


## Analyzing the Effectiveness and User Experience of AI-Based Creative Writing Mobile Learning Integrated with Local Wisdom (AI-CreWLi)

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### ABSTRACT

The development of artificial intelligence (AI) technology in education has opened up new opportunities to create more interactive, adaptive, and contextual learning, including in the development of creative writing skills. This study aims to analyze the effectiveness and user experience of the application of AI-CreWLi (AI-Based Creative Writing Mobile Learning Integrated with Local Wisdom) in improving students' 21st century creative writing skills. The study used an explanatory quantitative approach with a pretest-posttest design and a Likert scale questionnaire to assess user perception. A total of 78 students participated in creative writing learning using the AI-CreWLi application for eight weeks. The results showed a significant improvement in the experimental group using AI-CreWLi, with the average score increasing from 73.91 to 85.59, while the control group only increased from 66.09 to 75.13. The Levene test showed homogeneous data variance (Sig. > 0.05), while the paired t-test and ANOVA confirmed a significant difference between the two groups (Sig. = 0.000). Linear regression analysis yielded a coefficient of  $\beta = 1.173$  (Sig. = 0.000) with a standardized Beta value of 0.807, indicating a strong influence of the use of AI-CreWLi on learning outcomes. In addition, students' perception of the application showed values of  $R = 0.786$  and  $R^2 = 0.601$ , which means that 60.1% of the variation in students' positive perceptions was explained by the use of AI-CreWLi. The perception ANOVA test ( $F = 47.836$ ; Sig. = 0.000) also showed a significant influence on 21st century skill development. In conclusion, the application of AI-CreWLi has proven to be effective in enhancing creative writing skills and strengthening 21st century skills through AI-based learning that is adaptive, contextual, and integrated with local wisdom values. These findings support the development of innovative learning models that are in line with the Independent Learning – Independent Campus policy.

**Keywords:** Artificial Intelligence, Mobile Learning, Culture studies, creative writing, 21st-Century Skills

## INTRODUCTION

Creative writing skills have a strategic role in the academic world and the creative industry (Fang et al., 2023). However, students often face obstacles in finding ideas, developing a mindset, and getting quick and accurate feedback. Advances in artificial intelligence technology offer innovative solutions through features such as automated idea generation and Language analysis (Ayele & Juell-Skielse, 2021; L. Chen et al., 2019). Most of the artificial intelligence-based applications available are still generic and do not specifically support creative writing learning (Das et al., 2024; Davoodi, 2024). In the digital era, the readiness of students in the 21st century must be in line with the needs of the business world and the industrial world (Altun et al., 2024). These needs require the mastery of essential skills such as character, citizenship, collaboration, communication, creativity, and critical thinking (Hagvall Svensson et al., 2022). Artificial intelligence has the potential to help students in developing these competencies, exploring ideas and improving writing. However, the application of this technology in writing learning in college is still limited (Doyal et al., 2023). In addition, local wisdom has a strategic value in enriching students' creative processes, so that it can produce works that are not only innovative but also have high cultural relevance and aesthetic value (Ariyatun et al., 2025).

The integration between AI technology and local wisdom in the context of creative writing learning provides a new dimension in higher education (Marwani et al., 2025). AI can act as an intelligent assistant that provides suggestions for ideas, narrative structures, and language styles that suit the local cultural context (Kasirzadeh & Gabriel, 2023). Thus, students not only learn to write technically, but also understand the cultural values that are part of the local identity. This is in line with the modern education paradigm that emphasizes the importance of contextual learning so that learning outcomes are more meaningful and relevant to real life (Sudarmin, Ariyatun, et al., 2025), (Murphy, 2019). Furthermore, AI-based mobile learning allows for high flexibility in the learning process, as students can interact with the app's materials and features anytime and anywhere. Mobile learning bridges the limitations of space and time, while encouraging self-regulated learning which is very important in the digital era (Maulana et al., 2025), (Jibril & Adedokun-Shittu, 2023). When AI elements are integrated with local approaches, learning becomes more personalized and contextual, thereby increasing student engagement and motivation to learn (Sajja et al., 2025; Salem, 2015).

The effectiveness of implementing such systems relies heavily on interface design, ease of use, and AI's ability to tailor recommendations based on the user's cultural background. Therefore, this research not only focuses on the results of 21st century skill improvement, but also on the user experience in using the application. User experience evaluation includes aspects of perceived convenience, usefulness, interactivity, and overall satisfaction. Thus, this research can make an important contribution to the development of innovative AI-based learning models that are not only effective in improving creative writing skills, but also strengthening students' cultural identities through the integration of local wisdom (Larasati, Alik; Ginting, 2024; Radja Leba et al., 2025). This approach can be a reference for the development of a digital curriculum that is relevant to the needs of the times while maintaining the noble values of the nation's culture.

