International Journal of Sustainable Social Science (IJSSS)
Vol.4, No.1, 2026: 103-118

The Impact of AI-Based Social Media Content on Students' Learning Motivation and Academic Achievement in the Digital Learning Era

Sudirman[1*], Mulia Hasnah[2], Azhariah Rachman[3], Nurzamsinar[4]
[1,4]Universitas Islam Darud Da`wah Wal-Irsyad A.G.H. Abdurrahman Ambo Dalle
[2]STAI AL GAZALI SOPPENG
[3]Universitas Halu Oleo
Corresponding Author: Sudirman; sudirman@ddipolman.ac.id

A R T I C L E I N F O

Keywords: Artificial Intelligence, Social Media, Learning Motivation, Academic Achievement, Digital Learning

Received : 5 December
Revised : 23 January
Accepted: 23 February

A B S T R A C T

The development of artificial intelligence in social media has transformed student learning patterns to be more interactive, adaptive, and personalized, thus potentially increasing learning motivation and academic achievement. This study aims to analyze the influence of artificial intelligence-based social media content on students' learning motivation and academic achievement in the digital learning era. The study used a quantitative approach with a survey method on 60 students as respondents, with data collection through questionnaires and analysis using SPSS which includes correlation tests, t-tests, and F-tests. The results showed that artificial intelligence-based social media content has a positive and significant effect on learning motivation and academic achievement, both partially and simultaneously, with a relatively strong level of relationship. In addition, learning motivation acts as a variable that strengthens the influence of the use of AI-based content on academic achievement. Thus, it can be concluded that the use of artificial intelligence-based social media content can be an effective strategy in improving the quality of student learning, but it needs to be supported by adequate digital literacy and the active role of teachers in directing the use of technology appropriately and responsibly

INTRODUCTION

The development of digital technology in recent decades has brought significant changes to various aspects of human life, including education, which has undergone a fundamental transformation (Timotheou, 2023; Wang, 2024). This transformation is marked by the increasing use of information and communication technology as a primary means of supporting a more flexible, efficient, and adaptive learning process tailored to student needs. The use of technology is no longer limited to hardware or information access alone, but has evolved into an integrated digital learning ecosystem, where various platforms and applications support each other in creating a more interactive and dynamic learning experience (Nguyen, 2022; Mareya, 2025). One of the most prominent innovations in this development is the integration of artificial intelligence (AI) into various digital platforms, including social media, which now function not only as a means of communication and social interaction but also as a potential learning medium (Shanmugasundaram, 2023; Masih, 2025). Artificial intelligence enables systems to analyze user behavior, identify learning needs, and automatically present personalized content, enabling students to access materials tailored to their level of understanding and interests. Furthermore, this technology is driving a paradigm shift in learning from conventional, teacher-centered learning to a more student-centered learning paradigm, where students play an active role in accessing, exploring, and constructing knowledge independently. Therefore, the integration of digital technology and artificial intelligence in education not only expands access to learning resources but also contributes to improving the quality and effectiveness of learning processes in the digital age.

Artificial intelligence-based social media has experienced rapid development alongside advances in computing and data analysis technology, particularly in its ability to personalize content based on user preferences and characteristics (Saheb, 2024). The algorithms used in these systems are capable of collecting and analyzing user behavioral data, such as search history, content interactions, usage duration, and specific interests, to generate relevant and sustainable content recommendations. This personalization process not only enhances user experience in accessing information but also creates a more targeted and efficient experience. In an educational context, this capability opens up new opportunities for students to access learning materials more tailored to their individual needs and learning styles. Students can access various forms of educational content, such as learning videos, infographics, interactive simulations, and even summaries tailored to their level of understanding. Furthermore, the continuity of content recommendations also encourages students to remain consistently engaged in the learning process, as the system automatically presents relevant material based on previous activity. Thus, artificial intelligence-based social media not only serves as a means of entertainment and communication but also has the potential to become an adaptive learning medium capable of improving the effectiveness and quality of student learning in the digital age. The use of social media in learning not only presents opportunities but also poses various challenges that require serious

