# THE EFFECT OF AI UTILIZATION AND LEARNING INNOVATION ON STUDENT LEARNING CREATIVITY

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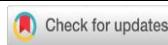
| Sections Info | ABSTRACT |
|---|---|
| | *This study aims to analyze the influence of Artificial Intelligence (AI) utilization and learning innovation on students' learning creativity. Employing a quantitative associative approach, the research involved 100 university students as the sample. Data were collected using a Likert-scale questionnaire and analyzed through multiple regression after passing validity, reliability, and classical assumption tests. The findings indicate that AI utilization and learning innovation have a significant effect on learning creativity, as reflected by a correlation coefficient of 0.844 and a significance value of 0.000. The results demonstrate that AI contributes to enhancing students' ability to explore information, generate new ideas, and understand learning materials through adaptive recommendations and feedback. Learning innovation also plays an essential role in creating interactive, flexible, and creativity-stimulating learning environments. The combination of AI utilization and innovative learning strategies provides a richer learning experience and effectively enhances students' creativity. Learning Innovation, Student Creativity* |

## ABSTRAK

*Penelitian ini bertujuan untuk menganalisis pengaruh pemanfaatan Artificial Intelligence (AI) dan inovasi belajar terhadap kreativitas belajar mahasiswa. Penelitian menggunakan pendekatan kuantitatif jenis asosiatif dengan melibatkan 100 mahasiswa sebagai sampel. Pengumpulan data dilakukan melalui kuesioner skala Likert dan dianalisis menggunakan regresi berganda setelah melalui uji validitas, reliabilitas, serta uji asumsi klasik. Hasil penelitian menunjukkan bahwa pemanfaatan AI dan inovasi belajar berpengaruh signifikan terhadap kreativitas belajar, yang ditunjukkan dengan nilai koefisien korelasi sebesar 0,844 dan signifikansi 0,000. Hasil menunjukkan bahwa AI berkontribusi dalam meningkatkan kemampuan mahasiswa mengeksplorasi informasi, menghasilkan ide baru, serta memahami materi melalui rekomendasi dan umpan balik adaptif. Inovasi belajar berperan penting dalam menciptakan proses pembelajaran yang interaktif, fleksibel, dan mampu merangsang kemampuan berpikir kreatif. Kombinasi antara pemanfaatan AI dan penerapan inovasi belajar memberikan pengalaman belajar yang lebih kaya dan mampu meningkatkan kreativitas mahasiswa.*

***Kata kunci:** Kecerdasan Buatan, Inovasi belajar, Kreativitas, Mahasiswa*

# INTRODUCTION

Technological developments in the era of globalization have had a major impact on the transformation of the world of education. Several studies show that developments in information and communication technology have the potential to increase human productivity and competence, making it easier for humans to access various activities, including in the context of education. This is evidenced by a survey conducted by the Central Statistics Agency (BPS) which shows that the level of technology use and internet access in Indonesia has increased every year. In 2023, the total number of internet users was recorded at 77%, and by 2025, it is expected to increase to 80.66%.

Increased internet access encourages students to be more creative in expressing new ideas and developing innovative ways of thinking. Creativity includes the ability of individuals to solve complex problems through adaptive approaches (Yassir et al., 2024). In the context of education, learning creativity is an important aspect that must be developed and plays a role in fostering critical thinking skills, the ability to solve various problems, and the ability to provide solutions (Munandar, 2019). Therefore, with the use of technology, students can access various digital learning resources and technology-based platforms, including AI, which opens up opportunities for adaptive learning processes.

Artificial Intelligence (AI) is one of the results of technological developments that are currently rapidly advancing. The application of AI provides great opportunities to create more effective and efficient learning processes. Through AI, students can gain learning experiences tailored to their individual abilities and learning styles (Holmes et., al 2021). AI has the potential to bring innovation to various aspects of education, including the process of evaluating student abilities, problem solving, and providing accurate answers (Tereshchuk & Slobodiniuk, 2023).

H1: The AI Utilization has a positive effect on student learning creativity

Learning innovation is a very important aspect in improving the quality of the learning process. Learning innovation is an effort to develop a learning system through the strategic application of new media or technology that can increase motivation, participation, and learning outcomes. Meanwhile, in the research Hidayat & Rahmawati (2023) states that learning innovation designed using digital technology can create an interactive, flexible, and adaptive learning environment for students' learning styles. In line with this, the development of AI has become one of the forms of technological innovation with great potential to improve the quality of learning. As shown in the research conducted by Tasya et al (2025) the results indicate that the AI Utilization has a significant impact on learning motivation.