## LITERATURE REVIEW

### Artificial Intelligence in Education

The development of artificial intelligence (AI) technology has brought significant transformation in the world of education. AI not only serves as an administrative tool, but also as a supporter of a more adaptive and personalized learning process (Kovalchuk et al., 2025; Sajja et al., 2024). AI is able to tailor learning experiences based on individual needs through the analysis of learners' learning patterns, preferences, and abilities (Jafari & Shaterzadeh-Yazdi, 2024). This technology allows for more effective learning because the system can provide instant feedback, material recommendations, and error analysis automatically (Admane et al., 2024). In the context of learning to write, AI plays a role in providing language suggestions, sentence structure, and idea development. Systems like AI writing assistants can identify grammatical errors, writing styles, and even inspire relevant story ideas (Pushpanadham & Sarpong, 2024). However, some researchers note that the effectiveness of AI in creative writing learning is highly dependent on the system's ability to understand local cultural context and values, which are often not accommodated in generalized global applications (Davoodi, 2024; Fang et al., 2023).

The application of AI in education also has great potential in supporting personalized learning. Through analytics and big data processing capabilities, AI can recognize each student's unique learning patterns and adjust learning strategies according to individual needs (Das et al., 2024). This approach allows for the creation of a more inclusive and responsive learning experience, where students of different skill levels can receive different but equally quality support (Luan et al., 2020). In the context of creative writing learning, AI systems that are designed adaptively can provide challenges that are appropriate to the development of students' abilities, encourage deeper

exploration of ideas, and facilitate the process of self-reflection on the results of writing (Demartini et al., 2024). Thus, AI serves not only as a technical tool, but also as an intellectual partner that strengthens the creative and critical thinking process in 21st-century learning.

### **Mobile Learning and 21st Century Skills**

The concept of mobile learning or mobile-based learning has become a new paradigm in modern education. Mobile learning allows for high flexibility because learners can access the material anytime and anywhere, according to their learning rhythm (Matzavela & Alepis, 2021). App-based learning encourages active participation, interactivity, and independent learning, which are essential elements in shaping 21st century skills. 21st century skills include critical thinking, collaboration, communication, and creativity (Teresa, 2011). Through mobile learning media, students not only play the role of recipients of information, but also as content creators who can express ideas independently (Elkhateeb et al., 2019). The integration of AI in mobile learning strengthens this process by bringing automatic feedback, data-driven formative assessments, and adaptive learning support capable of tailoring the level of difficulty to the user's abilities (Mahamad et al., 2025).

Mobile learning is able to provide a space for collaborative and contextual learning through various interactive features such as discussion forums, peer reviews, and digital community-based projects (Naseer & Khawaja, 2025). The main characteristic of mobile learning is its ability to connect formal learning experiences with informal learning environments, so that students can apply knowledge in real-world situations (Salem, 2015). In the context of learning creative writing, this allows students to interact, give each other feedback, and develop works together with the help of AI technology that can automatically assess language style, originality of ideas, and text coherence (Khine, 2024). Thus, mobile learning not only expands access to learning resources, but also creates a dynamic, collaborative, and holistically skill-development-oriented learning ecosystem for 21st century.

### **Integration of Local Wisdom in Learning**

Local wisdom reflects cultural values, traditions, and community identities that are inherited from generation to generation. The integration of local wisdom in education has an important role in instilling moral values, ethics, and love for one's own culture (Sudarmin et al., 2023). Learning based on the local context makes the learning process more relevant to students' real lives and strengthens national character and identity (Sudarmin, Sulistyansih, et al., 2025). In the context of learning creative writing, local wisdom can be a rich source of inspiration, both in terms of themes, characters, and story settings (Winarni et al., 2021). When local cultural values are raised through written works, students learn to appreciate their own culture while contributing to the preservation of cultural heritage (Hastuti et al., 2023). The integration of AI with local elements provides an opportunity to develop systems that are not only technologically intelligent, but also empathetic to the social and cultural context of their users.

Furthermore, the application of local wisdom in learning supported by digital technologies such as AI and mobile learning can be an effective strategy to bridge modernity and tradition (Munir, 2025). Education based on local wisdom is able to foster awareness of cultural identity while strengthening the global competitiveness of students (Asmayawati et al., 2024). When AI is integrated with local content, for example through narratives, symbols, or regional proverbs, students not only learn to write creatively, but also internalize social values such as mutual cooperation, honesty, and responsibility (Luqmi et al., 2025). This kind of integration makes the learning process more meaningful because learners can connect traditional values with contemporary issues (Latip et al., 2025). Thus, AI-based learning that adapts local wisdom has the potential to produce a generation that is not only technologically capable, but also has high cultural awareness and is able to contribute to the preservation of national values in the digital era. The theoretical framework of this research combines the concepts of AI in Education, mobile learning, creative writing pedagogy, and local wisdom-based education to build an effective, adaptive, and cultured learning model.

## **MATERIAL AND METHOD**

### **Research Design**

This study used a quasi-experimental approach with two groups that were not randomly selected, namely the experimental group and the control group (Zajić & Maksimović, 2022). The experimental group used a creative writing mobile learning application based on artificial intelligence (AI) that was integrated with local wisdom (AI-CreWLi), while the control group followed conventional creative writing learning without the support of AI technology. This quasi-experimental approach was chosen because it was able to provide a realistic picture of the

impact of the application of AI-CreWLi-based learning in the lecture environment, although it did not allow full control over external variables. The design used was a pretest-posttest non-equivalent control group design, where both groups were given writing skills tests before and after treatment. The pretest is conducted to get an initial idea of students' creative writing skills, while the posttest is used to measure the improvement of ability after the learning intervention. The use of the same instrument in both tests is intended to maintain measurement consistency and improve the reliability of the research results.

