensions | Mean | SD | VI |
|---|---|---|---|
| Limited Resources | 2.92 | 0.78 | Great Extent |
| Limited Time | 2.84 | 0.83 | Great Extent |
| Lack of Teacher Training | 2.87 | 0.81 | Great Extent |

*Legend: 3.50 – 4. Legend: 3.50 – 4.00: Very Great Extent/ 2.50 – 3.49: Great Extent / 1.50 – 2.49: Low Extent/ 1.00 – 1.49: Very Low Extent*

Moreover, students also report significant challenges related to time constraints, including insufficient time to complete projects, short attention spans, excessive screen time, and large class sizes. These time-related issues hinder students' ability to produce quality work and fully engage in the creative process. The lack of adequate teacher training is another major challenge that impacts both

students and teachers. Teachers feel they lack the necessary skills and support to effectively teach art, which affects their ability to foster a conducive learning environment. This includes a lack of professional development opportunities and resources to enhance their teaching methods and integrate modern technologies like AI.

**Difference in the extent of artificial intelligence practices when respondents are grouped according to demographic profile.** Table 10 evaluated the difference in the extent of artificial intelligence practices based on the demographic profile of respondents in the selected universities.

**Table 10**
*Difference in artificial intelligence practices when grouped according to demographic profile of students.*

| | Learning Content | | Learning Activities | | Assessment | |
|---|---|---|---|---|---|---|
| Demographic Profile | F-value | p-value | F-value | p-value | F-value | p-value |
| Age | 14.62 | .000 | 36.08 | .000 | 24.95 | .000 |
| Sex | .600 | .549 | .207 | .836 | -1.316 | .188 |
| Grade Level | .462 | .63 | 1.21 | .299 | 5.39 | .005 |

The table shows significant differences in AI practices - learning content, learning activities, and assessment based on age. The F- and p-values show that age has a considerable impact on students' engagement with AI in a variety of ways. However, there are no differences in assessment based on sex and grade level. As a result, students of various ages engage with AI learning content that differs significantly. Different exposure levels, varying interests, or curricula designed for different age groups could be the causes for this.

**Table 11**
*Difference in artificial intelligence practices when grouped according to demographic profile of teachers.*

| | Learning Content | | Learning Activities | | Assessment | |
|---|---|---|---|---|---|---|
| Demographic Profile | F-value | p-value | F-value | p-value | F-value | p-value |
| Age | 1.20 | .312 | 1.371 | .245 | 1.694 | .152 |
| Sex | -.321 | .748 | -.605 | .546 | .184 | .854 |
| Grade Level | 2.303 | .102 | .018 | .983 | .997 | .371 |

Table 11 displays the statistical analysis of how extensively teachers incorporate AI in three areas: learning content, learning activities, and assessment, considering their demographic characteristics, such as age, gender, and grade level. For the category of Learning Content in relation to Age, the F-value is 1.20 with a p-value of 0.312, indicating no significant difference in AI-related learning content practices across different age groups. Similarly, the analysis of Learning Content by Gender shows an F-value of -0.321 and a p-value of 0.748, suggesting no notable difference between male and female teachers in their AI-related learning content practices. Regarding Learning Content and Grade Level, the F-value is 2.303 with a p-value of 0.102, implying no significant difference in AI-related learning content practices among teachers of various grade levels. The p-value, being slightly above 0.05, further confirms the absence of statistical significance.

**Difference in the challenges in teaching art education when respondents are grouped according to demographic profile.** Table 12 presents the differences on the challenges students face in teaching art education, focusing on three main areas: limited resources, limited time, and lack of teacher training. These challenges are analyzed against different demographic profiles, specifically age, sex, and grade level.

