JOURNAL OF EDUCATION: DEVELOPMENT AND REVIEW (JEDAR)
Vol. 02, Issue. 01, January 2025, Pp: 29–36
Available online at: https://pub.ruangrosadi.com/jurnal-ilmiah/index.php/jedar/index

Enhancing Students' Achievement Motivation Through Curiosity and Digital Literacy

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Received: 05 Jan 2025
Revised: 17 Jan 2025
Accepted: 29 Jan 2025

Abstract

This study aims to analyze the influence of curiosity and digital literacy on achievement motivation. Curiosity and digital literacy skills are expected to serve as significant contributing factors in enhancing achievement motivation within academic environments. This research employs a quantitative approach using a survey method, with data collected through questionnaires distributed to university students as respondents. Data analysis was conducted using multiple linear regression techniques to examine the relationship between the independent variables (curiosity and digital literacy) and the dependent variable (achievement motivation). The findings indicate that curiosity has a significant positive effect on achievement motivation, while digital literacy also contributes to increasing students' motivation to achieve. Furthermore, curiosity and digital literacy collectively exhibit a significant influence on achievement motivation. These results suggest that a combination of high curiosity and strong digital literacy skills can serve as key drivers in enhancing individual achievement motivation. This study highlights the importance of fostering both factors in the educational context to achieve optimal academic performance.

Keywords: curiosity; digital literacy; achievement motivation

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INTRODUCTION

Curiosity is a fundamental element in effective learning. According to Hidi and Anderson (2000), curiosity drives individuals to seek new information and knowledge, ultimately enhancing their understanding and skills. In an educational context, curiosity serves as a powerful motivator for students to engage in active learning, which significantly contributes to their academic achievement. Data from the National Center for Education Statistics (2021) indicate that students with a high level of curiosity tend to achieve better exam scores than their less inquisitive peers.

In the current information age, digital literacy has become an essential skill. UNESCO (2013) defines digital literacy as the ability to access, evaluate, and utilize information from various digital sources. As the world becomes increasingly interconnected, the ability to navigate and process digital information is not only crucial for learning but also for personal and professional development. A study conducted by the Pew Research Center (2021) found that 88% of teenagers rely on the internet as their primary source of information, emphasizing the importance of digital literacy in modern education.

Digital literacy encompasses a broader and more complex set of skills than simply using digital technology (Biezā, 2020). It includes the ability to acquire, apply, and share knowledge, as well as to critically assess information produced by others (Kwon & Hyun,

2014; Noh, 2016). Furthermore, Sutrisna (2020) defines digital literacy as a life skill that extends beyond technical proficiency to include social interaction, learning abilities, and critical, creative, and inspirational thinking.

A high level of digital literacy enhances students' ability to engage effectively in learning processes (Irhandayaningsih, 2020). Given the increasing reliance on digital platforms in education, digital literacy has become a fundamental competency for students. Online learning, in particular, requires students to connect to digital platforms, access educational resources, complete assignments digitally, and participate in virtual discussions. As a result, digital literacy is essential for fostering effective learning, which in turn positively impacts academic achievement. Koltay (2011) emphasizes that digital literacy plays a vital role in education.

The relationship between curiosity, digital literacy, and achievement motivation is highly interconnected. Curiosity encourages students to develop stronger digital literacy skills, which in turn enhances their motivation to excel academically. Research by Kuhlthau (2004) suggests that students who actively seek information tend to be more motivated to learn and achieve their academic goals. Understanding the interplay between these three elements is essential for developing effective learning strategies.

In the contemporary era marked by digital advancements, the evolution of information technology has profoundly impacted various aspects of life, particularly in education. One crucial component of education is achievement motivation, which serves as a key determinant in academic success and the development of individual potential. Achievement motivation is shaped by numerous intrinsic and extrinsic factors, with curiosity and digital literacy being among the most influential intrinsic factors.