attention (Marlina, 2025). One major challenge is the high potential for distraction from non-educational content, such as entertainment, viral trends, or information irrelevant to learning objectives, which can easily divert students' attention. This situation is further complicated by the characteristics of social media, which are designed to continuously attract users' attention through notifications, chain recommendations, and visually appealing content displays. Although artificial intelligence algorithms are capable of recommending relevant content based on user preferences, in practice, these systems do not fully prioritize educational value but also consider the level of user engagement. As a result, students are potentially exposed to content that is less supportive of the learning process (Fischer, 2023; Kalyani, 2024). Therefore, selective skills and good digital literacy are required from users, especially students, to be able to sort, evaluate, and utilize content wisely. In addition, the role of teachers and the educational environment is also important in providing guidance and building students' critical awareness of the use of social media, so that the technology used can provide optimal benefits without reducing the quality of focus and depth of learning.

Learning motivation is a fundamental factor influencing student success in the learning process, as it serves as the primary driver determining the intensity, direction, and persistence of students in achieving learning goals (Orji, 2021; Kelkar, 2025). Motivation can originate from within the student (intrinsic), such as interest, curiosity, and the desire to achieve, or from external factors, such as the learning environment, teaching methods, and the use of technology in learning (Krulj, 2024; Merdiaty, 2024). In the context of digital learning, artificial intelligence-based social media content has the potential to be an effective external stimulus in increasing student learning motivation (Neji, 2023). This is due to the characteristics of the content, which is presented in an engaging, interactive, and user-friendly manner, thus fostering learning interest and reducing boredom. Furthermore, the personalization capabilities of AI-based systems enable the presentation of material relevant to students' needs and level of understanding, making the learning process more meaningful (Admane, 2024). Thus, the integration of artificial intelligence-based social media content into learning not only serves as a source of information but also as a motivating factor that can strengthen students' motivation to learn sustainably.

In addition to learning motivation, academic achievement is also an important indicator in assessing the success of the learning process because it reflects students' mastery of the material studied, across cognitive, affective, and psychomotor aspects (Ridha, 2025). Academic achievement is generally measured through evaluation results such as exam scores, assignments, and ongoing assessments, which comprehensively reflect student learning outcomes (Goss, 2022). Therefore, it is important to examine the extent to which the use of artificial intelligence-based social media content can significantly contribute to improving student academic achievement. In this context, AI-based content has the potential to enrich learning resources through the presentation of more varied, interactive, and easy-to-understand materials, thereby helping students deepen their understanding of concepts (Lee, 2024). Furthermore, the

personalized features of this technology enable students to access materials tailored to their needs and ability levels, ultimately enhancing learning effectiveness. However, this contribution is also influenced by how students utilize technology wisely and in a targeted manner, so that the use of artificial intelligence-based social media content can truly support optimal improvement in the quality of learning outcomes.

Several previous studies have shown that the use of technology in learning has a positive impact on student learning outcomes (Rahayu, 2023; Nathaniela, 2024; Akintayo, 2024; Ma, 2024). However, most of these studies still focus on general technology use, without specifically examining the role of artificial intelligence-based social media content. This indicates a research gap that requires further exploration. Furthermore, research simultaneously examining the relationship between social media, artificial intelligence, learning motivation, and academic achievement is still limited. Yet, these four aspects are closely related in the context of digital learning. Therefore, research is needed that can integrate these various variables within a comprehensive analytical framework.

LITERATURE REVIEW

Digital literacy is a key factor in determining the success of technology use in learning, especially amidst the increasing use of social media and artificial intelligence as learning resources (Ul, 2025; Ahmed, 2026). Digital literacy encompasses not only technical skills in operating devices and applications but also cognitive and critical skills in understanding, evaluating, and utilizing information appropriately and responsibly. Students with good digital literacy tend to be better able to filter relevant information, avoid useless content, and use technology as a tool to optimally support the learning process (Mokhtari, 2023). They are also more aware of digital ethics, such as using sources wisely and avoiding plagiarism. Conversely, low digital literacy can lead to misuse of technology, such as excessive use of social media for entertainment, reliance on instant information without in-depth understanding, and exposure to inaccurate or misleading information. These conditions can ultimately reduce the quality of learning and hinder academic achievement. Therefore, strengthening digital literacy is crucial to ensure that the use of technology, particularly artificial intelligence-based social media, can have a positive and sustainable impact on education.