### Sampling and Data Collection

The population of this study is students from the language group who are taking a creative writing course at one of the private universities in Indonesia. Sampling was carried out using purposive sampling techniques by considering several criteria, including active students, having a smartphone device compatible with the application, and willing to participate in all stages of the research. Based on these criteria, 70 students were obtained which were then divided into two groups: an experimental group of 36 students and a control group of 34 students, consisting of two academic groups, namely education and linguistics. Both groups had relatively homogeneous levels of basic literacy ability, although their strength characteristics differed. The characteristics of the student research sample in the study are presented in Table 1.

**Table 1.** The distribution of the sample

	Experiment		Control	
	Frequency	Valid Percent	Frequency	Valid Percent
<b>Gender</b>				
Female	20	55.55	22	64.71
Male	16	44.55	12	35.29
<b>Background</b>				
Field of Education	13	36.11	19	55.88
Field of Language Studies	23	63.89	15	44.12
<b>Age (years old)</b>				
17-18	16	44.44	16	47.06
19-20	10	27.77	14	38.88
21-22	7	19.44	4	11.76
<22	3	8.33	0	0.0
Total	36	100.00	34	100.00

Table 1 shows the demographic distribution of participants in the experimental and control groups. There were a total of 70 students consisting of 36 students in the experimental group and 34 students in the control group. In terms of gender, female participants were more dominant in both groups, namely 55.55% in the experimental group and 64.71% in the control group. Based on academic backgrounds, most of the participants in the experimental group came from the language science group (63.89%), while the control group was dominated by the education group (55.88%). Judging by age, the majority of participants were between 17 and 20 years old, which suggests that most are in the early stages of undergraduate studies. The relatively balanced composition in terms of gender, academic background, and age suggests that the two groups have sufficiently homogeneous characteristics to be compared in the analysis of the effectiveness of AI-based learning.

Furthermore, data was collected using three main instruments. First, a 21st century creative writing skills test is given at the pretest and posttest stages to measure the improvement of writing skills, creativity, critical thinking, and communication. Second, a user perception questionnaire consisting of 5 aspects using a 5-point Likert scale, to assess the ease of use, benefits, convenience, satisfaction, and impact of using AI-based applications on learning. Third, the app activity log, which records the frequency of use, interaction time, and student response to the automated feedback provided by the AI system. Reliability and Descriptive Statistics of AI-Based Learning Application User Experience Instruments are presented in Table 2.

**Table 2.** Reliability and Descriptive Statistics Instrument

Aspects Assessed	Cronbach's Alpha	Item-rest correlation	Mean	Category
Ease of use	0.894	0.525	3.626	Very Good

Benefits of AI features	0.893	0.561	2.585	Very Good
Relevance of <i>local wisdom content</i>	0.893	0.572	3.214	Good
Interface appeal	0.895	0.497	3.278	Good
Support for 21st century skills	0.895	0.506	3.773	Very Good

The reliability and descriptive statistics of AI-based learning application user experience instruments are presented in Table 2. Cronbach's Alpha values on all aspects range from 0.893 to 0.895, which indicates a very high level of reliability and good internal consistency. This indicates that the instrument used can be trusted to measure user perception of the application. Based on the mean, aspects in the "Excellent" category include ease of use (3,626), usefulness of AI features (2,585), and support for 21st century skills (3,773). Meanwhile, the relevance aspects of local wisdom content (3,214) and interface attractiveness (3,278) were in the "Good" category. In general, these results show that users rate AI-based learning apps to perform very well in terms of convenience, usefulness, and support for 21st-century skill development. However, there needs to be an improvement in the content aspects of local wisdom and interface appearance to make the learning experience more engaging and contextual. The page view of the material on the artificial intelligence integrated creative writing application containing local wisdom (AI-CreWLi) is presented in Fig.1.