H2: Learning innovation has a positive effect on student learning creativity

Artificial Intelligence (AI) helps students solve problems and makes it easier for them to access interesting learning materials. Therefore, student creativity has become one of the aspects of concern in the digital era that adopts AI technology. Creativity is not only seen from the perspective of art or aesthetics, but also the ability of students to come up with new ideas, develop innovative solutions, and integrate knowledge from various fields. AI is a technology that has various features such as machine learning and natural language processing, enabling students to explore various approaches in completing tasks, developing content, and formulating ideas more quickly and in a more varied manner. The use of various AI tools, such as DALL-E, ChatGpt, and AI-based programming platforms such as GitHub Copilot, opens up new spaces that encourage the growth of students' creative potential (Bahroun et al., 2023). However, there are still students who are unable to improve their creativity in developing ideas and critical thinking in the learning process. In addition,

several studies show that the AI Utilization without clear guidance can lead to excessive dependence on students, reduce their ability to think critically, and weaken the process of personal reflection on the material being studied (Zhai et al., 2024).Therefore, a deeper understanding of how AI is integrated appropriately and systematically is needed. Through this research, it is hoped that the extent to which the AI Utilization and learning innovations contribute to enhancing student learning creativity can be determined.

H3: The AI Utilization and learning innovations has a positive effect on student learning creativity
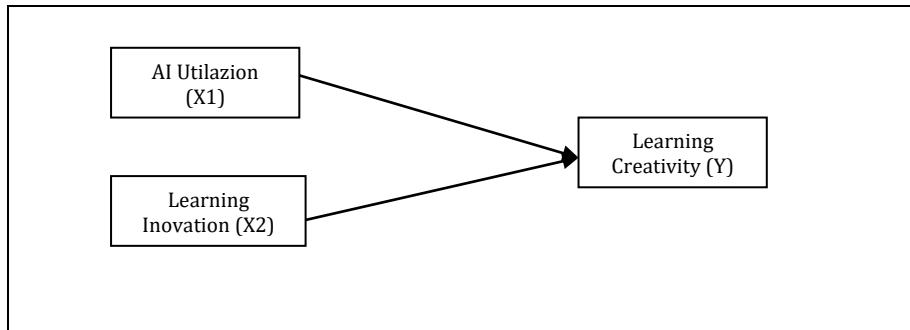


## RESEARCH METHOD

This study uses a quantitative approach with an associative research type that aims to determine the influence between two or more variables. Where the independent variable influences the dependent variable (Sugiyono, 2022). The population in this study was 100 students from Khairun University Ternate who became samples in this study with a simple random sampling type. Data collection techniques were conducted through questionnaires using a Likert scale with the options strongly agree (5), agree (4), neutral (3), disagree (2), and strongly disagree (1). The aim was to measure the AI Utilization and learning innovation on student learning creativity. The data analysis used was validity and reliability tests to examine the accuracy of the questionnaire. Classical assumption tests used normality, multicollinearity, and linearity tests to meet the prerequisites for regression analysis. Meanwhile, hypothesis testing used multiple regression tests to determine the effect of each variable.

The research instrument was developed using a combination of indicators from several sources related to the variables in the study. The research instrument for the AI utilization variable refers to the theory of Alberto Grajeda et al (2024), which contains 5 indicators comprising 4 statements. Furthermore, the learning innovation variable refers to Rogers' theory, which contains 4 indicators consisting of 9 statements, and the learning creativity variable uses Guilford's theory, which contains 5 indicators consisting of 8 statements.

## RESULTS AND DISCUSSION
### Results

**Table 1. Validity Test**

| Variable X1: AI Utilization | | | |
|---|---|---|---|
| Statement | Calculated F | Ftable | Note |

| No. | | | |
|---|---|---|---|
| 1. | 0.795 | 0.195 | Valid |
| 2. | 0.711 | 0.195 | Valid |
| 3. | 0.757 | 0.195 | Valid |
| 4. | 0.725 | 0.195 | Valid |
| 5. | 0.830 | 0.195 | Valid |
| **Variable X2 : Learning Innovation** | | | |
| 6. | 0.675 | 0.195 | Valid |
| 7. | 0.741 | 0.195 | Valid |
| 8. | 0.742 | 0.195 | Valid |
| 9. | 0.765 | 0.195 | Valid |
| 10. | 0.802 | 0.195 | Valid |
| 11. | 0.738 | 0.195 | Valid |
| 12. | 0.717 | 0.195 | Valid |
| 13. | 0,716 | 0.195 | Valid |
| 14. | 0,797 | 0.195 | Valid |
| **Variable Y: Learning Creativity** | | | |
| 15. | 0.825 | 0.195 | Valid |
| 16. | 0.851 | 0.195 | Valid |
| 17. | 0.794 | 0.195 | Valid |
| 18. | 0.770 | 0.195 | Valid |
| 19. | 0.826 | 0.195 | Valid |
| 20. | 0.677 | 0.195 | Valid |
| 21. | 0.823 | 0.195 | Valid |
| 22. | 0.849 | 0.195 | Valid |