Curiosity is an innate drive that compels individuals to seek additional information, understand their surroundings, and enhance their critical thinking abilities. In an educational setting, curiosity fosters greater student engagement in learning activities, ultimately increasing their motivation to succeed. Students with high levels of curiosity are more proactive in acquiring new knowledge and overcoming academic challenges.

Moreover, digital literacy is increasingly recognized as a critical competency in today's digital era. Beyond technical skills, digital literacy involves the ability to critically evaluate and effectively utilize digital information. Students with strong digital literacy skills are more adept at accessing online educational resources, collaborating in virtual environments, and completing academic tasks efficiently. In essence, digital literacy facilitates the enhancement of students' achievement motivation, particularly in learning environments that are heavily influenced by technology.

Despite the prevailing notion that curiosity and digital literacy function as key factors in enhancing achievement motivation, empirical studies explicitly investigating the relationship among these three variables remain scarce. Therefore, this study aims to examine the impact of curiosity and digital literacy on students' achievement motivation. Through this investigation, it is anticipated that a deeper understanding of the reciprocal influence of these factors in educational settings will be obtained, along with insights into their implications for fostering student achievement motivation in the digital age.

METHODS

This study employs a quantitative approach using a survey method to analyze the influence of curiosity and digital literacy on students' achievement motivation. The research was conducted at the Economics Education Study Program, Universitas Indraprasta PGRI, Jakarta. The population of this study consists of students enrolled in the Economics Education program at Universitas Indraprasta PGRI. A random sampling

technique was used to select 159 students as the research sample. This sampling method ensures that every individual in the population has an equal chance of being selected, thereby allowing the results to be generalized to the entire student body.

Data were collected through questionnaires distributed to the selected respondents. The questionnaire consisted of structured questions designed to measure:

1. Curiosity (Independent Variable X_1) – The students' tendency to seek new information, explore learning resources, and engage in academic inquiry.
2. Digital Literacy (Independent Variable X_2) – The students' ability to navigate digital learning platforms, critically evaluate online content, and apply digital tools in academic activities.
3. Achievement Motivation (Dependent Variable Y) – The students' drive to excel academically, set learning goals, and persist in overcoming academic challenges.

To examine the relationship between curiosity (X_1), digital literacy (X_2), and achievement motivation (Y), the study utilized multiple linear regression analysis. The analysis was conducted using JASP (Jeffrey's Amazing Statistics Program) version 0.19.1.0.

The statistical tests performed include:

1. Partial Hypothesis Testing (t-test) – To determine the individual influence of curiosity and digital literacy on achievement motivation.
2. Simultaneous Hypothesis Testing (F-test) – To examine whether curiosity and digital literacy together significantly affect achievement motivation.
3. Coefficient of Determination (R^2) – To measure the proportion of variance in achievement motivation explained by curiosity and digital literacy.

These analyses provide insights into the extent to which curiosity and digital literacy contribute to students' motivation to achieve academic success.

RESULTS & DISCUSSION

Results

Analysis of Variance (ANOVA) – Simultaneous Influence (F-Test)

The F-test was conducted to determine whether curiosity and digital literacy simultaneously influence achievement motivation. The results are presented in the table below:

Table 1. ANOVA

Model		Sum of Squares	df	Mean Square	F	p
M_1	Regression	18261.731	2	9130.866	257.850	< .001
	Residual	5524.206	156	35.412		
	Total	23785.937	158			

The calculated F-value (257.850) is significantly greater than the critical F-table value. The significance value $p < 0.001$ indicates that curiosity and digital literacy together have a significant impact on achievement motivation.

