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Integration of Artificial Intelligence in Teaching and Learning Visual Arts Subject in Secondary Schools

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Abstract

The use of the Technology Acceptance Model (TAM) is commonly employed in studies related to the application of technology by previous researchers. This study also adopts the TAM to examine teachers' perceptions regarding the use of artificial intelligence software in the teaching and learning process of Visual Arts Education. The aim of this study is to identify teachers' views on the utilization of artificial intelligence technology in the teaching and learning of Visual Arts Education at the secondary school level. The study is descriptive in nature, utilizing a survey method with a Likert scale questionnaire as the instrument. A total of 87 respondents, consisting of Visual Arts Education teachers in secondary schools in the Batu Pahat district were involved in this study. The findings indicate that teachers' perceptions of the ease of use, usefulness, and attitude towards the use of artificial intelligence software in the teaching and learning of Visual Arts Education at the secondary school level are high.

1. Introduction

In this era of globalization, the use of technology has become a crucial component in the education system worldwide to engage the current generation of students in the classroom. The integration of technology is not a new phenomenon; countries such as the United States and Europe have incorporated technology in education since the 1960s. Furthermore, the integration of technology in the field of education includes the use of computers, audiovisual tools, and the internet, significantly enhancing teaching and learning, especially in the subject of Visual Arts Education. Moreover, the integration of technology in education facilitates the exchange of ideas and opinions between teachers and students, creating a more interactive and engaging learning environment (Subari, 2022). The Ministry of Education Malaysia (KPM) has emphasized the incorporation of technology at the school and higher education levels with the aim of fostering an IT-savvy culture and deepening understanding among educators (Ramli, 2015).

Previously, the Right Honorable Tan Sri Muhyiddin Yassin strongly recommended that educators embrace the use of technology in all aspects of education, including administration, teaching, and learning (Syed Abu Bakar, 2018). The integration of technology for the subject of Visual Arts Education is believed to be more effective in delivering learning topics to students in the classroom. This is because each students has their own background and learning style. Therefore, the use of multimedia technology can serve as a communication tool with positive effects, as it incorporates elements such as color, audio, video, text and animation that can capture the attention of students during teaching and learning in the classroom (Anuar, 2015). The integration of technology in the field of education has shown rapid progress in recent times, especially with the emergence of artificial intelligence technology (Li, J., & Zhang, 2022).

Artificial Intelligence Technology, also known as AI Technology, is a technology that operates using computers. The integration of artificial intelligence technology into the subject of Visual Arts Education in schools is considered a valuable technological tool that enhances the delivery of educational content (Husain, 2020). By incorporating artificial intelligence technology, students can also produce higher-quality artworks. The effectiveness of this technology integration depends on the approach used by teachers and the most optimal approach is when it is employed systematically and judiciously, capable of improving the effectiveness of integrating technology for the subject of Visual Arts Education in schools (Husain, 2020).

The integration of artificial intelligence technology has become one of the pedagogical approaches for teachers that can enhance student learning in schools (Rahmat, 2017). The use of artificial intelligence technology in the subject of Visual Arts Education can have a significant impact on shaping the identity of students, in addition to acquiring knowledge. The utilization of artificial intelligence technology in the subject of Visual Arts Education in schools involves the application of software such as Adobe Firefly, Corel, Jasc Paint Shop Pro, Adobe Illustrator, Dall-E, OpenAI, and others (Syed Abu Bakar, 2015).

The primary goal of integrating artificial intelligence technology into the subject of Visual Arts Education is to use it as a teaching tool to stimulate the creativity of students, which should not be limited to academic subjects alone. This is because enhanced technological teaching and learning enable teachers to diversify their teaching approaches to engage students and boost their motivation, especially at the secondary school level (Yusoff & Husain, 2021). The Visual Arts Education subject in schools emphasizes the process of creating art expressions based on the emotions and characteristics of the students (Furqan, 2014). Therefore, in this era of technological advancement, teaching and learning can be facilitated more easily by utilizing artificial intelligence technology. This indirectly demonstrates the effectiveness of integrating artificial intelligence technology into the subject of Visual Arts Education as a positive step in the education system.