**Table 12**
*Difference in challenges in teaching art when grouped according to demographic profile of students.*

| | Limited Resource | | Limited Time | | Lack of Teacher Training | |
|---|---|---|---|---|---|---|
| Demographic Profile | F-value | p-value | F-value | p-value | F-value | p-value |
| Age | 12.304** | .000 | 7.331** | .000 | 5.866** | .000 |
| Sex | -1.795 | .074 | -1.668 | .096 | -.469 | .639 |
| Grade Level | 1.957 | .142 | 2.900 | .056 | 2.147 | .118 |

For the Limited Resources along Age, the F-value is 12.304, and the p-value is .000. To interpret the results, given that the p-value is less than 0.05, this indicates a statistically significant relationship between age and the challenge of limited resources. This suggests that age significantly impacts how students perceive the availability of resources in teaching art education.

**Table 13**

*Difference in challenges in teaching art when grouped according to demographic profile of teachers.*

| | Limited Resource | | Limited Time | | Lack of Teacher Training | |
|---|---|---|---|---|---|---|
| Demographic Profile | F-value | p-value | F-value | p-value | F-value | p-value |
| Age | 1.332 | .259 | 3.600** | .007 | 2.085 | .084 |
| Sex | -2.023** | .044 | .699 | .485 | -1.087 | .278 |
| Grade Level | 6.712** | .001 | 1.255 | .287 | 1.113 | .331 |

Table 13 shows differences in the assessment of teachers' challenges in teaching art education, examining three main areas: Limited Resources, Limited Time, and Lack of Teacher Training. The interpretation and analysis consider three demographic factors: Age, Sex, and Grade Level. For Limited Resources, no significant difference is seen in terms of age. However, there is a significant difference in terms of Sex, with an F-value of -2.023 and a p-value of .044. There is a highly significant difference in grade level, with an F-value of 6.712 and a p-value of .001 @ 0.05 level of significance.

The teacher-respondents' perception of limited resources varies significantly based on sex and grade level. The negative F-value for sex suggests that one sex, most likely females, perceives greater resource limitations than the other, given coding conventions. Grade level strongly influences resource perception, indicating that teachers at different grade levels experience resource limitations differently. Considering the F-value, the challenge in Limited Time along Age has a highly significant difference between F= 3.600 and the p-value at .007. No significant difference is seen in Sex and Grade Level, with F-values at .699 and 1.255 and p-values at p= .485 and .287, respectively, with F-values at the @ 0.05 significance level. Age is the only factor significantly affecting the perception of time limitations. This suggests that teachers of different ages experience or perceive time constraints differently in art education.

**Relationship between demographic profile and extent of artificial intelligence practices.** In Table 14, results reveal that there is no significant relationship between age or sex and the extent of AI practices in learning content, learning activities, and assessment. However, there is a significant relationship between grade level and AI practices in assessment, indicating that the effectiveness or perception of AI practices in assessments varies significantly with the grade level of students.

**Table 14**

*Correlation coefficient (r) from Pearson correlation analysis between demographic profile and extent of artificial intelligence practices of students.*

| | Learning Content | | | Learning Activities | | | Assessment | | |
|---|---|---|---|---|---|---|---|---|---|
| Demographic Profile | Chi Value | p-value | Interpretation | Chi Value | p-value | Interpretation | Chi Value | p-value | Interpretation |
| Age | 49.329 | .000 | Significant | 71.627 | .000 | Significant | 53.364 | .000 | Significant |
| Sex | .983 | .800 | Not Significant | 1.152 | .770 | Not Significant | 4.508 | .214 | Not Significant |
| Grade Level | 5.116 | .538 | Not Significant | 6.946 | .325 | Not Significant | 10.41 | .106 | Not Significant |

On the other hand, the findings in Table 15 reveal a significant relationship between the age of the teacher-respondents and the extent of AI practices in learning content, learning activities, and assessment. However, no significant relationship is found between sex or grade level and the extent of AI practices in these areas.