Partial Hypothesis Testing (t-Test) – Individual Influence

A t-test was conducted to analyze the individual influence of curiosity and digital literacy on achievement motivation. The results are presented in the following table:

Table 2. Coefficients

Model		Unstandardized	Standard Error	Standardized	t	p
M_0	(Intercept)	86.918	0.973		89.326	< .001
M_1	(Intercept)	12.917	3.307		3.906	< .001
	KURIOSITAS	0.557	0.068	0.550	8.233	< .001
	LITERASI DIGITAL	0.342	0.062	0.367	5.491	< .001

Interpretation:

- Curiosity (X_1) has a significant positive influence on achievement motivation, with t-value = 8.233, $p < 0.001$.
- Digital literacy (X_2) also has a significant positive influence on achievement motivation, with t-value = 5.491, $p < 0.001$.
- These results suggest that students who demonstrate higher curiosity and possess better digital literacy skills are more motivated to achieve academically.

Multiple Regression Equation

Based on the regression analysis, the following equation was derived:

$$Y = 12.917 + 0.557X_1 + 0.342X_2$$

Where:

Y = Achievement motivation
X_1 = Curiosity
X_2 = Digital literacy
12.917 = Intercept, representing the baseline achievement motivation when both curiosity and digital literacy are zero.
0.557 = Curiosity coefficient, indicating that a 1-unit increase in curiosity leads to a 0.557-unit increase in achievement motivation.
0.342 = Digital literacy coefficient, indicating that a 1-unit increase in digital literacy leads to a 0.342-unit increase in achievement motivation.

These results confirm that both curiosity and digital literacy significantly contribute to students' motivation to achieve academic success.

Coefficient of Determination (R^2) – Contribution of Curiosity and Digital Literacy

To measure the extent to which curiosity and digital literacy contribute to achievement motivation, the coefficient of determination (R^2) was analyzed. The results are shown in the following table:

Table 3. Model Summary - MOTIVASI BERPRESTASI

Model	R	R^2	Adjusted R^2	RMSE
M_0	0.000	0.000	0.000	12.270
M_1	0.876	0.768	0.765	5.951

Note. M_1 includes KURIOSITAS, LITERASI DIGITAL

The model with curiosity and digital literacy included (M_1) has an R^2 value of 0.768, indicating that these two variables explain 76.8% of the variance in achievement motivation. The remaining 23.2% is influenced by other factors not examined in this study.

Key Findings from the Results Section

1. Curiosity and digital literacy have a strong combined effect on achievement motivation ($F = 257.850$, $p < 0.001$).
2. Curiosity significantly influences achievement motivation ($\beta = 0.550$, $t = 8.233$, $p < 0.001$).
3. Digital literacy significantly influences achievement motivation ($\beta = 0.367$, $t = 5.491$, $p < 0.001$).
4. 76.8% of the variation in achievement motivation is explained by curiosity and digital literacy, highlighting their critical role in shaping students' academic success.

Discussion

The findings of this study confirm that curiosity and digital literacy play a significant role in enhancing students' achievement motivation. This aligns with previous research indicating that students who exhibit a strong sense of curiosity and possess adequate digital literacy skills are more likely to engage actively in academic tasks and demonstrate higher motivation to achieve.

The Role of Curiosity in Achievement Motivation

Curiosity is a key intrinsic factor that drives students to explore new information, expand their knowledge, and actively participate in learning activities. The results of this study indicate that curiosity significantly influences achievement motivation, as reflected in the t-value of 8.233 ($p<0.001$). This finding is consistent with research by Kuhlthau (2004), which suggests that students who actively seek information are more motivated to learn and achieve academic success. Similarly, Nehru and Irianti (2019) found that curiosity has a strong correlation with learning outcomes, as students with a high level of curiosity tend to ask more questions, seek additional resources, and engage in critical thinking.

Students with a high curiosity level exhibit greater persistence in overcoming academic challenges. They are more likely to set higher learning goals and seek innovative ways to enhance their understanding. This study reinforces the notion that fostering curiosity in students can lead to improved academic motivation and performance.

The Impact of Digital Literacy on Achievement Motivation

Digital literacy also plays a crucial role in shaping students' academic motivation. The results demonstrate a significant positive relationship between digital literacy and achievement motivation (t-value = 5.491, $p<0.001$), indicating that students with stronger digital literacy skills tend to be more motivated in their studies. This is supported by Soraya et al. (2023), who found that digital literacy positively impacts students' learning outcomes.