The role of teachers is crucial in guiding the use of artificial intelligence-based social media in the learning process, especially amidst the rapid development of digital technology that influences the way students learn (Hania, 2025). Teachers no longer function solely as transmitters of learning materials, but have also transformed into facilitators, mediators, and mentors, helping students utilize technology effectively, critically, and responsibly. In this context, teachers have a strategic role in designing learning that integrates the use of AI-based social media in a targeted manner, thereby supporting the achievement of learning objectives. Furthermore, teachers are also responsible for building student awareness of the importance of digital literacy, ethical use of technology, and the ability to select relevant and quality information. With appropriate

guidance, students can utilize technology not only for entertainment but also as a productive tool to improve academic understanding and skills. Therefore, the successful integration of artificial intelligence-based social media in learning depends heavily on teachers' competence in managing, directing, and optimizing the use of such technology according to students' needs and characteristics.

Based on this description, it is clear that artificial intelligence-based social media content has significant potential to support the learning process. However, its use requires empirical study to determine its impact on student learning motivation and academic achievement. This is crucial to ensure that the technology used truly provides benefits in improving the quality of education. This study aims to analyze the influence of artificial intelligence-based social media content on student learning motivation and academic achievement in the digital learning era. This research is expected to provide theoretical contributions to the development of technology-based education studies, as well as practical contributions for educators in utilizing social media as a learning tool. Thus, this research has a high urgency in addressing the challenges and opportunities arising from the development of digital technology. The research results are expected to serve as a basis for formulating learning strategies that are more innovative, adaptive, and relevant to the needs of students in today's digital era.

METHODOLOGY

This study uses a quantitative approach with a survey method to analyze the influence of artificial intelligence-based social media content on students' learning motivation and academic achievement in the digital learning era. This approach was chosen because it allows researchers to measure the relationship between variables objectively, systematically, and in a structured manner. The research design used is explanatory research, which aims to explain the causal relationship between independent and dependent variables. In this study, the independent variable is artificial intelligence-based social media content, while the dependent variables include students' learning motivation and academic achievement. The population in this study was all secondary school students (SMP/SMA) who actively use social media for digital learning activities. The sampling technique used purposive sampling, with the criteria being students who actively use artificial intelligence-based social media, such as automated content recommendation systems, and are engaged in digital learning.

Data collection techniques were conducted through questionnaires and documentation. The questionnaires were used to measure the level of use of artificial intelligence-based social media content and students' learning motivation using a Likert scale of 1–5. Meanwhile, documentation was used to obtain data on students' academic achievement, such as report card grades or exam results. The research instrument was developed based on indicators including frequency of use, content relevance, personalization, and interactivity for AI-based social media variables; and learning interest, persistence, attention, and internal drive for learning motivation variables. Academic achievement was measured through average grades and student learning outcomes. Prior to use, the research instrument was tested for validity and reliability. The collected data

were then analyzed using statistical techniques, including multiple linear regression analysis, to determine the effect of the independent variables on the dependent variable. Hypothesis testing was conducted using a partial t-test and a simultaneous F-test with a significance level of 0.05.