A validity test is conducted to determine the suitability of a questionnaire. If the calculated r value is greater than the table r value, it can be considered valid. Based on the results of the validity test conducted, it is declared valid because the calculated r value is greater than the table r value.

### Table 2. Reliability Test Results

| No | Variable | Croncbach Alpha | A | Note |
|---|---|---|---|---|
| 1. | AI Utilization | 0.821 | 0.60 | Reliable |
| 2. | Learning Innovation | 0.898 | 0.60 | Reliable |
| 3. | Learning Creativity | 0.920 | 0.60 | Reliable |

Based on the reliability test results, it is known that the Cronbach's alpha value is >0.60. If the value obtained is >0.60, it can be said to be reliable. Therefore, the research instrument is suitable for use in this study.

## PREREQUISITE ANALYSIS TEST

### Table 3. Normality Test Results

| Variable | Asymp Sig. (2tailed) | Note |
|---|---|---|
| AI Utilization | 0,095 | |
| Learning Innovation | 0,095 | Normal |
| Learning Creativiy | 0,095 | |

The normality test uses Kolmogorov-Smirnov, based on the results obtained of 0.095, which means that the score meets the normality test requirements, namely if the significance value is > 0.05, it can be concluded that the data is normally distributed..

**Table 4. Multicollinearity Test Results**

| Variable | Tolerance | VIF |
|---|---|---|
| AI Utilization | 0.551 | 1.814 |
| Learning Innovation | 0,551 | 1.814 |
| Learning Creativity | 0,551 | 1.814 |

Multicollinearity test Multicollinearity testing can be seen from the Tolerance and VIF values. Based on the results of the multicollinearity test conducted, the tolerance value is 0.551 and the VIF value is 1.814, so there is no multicollinearity, because the tolerance value is greater than 0.5 and the VIF value is less than 10.

**Table 5.  Hasil Uji Linearitas**

| Variable | *Linearity* | *Deviation From Linearity* | **Note** |
|---|---|---|---|
| AI Utilization  (X1) | 0,000 | 0,136 | Linear |
| Learning Creativity (Y) | 0,000 | 0,136 | Linear |
| Learning Innovation (X2) | 0,000 | 0,094 | Linear |
| Learning Creativity (Y) | 0,000 | 0,094 | Linear |

Based on the linearity test results, it is known that the Linearity significance value is 0.000 and the linearity test stipulates that if the significance value is <0.05, there is a linear effect between the variables of AI utilization, learning innovation, and learning creativity.

**HYPOTHESIS TEST**

**Table 6. Hypothesis Test Results**

| Variable | r | R-Square | P | Note |
|---|---|---|---|---|
| AI Utilization | 0.844 | 0.713 | 0.000 | HaAccepted |
| Learning innovation | 0.844 | 0.713 | 0.000 | HaAccepted |
| Learning Creativity | 0.844 | 0.713 | 0.000 | Ha Accepted |

Based on the results of hypothesis testing through multiple regression analysis, a correlation coefficient of 0.844 was obtained with a significance value of p=0.000. This correlation value indicates that there is an influence between the variables of AI utilization and learning innovation on learning creativity. A significance of 0.000 indicates that AI utilization and learning innovation have a significant effect on student learning creativity. Thus, the hypothesis (Ha) is accepted and (Ho) is rejected.

*Discussion*
Results
**The Effect of AI Utilization on Student Learning Creativity**
The analysis results show a significant effect between AI utilization and student

learning creativity. AI contributes positively to increasing learning creativity, both individually and collaboratively, so that it can be one of the relevant learning strategies in the digital era. This is in line with the research (Harini et al., 2025) which states that student creativity in the learning process shows a significant increase through the application of AI technology, which is the main driver in stimulating and developing the creative abilities of each individual. Additionally, research conducted by Tanga et al (2024) in China shows that students who utilize AI-based applications with a constructivist approach experience a significant increase in their ability to generate ideas and create original solutions. AI provides a broad exploratory space through generative and interactive tools, allowing students to channel their ideas in an original and innovative way (Harini et al., 2025). The Social Psychology of Creativity perspective from (Anubile, 1983) emphasizes that creativity is influenced by a combination of domain skills, creative thinking skills, and intrinsic motivation. All aspects can be developed through the integration of appropriate technology in education.

