|Jurnal Sinar Edukasi |JSE|Vol. 7| No. 1|May|Year 2026|

The impact of artificial intelligence on students' learning motivation and creative expression in visual arts education

LUSI HELDAYANI[1*], HELDI[2], AND INDRAYUDA[3]

Abstract

Learning the visual arts has seen substantial changes as a result of the advancement of artificial intelligence (AI) technology. The purpose of this investigation is to evaluate the impact of AI utilization on the motivation and creativity of students at SMA Negeri 3 Solok Selatan. Employing a quasi-experimental design (one-group pretest-posttest), the investigation implemented a quantitative methodology. A total of 33 students from class XI.8 comprised the research sample. The research instruments comprised a learning motivation questionnaire and a creativity assessment rubric that was based on the characteristics of fluency, flexibility, originality, and elaboration. Descriptive statistics and paired t-tests were implemented to analyze the data. The results suggest that the utilization of AI has a substantial and beneficial impact on both student motivation and creativity. These results indicate that the incorporation of AI into visual arts education can be a successful pedagogical innovation that enhances the quality of the learning process and student outcomes.

Keywords

Artificial Intelligence, creativity, digital learning. learning motivation, visual arts

Article History

Received 01 January 2026
Accepted 30 March 2026

How to Cite

Heldayani, L., Heldi, & Indrayuda, I. (2026). The impact of artificial intelligence integration on students' learning motivation and creative expression in visual arts education. Jurnal Sinar Edukasi |JSE|, 7(1), 1-15. https://doi.org/10.61346/jse.v7i01.309

[1*] Universitas Negeri Padang, Padang, Indonesia, Corresponding email: heldayanilusi@gmail.com
[2,3] Universitas Negeri Padang, Padang, Indonesia

Introduction

The educational landscape has been compelled to adapt to the rapid technological advancements of the industry 4.0 era, which include the integration of artificial intelligence (AI). AI presents significant potential for improving the quality of education by employing automated feedback mechanisms, content personalization, and the reinforcement of student engagement, as per UNESCO (2023). Further, the OECD (2023) asserts that AI-driven learning systems can significantly enhance the efficacy of instructional processes by implementing adaptive strategies that are customized to the unique requirements of learners.

In the realm of visual arts education, creativity is an essential skill that necessitates systematic cultivation. Guilford (1967) claims that creativity is inextricably linked to divergent thinking capabilities, which include elaboration, originality, fluency, and flexibility. On the other hand, Torrance (1974) contends that learning environments that provide students with the freedom to express themselves and the opportunity for ideational exploration can foster creativity. Nevertheless, visual arts instruction at the secondary school level remains primarily conventional and teacher-centered, which limits the scope of students' creative exploration.

In addition, instructional success is significantly influenced by learning motivation. Drawing on Deci and Ryan's (2000) self-determination theory, students are more intrinsically motivated when they feel like they have control over their learning, are good at it, and are connected to it. The incorporation of interactive technologies, such as AI, has the potential to foster this motivation by providing more engaging and responsive learning experiences. Similarly, Keller's (2010) ARCS Model identifies attention, relevance, confidence, and satisfaction as critical elements in the maintenance and improvement of student learning motivation.

Research is increasingly suggesting that the integration of AI in education can improve student engagement and learning outcomes (Holmes et al., 2022). Nevertheless, empirical research that specifically investigates the relationship between AI utilization and both motivation and creativity within the domain of visual arts education at the senior secondary level is still scarce, particularly in regional school contexts. In light of this, the current investigation was conducted to empirically investigate the impact of AI integration on the creative expression and learning motivation of students at SMA Negeri 3 Solok Selatan.

Methodology

In this study, a one-group pretest-posttest quasi-experimental design was used (Creswell, 2018). This design allows the researcher to compare the conditions within the same group before and after the intervention, without the necessity of complete randomization. The study population included all eleventh graders at SMA Negeri 3 Solok Selatan. The research sample was selected from Class XI.8 using purposive sampling (Sugiyono, 2019).

The independent variable was the integration of AI in visual arts instruction, while the dependent variables were students' learning motivation and creativity. In response to indicators that addressed persistence, interest, resilience in the face of challenge, and active engagement, a Likert-scale questionnaire was implemented to evaluate learning motivation. Students' creativity was assessed in visual artworks based on the dimensions of fluency, flexibility, originality, and elaboration. Descriptive statistics and paired-sample t-tests were

implemented to determine the significance of discrepancies between pretest and posttest scores.

