Student Creativity in Digital Learning: A Review of School Self-Confidence and Utilization

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ABSTRACT

Creativity is a crucial 21st-century skill, yet students' mathematical creativity remains relatively low. This research aims to develop mathematics learning materials based on the Pijar Sekolah Learning Management System (LMS) that are interactive, contextual, and problem-based to foster creativity by considering self-confidence. The Research and Development (R&D) method using the ADDIE model was employed. The sample consisted of two classes at a vocational school in Bandung. Data were collected via questionnaires, interviews, and observations, then analyzed using Aiken's V, Cronbach's Alpha, two-way ANOVA, and Pearson correlation. Results showed the materials are valid (Aiken's V = 0.738) and reliable (Alpha = 0.945). Two-way ANOVA revealed that the LMS method significantly improves creativity specifically for students with high self-confidence ($p = 0.004$), although it showed no significant difference for the overall group ($p = 0.905$). A significant positive correlation between self-confidence and creativity was found only in the experimental class ($r = 0.478$, $p = 0.021$). These findings emphasize that digital platforms optimize creativity when balanced with high student self-confidence.

ABSTRAK

Kreativitas adalah keterampilan krusial abad ke-21, namun kreativitas matematis siswa masih tergolong rendah. Penelitian ini bertujuan mengembangkan bahan ajar matematika berbasis Learning Management System (LMS) Pijar Sekolah yang interaktif, kontekstual, dan berbasis masalah untuk menumbuhkan kreativitas dengan mempertimbangkan faktor kepercayaan diri. Metode penelitian yang digunakan adalah Research and Development (R&D) dengan model ADDIE. Sampel penelitian terdiri dari dua kelas di sebuah SMK di Bandung. Data dikumpulkan melalui angket, wawancara, dan observasi, lalu dianalisis menggunakan Aiken's V, Cronbach's Alpha, ANOVA Dua Jalur, dan korelasi Pearson. Hasil penelitian menunjukkan bahan ajar valid (Aiken's V = 0,738) dan reliabel (Alpha = 0,945). Uji ANOVA Dua Jalur menunjukkan bahwa metode LMS secara signifikan meningkatkan kreativitas khusus pada siswa dengan kepercayaan diri tinggi ($p = 0,004$), namun tidak terdapat perbedaan signifikan pada kelompok secara keseluruhan ($p = 0,905$). Korelasi positif yang signifikan antara kepercayaan diri dan kreativitas hanya ditemukan pada kelas eksperimen ($r = 0,478$, $p = 0,021$). Temuan ini menegaskan bahwa platform digital mengoptimalkan kreativitas jika dibarengi dengan kepercayaan diri siswa yang tinggi.

INTRODUCTION

Creativity is one of the important competencies of the 21st century that must be developed in the learning process, including in mathematics subjects. Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 21 of 2016 emphasizes that mathematics learning should not only focus on cognitive outcomes but also develop creative, logical, and systematic thinking skills. Mathematics learning requires students not only to master procedural skills but also to develop higher-order thinking abilities such as problem-solving and creative thinking. Studies have confirmed that mathematical problem-solving ability is closely related to students' self-confidence, as confident students are more capable of exploring various solution strategies (Putra et al., 2018; Andriani & Siregar, 2023). Creativity enables students to solve problems with multiple approaches, adapt to change, and generate new ideas in real-life situations (Supriatna, 2022). The OECD Learning Compass 2030 identifies creativity as a *transformative competency* that equips learners to create new value, manage tensions, and respond to uncertainty in a rapidly changing world (OECD, 2019). Similarly, the Partnership for 21st Century Learning (P21) places creativity and innovation as one of the "4Cs" required for success in global society (P21, 2019). Research in mathematics education further demonstrates that creativity supports flexible problem-solving, deeper conceptual understanding, and resilience in facing unfamiliar tasks (Mann, 2006; Leikin & Pitta-Pantazi, 2013). In the context of digital learning, creativity is becoming increasingly important because students are required to be able to integrate technology in learning and thinking activities in an innovative way (Hidayat et al., 2023). Previous studies have shown that interactive digital learning environments can effectively foster students' creative thinking skills by providing flexible learning paths and engaging learning media (Andriani & Siregar, 2023; Nisa et al., 2024). This ideal condition places creativity as one of the essential learning outcomes in technology-based learning.

However, field conditions show that there is a gap between expectations and reality. Based on the results of initial observations and the findings of several studies, student creativity in schools, especially in digital learning, is still relatively low (Nasution, 2023). Many students tend to be passive, dependent on the teacher's instructions, and lack the courage to express ideas and use digital media to express ideas creatively. One of the reasons is the students' low self-confidence in participating in technology-based learning (Rahmawati, 2023). Self-confidence plays an important role in encouraging students' courage to experiment, take risks, and try new things in the learning process (Sari & Pratama, 2024). Research has indicated that students with higher self-confidence tend to demonstrate better mathematical problem-solving abilities and greater persistence in learning tasks (Putra et al., 2018). Students with low self-confidence tend to hesitate using technology and fear making mistakes, which limits their creative potential. International evidence shows that low creativity is also a global issue; the OECD (2020) reports that students worldwide still struggle with creative thinking, especially in open-ended and technology-based tasks. Schools in many countries also continue to emphasize routine work, reducing opportunities for divergent thinking (Siew & Ambo, 2020; Henriksen et al., 2021). Recent studies further confirm that self-confidence strongly predicts creativity, as students with higher creative self-efficacy generate more original ideas and engage more effectively in complex tasks (Li & Wang, 2021). In mathematics, higher self-efficacy similarly enhances students' creative problem-solving in digital settings (Amri et al., 2020). Thus, low creativity and low self-confidence are global challenges that hinder students' creative development in technology-based learning.