RESULTS

Respondent Data Description

This study involved 60 students as respondents. The distribution of respondents is presented as follows:

Table 1. Respondent Distribution

Characteristics	Frequency	Persentase (%)
male	26	43,3
female	34	56,7
Kelas X	20	33,3
Kelas XI	21	35,0
Kelas XII	19	31,7
Total	**60**	**100**

Based on Table 1, the number of respondents in this study was 60 students, consisting of 34 females (56.7%) and 26 males (43.3%), indicating a slight preponderance of female respondents, although the difference was not significant. In terms of grade level, the distribution of respondents was relatively even, with 21 students from grade 11 (35.0%), 20 from grade 10 (33.3%), and 19 from grade 12 (31.7%). This relatively balanced distribution indicates that the data obtained adequately represents the various grade levels, allowing the research results to provide a fairly representative picture of student conditions in the context studied.

t-Test (Partial)

The t-test was used to determine the effect of each independent variable, namely artificial intelligence (AI)-based social media content, on the dependent variables, namely student learning motivation and academic achievement.

Table 2. t-Test

Variabel	t count	t table	Sig.	Information
AI_Content → Motivation to learn	6.557	2.002	0.000	Signifikan
AI_Content → Academic Achievement	6.305	2.002	0.000	Signifikan

Based on the table, the calculated t-value for the effect of AI-based social media content on learning motivation is 6.557, which is greater than the t-table value of 2.002, with a significance value of 0.000 < 0.05. This indicates that AI-based social media content has a positive and significant effect on student learning motivation. Furthermore, the calculated t-value for the effect of AI-based social media content on academic achievement is 6.305, which is also

greater than the t-table value (2.002) with a significance value of 0.000 < 0.05. Thus, it can be concluded that AI-based social media content also has a positive and significant effect on student academic achievement. The t-test results indicate that AI-based social media content has a significant effect on improving student learning motivation and academic achievement, thus the proposed research hypothesis is accepted.

F-Test Results (Simultaneous)

The F-test is used to determine whether the independent variables simultaneously influence the dependent variable.

Table 3. F-Test

Model	F count	F table	Sig.	Information
Regresi	29.756	3.16	0.000	Signifikan

Based on the table, the calculated F-value was 29.756, which is greater than the F-table value of 3.16, and the significance value was 0.000, which is less than 0.05. This indicates that the variables of artificial intelligence-based social media content and learning motivation simultaneously have a positive and significant effect on student academic achievement. Therefore, it can be concluded that the regression model used in this study is fit and able to explain the relationship between the variables simultaneously. These results also indicate that increased use of AI-based social media content accompanied by strong learning motivation will significantly improve student academic achievement. Therefore, the hypothesis stating a simultaneous influence between the variables is accepted.

Correlation Coefficient Results (R)

The correlation coefficient (R) is used to determine the strength of the relationship between the variables of artificial intelligence (AI)-based social media content, learning motivation, and student academic achievement.

Table 4. Correlation Coefficient (R)

Model	R	R Square	Information
1	0.715	0.511	Strong Relationship

Based on the table, the correlation coefficient (R) value is 0.715. This value indicates that the relationship between the variables of artificial intelligence-based social media content and learning motivation on student academic achievement is in the strong category. This means that the higher the utilization of AI-based social media content and the better the students' learning motivation, the more likely it is followed by an increase in academic achievement. In addition, the R Square value of 0.511 indicates that 51.1% of the variation in student academic achievement can be explained by the variables of AI-based social media content and learning motivation, while the remaining 48.9% is influenced by other factors outside the research model. Thus, it can be concluded that the relationship between the variables in this study is quite strong and has a significant contribution.

DISCUSSION

Based on the results of this study, it can be understood that artificial intelligence-based social media content plays a very significant role in supporting the learning process in the rapidly evolving digital era (Apriadi, 2023; Abuhassna, 2024; Singh, 2025). The transformation of information technology has brought about a fundamental shift in the learning paradigm, from being conventional, teacher-centered, and tending to be uniform, to being more adaptive, interactive, and oriented towards the needs and characteristics of individual students. In this context, the presence of artificial intelligence functions not only as a technological tool, but also as a system capable of analyzing students' learning behavior, interests, and levels of understanding in greater depth and in real time. This allows for more relevant personalized learning content, so that the material presented can be tailored to the learning style, speed of understanding, and preferences of each student. Furthermore, the integration of artificial intelligence in social media also expands access to more varied and dynamic learning resources, such as interactive videos, simulations, and algorithm-based content recommendations (Liao, 2025). Thus, the learning process is no longer limited to formal classrooms but can take place flexibly and sustainably across various digital platforms. However, the effectiveness of this technology remains dependent on the ability of users, both students and educators, to utilize available features wisely, critically, and responsibly, thereby maximizing optimal learning objectives.