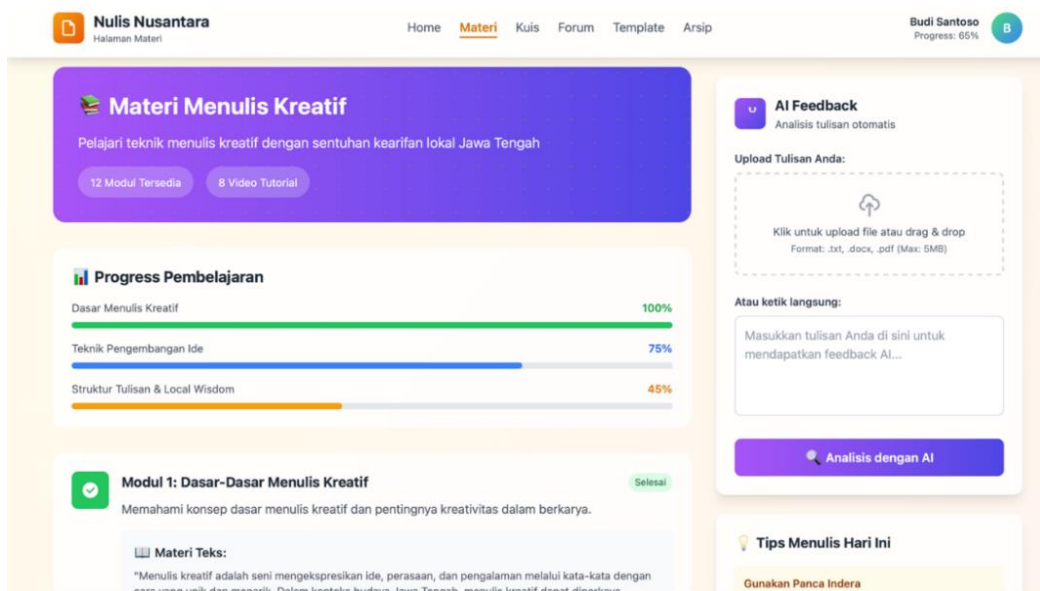


Fig.1 AI-CreWLi material visualization view

### Data Analysis

The data analysis in this study was carried out quantitatively through several stages. The first stage is descriptive analysis, which is used to describe the characteristics of respondents and pretest-posttest results, thus providing an overview of the initial condition of students' creative writing skills before treatment. The second stage used the Paired Sample t-Test to analyze the difference in the average pretest and posttest scores in each group, which aimed to determine the improvement of students' creative writing skills after the intervention. The third stage used the Independent Sample t-Test to compare the learning effectiveness between the experimental group and the control group. Next, Pearson's correlation analysis was carried out to identify the relationship between the intensity of application use and the increase in creative writing skills. To better understand the factors that contribute to learning effectiveness, multiple linear regression analysis was used with independent variables in the form of user perception, frequency of use of AI features, and duration of interaction, while dependent variables were increased creative writing skill scores. All statistical analyses were performed using JASP software with a significance level of  $p < 0.05$ . The results of the analysis are then interpreted systematically to answer research questions and test hypotheses, so that a deep understanding of the effectiveness and user experience of AI-based creative mobile learning is integrated with local wisdom.

Furthermore, the conceptual model in this study is visualized in the form of a flow chart that describes the research flow, starting from inputs (students and variables), followed by the AI-CrewWLi process, then the data collection stage, and ending at the final result (improvement of 21st century creative writing skills). This visualization is shown in Figure 2.

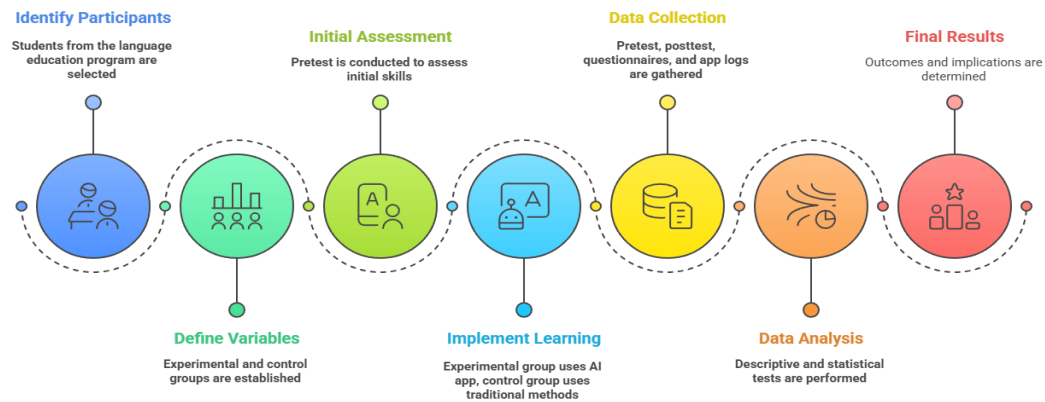


Fig. 2. Conceptual Model Visual

## RESULTS AND DISCUSSION

### Effectiveness of AI-CreWLi in Enhancing Creative Writing Skills

To evaluate the effectiveness of the AI-CreWLi application in improving students' creative writing skills, both the experimental and control groups were assessed through pretest and posttest scores. The descriptive statistics provide an overview of the students' performance before and after the learning intervention. The summary of the results is presented in Table 3.

**Table 3.** Descriptive Statistics of Experimental and Control Classes

	N	Minimum Score	Maximum Score	Mean	Std. Deviation
<b>Experimental</b>					
Pre-test	36	55	86	73.91	9.653
Post-test	36	65	95	85.59	8.199
Valid N (listwise)	36				
<b>Control</b>					
Pre-test	34	45	85	66.09	10.621
Post-test	34	50	88	75.13	8.416
Valid N (listwise)	34				

Table 3 shows that the experimental group that used AI-CreWLi experienced an increase in average score from 73.91 to 85.59, while the control group that learned by conventional methods only increased from 66.09 to 75.13. This improvement shows that the use of AI-CreWLi applications is more effective in improving students' creative writing skills compared to traditional methods. These results found that the use of artificial intelligence-based technology is able to improve critical thinking skills and creativity in writing (Purwanto et al., 2023). In addition, Zawacki-Richter et al. (2019) assert that AI can create more personalized and adaptive learning, helping students understand mistakes and correct their writing independently (Sajja et al., 2024). The standard deviation value that decreased from 9.653 to 8.199 in the experimental group showed more even learning outcomes, indicating that AI-based learning helps to equalize students' abilities. AI-based adaptive learning systems can accommodate individual differences and strengthen active participation (Gligorea et al., 2023).