To minimize this gap, the use of Learning Management Systems (LMS) such as *Pijar Sekolah* may serve as a potential solution. Previous research indicates that LMS environments can support not only the organization and delivery of learning content but also facilitate interactive, student-centered activities that encourage exploration, problem-solving, and higher-order thinking, all of which are essential components of creative learning processes (Rosário & Dias, 2022). LMS platforms often provide features such as discussion forums, adaptive assessments, self-paced learning modules, and interactive multimedia resources, which allow students to engage with material in multiple ways and express their ideas more freely. For example, studies have shown that LMS-based courses significantly improve students' creative performance in specific domains by enabling learners to interact with content, receive immediate feedback, and reflect on their problem-solving strategies (Gunawan et al., 2024). Such interactive and adaptive elements of LMS environments create opportunities for students to develop creative skills by experimenting with different approaches and solutions within a digital learning context.

Pijar Sekolah, developed by Telkom Indonesia, provides various digital learning features such as interactive books, learning videos, *computer-based test* exercises, and online collaborative activities (Telkom, 2023). This platform is designed to help teachers manage learning in an interactive and flexible way, as well as provide opportunities for students to learn independently (Ismail & Nugroho, 2024). However, research showed that the use of *Pijar Sekolah* in schools is not optimal because the learning materials provided are still textual and have not fully encouraged active involvement and the development of students' creative ideas (Hanifah, 2024; Sari et al., 2021). Therefore, further analysis is needed to examine how learning management systems, particularly Pijar Sekolah, can facilitate the development of students' creativity by providing a digital learning environment that supports the effective utilization of students' self-confidence.

Previous studies have shown that Learning Management Systems (LMS) and interactive digital learning materials have the potential to enhance students' creativity and learning engagement (Meliana et al., 2022; Nisa et al., 2024). However, most of these studies focus primarily on cognitive outcomes and provide limited attention to affective factors such as students' self-confidence, particularly in mathematics learning contexts. In addition, limited research has explored the development of LMS-based mathematics learning materials that simultaneously foster algorithmic mathematical thinking and creativity. Addressing this gap, the present study aims to develop interactive mathematics learning materials based on Pijar Sekolah and to examine their effectiveness compared to conventional learning materials, viewed from different levels of students' self-confidence, as well as to analyze the relationship between self-confidence and students' algorithmic mathematical thinking in a digital learning environment. This research is expected to contribute to the development of more effective and humane digital learning strategies by emphasizing increasing self-confidence and strengthening aspects of student creativity in the context of technology-based education.

METHOD

This study uses the Research and Development (R&D) method employing the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) design approach as a development framework (Yaniawati & Indrawan, 2024) for learning materials based on the Learning Management System (LMS) of *Pijar Sekolah*, with research procedures as shown in **Figure 1**.
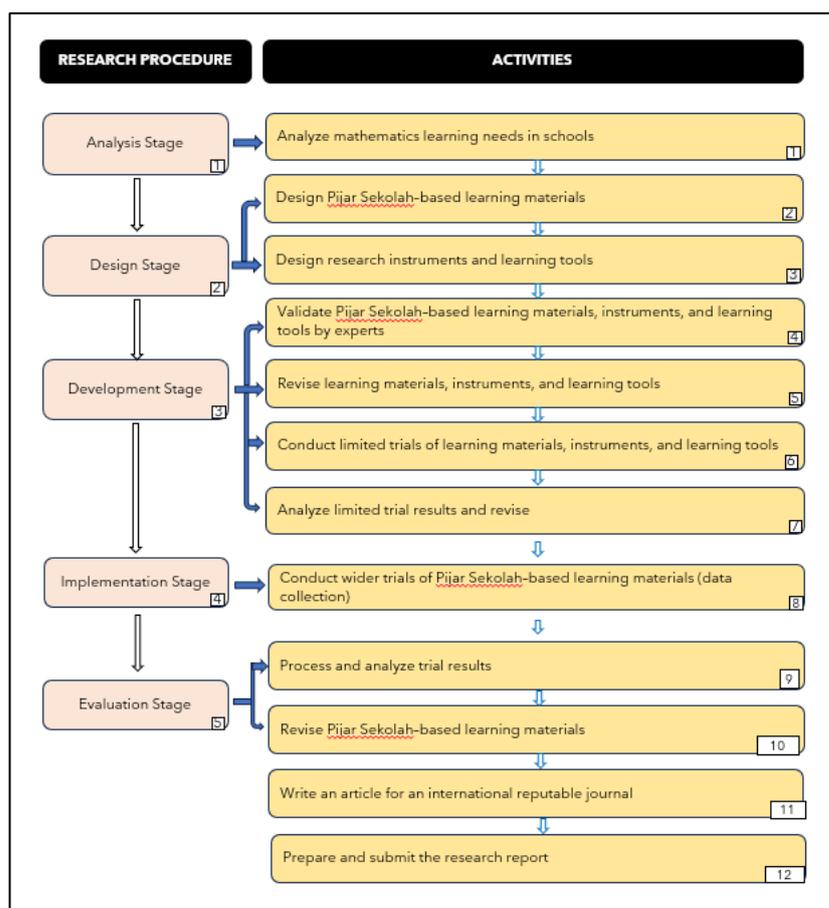
Figure 1. Research procedure.