Results

The research results indicate an improvement in students' learning motivation scores and creativity after the implementation of AI in visual arts learning. The analysis results can be seen in the following tables:

Descriptive statistics of student creativity

Tabel 1. *Descriptive statistics of student creativity before and after AI use*

No	Variables	N	Minimum Scores	Maximum Scores	Mean	Categories
1	Creativity Before AI	33	6	18	11,33	Sufficient
2	Creativity After AI	33	11	20	15,42	Good

There was an increase in the mean creativity score of 4.09 points after AI use in visual arts learning.

Comparison of creativity before and after AI use in visual arts learning

Based on the creativity assessment results before and after AI use, the following summary was obtained.

Tabel 2. *Descriptive statistics of student learning motivation before and after AI use*

No	Variables	N	Minimum Scores	Maximum Scores	Mean	Categories
1	Motivation Before AI	33	40	64	52,03	Sufficient
2	Motivation After AI	33	44	65	56,54	Good

There was an increase in the mean creativity score of 4.51 points after AI use in visual arts learning.

Student learning motivation

Tabel 3. *Descriptive statistics of learning motivation (before AI)*

No	Indicators	Mean	SD	Categories
1	Study Diligence	2,93	0,93	Moderate
2	Interest in Tasks	2,78	0,81	Moderate
3	Resilience in Facing Difficulties	2,84	0,83	Moderate
4	Active Engagement	2,87	0,78	Moderate
	Overall Mean	2,85	0,06	Moderate

The table above shows that the mean motivation before AI use was 2.85, categorized as moderate. The highest indicator was study diligence (2.93), the lowest was resilience in facing difficulties (2.78). This indicates that prior to AI use, student motivation was not yet optimal and tended to remain at a sufficient level.

Learning motivation after ai use

An overview of student learning motivation after AI use can be seen in the following table:

Tabel 4. *Descriptive statistics of learning motivation (after AI)*

No	Indicators	Mean	SD	Categories
1	Study Diligence	4,06	0,70	High
2	Interest in Tasks	3,72	0,71	High
3	Resilience in Facing Difficulties	3,81	0,63	High
4	Active Engagement	3,81	0,68	High
	Overall Mean	3,85	0,14	High

The table above shows that the mean motivation after AI use was 3.85, categorized as high. The highest indicator was study diligence (4.06). There was a significant improvement across all motivation indicators, with students becoming more active, interested, and persistent in visual arts learning.

Comparison of motivation before and after AI use

An overview of the comparison of Motivation Before and After AI Use. For further details, see the following table:

Tabel 5. *Comparison of mean motivation scores*

No	Indicators	Before	After	Differences
1	Study Diligence	2,93	4,06	1,13
2	Interest in Tasks	2,78	3,72	0,94
3	Resilience in Facing Difficulties	2,84	3,81	0,97
4	Active Engagement	2,87	3,81	0,94
	Overall Mean	2,85	3,85	1

The table above shows that there was an increase in mean motivation of 1 point. The percentage increase in motivation was 1.13%, and the greatest increase occurred in the active engagement indicator. This indicates that AI use in visual arts learning was able to meaningfully improve student learning motivation. Student learning motivation before AI use was in the moderate category, whereas after AI use it rose to the high category. Thus, AI use had a positive impact on improving student learning motivation in visual arts learning.

Analysis prerequisite tests

Prior to hypothesis testing, analysis prerequisite tests were first conducted. The purpose of these tests was to ensure that the research data met the statistical assumptions required for parametric testing. In this study, hypothesis testing employed the *paired sample t-test* and the F-test (ANOVA), requiring the data to satisfy assumptions of normality and homogeneity. The normality test was conducted to determine whether the data were normally distributed, while the homogeneity test was conducted to determine whether the variances across groups were equal (homogeneous). If both conditions were met, analysis could proceed using parametric tests. However, if either condition was not met, a non-parametric alternative would need to be considered.

Normality test of data, the normality test was conducted to determine whether the research data were normally distributed. This test is important because the hypothesis tests used in this study fall under the category of parametric tests, which require normally distributed data.