The application of AI-CreWLi has been proven to not only improve creative writing skills, but also encourage student learning independence and engagement through automated feedback and the integration of content based on local wisdom (Hastuti et al., 2023). The next analysis was a comparative analysis that compared the results of the 21st century creative writing skills test between the experimental group and the control group using the Paired Sample t-Test and the ANOVA test. Before the analysis was carried out, a prerequisite test of homogeneity of variance was first carried out using the Levene's Test on several variable approaches. The results of the Levene test are presented in Table 4.

**Table 4.** Homogeneity Test with Levene Statistics

		Levene Statistic	df1	df2	Sig.
AI-	Based on Mean	1.002	3	127	.394
CreWLi	Based on Median	.675	3	127	.569
	Based on median and with adjusted df	.675	3	121.859	.569
	Based on trimmed mean	.938	3	127	.424

Based on the results of the variance homogeneity test using Levene's Test presented in Table 4, a significance value (Sig.) was obtained for all approaches greater than 0.05, namely 0.394 (based on mean), 0.569 (based on median), 0.569 (median with adjusted df), and 0.424 (based on trimmed mean). Significance values greater than 0.05 indicate that there was no significant difference in variance between the experimental group and the control group. In other words, the data used has a homogeneous variance. This homogeneity of variance shows that the initial ability of students in both groups is at a relatively comparable level, so that the comparison of learning outcomes after treatment can be done fairly. This means that the difference in posttest results can later be more reliable as a result of the use of AI-CreWLi, not because of differences in characteristics or diversity of data between groups. This result is consistent with the principle stated by Field (2018) that the Levene test is used to ensure the similarity of variance before parametric tests such as t-test and ANOVA, so that the analysis results are valid and reliable. With this homogeneity assumption being met, further comparative analyses, such as the Paired Sample t-Test and ANOVA can be carried out to test the difference in the effectiveness of the use of AI-CreWLi on improving students' creative writing skills more accurately. After confirming that the data met the assumption of variance homogeneity through the Levene test, the results of the Paired Sample T-test and ANOVA in Table 5.

**Table 5.** Paired Sample T-test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest - Experiment	-9.800	8.421	1.257	-13.055	-8.025	-7.966	36	.000
	Experiment - Posttest								
Pair 2	Pretest - Control	-9.120	7.164	1.267	-12.151	-7.026	-7.609	34	.000
	Control - Posttest								
	Posttest - Control								

Based on the results of the Paired Sample T-test presented in Table 5, it can be seen that there is a significant difference between the pretest and posttest values, both in the experimental group and the control group. In the experimental group, the mean difference was -9.800 with a significance value (Sig. 2-tailed) of 0.000, which means it is less than 0.05. This shows that there is a significant increase in creative writing skills after students participate in learning using AI-CreWLi. Meanwhile, in the control group, the mean value of the difference was -9.120 with a significance value (Sig. 2-tailed) also of 0.000, indicating an increase in creative writing ability, although the increase was not as large as in the experimental group. The difference in average scores between the two groups showed that students who studied using AI-CreWLi obtained a higher increase in learning outcomes than students who studied with conventional methods.

These results confirm that the use of artificial intelligence-based technology in writing learning has a positive influence on improving students' critical thinking skills, creativity, and organization of ideas (Agaoglu et al., 2025). AI-assisted learning can improve the quality of student writing through automated feedback and personalization of learning (Nhan, 2025). In addition, the application of AI-based adaptive systems in the context of language learning can accelerate the development of writing skills by providing relevant and contextual feedback (Kenshinbay & Ghorbandordinejad, 2024). Thus, the results of the Paired Sample T-test support the hypothesis that the use of AI-CreWLi is effective in significantly improving students' creative writing skills compared to conventional learning. This improvement shows that the integration of AI technology with local wisdom not only

enriches the learning experience, but also strengthens the relevance of the cultural context in the writing learning process. Next, the ANOVA test result is presented in Table 6.

**Table 6.** ANOVA Test

AI-CreWLi Use					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5229.736	3	2076.478	20.385	.000
Within Groups	12937.010	127	101.765		
Total	18166.746	130			

The results of the ANOVA test presented in Table 6 are known to have an F-calculation value of 20.385 with a significance value (Sig.) of 0.000, which means it is smaller than 0.05. These results show that there is a significant difference between the experimental group and the control group in terms of improving creative writing skills after the implementation of learning using AI-CreWLi. The Sum of Squares Between Groups value of 5229.736 indicates that most of the variation in learning outcome scores comes from differences in treatment between groups, not from random variations within the group. In other words, the use of AI-CreWLi has a real influence on improving students' creative writing skills.

These findings reinforce the results of the previous Paired Sample T-test, where the experimental group showed a higher increase in posttest scores than the control group. This proves that creative writing learning that utilizes artificial intelligence and integrates local wisdom values is able to create a more contextual, engaging, and effective learning experience. The application of AI in learning can increase instructional effectiveness through personalization and adaptive feedback (Abdelkrim Dekhakhena, 2025). In addition, the integration of AI systems in language learning is able to strengthen student engagement and accelerate the achievement of communicative skills (Wei, 2023). In the context of this research, the success of AI-CreWLi comes not only from technological support, but also from the integration of content based on local wisdom that provides cultural relevance and increases student learning motivation.