Teachers who possess positive perceptions or attitudes are crucial in providing encouragement for students to learn new things (Suguneswary, 2016). The acceptance of teachers towards the integration of technology in teaching and learning can be enhanced based on the positive perceptions and attitudes demonstrated by the teachers. Therefore, the perceptions and attitudes of teachers are essential in gauging the success of integrating artificial intelligence technology in the teaching and learning process for the subject of Visual Arts Education in schools.

1.1 Problem Statement

The main problem faced in integrating artificial intelligence technology for Visual Arts Education in schools is related to facility constraints. This occurs because the lack of facilities such as Liquid Crystal Displays (LCDs), computers and projectors has become a reason why teachers still resort to traditional teaching methods during the teaching and learning process in schools. This also contributes to why Visual Arts Education in schools has not fully embraced artificial intelligence software such as Adobe Photoshop, Adobe Illustrator, and Adobe InDesign as one of the teaching tools (ABBM) in schools.

Furthermore, the aspect of teacher skills also plays a crucial role in ensuring the effectiveness of integrating artificial intelligence technology for the subject of Visual Arts Education (PSV) in schools. However, teachers with skills in handling technology still remain at a moderate level. This should not be the case because, in this era of technological advancement, teachers should act as moderators for students in school. Therefore, art education teachers should act as creative and innovative moderators to ensure the continuity and competitiveness of artistic knowledge in this era of technological development.

As a result, based on observations made regarding the background of this issue, the researcher can conclude that the main problem in this study is that teachers are insufficiently prepared to create a 21st-century learning environment that utilizes technology as a teaching tool. Therefore, this study will focus on teachers' perceptions of integrating artificial intelligence technology in the teaching and learning of Visual Arts Education (PSV) in secondary schools, specifically in terms of utility, usability, and the attitudes of Visual Arts Education teachers etc.

1.2 Objective of The Study

The objectives of this study are as follows:

1. To identify Visual Arts Education teachers' perceptions of the usability of artificial
2. intelligence technology software in teaching and learning.
3. To identify Visual Arts Education teachers' perceptions of the usefulness of artificial intelligence technology software in teaching and learning.
4. To identify Visual Arts Education teachers' attitudes towards the use of artificial intelligence technology software in teaching and learning.

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2. Methodology

The researcher employed a quantitative descriptive research design to obtain data related to art teachers' perceptions of the use of technology software in the teaching and learning processes in secondary schools. A survey method using a questionnaire was utilized by the researcher to collect information to address the research questions. Surveys are commonly used in social science research as they allow for large sample sizes and the direct collection of information from respondents. Survey results can also be generalized to a larger population. The survey method was chosen to identify the views of a specific group regarding a particular issue. The timeframe for this survey method was a cross-sectional survey, where data collection occurred at a specific point in time from the selected sample. This descriptive study aims to gather information and determine

The researcher will use a questionnaire using a Google Form and the URL link from the questionnaire will be provided to the respondents. By employing this method, the findings obtained from this study will be more accurate without interference from external factors. Therefore, the researcher conducted this study by distributing the questionnaire forms to 87 Visual Arts Education teachers in secondary schools in the Batu Pahat district.

The questionnaire for this study is divided into four sections: Part A, Part B, Part C, and Part D, which are adaptations and modifications based on previous studies by Halili (2018) and Zakaria (2020). Part A of the questionnaire contains demographic data, such as the respondents' background information, including gender, location, and age. Part B focuses on teachers' perceptions of the perceived ease of use of artificial intelligence technology software in teaching and learning for the subject of Visual Arts Education in secondary schools. Part C centers around the perceptions of Visual Arts Education teachers regarding the perceived usefulness of artificial intelligence technology software in teaching and learning within the classroom. Part D emphasizes the attitudes of Visual Arts Education teachers in integrating artificial intelligence technology software into teaching and learning in secondary schools.

This questionnaire utilizes a 5-point Likert scale to measure teachers' perceptions. The Likert scale is employed in the questionnaire to assist art teachers in responding to the questions. Table 1 illustrates the Likert scale used in the questionnaire.

Table 1 *Likert scale*

Scale	Interpretation
1.00	Strongly Disagree
2.00	Disagree
3.00	Uncertain
4.00	Agree
5.00	Strongly Agree

Furthermore, to classify the minimum scores resulting from the conducted analysis, the researcher refers to the scoring interpretation table introduced by Nunnally & Bernstein (1994). Table 2 illustrates the classification for interpreting minimum scores.