In **Figure 1**, it can be seen that the research procedure begins with an analysis stage that focuses on identifying students' needs and characteristics, including their creativity tendencies and self-confidence levels in participating in digital learning. The design stage is carried out by designing interactive and contextual Pijar-based digital learning materials, adjusted to the curriculum and learning needs at vocational schools. At the development stage, the learning materials are made in digital form and validated by subject matter experts and media experts to ensure the suitability of content, appearance, and ease of use.

The implementation stage was carried out at SMK Pasundan 4 Bandung by involving students of class X of Computer Network and Telecommunication Engineering (TJKT). *Pijar Sekolah*-based digital learning materials are applied in the mathematics learning process, and students are asked to take part in learning activities using the LMS under the guidance of teachers. Observations were conducted to examine the implementation of learning to see the involvement of students in using this digital media. The last stage is evaluation, which is carried out to assess the feasibility and applicability of learning materials and analyze the results of data on student creativity based on their level of self-confidence in Pijar-based learning.

The research instrument used was a closed questionnaire based on the Likert scale, which was compiled to measure two main variables, namely students' creativity and self-confidence. The questionnaire is validated by experts to ensure the validity of its content and reliability. The data collection process is carried out directly at school using *Google Form*,

with the assistance of researchers so that students understand each statement item and fill it in according to the actual conditions.

The data obtained was analyzed in a quantitative descriptive manner, by calculating the average score and percentage on each of the indicators of creativity and self-confidence. The results of the analysis are presented in the form of distribution tables and diagrams to illustrate the tendency of students' creativity levels in Pijar-based digital learning based on their self-confidence. Through this R&D method with the ADDIE model, the research is expected to produce digital learning materials that are suitable for instructional use and to provide empirical evidence of the relationship between students' creativity and self-confidence in digital learning contexts at vocational schools, measured using creativity indicators such as originality and flexibility and self-confidence indicators related to students' belief in their abilities.

RESULTS AND DISCUSSION

The results of this study are described based on the research objectives. The first objective is to produce Pijar Sekolah-based mathematics learning materials that are interactive and support 21st-century learning. The second objective is to analyze the creativity of students who use Pijar Sekolah-based learning materials compared to those who use conventional learning materials, viewed from high, medium, and low levels of student self-confidence. The third objective is to examine the correlation between student creativity and student self-confidence in mathematics learning. The development of the learning materials was carried out using the Pijar Sekolah-based trigonometry comparison material, which is designed to be interactive and to support 21st-century learning through the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) model.

In the analysis stage, the focus was on identifying the needs of mathematics learning in schools, particularly in relation to student creativity. Based on the results of recent national research, students' mathematical creativity still needs improvement. A mixed-methods study in Makassar by Rahyuningsih, et al. (2022) showed that students with low self-confidence generally also show low creativity. At this stage, literature studies, classroom observations, and interviews with teachers and students were conducted to understand the gap between learning needs and actual conditions. The results of literature studies, class observations, and interviews show that mathematics learning still uses many traditional methods, minimal open-ended assignments, and a lack of use of activities that encourage students to think creatively and actively. Teachers want learning materials that are more adaptive to students' learning styles, as evidenced by research by Sulistiyowati & Masduki (2024) that learning styles affect the emergence of creativity indicators in series and row materials.

Furthermore, an analysis was conducted on the readiness of school digital infrastructure and the relevant features of the Pijar Sekolah LMS to be integrated into the learning materials. The results showed that although some schools already have basic devices and internet access, they often face limitations in connection speed and device availability. Previous research on the Sevima EdLink LMS indicated that learning management systems can significantly enhance mathematical creativity and self-regulated learning if used optimally (Hodijah, et al. 2025).

At the design stage, Pijar Sekolah-based learning materials were planned to support the development of students' creativity. This stage involved structuring content flows, selecting interactive learning methods such as instructional videos, adaptive quizzes, and practice exercises, as well as preparing research instruments in the form of mathematical creativity questionnaires, student self-confidence questionnaires, interview guidelines, observation sheets, and learning tools, particularly teaching modules. The design process also emphasized alignment with curriculum standards and learning objectives to ensure that the materials were pedagogically relevant and meaningful for students.