The results of the ANOVA test indicate that AI-CreWLi has a significant effect on improving students' creative writing skills. AI-based learning with a local contextual approach has proven to be more effective than traditional methods, because it is able to combine intelligent technology with cultural values that are close to students' lives, so that the learning process becomes more meaningful and sustainable. The next step is single-path regression to see the effect of AI-CreWLi implementation on increasing the use of AI-CreWLi and learning outcomes, presented in Table 7.

**Table 7.** Coefficients<sup>a</sup> Regression

Model	Unstandardized Coefficients		Standardized Coefficients			
	$\beta$	Std. Error	Beta	t	Sig.	
1	(Constant)	31.891	3.524		8.101	.000
	AI-CreWLi Use	1.173	.095	.807	10.368	.000

a. Dependent Variable: Learning Outcomes

The results of the simple linear regression test shown in Table 7 obtained a constant value of 31.891 and a regression coefficient for the AI-CreWLi Use variable of 1.173 with a significance value (Sig.) of 0.000, which is much smaller than 0.05. This shows that the use of AI-CreWLi has a positive and significant influence on student learning outcomes. The value of the coefficient  $\beta = 1.173$  means that every one-unit increase in the use of AI-CreWLi will increase student learning outcomes by 1.173 points, assuming other variables are constant. In addition, a standardized Beta value of 0.807 shows that the influence of the variable of the use of AI-CreWLi on learning outcomes is relatively strong and dominant, because it is close to 1. These findings reinforce the results of previous tests (Paired Sample T-test and ANOVA) which show that the application of AI-CreWLi is effective in improving students' creative writing skills. AI-based learning systems can improve academic performance through automated feedback and personalization of learning content (L. Chen et al., 2019). The results of this regression test confirm

that AI-CreWLi not only functions as a technological tool, but also as an intelligent learning system that is able to significantly improve the quality of learning outcomes.

The integration of artificial intelligence with content based on local wisdom makes the learning process more relevant, contextual, and meaningful for students, while strengthening 21st-century skills such as critical thinking, communication, and creativity. Student training features consist of interactive quizzes, short writing exercises, to mini-projects based on the business and industry world such as writing local product advertising scripts or tourism promotion scripts. The evaluation system combines automated assessment by AI with peer-reviewed between students, presented in Figure 3.

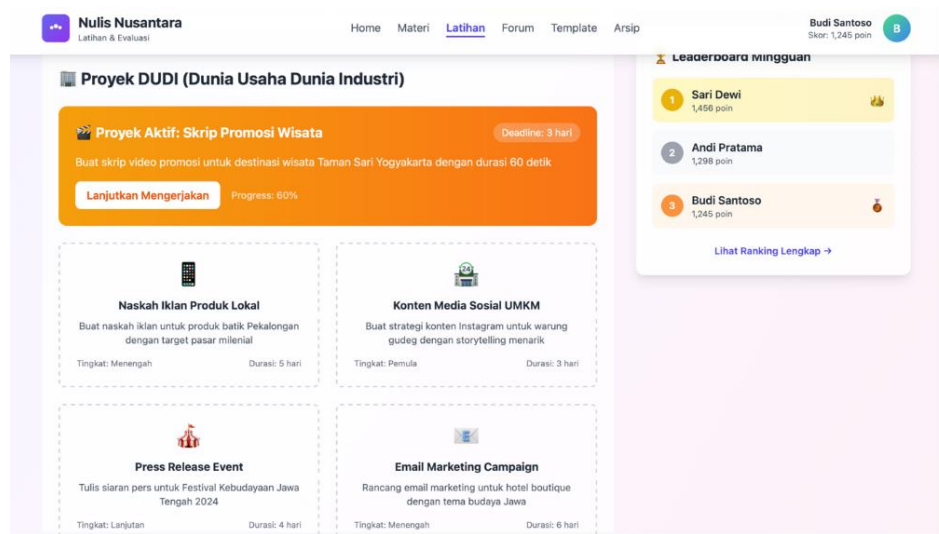


Fig.3. Practice and evaluation view on the AI-CreWLi application

Figure 3 shows a display of practice and evaluation features on the AI-CreWLi app, which serves as a means of developing creative writing skills based on real projects. This feature integrates learning with the context of the business world and industry through various activities such as writing local product advertising scripts, tourism promotion scripts, MSME social media content, press release events, and email marketing campaigns. Each project is designed with a different level of difficulty and duration, so students can choose the exercises according to their abilities and interests. The AI-CreWLi practice and evaluation system also combines two assessment approaches, namely automated assessment by AI and peer-to-student review. Automated assessments allow students to get direct feedback on the structure, language style, and appropriateness of content, while peer review provides an opportunity to criticize each other and learn from peer work. This approach is in line with the collaborative and reflective concept of learning that emphasizes the importance of active engagement and social feedback in digital learning (M. R. A. Chen et al., 2019; Colomer et al., 2020).