Table 2 *Interpretation of minimum scores (Nunnally & Bernstein, 1994)*

Mean Score	Level of propensity
1.00-2.00	Low
2.01-3.00	Medium Low
3.01-4.00	Medium High
4.01-5.00	High

3. Result and Discussion

The results are presented in three different sub sections which are according to the objective of the study.

3.1 Teachers' Perceptions Regarding the Perceived Ease of Use of Artificial Intelligence Technology Software in Teaching and Learning Visual Arts Education in Schools

Table 3 presents a descriptive analysis of the minimum score values of teachers' perceptions regarding the Perceived Ease of Use of artificial intelligence technology software in the teaching and learning of Visual Arts Education in secondary schools. For the 8 constructs, the majority of the minimum score values fall within the range of 4.01 to 4.30, categorized as a high interpretation. Overall, the findings from the conducted analysis reveal

that the average minimum score for all items obtained is 4.19, with a standard deviation of 0.50. Therefore, it can be concluded that teachers' perceptions regarding the Perceived Ease of Use of artificial intelligence technology software in the teaching and learning of Visual Arts Education in secondary schools fall into the high interpretation category.

The analysis results indicate that the aspect of perceived ease of use is observed to be at a high level. This demonstrates the positive views expressed by Visual Arts Education teachers regarding the utility of artificial intelligence technology software in the teaching and learning process, particularly in developing students' skills (Jumaat, 2017). This is because the use of artificial intelligence technology software in teaching and learning at schools provides opportunities for teachers to pay more attention to guidance and interaction with students during learning sessions (Sandy et al., 2021). This helps teachers adopt a more student-centered teaching approach and enhances the learning experience in schools (Sidek & Hashim, 2016).

Table 3 *Descriptive analysis of teachers' perceptions regarding the perceived ease of use of artificial intelligence technology software in the teaching and learning of visual arts education in secondary schools (N=87)*

No	Items	Mean	Std Deviations	Level
1	Facilitates me in teaching	4.29	0.56	High
2	I can facilitate students' understanding in the teaching and learning process	4.14	0.61	High
3	I can make interactions during class clearer and easier to understand	4.17	0.59	High
4	I can make the teaching and learning process more interesting	4.33	0.62	High
5	I can create more flexible interactions during the teaching and learning process.	4.15	0.58	High
6	I can increase students' interest in learning	4.30	0.74	High
7	I can manage the teaching and learning process more easily	4.20	0.67	High
8	I can do things the way I want	4.01	0.72	High
Overall average perceived ease of use		4.19	0.50	High

3.2 Teachers' Perceptions Regarding the Perceived Usefulness of Artificial Intelligence Technology Software in the Teaching and Learning of Visual Arts Education Subject in Schools

Table 4 presents a descriptive analysis of the minimum score values of teachers' perceptions regarding the Perceived Usefullness of artificial intelligence technology software in the teaching and learning of Visual Arts Education in secondary schools. For the 6 constructs, the majority of the minimum score values fall within the range of 4.11 to 4.32, categorized as a high interpretation. Overall, the findings from the conducted analysis reveal that the average minimum score for all items obtained is 4.22, with a standard deviation of 0.55. Therefore, it can be concluded that teachers' perceptions regarding the Perceived Usefullness of artificial intelligence technology software in the teaching and learning of Visual Arts Education in secondary schools fall into the high interpretation category.

The findings suggest that the majority of teachers believe that the integration of artificial intelligence technology software in the teaching and learning process can save time, ensure a more organized classroom, and enhance communication among students. This is because the use of artificial intelligence technology also benefits educators by allowing them to prepare assignments more quickly and facilitating the assignment preparation process (Lau & Rosli, 2020). The findings of this study align with the results of research conducted by Trisnaningsih et al. (2020), which show that the use of artificial intelligence technology software such as Adobe Firefly, Adobe Photoshop, Adobe Illustration, and Canva can assist teachers in lesson preparation and facilitate the teaching and learning process in the classroom. This artificial intelligence technology software can be accessed through various devices and used in locations with internet coverage (Jarvis et al., 2021). This advantage ensures that users do not need to worry because in the modern era, internet access is readily available in various locations. The use of artificial intelligence technology indirectly contributes to improving a teacher's performance in school (Yusoff & Husain, 2021).