Tabel 6. *Normality test*

One-Sample Kolmogorov-Smirnov Test				
	Creativity before using AI	Creativity after using AI	Motivation before using AI	Motivation after using AI
Test Statistic	,142	,146	,092	,096
Asymp. Sig. (2-tailed)[c]	,087	,073	,200[e]	,200[e]

In this study, the normality test was applied to the pretest and posttest data on student learning motivation and creativity using the Kolmogorov-Smirnov test. The decision criterion is as follows: if the significance value (Sig.) > 0.05, the data are normally distributed; if the significance value (Sig.) < 0.05, the data are not normally distributed.

The homogeneity test was conducted to determine whether the data variances were equal (homogeneous) or not. This test is necessary to ensure that the data meet the assumption of variance equality prior to hypothesis testing using parametric methods. In this study, the Levene test was used for homogeneity testing. The decision criterion is as follows: if the significance value (Sig.) > 0.05, the data variances are declared homogeneous; if the significance value (Sig.) < 0.05, the variances are not homogeneous. For further detail, see the table below:

Table 7. *Homogeneity test*

	Tests of Homogeneity of Variances				
		Levene Statistic	df1	df1	Sig
Creativity before using AI	,939	3	29	,434	
Creativity after using AI	,272	3	29	,845	
Creativity before using AI	,574	3	29	,637	
Creativity after using AI	,131	3	29	,941	

Based on the table above, it is shown that the significance values are all > 0.05, meaning all variables are homogeneous.

t-Test: The effect of AI use on student learning motivation in visual arts learning

Tabel 8. *t-Test the effect of AI use on student creativity in visual arts*

Variables	Mean Difference	t hitung	Sig. (p)	Note
AI Use → Motivation	4,51515	7,544	0,000	Significant

The significance value of 0.000 < 0.05, so H_0 is rejected. This means there is a significant effect of AI use on student creativity in visual arts learning. The t-value (5.665) indicates a moderately strong and positive effect. The better the AI is used, the more student creativity increases.

The effect of AI use on student creativity in visual arts learning

Tabel 9. *t-Test-the effect of AI use on student creativity in visual arts visual arts learning*

Variable	Mean Difference	t hitung	Sig. (p)	Note
AI Use → Motivation	4,51515	7,544	0,000	Significant

The significance value of 0.000 < 0.05, so H_0 is rejected. This means AI use has a significant effect on student learning motivation. The t-value (7.544) is greater than that for the effect on creativity, indicating that the effect of AI on learning motivation is stronger than on creativity.

F-Test - Simultaneous effect of AI use on student learning motivation and creativity in visual arts learning

Tabel 10. *F-test*

Model	F hitung	Sig.	Note
AI Use → Motivation & Creativity	2105,115	0,000	Significant

The significance value of 0.000 < 0.05, so H_0 is rejected. This means that AI use simultaneously has a significant effect on student learning motivation and creativity in visual arts learning. The very large F-value (2105.115) indicates that the regression model used is highly robust and appropriate for explaining the relationship between variables.

Discussion

The research results show that the integration of Artificial Intelligence (AI) in visual arts learning has a positive and significant effect on student learning motivation. This finding is

consistent with UNESCO (2023), which states that the use of AI in education can improve student engagement through more interactive and responsive learning. Furthermore, Holmes et al. (2022) explain that AI strengthens learning engagement by providing real-time feedback and personalizing content to meet individual student needs. Thus, the increase in learning motivation found in this study is in line with international literature that views AI not merely as a technical tool but as a mediator of the learning process capable of stimulating student interest and engagement.

Learning motivation is an important aspect of successful learning. Deci and Ryan (2000) in their Self-Determination Theory state that intrinsic motivation grows when students feel they have autonomy and competence in learning. In the context of AI use, students feel empowered to explore artwork digitally, which aligns with higher levels of autonomy and engagement. This supports Keller's (2010) view that technology relevant to students' lives can enhance attention and confidence in learning. Beyond motivation, this research found an improvement in student creativity after AI intervention. According to Guilford (1967), creativity consists of four main dimensions: fluency, flexibility, originality, and elaboration. Improvements across all four indicators show that AI provided stimuli enabling students to generate a wider variety of visual ideas expressed more richly. Torrance (1974) stated that a learning environment that stimulates ideas supports divergent creative thinking. In this regard, AI acts as a *creative stimulus* that broadens the possibilities for idea exploration through generative technology and digital design.