**The Influence of Learning Innovation on Learning Creativity**

The results of the study show that learning innovation has a significant effect of 0.000 < 0.05, meaning it has a positive effect on student learning creativity. This means that the higher the level of innovation applied in the learning process, the higher the creativity that emerges in students.

Penerapan inovasi belajar terbukti dapat meningkatkan keterlibatan mahasiswa dalam proses pembelajaran. The application of learning innovation has been proven to increase student engagement in the learning process. This innovative method encourages students to not only be recipients of information, but also as individuals who actively construct knowledge through more interactive and collaborative learning experiences. Such a learning environment provides cognitive and affective stimulation that strengthens creative thinking skills, such as flexible thinking, generating original ideas, and creating new works or solutions. In line with research conducted by Asmayawati (2025) the AI Utilization-based technology can be an effective strategy in early childhood learning, especially for developing cognitive and affective aspects in a balanced manner, so that teachers and parents can utilize AI as a co-teacher in providing learning experiences that are more interactive, personalized, and adaptive to the learning characteristics of children.

These findings align with Suryana's statement that learning innovations can enhance learning quality through creative and adaptive strategies. These findings are also supported by research Hidayat & Rahmawati (2023), which confirms that the integration of digital innovation in learning can increase student motivation, participation, and creative thinking skills. In addition Rudiyanto et al. (2024) explain that innovative learning that effectively utilizes modern technology and methods can create a more engaging learning atmosphere and stimulate creativity.

Thus, it can be concluded that learning innovation has a significant contribution to enhancing student creativity. Through the application of creative and technology-based learning strategies, students have the opportunity to engage in a more challenging and inspiring learning process that encourages the development of the ability to generate new and useful ideas.

**The Effect of AI Utilization and Learning Innovation on Student Learning Creativity**

The results of the study show that there is a positive influence of 0.000 < 0.05, which indicates that the variables of AI utilization and learning innovation have a significant effect

on student learning creativity. These findings confirm that the two independent variables together make a real contribution to improving students' ability to generate new ideas, think flexibly, and solve problems creatively. In line with the research conducted by Rudiyanto et al., (2024) explains that innovative learning that effectively utilizes modern technology and methods can create a more engaging learning environment and stimulate creativity.

This shows that any increase in the AI Utilizationand learning innovation will be followed by an increase in learning creativity. In other words, student creativity is not only influenced by their ability to utilize AI technology, but also greatly depends on how learning innovations are applied by educators in the teaching and learning process. Artificial Intelligence (AI) can be used as a means to improve the quality of the learning process and optimize student potential, including in the aspect of creativity (Gulamhussein, 2013).

The AI Utilizationcontributes to providing convenience for students to explore information, discover new ideas, and accelerate concept understanding through automatic recommendations, simulations, and adaptive explanations. Meanwhile, learning innovation provides a learning environment and strategies that encourage students to actively think, collaborate, and try various new approaches to problem solving. This is in line with previous research, which found that the AI Utilizationin the learning process can increase student motivation (Tasya et al., 2025) When these two aspects are combined, students gain a richer, more varied learning experience that stimulates creativity more optimally. Research conducted by Ahsan & Rizal (2024) states the same thing, that creative and interesting learning can increase student motivation and learning outcomes

## CONCLUSION

Based on the research results, it can be concluded that the use of Artificial Intelligence (AI) and learning innovation has a significant effect on student learning creativity. The results of multiple regression analysis show a correlation coefficient value of 0.844 and a significance of 0.000, indicating that both independent variables simultaneously contribute significantly to increasing learning creativity. The AI Utilizationhas been proven to help students explore information, generate new ideas, and understand material through an adaptive approach. Meanwhile, learning innovation supports the creation of an interactive, flexible learning process that stimulates students' creative thinking skills. Thus, the more optimal the AI Utilizationand the better the learning innovation is implemented, the higher the students' learning creativity will be. This study emphasizes the importance of integrating technology, particularly AI, in the development of modern learning strategies to improve the quality of the learning process and outcomes in higher education.

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