In addition, the leaderboard system displayed on the right side of the interface serves to motivate students through healthy competition, encouraging them to complete projects on time and improving the quality of their work. Gamification elements such as points and rankings can increase intrinsic motivation as well as learner engagement (Mekler et al., 2017). Overall, the training feature on AI-CreWLi not only serves as an evaluation medium, but also as a simulation of real-world work experiences that hone students' creativity, responsibility, and collaboration. The integration between AI-based feedback, industry-based projects, and local wisdom contexts makes learning creative writing more relevant, adaptive, and meaningful.

### User Perception of AI-CreWLi Application

Students' perception of AI-CreWLi refers to how students assess, feel, and respond to the use of this application in the creative writing learning process. This perception includes various aspects such as ease of use, the usefulness of AI features, convenience, and the level of student satisfaction with the learning experience using this technology. The results of the analysis of student perception are presented in Table 8.

Table 8. Summary of Students' Perceptions

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.786 <sup>a</sup>	.601	.540	.810

a. Predictors: (Constant), AI-CreWLi Use

Based on the results of the regression analysis shown in Table 8, a value of  $R = 0.786$  was obtained which shows a strong relationship between the use of AI-CreWLi and students' perception of creative writing learning. The value of  $R^2 = 0.601$  means that 60.1% of the variability of student perception can be explained by the use of AI-CreWLi, while the remaining 39.9% is influenced by other factors outside of this research model. The value of Adjusted  $R^2 = 0.540$  indicates that after adjusting for the number of samples and variables, the model remains to have a high level of reliability in explaining the relationships between variables. These results indicate that the more often students use the AI-CreWLi application, the more positive their perception of the convenience, usefulness, and effectiveness of AI-based learning becomes.

These findings suggest that the level of use of AI-based technology is positively correlated with student satisfaction and motivation to learn (Chiu et al., 2024). In addition, the Technology Acceptance Model (TAM) theory explains that the perception of the convenience and benefits of a technology is the main factor that influences the acceptance and use of technology in the context of education [56], (Al-hawari & Mouakket, 2010). These results confirm that AI-CreWLi is not only effective as a creative writing learning medium, but also able to shape positive perceptions of students through the integration of artificial intelligence technology and local wisdom-based content that is relevant, contextual, and supports the development of 21st century skills. To see the significance of the regression model that links the use of AI-CreWLi with 21st century skills, the ANOVA test was carried out in Table 9.

**Table 9.** ANOVA<sup>a</sup> Analysis

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	41.323	1	41.353	47.836	.000 <sup>b</sup>
	Residual	27.319	35	.816		
	Total	64.743	36			

a. Dependent Variable: 21st-century skills  
b. Predictors: (Constant), AI-CreWLi Use

The results of the ANOVA test presented in Table 9 obtained an F-calculation value of 47.836 with a significance value (Sig.) of 0.000, which means less than 0.05. These results show that the regression model that links the use of AI-CreWLi to 21st century skills is statistically significant. In other words, the use of AI-CreWLi has a real influence on the improvement of students' 21st century skills. The Sum of Squares Regression value of 41.323 also shows that most of the variation in 21st century skills can be explained by the AI-CreWLi use variable, while the Residual value of 27.319 indicates the remaining variation that is not explained by the model. This indicates that the contribution of the use of AI-CreWLi to the development of 21st century skills, such as creativity, critical thinking, communication, and collaboration, is relatively high and significant. The integration of AI and local wisdom in it helps students to think more critically, innovate contextually, and collaborate in a modern learning environment that is relevant to the needs of today's world of work.

These findings also reinforce the results of previous research that showed that the application of AI-assisted writing tools can increase learning motivation, as students feel more directed, get quick feedback, and can learn independently according to their abilities (Song & Song, 2023; Tajik, 2025). In the context of AI-CreWLi, an adaptive automated feedback system provides a more personalized learning experience and fosters students' confidence in writing (Lin et al., 2023). In addition, the integration of elements of local wisdom strengthens the emotional and contextual aspects of learning, making writing activities more meaningful and relevant to students' cultural identities. Learning based on local culture can increase students' emotional involvement and strengthen character values in the learning process (Handoyo et al., 2025). From an educational perspective, the results of this study make an important contribution to the development of learning models that combine artificial intelligence with contextual and humanistic approaches. AI-CreWLi is not just a technological innovation, but also a bridge between digital progress and the preservation of local values in higher education (Kasirzadeh & Gabriel, 2023; Marwani et al., 2025; Sajja et al., 2025).

Through the application of AI-CreWLi, students not only gain improved creative writing skills, but also develop 21st-century skills such as critical thinking, creativity, communication, and collaboration (Purwanto et al., 2023). Thus, these results support the direction of educational transformation that emphasizes technology-based learning that remains rooted in cultural contexts (Larasati, Alike, Ginting, 2024). More broadly, these findings have implications for strengthening adaptive and AI-based learning strategies in Indonesian higher education. The application of AI-CreWLi proves that artificial intelligence technology can be adapted to enrich language and literary learning, while fostering a higher interest in learning. AI-based learning systems can create a more participatory learning environment that is responsive to individual needs (Gligorea et al., 2023). Therefore, AI-CreWLi can be used as a model for innovative learning development that supports the Independent Learning-

Independent Campus (MBKM) policy by prioritizing creativity, learning autonomy, and the integration of culture-based technology in improving the quality of national education.