At the development stage, the learning materials were produced in digital form and integrated into the Pijar Sekolah platform (**Figure 2**). The resulting prototypes, including learning materials, research instruments, and learning tools, were validated by subject matter experts, learning media experts, and educational practitioners to evaluate the feasibility, clarity, and effectiveness of the content and design. Revisions were made based on expert input before the materials were tested on a limited basis with 30 grade X students at one vocational school in the city of Bandung. This trial phase aimed to identify potential technical issues, assess student engagement, and gather initial feedback for further refinement.

Figure 2. Display of learning materials based on *Pijar Sekolah.*

The results of expert validation of the feasibility of content, appearance, and design effectiveness in **Table 1** show that learning materials and learning media are in the medium category with an Aiken's V value of 0.738. Thus, the development product is declared to be suitable for use in learning, but it is recommended that further improvements be made so that the quality is improved and more effectively supports the learning process.

Table 1. Aiken's V Test Learning materials and Media

Question	Assessment		S1	S2	∑S	V	Rem.
	I	II					
Questions 1 - 21	100	66	79	45	124	0,738095	Keep

Based on the results on **Table 1** of a limited trial with processing using SPSS 23 on a research instrument consisting of 30 statements and involving 25 respondents, a correlation value was obtained between the score of each item and the total score ranging from 0.409 to 0.788. The value of the table at the significance level of 5% with the number of 25 respondents was 0.396. Thus, an item statement is said to be valid if the value of r is greater than the r of the table (r > 0.396).

The calculation results showed that all 30 statements are declared valid because each has a calculated r-value that exceeds the r of the table. The highest validity value is found in item P18 with a correlation coefficient of 0.788, while the lowest validity value is found in item P4 with a coefficient of 0.409. Based on Guilford's (1956) classification, these values are included in the category of moderate to very high validity. This showed that the entire item on the questionnaire is able to measure the construct in question precisely and representatively.

Furthermore, a reliability test is carried out to determine the consistency level of the instrument. The test results using Cronbach's Alpha formula showed a value of 0.945. Based on the reliability interpretation criteria, the value falls into the very high category, which means that the instrument has an excellent level of regularity or internal consistency. In other words, if the questionnaire is reused under similar conditions, the measurement results will be relatively stable and reliable.

At the implementation stage, the researcher carried out a trial of learning materials that had been developed for class X students at one of the vocational schools in the city of Bandung. This trial was carried out to see the implementation of the learning materials and obtain data on the level of mathematical creativity of students after using the learning materials. The implementation process was carried out for six meetings by applying the developed learning materials to mathematics learning activities in the classroom. At this stage, the researcher distributed a mathematical creativity questionnaire to 52 students using a Google Form that was filled out directly at school. The dissemination of this questionnaire aims to obtain quantitative data on the profile of students' creativity in solving mathematical problems presented through learning using digital learning materials.

During the implementation phase, the researcher also observed student involvement in learning to see how the learning materials supported the emergence of aspects of creativity, such as fluency, flexibility, and originality in mathematical thinking. Obstacles found in the field include limited devices and unstable internet networks when digital-based learning is carried out. Despite this, most students showed good enthusiasm in accessing and utilizing learning materials through their respective devices. From the teacher's side, the learning process becomes more interactive because the learning materials developed facilitate students to think more openly and creatively in finding solutions to the problems given. The collected questionnaire results data are then analyzed to describe the overall level of students' mathematical creativity at this stage.
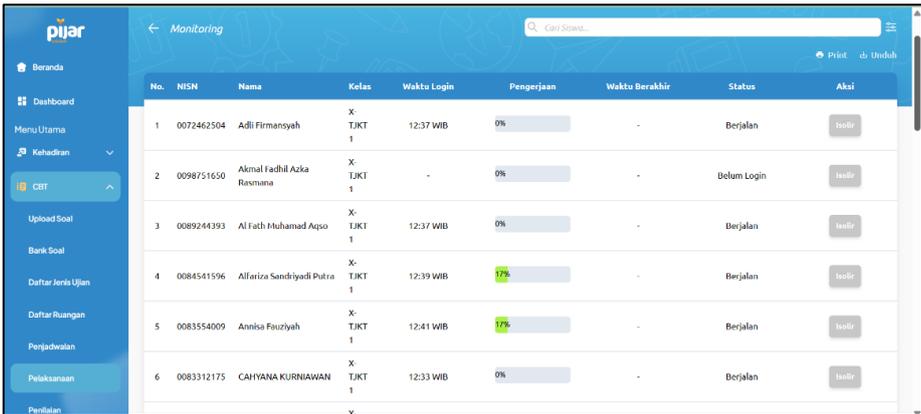
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Figure 3. The classroom atmosphere when students are learning using learning materials at *Pijar Sekolah* and doing tests through the platform.