The findings of this study indicate a positive and significant influence between the use of artificial intelligence-based social media content on increasing student learning motivation. This can be understood through the characteristics of digital content presented visually, concisely, contextually, and easily understood, thus better capturing student attention and maintaining engagement in the learning process. Presenting material in the form of short videos, interactive infographics, and personalized content recommendations based on artificial intelligence algorithms allows students to access information tailored to their individual interests, needs, and learning styles, making the learning experience more enjoyable and less monotonous (Valcheva, 2025). This indirectly encourages curiosity, active engagement, and an internal drive to continue exploring learning materials independently. Furthermore, the instant feedback features and adaptive recommendation systems of artificial intelligence technology provide positive reinforcement, which plays a crucial role in building student confidence and learning persistence. Thus, AI-based social media integration serves not only as a means of information distribution but also as a catalyst capable of increasing students' intrinsic motivation, strengthening learning independence, and creating more relevant, personalized, and sustainable learning experiences in the digital age.

Artificial intelligence-based algorithmic systems in social media play a crucial role in providing sustainable, relevant content recommendations tailored to users' needs and preferences, including in the context of learning (Sun, 2025). Through the analysis of user behavior data, such as search history, interaction duration, and frequently accessed content types, algorithms are able to

dynamically and continuously update student learning preference patterns. This creates an adaptive and responsive learning environment, where students are indirectly directed to access learning materials that align with their interests and level of understanding. As a result, the learning process becomes more personalized, less boring, and tends to retain students' attention for longer periods. Furthermore, the continuity of automatically presented content recommendations also encourages the formation of repetitive learning habits, where students are encouraged to continue exploring new material without feeling overwhelmed (Sihotang, 2025). This consistent engagement ultimately implies an increase in the intensity and consistency of student learning, which are important indicators of the success of the learning process in the digital era. However, it is important to note that optimizing the benefits of this algorithmic system still requires adequate guidance and digital literacy, so that students are not merely passive consumers but are also able to utilize technology critically, selectively, and responsibly.

The effectiveness of utilizing artificial intelligence-based social media content is fundamentally influenced by the digital literacy level of students, the primary users of the technology (Wu, 2025). Students with high digital literacy tend to have better abilities to access, evaluate, and utilize information critically and selectively, enabling them to use available content as a productive learning resource relevant to their academic needs (Trixa, 2024). Conversely, students with low digital literacy levels are more susceptible to distraction by content that is purely entertainment-oriented, irrelevant, or even misleading, thus underutilizing technology's potential as a learning medium. This situation demonstrates that the existence of advanced technology such as artificial intelligence does not automatically guarantee improved learning quality without being balanced by users' ability to manage and utilize information wisely. Therefore, digital literacy plays a crucial moderating role in the relationship between technology use and student learning motivation, as it determines the extent to which technology can have a positive or negative impact. In this context, strengthening digital literacy through formal and non-formal education is crucial to ensure that students are not only technology users but also critical, independent, and responsible learners amidst the increasingly complex flow of digital information.

From an academic achievement perspective, research results indicate a positive and significant impact of the use of artificial intelligence-based social media content on student learning outcomes (shahzad, 2024). Students who actively utilize this technology as a supplementary learning resource tend to demonstrate improved conceptual understanding, primarily because the material presented is more varied, contextual, and easily accessible at any time. Content supported by artificial intelligence systems allows for a more structured and adaptive presentation of information, helping students grasp previously difficult material through a simpler and more interactive approach. Furthermore, the automatic recommendation and repetition features of material contribute to strengthening the concept reinforcement process, which in turn improves academic evaluation results, whether in the form of assignments, quizzes, or