## **DISCUSSION AND IMPLICATION**

The results of this study consistently show that the application of AI-CreWLi has a significant influence on improving students' creative writing skills, learning motivation, and 21st century skills. Based on the results of the Paired Sample t-test, ANOVA, and linear regression, all indicators showed a significance value below 0.05, indicating that the use of AI-CreWLi significantly contributed to the improvement of learning outcomes. A significant increase in average scores in the experimental group compared to the control group suggests that artificial intelligence-based technology integrated with local wisdom content can strengthen the effectiveness of creative writing learning. These findings confirm that AI-assisted learning is able to improve students' critical thinking skills and creativity through automated and adaptive feedback (Ayele & Juell-Skielse, 2021).

In addition to improving learning outcomes, this study also found that students' perception of the use of AI-CreWLi was very positive, as shown by the correlation values of  $R = 0.786$  and  $R^2 = 0.601$ . This shows that more than half of the variation in student perception can be explained by the intensity of application use. Students rated AI-CreWLi as easy to use, useful, and increased their comfort and involvement in the learning process. These results support the Technology Acceptance Model (TAM) model which emphasizes that the perception of convenience and usefulness are the main factors influencing the acceptance of technology (E. V. Martynova, L. R. Sakaeva<sup>2</sup>, D. F. Khakimzyanova, B. Bashirova & Gainutdinova, Khanipova, R. R. Khairutdinov, 2018). In other words, the higher the level of use of AI-CreWLi, the higher the motivation and satisfaction of students for the AI-based creative writing learning experience. From a pedagogical perspective, the results of this research make an important contribution to the development of modern learning models that combine technological innovations and cultural contexts. The integration of artificial intelligence with local values not only reinforces the relevance of the material, but also enriches the meaning of learning. These findings confirm that learning based on local wisdom is able to strengthen students' cultural identities while increasing their emotional engagement (Ariyatun et al., 2025). In the context of AI-CreWLi, students not only practice writing technically, but also learn to express ideas by considering the values, ethics, and cultural character inherent in their social environment.

AI-based adaptive learning can create a participatory and reflective learning environment. Thus, this study strengthens the position of AI-CreWLi as an innovative learning model that is able to foster student learning independence, creativity, and collaboration in a contextual and sustainable manner (Admane et al., 2024; Jafari & Shaterzadeh-Yazdi, 2024). The implications of this research include theoretical, practical, and educational policy aspects that contribute to the development of technology-based learning in the digital era. Theoretically, the results of this study emphasize that the perception of the convenience and usefulness of technology has a direct effect on the acceptance and effectiveness of its use in the context of education (Khine, 2024; Winarni et al., 2021). This research also confirms the relevance of the cognitive-constructivist approach, in which students actively build knowledge through interaction with intelligent learning systems that provide adaptive feedback. Thus, these findings expand the theoretical understanding of how the integration between AI and local wisdom can produce learning models that are contextual, humanistic, and in accordance with the cultural character of learners.

From a practical perspective, the application of AI-CreWLi shows that artificial intelligence can function as an educational partner that assists lecturers in providing quick feedback, objectively assessing student work, and monitoring the development of creative writing skills on an ongoing basis (Lin et al., 2023; Tanveer et al., 2020). For students, the app increases learning motivation, independence, and active engagement through interactive features such as automated feedback, peer review, and project-based learning based on local culture. This shows that AI-CreWLi is not only a technological tool, but also an adaptive learning tool that is able to foster critical thinking, communication, and creativity skills needed in the professional world. The integration of AI technology with local wisdom values shows that digital innovation can go hand in hand with cultural preservation and character education (Luqmi et al., 2025), (Rahayu et al., 2025). Therefore, universities can consider the development and adoption of local AI-based learning platforms as a strategy in the digital transformation of national education. With a planned implementation, AI-CreWLi can be a model for the development of learning systems that are adaptive, participatory, and relevant to the needs of today's creative industries.

In a long-term context, this research opens up opportunities for the development of AI-based learning models in various disciplines. Collaboration between academics, technology developers, and local cultural communities is essential to ensure that the AI technology applied remains inclusive, ethical, and in accordance with Indonesia's social context (Jannah et al., 2025). Thus, AI-CreWLi can be a prototype of future learning that harmoniously combines artificial intelligence, cultural contexts, and 21st-century skill development, thereby driving the transformation of education towards a more adaptive, humanist, and sustainable system.

## CONCLUSION

The application of AI-CreWLi has proven to be effective in improving students' creative writing skills, motivation to learn, and mastery of 21st century skills. Through the results of the t-test, ANOVA, and linear regression, all analyses showed a positive and significant effect of the use of AI-CreWLi on learning outcomes. This application not only helps students improve their writing independently through automated feedback based on artificial intelligence, but also strengthens the relevance of learning through the integration of local wisdom values. In addition, students' perceptions of AI-CreWLi are very positive, reflecting the high acceptance of the technology due to its ease of use, usefulness, and more interactive learning experience. These findings confirm that AI-CreWLi not only functions as a learning technology innovation, but also as a contextual education model that is in line with the spirit of Independent Learning–Independent Campus (MBKM) in building adaptive, creative, and culture-based learning.

## CONFLICT OF INTEREST

The authors declare no conflict of interest.

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