**Table 15**

*Correlation coefficient (r) from Pearson correlation analysis between demographic profile and extent of artificial intelligence practices of teachers.*

| | Learning Content | | | Learning Activities | | | Assessment | | |
|---|---|---|---|---|---|---|---|---|---|
| Demographic Profile | Chi Value | p-value | Interpretation | Chi Value | p-value | Interpretation | Chi Value | p-value | Interpretation |
| Age | 8.952 | .718 | Not Significant | 10.441 | .549 | Not Significant | 12.602 | .344 | Not Significant |
| Sex | .539 | .972 | Not Significant | 6.508 | .066 | Not Significant | .960 | .886 | Not Significant |
| Grade Level | 4.915 | .544 | Not Significant | 1.939 | .976 | Not Significant | 19.914 | .001 | Significant |

**Proposed innovative development plan.** To ensure that artificial intelligence practices are integrated into art education, the detailed action plan below is proposed as basis for an innovative development plan.

**Action Plan for Integrating Artificial Intelligence into Art Education**

**General Objective:** To effectively integrate artificial intelligence (AI) into art education to enhance learning experiences, improve teaching methodologies, and prepare students for the future of art and technology.

**Table 16**

*Action plan matrix for integrating artificial intelligence into art education.*

| Activities | Objectives | Actions | Timeline | Key People | Key Performance Indicators |
|---|---|---|---|---|---|
| Needs Assessment Survey and Planning | Determine the needs of both teachers and students in relation to AI tools and technologies. | • Survey faculty and students on the current use of technology in art education.<br>• Review existing art education curricula and identify gaps in AI integration.<br>• Analyze successful case studies of AI integration in other art programs. | 1-2 months | Administrators (Deans, Program Heads, Coordinators, Faculty Members) | 100% of faculty and students participating in the needs assessment survey |
| Appropriation and Acquisition of AI Infrastructure and Resources | Provision of AI tools that support art instruction. | • Identify and procure AI software and applications suitable for art education (e.g., generative design tools and AI-based art critique systems).<br>• Ensure compatibility with existing hardware and software. | 3 months | IT Department<br>Procurement Department | 95% User satisfaction rate with newly procured AI tools and technologies |
| Curriculum Development – Integrate AI into Art Curriculum | Integrate AI tools, technologies, and concepts into existing art courses. | • Develop new course modules that include AI techniques (e.g., AI-assisted art creation and digital media analysis).<br>• Update existing courses to integrate AI components. | 4 months | Curriculum Developers<br>Faculty | 100% development of new course modules with the integration of AI tools, technologies, and activities |
| | Offer specialized electives focusing on AI in art. | • Design and propose elective courses that delve deeper into AI applications in art.<br>• Develop syllabi and learning materials for these electives. | 4 months | Department Heads<br>Program Dean<br>Faculty | 100%<br>AI-focused elective courses developed<br>100% of syllabi and learning materials created for AI electives. |
| Faculty Development and Capacity Building | Create resources to support faculty in teaching AI-related content | • Develop AI teaching resources<br>• Develop guides, tutorials, and case studies for AI in art education.<br>• Create a repository of AI art tools and techniques. | 4 months | Instructional Designers<br>Faculty | An inadequate number of AI teaching guides, tutorials, and case studies have been developed.<br>Faculty usage rate of the AI teaching resource repository.<br>100% faculty satisfaction rate with the available AI teaching resources. |
| Student Engagement - Introduce AI in Student Projects<br>Host AI Art Competitions and Exhibitions | Provide AI training for faculty members of the Art Department | • Equip faculty with the skills and knowledge to teach AI-integrated art courses.<br>• Organize workshops and seminars on AI tools and techniques in art.<br>• Encourage participation in external AI and art education conferences. | Year-round | Professional Development Team<br>External Trainers | Satisfactory number of workshops and seminars conducted.<br>100% of faculty attending AI training sessions.<br>100% of faculty satisfaction rate with AI training. |
| | Encourage students to use AI tools in their art projects. | • Integrate AI-based projects into course assignments and portfolios.<br>• Provide access to AI tools and resources for student use | Year-round | Faculty<br>Laboratory Coordinators | 100% of art courses incorporating AI-based projects.<br>100% of students use AI tools in their projects.<br>100% Student satisfaction rate with AI-based projects. |
| | Promote the use of AI in art through competitions and exhibitions | • Organize annual or semi-annual AI art competitions.<br>• Set up exhibitions to showcase AI-enhanced artworks created by students. | Six months | Art Department<br>Activity Coordinators | At least 4 AI art competitions and exhibitions are organized annually.<br>100% Participation rates in AI art competitions.<br>100% Very Satisfactory Attendee feedback and satisfaction rate for AI art exhibitions. |
| Evaluation and Improvement – Monitor AI Integration and Effectiveness<br>Adjust and Update Strategies | Assess and evaluate the impact and effectiveness of AI integration in art education. | • Collect feedback from students and faculty on AI tools and methods.<br>• Evaluate student performance and engagement in AI-integrated courses | Year-end | Assessment Team and Coordinators<br>Department Heads, Deans | 100% feedback collection from students and faculty.<br>100% of evaluation reports are generated annually.<br>Enhanced student performance and engagement metrics. |
| | Consistently enhances AI integration based on feedback and evaluation. | • Review feedback and performance data to identify areas for improvement.<br>• Update curriculum, training, and resources as needed. | Yearly | Assessment Team and Coordinators<br>Department Heads, Deans<br>Curriculum Developers | An ample number of strategy review meetings are conducted annually.<br>An ample number of updates were made to the curriculum, training, and resources.<br>100% Stakeholder satisfaction rate with the adjustments and updates. |