In **Figure 3**, the classroom learning process shows students accessing mathematics learning materials through the Pijar Sekolah platform. Some students are seen individually exploring the digital content, while others are working collaboratively in small groups to complete practice exercises provided in the learning materials. This learning activity reflects the integration of digital-based instruction with collaborative learning, where students actively engage with the content, exchange ideas, and support one another during problem-solving. The use of Pijar Sekolah enables students to learn independently as well as collaboratively, creating an interactive learning environment that supports active participation and deeper understanding of mathematical concepts.
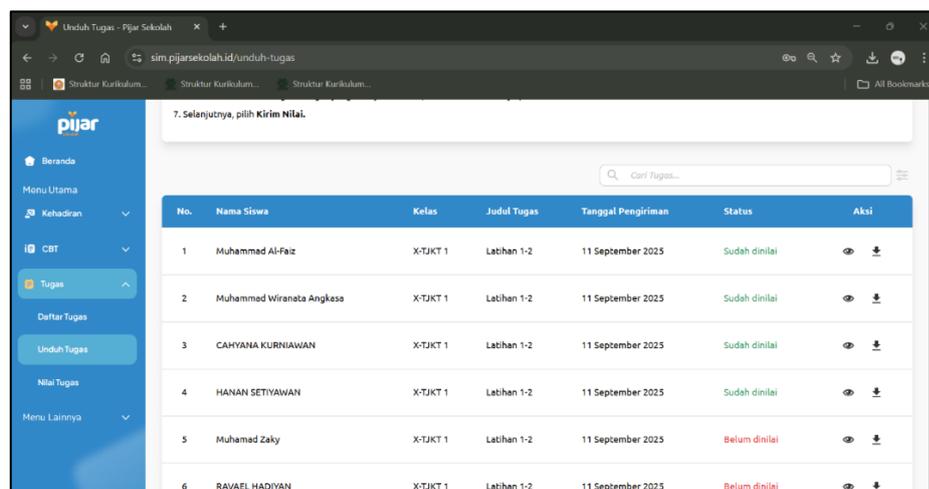
Figure 4. The display of the *Pijar Sekolah* page showed that students have collected LKPD assignments.

In **Figure 4**, the *Pijar Sekolah* interface displays the task submission menu, indicating that students have completed and submitted their group worksheets (LKPD) through the platform. This feature allows teachers to monitor student participation and track the completion of learning tasks in real time. The digital submission of LKPD also supports more organized learning management, as students can submit their work efficiently while teachers can manage and review student outputs systematically. The interface shown in this figure highlights the role of *Pijar Sekolah* as a learning management system that facilitates task collection and supports collaborative learning activities in mathematics instruction.

Figure 5. The *Pijar Sekolah* display showed students taking the test, and teachers can monitor the process directly.
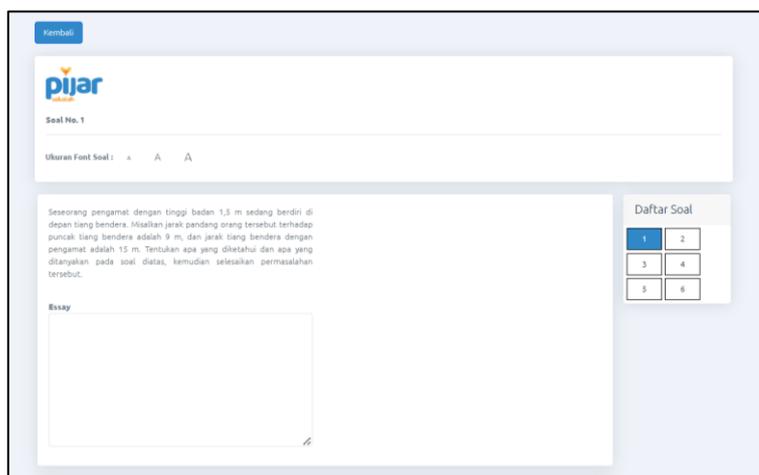
In **Figure 5**, the Pijar Sekolah interface presents students' progress in completing practice exercises or formative assessment tasks. The display allows teachers to monitor student participation and completion status in real time, providing an overview of individual and group learning progress. This feature supports formative assessment by enabling teachers to identify students who have completed the tasks as well as those who may require additional guidance. The progress monitoring function shown in this figure demonstrates how Pijar Sekolah facilitates continuous assessment and timely feedback within the digital learning process.

This stage is carried out to assess the impact of the use of learning materials on student creativity. Evaluation includes quantitative data analysis of student learning outcomes, as well as reflection on teacher and student feedback. The results of the evaluation were used to compile the final research report and develop practical recommendations for the application of *Pijar Sekolah*-based learning materials in adaptive and innovative mathematics learning.

In the results of interviews with several students, the obstacles experienced by students are that with the existence of *Pijar Sekolah*, in fact, learning based on digital platforms has become easier to understand. However, in the practice of learning mathematics, especially during exams, there are still obstacles. For example, Pijar does not support the use of mathematical symbols, so students feel troubled because they have to work on essay questions on paper, not directly on Pijar.

In addition, the limitations of the device are also an obstacle. If the device used does not meet the recommended version or does not support it, then the Pijar application cannot be opened, especially since it is only recommended through the Chrome browser. Network

factors also influence. When the exam takes place at the same time, the stability of the *server* and the signal greatly determine the smooth running of the question.

Figure 6. The display of *Pijar Sekolah* when students carry out tests with essay questions that are not equipped with mathematical symbols, images, or answer upload options.