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Table 4 *Descriptive analysis of teachers' perceptions regarding the usefulness of artificial intelligence technology in teaching and learning visual arts education in secondary schools (N=87)*

No	Items	Means	Std Deviations	Level
1	My tasks can be completed quickly	4.20	0.71	High
2	My work can be done more easily	4.21	0.68	High
3	Will enhance my job performance	4.24	0.62	High
4	My productivity can be increased	4.24	0.66	High
5	The effectiveness of my teaching in the classroom can be improved.	4.11	0.63	High
6	The teaching and learning process becomes enjoyable and interesting.	4.32	0.58	High
Overall average score perceived usefulness		4.22	0.55	High

3.3 Teachers' Perceptions Regarding Their Attitude Towards the Use of Artificial Intelligence Technology in Teaching and Learning Visual Arts Education in Secondary Schools

Table 5 presents a descriptive analysis of the minimum score values of teachers' perceptions regarding their attitude towards the use of artificial intelligence technology in teaching and learning Visual Arts Education in secondary schools. Out of the 9 construct items, the majority of the minimum score values obtained fall within the range of 4.09 to 4.30, categorized as high interpretation. Overall, the findings from the conducted analysis indicate that the average minimum score for all items obtained is 4.17, with a standard deviation reaching a reading of 0.52. Therefore, it can be concluded that teachers' perceptions regarding their attitude towards the use of artificial intelligence technology in teaching and learning Visual Arts Education in secondary schools are in the high interpretation category.

According to Yusoff et al. (2021), teachers have recognized the usability of such software that is easily accessible and usable in the classroom. They believe that the use of such software can enhance students' productivity and creativity (Mailis, 2022). A learning environment involving artificial intelligence technology provides opportunities for students to undergo authentic inquiry experiences and opens up space for creativity, thereby enhancing their skills in visual arts (Rahmat, 2017).

Table 5 *Descriptive analysis of teachers' perceptions regarding their attitude towards the use of artificial intelligence technology in teaching and learning visual arts education in secondary schools (N=87)*

No	Items	Means	Std Deviations	Level
1	Using artificial intelligence technology because it can benefit myself and others	4.09	0.62	High
2	Learning how to operate the latest technological tools	4.26	0.63	High
3	Seeking opportunities to attend courses related to technology.	4.13	0.66	High
4	Engaging in courses related to 21st-century education	4.18	0.69	High
5	Feeling enjoyable to implement teaching and learning processes in the classroom.	4.20	0.69	High
6	Learning the methods of using the latest artificial intelligence technology	4.13	0.66	High
7	Staying updated on using artificial intelligence technology.	4.18	0.69	High
8	I am willing to change my teaching methods according to the latest teaching methods.	4.11	0.63	High
9	I am aware that knowledge related to 21st-century education can benefit myself and others	4.30	0.59	High
Overall average value of the acceptance level in terms of attitude		4.17	0.52	High

4. Conclusion

In conclusion, the findings of this study indicate that teachers' perceptions of the ease of use, usefulness, and attitudes toward the use of artificial intelligence technology in teaching Visual Arts in secondary schools are at a high level. The use of artificial intelligence software significantly benefits teachers in improving teaching performance. These results align with the views of Badaruddin et al. (2019), emphasizing the freedom for students and educators to acquire knowledge without being restricted by location and time. Therefore, it is recommended for those responsible to promote and sustain the use of artificial intelligence technology in the learning process in schools to provide flexibility for both students and teachers. Furthermore, the results of this study are expected to provide guidance and encouragement to stakeholders to enhance the use of technology in the context of Visual Arts Education in schools.

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Conflict of Interest

Authors declare that there is no conflict of interest regarding the publication of the paper.

Author Contribution

The authors confirm contribution to the paper as follows: Mohd Zulfadli Rozali: ***Literature review, methodology, data collection and project administration****. Ainul Aqidah Azman:* ***Drafted the manuscript and provided substantial revisions formal analysis, and validation****. Ainul Aqidah Azman:* ***Contributed to writing the results and discussion sections, conceptualization, methodology and resources****. Mohd Zulfadli Rozali & Ainul Aqidah Azman:* ***Conceptualization, methodology and resources****.*

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