exams. These findings indicate that the integration of artificial intelligence-based technology in social media functions not only as a complement but also as a strategic element in enhancing the effectiveness of the knowledge transfer process. Therefore, the appropriate use of this technology can support the creation of more efficient, flexible learning, and oriented towards improving the quality of student learning outcomes in the digital era. The relationship between learning motivation and academic achievement in this study proved significant, confirming that learning motivation is an internal factor that plays a crucial role in determining students' success in achieving optimal learning outcomes (Masfufah, 2023). Students with high motivation tend to demonstrate greater levels of engagement, persistence in completing assignments, and the ability to overcome learning difficulties independently (Zhai, 2025). In this context, artificial intelligence-based social media content serves as an external stimulus that can strengthen learning motivation through the presentation of engaging, interactive materials that are tailored to individual student preferences. Support features such as content personalization, instant feedback, and flexible access to various learning resources contribute to a more enjoyable and less boring learning experience. Consequently, the increase in learning motivation triggered by the use of this technology has direct implications for improving student academic achievement, both in terms of conceptual understanding and evaluation results. Thus, these findings strengthen the assumption that the synergy between internal factors (motivation) and external factors (artificial intelligence-based technology) can have a significant impact on the quality of student learning outcomes in the digital era.

The F-test results in this study indicate that artificial intelligence-based social media content and learning motivation simultaneously have a significant effect on student academic achievement. This indicates that learning success cannot be explained by a single variable but rather results from a complex interaction between external and internal factors. AI-based social media content acts as an external factor, providing access to adaptive, engaging, and easy-to-understand learning resources, while learning motivation serves as an internal psychological factor that encourages students to actively engage in the learning process. When the two interact optimally, a more effective learning environment is created, where students not only have adequate learning resources but also the internal drive to utilize them optimally. This finding reinforces the view that technology integration in education must be balanced with strengthening students' motivational aspects to significantly impact academic achievement (Abubakar, 2024). Therefore, learning approaches in the digital era need to be designed holistically, considering the synergy between technology utilization and student psychological development to achieve optimal learning outcomes.

The correlation coefficient, which is in the strong category, indicates a close relationship between the variables studied. This confirms that increased use of AI-based social media content and learning motivation will be followed by increased academic achievement. Thus, the relationship between the variables in this study is consistent and mutually supportive. However, this study also identified potential negative impacts from the use of AI-based content.

Dependence on instant information can reduce students' critical and analytical thinking skills. Furthermore, excessive exposure to content has the potential to cause distractions that can disrupt learning concentration if not managed wisely. Overall, the results of this study confirm that AI-based social media content has significant potential to increase student learning motivation and academic achievement. However, its use needs to be balanced with increased digital literacy, adequate supervision, and an active role for educators in guiding the productive use of technology. Thus, the integration of technology in learning can optimally contribute to improving the quality of education in the digital era.

CONCLUSIONS AND RECOMMENDATIONS

Based on the research results and discussion, it can be concluded that artificial intelligence-based social media content has a positive and significant influence on students' learning motivation and academic achievement in the digital learning era. Interactive, adaptive, and personalized content can increase students' interest and engagement in the learning process. Statistical analysis results show a strong relationship between the use of AI-based content and increased learning motivation, which ultimately impacts student academic achievement. Furthermore, learning motivation has been shown to play a significant role in strengthening the influence of technology on learning outcomes. However, the effectiveness of utilizing artificial intelligence-based social media content is greatly influenced by students' level of digital literacy and their ability to manage social media use wisely. Without proper management, the use of this technology has the potential to cause distraction and dependence on instant information. Therefore, teachers and the educational environment need to play an active role in providing direction, guidance, and supervision to ensure optimal use of technology. Therefore, the integration of artificial intelligence in social media can be an effective strategy in improving the quality of learning if supported by adequate digital literacy and an appropriate pedagogical approach.

FURTHER STUDY

This research still has limitations, so further research is needed on the topic of The Impact of AI-Based Social Media Content on Students' Learning Motivation and Academic Achievement in the Digital Learning Era in order to perfect this research and increase insight for readers.

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