In **Figure 6**, the Pijar Sekolah interface highlights the limitations in supporting mathematical symbols when students are required to answer essay-type questions. The platform does not provide features for inserting mathematical notation, images, or file uploads within essay responses. As a result, students often need to complete their answers manually on paper before submitting them separately, which leads to additional workload and reduced efficiency during assessments. This limitation was also confirmed through interviews with mathematics teachers, who reported that while multiple-choice questions can be assessed automatically, essay responses still require manual review and careful formatting. Furthermore, the restricted functionality for mathematical expression input contributes to the limited use of Pijar Sekolah–based learning materials, as instructional content is often confined to PDF or video formats that still require further explanation from the teacher.

Table 2. The results of the descriptive analysis of Student Creativity are reviewed from self-confidence.

Ability		Creativeness	
Group	Self-confidence	$\underline{x}$	s
Experiment	Tall	96.7500	5.87367
	Keep	91.6000	7.18928
	Low	0	0
	Sum	188.3500	13.06295
Control	Tall	90.8333	6.61564
	Keep	93.6667	4.71573
	Low	0	0
	Sum	184.5000	11.33137

Based on **Table 2**, the descriptive data was then analyzed using the normality test and the homogeneity test using SPSS 23. The normality test of student creativity data showed that the experimental class using *Pijar Sekolah* as presented in **Table 2** had a significance

value of 0.576, and the control class that used conventional learning had a significance value of 0.977. Because the two significance values are greater than 0.05, it can be concluded that the student creativity data in both classes is normally distributed. In addition, the results of the homogeneity test showed a significance value of 0.073. Since the value is also greater than 0.05, it can be concluded that the data has a homogeneous variance. After that, a two-way ANOVA test was carried out with the results seen in **Table 3**.

Based on the results of the normality and homogenization tests, it is known that the data on student creativity is normally distributed and comes from homogeneous variance. Therefore, the ANOVA two-way test was continued using SPSS 23 with the results seen in **Table 3**.

Table 3. Results of the Two-Way ANOVA Test on Student Creativity

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	438.902a	3	146.301	4.519	.008
Intercept	390988.498	1	390988.498	12076.555	.000
A	.468	1	.468	.014	.905
B	274.599	1	274.599	8.482	.006
A*B	153.519	1	153.519	4.742	.035
Error	1327.409	41	32.376		
Total	393953.000	45			
Corrected Total	1766.311	44			

a. R Squared = .248 (Adjusted R Squared = .193)

Based on the results of the two-way ANOVA test as presented in **Table 3**, it was shown that the learning method, whether using *Pijar Sekolah* or conventional, did not provide a significant difference to student creativity because the significance value was 0.905 which was greater than 0.05. On the other hand, the level of student self-confidence was shown to have a significant effect on creativity with a significance value of 0.006 which was below 0.05. In addition, the results of the analysis also showed a significant interaction between learning methods and self-confidence in student creativity with a significance value of 0.035. This meant that the influence of learning methods on student creativity depends on the level of self-confidence that students have.

Because there are significant differences based on the results of the ANOVA test, a follow-up test of Tukey HSD was carried out using SPSS 23 to find out more specifically which group pairs showed significant differences in student creativity with the results seen in **Table 4**.

Table 4. Student Creativity Quiz Results

(I) Post Hoc	(J) Post Hoc	Mean Difference (I-J)	Std. Error	Sig.	95% Self-confidence Interval	
					Lower Bound	Upper Bound
A1B1	A1B2	8.6591[*]	2.37513	.004	2.2994	15.0188
	A2B1	3.9091	2.48613	.405	-2.7478	10.5660
	A2B2	5.1591	2.37513	.148	-1.2006	11.5188
A1B2	A1B1	-8.6591[*]	2.37513	.004	-15.0188	-2.2994
	A2B1	-4.7500	2.43630	.224	-11.2735	1.7735
	A2B2	-3.5000	2.32292	.443	-9.7199	2.7199
A2B1	A1B1	-3.9091	2.48613	.405	-10.5660	2.7478
	A1B2	4.7500	2.43630	.224	-1.7735	11.2735
	A2B2	1.2500	2.43630	.956	-5.2735	7.7735
A2B2	A1B1	-5.1591	2.37513	.148	-11.5188	1.2006

(I) Post Hoc	(J) Post Hoc	Mean Difference (I-J)	Std. Error	Sig.	95% Self-confidence Interval	
					Lower Bound	Upper Bound
	A1B2	3.5000	2.32292	.443	-2.7199	9.7199
	A2B1	-1.2500	2.43630	.956	-7.7735	5.2735

Based on observed meant.
 The error term is Mean Square(Error) = 32.376.
*. The mean difference is significant at the 0.05 level.

Information:
A1 = experimental class (use *Pijar Sekolah*)
A2 = control class (conventional)
B1 = high self-confidence
B2 = moderate self-confidence
B3 = low self-confidence (does not appear, as there are no students in this category)

Based on the results of the post hoc Tukey HSD test as presented in **Table 4**, it is known that most comparisons between groups do not show significant differences because the Sig. value is greater than 0.05. However, there was one significant comparison, namely between A1B1 (experimental class with high self-confidence) and A1B2 (experimental class with moderate self-confidence) with a value of Sig. = 0.004 < 0.05. This meant that there is a noticeable difference in creativity between the two groups.