Vygotsky (1978) affirmed that cognitive tools can extend students' zone of proximal development. AI in visual arts learning functions as a cognitive tool by providing rapid feedback and rich visualization of ideas, enabling students to move beyond dependence on traditional methods. This expands students' creative thinking capacity and creates space for deeper reflection. Previous research has shown that the use of digital technology in visual arts education can help students understand artistic concepts contextually (Efland, 2002). AI facilitates exploration of color composition, visual structure, and varied artistic styles, which Runco (2014) identifies as important elements in fostering creativity. Meanwhile, Sternberg (2012) emphasizes that creativity is not merely a final product but a thinking process that requires stimulation from a supportive learning environment. Thus, the integration of AI in visual arts learning is capable of creating a more conducive learning environment for the development of student creativity.

The TPACK (Technological Pedagogical Content Knowledge) model developed by Mishra and Koehler (2006) explains that the combination of technological, pedagogical, and content knowledge produces effective learning. The findings of this study demonstrate that AI use consciously integrated into visual arts teaching strategies has a positive impact on both variables examined. This reinforces the view that the success of technology integration in education depends on the balance between pedagogical and content aspects, not merely on the use of technology itself.

According to the OECD (2023) report, AI-based learning can enhance student engagement and the quality of learning outcomes when implemented ethically and pedagogically. This is consistent with the research findings showing that AI not only boosts motivation but also stimulates creative thinking through adaptive and interactive learning dynamics. Research by Jenkins and Khanna (2025) demonstrates that AI-based learning systems provide more engaging and relevant learning experiences for the digital generation living amidst rapid technological development. This is particularly relevant in the context of

today's Generation Z, who tend to experience high levels of digital distraction, as AI use can transform passive learning patterns into more active ones. Holmes et al. (2022) state that AI use can also improve student engagement through adaptive learning that presents challenges tailored to each student's skill-level. Meanwhile, UNESCO (2023) emphasizes the importance of ethics in AI use, noting that technology must support learning experiences without diminishing the humanistic values and originality of student work.

Conclusion

Based on the research findings, the use of Artificial Intelligence (AI) in visual arts learning has been proven to enhance student learning motivation and creativity. AI provides a more interactive, personalized, and adaptive learning experience, enabling students to feel more engaged and to explore creative ideas more broadly, including in composition, color, and artistic style. The success of AI implementation is highly dependent on the appropriate integration of technology, pedagogy, and learning content, so that AI functions not merely as a digital tool but as a mediator that expands students' cognitive and creative capacities. Furthermore, AI use is relevant to the characteristics of the digital generation, which requires active and adaptive learning approaches. Nevertheless, AI implementation must take into account ethical and humanistic dimensions to avoid diminishing the originality and authenticity of students' learning experiences. Thus, the integration of AI in visual arts learning provides a significant positive impact, as long as it is implemented pedagogically, ethically, and in accordance with learners' needs.

References

Creswell, J. W. (2018). *Research design: Qualitative, quantitative, and mixed methods approach (5th ed.)*. Sage.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and self-determination of behavior. *Psychological Inquiry, 11*(4), 227–268.

Efland, A. D. (2002). *Art and cognition: Integrating the visual arts in the curriculum*. Teachers College Press.

Guilford, J. P. (1967). *The nature of human intelligence*. McGraw-Hill.

Holmes, W., Bialik, M., & Fadel, C. (2022). *Artificial intelligence in education: Promises and implications for teaching and learning*. Routledge

Jenkins, D., & Khanna, G. (2025). AI-enhanced training, education, & development: exploration and insights into generative AI's role in leadership learning. *J Leadersh Stud, 18*, 81-97. https://doi.org/10.1002/jls.70004

Keller, J. M. (2010). *Motivational design for learning and performance: The ARCS model approach*. Springer.

Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record, 108*(6), 1017–1054.

OECD. (2023). AI in education policy perspectives. OECD Publishing.

Runco, M. A. (2014). *Creativity: Theories and themes: Research, development, and practice*. Academic Press.

Sternberg, R. J. (2012). *The assessment of creativity: An investment perspective*. Cambridge University Press.

Sugiyono. (2019). *Metode penelitian kuantitatif, kualitatif, dan R&D*. Alfabeta.

Torrance, E. P. (1974). *The torrance tests of creative thinking: Norms-technical manual*. Princeton, NJ: Personal Press.

UNESCO. (2023). *Artificial intelligence in education: Guidance for policy makers*. UNESCO Publishing.

UNESCO. (2025). *AI and educational outcomes: Global impact report*. New York: UNESCO.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.