Students who are digitally literate can effectively access online learning resources, utilize digital tools, and engage in virtual academic communities, making their learning experiences more interactive and engaging. As emphasized by Biezā (2020), digital literacy extends beyond basic technological skills—it includes critical thinking, information evaluation, and digital communication, all of which are essential for academic success.

Moreover, the increasing integration of digital learning platforms in education demands that students possess adequate digital literacy to navigate, analyze, and apply

digital content effectively. Koltay (2011) highlights that digital literacy is a crucial competency in modern education, as it enables students to process vast amounts of information and enhance their learning efficiency.

The Combined Effect of Curiosity and Digital Literacy on Achievement Motivation

The findings indicate that curiosity and digital literacy collectively explain 76.8% of the variance in achievement motivation (R^2=0.768). This suggests that these two factors together provide a strong predictive power in determining students' motivation levels. The simultaneous influence, confirmed by the F-test (F=257.850,p<0.001), highlights the importance of addressing both curiosity and digital literacy in educational settings.

This aligns with Mifthahurrachman (2015), who found that emotional intelligence, learning environments, and digital literacy collectively influence student performance. Additionally, Hidayat (2015) concluded that curiosity, when combined with strong digital literacy skills, enhances students' ability to navigate academic challenges and sustain long-term motivation.

Educational Implications

Given the significant influence of curiosity and digital literacy on achievement motivation, several recommendations can be made:

1. For Educators – Teachers should design learning environments that encourage curiosity by incorporating inquiry-based learning, research projects, and problem-solving activities. This can help students develop a habit of exploring new information actively.
2. For Institutions – Schools and universities should integrate digital literacy training into their curricula to equip students with the skills needed to utilize digital resources effectively.
3. For Students – Students should be encouraged to adopt self-directed learning approaches, leveraging their curiosity and digital skills to enhance their academic performance.

By implementing these strategies, educators and policymakers can create a learning environment that nurtures both curiosity and digital literacy, ultimately leading to greater student motivation and academic success.

CONCLUSION

This study highlights the significant role of curiosity and digital literacy in shaping students' achievement motivation. The findings confirm that curiosity fosters a deep engagement with learning materials, encourages independent exploration, and enhances persistence in academic activities. Similarly, digital literacy enables students to navigate, evaluate, and apply digital resources effectively, improving their overall learning experience. The results further reveal that curiosity and digital literacy collectively contribute to 76.8% of the variance in achievement motivation, demonstrating their strong influence in driving students toward academic success. These insights underscore the necessity for educators and institutions to cultivate an educational environment that nurtures curiosity while strengthening digital literacy skills.

In light of these findings, several recommendations can be proposed to enhance academic motivation and performance. Educators should adopt inquiry-based learning methods that encourage students to explore knowledge independently, engage in critical thinking, and actively participate in academic discussions. Additionally, the integration of

digital tools in classroom activities can enhance student engagement and facilitate access to diverse learning resources. Educational institutions should also prioritize digital literacy development by incorporating it into curricula, ensuring access to technological infrastructure, and providing teacher training programs to support effective technology integration in education.

Students, as active participants in the learning process, are encouraged to develop self-directed learning habits by utilizing curiosity as a driving force for knowledge acquisition. Enhancing digital literacy through online research, virtual academic collaborations, and participation in digital learning platforms can further strengthen their academic motivation. Lastly, future research should explore additional psychological and environmental factors influencing achievement motivation, conduct longitudinal studies to assess the long-term impact of curiosity and digital literacy, and investigate emerging technologies such as artificial intelligence in education.

By fostering a learning environment that integrates curiosity-driven exploration with strong digital literacy, educators and institutions can empower students to maximize their academic potential. This approach not only enhances motivation but also equips students with essential skills for lifelong learning and success in an increasingly digital world.

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