Thus, it can be concluded that the use of *Pijar Sekolah* gives different results to students' creativity when viewed from the level of self-confidence. Students with high self-confidence showed significant differences in creativity compared to students who had moderate self-confidence in experimental classes. Meanwhile, in the comparison of other groups, no significant difference was found because the Sig. value was above 0.05.

These findings are in line with Zhuofan's (2024) research, which showed that self-efficacy plays an important role in mediating the relationship between the use of learning technology and students' mathematical creativity achievements. Students with high self-confidence tend to be more courageous in expressing ideas, trying new strategies, and taking intellectual risks, so their creativity is more developed in an interactive digital environment. This is also supported by Marrone (2023) who asserts that creativity is not only determined by learning methods but also by affective factors such as self-confidence and readiness to face challenges. On the other hand, for students with medium or low self-confidence, the potential for creativity development through *Pijar Sekolah* is not optimal without additional support in the form of scaffolding and personal feedback. Thus, a differentiation strategy is needed in the implementation of digital platforms so that the positive influence on student creativity can be felt equally in all groups.

Overall, the results showed that the use of *Pijar Sekolah* had a significant influence on student creativity; the difference was only seen in students in experimental classes with high levels of self-confidence compared to students in experimental classes who had moderate self-confidence.

Based on **Table 5** in the following page, it was concluded that in the aspect of creativity, students in the experimental class with high self-confidence showed a significant difference compared to students in the experimental class with moderate self-confidence, with a significance value of 0.004. This showed that the *Pijar Sekolah* method is more effective in increasing creativity in students with high self-confidence. Meanwhile, the group of students with moderate and high self-confidence in the control class showed no significant difference against the other groups, as well as in the low self-confidence group which could

not be analyzed because there was no data. Thus, overall it can be concluded that the use of *Pijar Sekolah* has a different influence on creativity, especially in students who have a high level of self-confidence.

Table 5. Conclusion of the Results of the Significance Test of Student Creativity Based on Self-confidence Level

Group	Self-confidence	Creativeness	
		Sig.	Conclusion
Experiment	Height (A1B1)	0.004 (with A1B2)	Significantly different from moderate self-confidence experiments
	Medium (A1B2)	0.004 (with A1B1)	Lower than high self-confidence experiments
	Low (A1B3)	–	No student data
Control	High (A2B1)	> 0.05	There is no significant difference
	Medium (A2B2)	> 0.05	There is no significant difference
	Low (A2B3)	–	No student data

The results of the Pearson correlation test between student creativity and student self-confidence using learning materials based on *Pijar Sekolah* and conventional ones can be seen in **Table 6**.

Table 6. Correlation Test Results

		Experiment		Control	
		Student Creativity	Student Self-confidence	Student Creativity	Student Self-confidence
Student Creativity	Pearson Correlation	1	.478[*]	1	.312
	Sig. (2-tailed)		.021		.169
	N	23	23	21	21
Student Self-confidence	Pearson Correlation	.478[*]	1	.312	1
	Sig. (2-tailed)	.021		.169	
	N	23	23	21	21

Based on the results of the correlation test processed using SPSS 23 as presented in **Table 6**, the experimental class using *Pijar Sekolah* obtained a correlation coefficient value (*Pearson Correlation*) of 0.478 with a significance value of $0.021 < 0.05$. This showed that there is a significant relationship between students' creativity and their self-confidence. This meant that the higher the level of student self-confidence, the higher the level of creativity shown in learning using *Pijar Sekolah*. This relationship is positive, which meant that the two variables affect each other in the same direction. The application of *Pijar Sekolah* provides a space for students to express their ideas more freely through interactive digital activities, so that high self-confidence can play a role in increasing their creativity during the learning process.

Meanwhile, in the control class using conventional learning methods, a correlation value of 0.312 was obtained with a significance of $0.169 > 0.05$. This score showed that there is no significant relationship between student creativity and self-confidence in conventional learning. This condition showed that students' self-confidence in the control class has not

been able to influence or go hand in hand with their level of creativity. Conventional learning that tends to be one-way and does not provide space for the exploration of ideas makes students not have the optimal opportunity to channel their self-confidence in the form of creative ideas.

These results indicate that digital platforms such as *Pijar Sekolah* play a role in strengthening the relationship between students' self-confidence and creativity. An interactive, visual, and flexible learning environment encourages students to actively participate and experiment with new ideas, which ultimately leads to increased creativity along with increased self-confidence. In contrast, conventional learning that still focuses on lecture methods and routine exercises does not stimulate the emergence of creativity even though students have a good sense of self-confidence.

Overall, it can be concluded that self-confidence has a significant relationship with student creativity in *Pijar Sekolah*-based learning, but it does not show a significant relationship in conventional learning. This showed that the use of digital platforms not only supports cognitive skills but also strengthens students' affective factors, such as self-confidence, which contribute directly to the emergence of creativity in the learning process.