**Conclusion.** Based on the findings of this study, the researcher came up with the following conclusions:

1. Age is a significant factor in the extent of AI practices for students rather than for teachers. Sex does not significantly influence the extent of AI practices for students and teachers. Grade level significantly affects students' perceptions of AI practices in assessment, and similarly, teachers' perceptions vary significantly with grade level in assessment.

2. The respondents perceive the integration of AI in learning content within selected universities as very satisfactory, particularly appreciating the AI-supported resources and materials that enhance art education. The focus on art education in China, bolstered by national policies and resources, has significantly benefited from AI incorporation. This integration supports the national emphasis on cultural and aesthetic education, providing a robust framework for improved art education outcomes.

3. The problems in teaching art education are so interwoven that they generally affect the effectiveness of art education. The outcome is a cycle of frustration, underachievement, and low expectations for students and teachers due to limited resources, time constraints, and inadequate teacher training. Limited resources, materials, and funding make a comprehensive art education easier, while time limits students' ability to engage fully with crafting. The issues arise more with inadequate training and support for teachers to get the job done efficaciously without proper tools.

5. Age plays a significant role in how students interact with AI practices at the university level. Younger and older students engage differently with AI learning content, activities, and assessments. These differences could stem from varying exposure levels to AI technologies, distinct interests, or curricula tailored to specific age groups. This finding underscores the importance of considering demographic factors, particularly age when implementing AI practices in educational institutions.

6. The analysis reveals that the perception of challenges in teaching art education varies based on certain demographic factors.

7. The research suggests that universities should concentrate on creating and enhancing efficient AI methods for most demographic groups. It's important to pay particular attention to how AI methods are used in evaluations for various grade levels, as a significant correlation was discovered in this area. This allows universities to customize their AI-driven assessment techniques to better align with the requirements and abilities of students at different points in their academic progress.

**Recommendations.** Based on the result of the study, the researcher recommends the following:

1. To enhance effectiveness, focus on developing AI-driven assessment tools and AI integration strategies that are adaptable to different grade levels and age groups.

2. Expand the use of AI-driven resources and materials to support student learning and understanding further.

3. Schools and universities should prioritize the allocation of resources for art education. This includes providing sufficient materials, financial support, and dedicated spaces for art projects. Collaborations with local art organizations and community sponsors can also help bridge the resource gap.

4. Art Universities should design AI-related learning content and activities that cater to different age group's specific needs and interests. This could involve creating age-appropriate AI modules and ensuring that AI practices are relevant and engaging for all students.

5. Conduct additional research to explore the borderline significance of grade level in relation to time constraints. Understanding how grade levels impact perceptions of time management can help develop more effective interventions.

6. Consider implementing Annabestani's (2020) method, which uses infinite values throughout the academic year and rounds to standard values at year-end. This could be integrated into a smartphone application to streamline the evaluation process.

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