The analysis stage is carried out to identify students' needs for digital learning that can stimulate creativity. These findings are consistent with previous research indicating that digital learning environments supported by LMS features such as interactive content and adaptive tasks can enhance students' creative engagement and problem-solving abilities (Rosário & Dias, 2022; Gunawan et al., 2024). Previous learning was still predominantly teacher-centered and lacked exploration of independent ideas. This finding is in line with research by Sari and Hartati (2021) who stated that low student creativity is often caused by a lack of opportunities to experiment and reflect in the learning process. In addition, most students show varying self-confidence; Some actively express ideas, but others are still hesitant for fear of making mistakes. This condition showed the need for digital-based learning innovations that encourage active participation and the expression of creative ideas.

At the design stage, learning materials are developed by utilizing the *Pijar Sekolah* platform which provides interactive features such as learning videos, adaptive quizzes, and creative task exploration spaces. This design emphasizes activities that allow students to express ideas, think divergently, and collaborate in a digital environment. According to Fatmawati et al. (2022), the integration of interactive media that allows students to experiment visually and conceptually can increase engagement and generate new ideas. Therefore, the design of these digital learning materials is focused on creating a balance between the teacher's direction and the student's exploratory freedom.

The development stage produces learning materials that have been validated by media experts and material experts with a suitable category for use. Several revisions were made, especially in the aspects of clarity of instruction and consistency of display so that it is easily accessible to students. This validation strengthens the opinion of Wibowo and Kurniawan (2023) that the quality of the interface and the ease of use of the platform have a direct effect on the effectiveness of digital creative activities. In addition, digital content is also adapted to be relevant to the context of students' lives so that their creativity emerges from meaningful situations.

The implementation stage showed that the use of *Pijar Sekolah* had a positive impact on increasing students' creativity, especially in experimental groups with high levels of self-confidence. The results of the statistical test showed that there was a significant relationship between creativity and self-confidence in the experimental class, but no overall significant correlation was found between variables in all groups. This indicates that digital learning

platforms are more effective for students with higher levels of self-confidence who are willing to actively participate, while students with lower self-confidence tend to remain passive. These results are in line with the findings of Putri and Nugraha (2023) who explain that self-confidence plays a role as an enhancer in creative activities, not a direct cause. In other words, confident students are more courageous to take intellectual risks and display unique ideas, while students with low self-confidence are more likely to imitate and be reluctant to try new things.

Meanwhile, the absence of an overall significant correlation between creativity and self-confidence suggests that other external factors, such as the quality of teacher guidance and technological readiness, also influence. As conveyed by Rahmawati and Setiawan (2024), creativity in digital learning is not only determined by individual affective factors, but also by the support of the learning environment and the sustainability of reflective activities. Thus, *Pijar Sekolah*-based learning is effective in encouraging creativity in students who are emotionally and technologically ready, but still require differential mentoring strategies for students who lack self-confidence.

The evaluation stage showed that in general, the use of *Pijar Sekolah* has a positive impact on student involvement in creative and collaborative activities. However, obstacles are still found, such as device limitations, network stability, and the need for direct guidance from teachers to maintain the consistency of students' creative ideas. Teachers also need to ensure that digital-based assignments not only emphasize the final outcome but also the student's creative thinking process. This is in accordance with the view of Ningsih and Fadhilah (2023) that the effectiveness of digital media in fostering creativity is only optimal if balanced with scaffolding, reflective feedback, and open exploration opportunities.

Overall, the results of this study show that the use of *Pijar Sekolah* is able to increase students' creativity in digital learning, especially for those who have a high level of self-confidence. Although no significant correlation was found in general, the relationship that emerged in the experimental class confirmed the importance of a balance between affective readiness and technological support. Thus, platform-based digital learning such as *Pijar Sekolah* has great potential to develop the creativity of 21st century students, as long as it is balanced with self-confidence-building strategies and process-oriented activity management.

These findings imply that the implementation of digital learning platforms should be accompanied by instructional strategies that strengthen students' affective readiness, particularly self-confidence, to optimize creative outcomes. Therefore, teachers are encouraged to design LMS activities that promote active participation and creative expression, while schools should support the alignment of technological use with pedagogical and psychological considerations.

CONCLUSION

This research concludes that the use of the Pijar Sekolah platform in digital learning has a positive effect on student creativity, particularly among students with higher levels of self-confidence. The findings indicate that creativity is more optimally developed when digital learning environments support active engagement and confidence in expressing ideas.

The results also show a significant relationship between self-confidence and creativity in the experimental class using Pijar Sekolah, while this relationship was not consistently found across all groups. This suggests that the influence of self-confidence on creativity is contextual and strongly supported by interactive and well-designed digital learning environments. The experimental class demonstrated a moderate positive correlation

between self-confidence and creativity as well as a significant difference in creativity among students with high levels of self-confidence.

Therefore, the findings emphasize that effective digital learning not only relies on the use of technology but also on instructional designs that facilitate participation and confidence building. Teachers are encouraged to incorporate reflective activities and open feedback in digital learning to support students with moderate or low self-confidence. Future research may further examine other contributing factors, such as intrinsic motivation, learning styles, or social support, to strengthen the understanding of creativity development in digital learning contexts.

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