Analysis of the Relationship between Facilities, Learning Motivation, and Parental Involvement in Students' Digital Literacy in Junior High School

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ABSTRACT: This study aimed to (1) examine the relationship between facilities and students' digital literacy in junior high schools, (2) explore the association between learning motivation and students' digital literacy in junior high schools, (3) investigate the correlation between parental involvement and students' digital literacy in junior high schools, and (4) examine the relationship between facilities, motivation, parental involvement, and students' digital literacy in junior high schools. This research employed a quantitative descriptive approach with an ex post facto design. The subjects of this study were students of State Junior High School 4 Pakem (SMP Negeri 4 Pakem), Yogyakarta, Indonesia, in the seventh and eighth grades. The sampling used a random technique totaling 178 respondents. Data analysis involved correlation and multiple regression analyses. The results indicated the following: (1) there was a significant correlation between facilities and students' digital literacy in junior high schools, with a computed correlation coefficient of 0.407 and a significance value of 0.000 ($p < 0.05$); (2) a significant correlation existed between students' learning motivation and their digital literacy in junior high schools, with a computed correlation coefficient of 0.449 and a significance value of 0.000 ($p < 0.05$); (3) a significant correlation was found between parental involvement and students' digital literacy in junior high schools, with a computed correlation coefficient of 0.508 and a significance value of 0.000 ($p < 0.05$); (4) there was a relationship between facilities, motivation, parental involvement, and students' digital literacy in junior high schools, as evidenced by the multiple regression analysis, which yielded a computed F-value of 29.693 and a significance value of 0.000 ($p < 0.05$), with an R^2 value of 0.339. This implies that facilities, learning motivation, and parental involvement collectively contribute to 33.9% of students' digital literacy in junior high schools.

KEYWORDS: infrastructure, learning motivation, parental role, digital literacy

INTRODUCTION

School-age children have the right to receive education. The success of education is not solely dependent on the role of teachers but also on the role of the family, especially parents. This is reinforced by the law outlining parents' obligations towards their children's education, namely the Indonesian Law Number 20 of 2003 concerning the National Education System. In Chapter IV, Article 7, clause 2 states that parents of school-age children must provide basic education for their children. Parental involvement entails supporting and fostering a spirit of learning in children's activities, both at school and at home, as an expression of their concern for their children's future. [1] The roles of parents in supporting academic achievement include (1) parents as educators; (2) parents as mentors; (3) parents as motivators; (4) parents as facilitators. Therefore, the role of parents is crucial in fostering the development and improvement of children's intelligence, and their contribution cannot be disregarded. [2]

In light of the current technological advancements and the ongoing Fourth Industrial Revolution, which brings changes to every aspect of human life and has profound impacts on social, cultural, economic, educational, and other spheres, the importance of digital literacy becomes paramount. It is crucial to equip children with the ability to discern and filter negative information obtained from the internet. This serves as a means of protecting children and creating a future of quality. Digital technology has become integral to their daily experiences, even among early-age children. It is highly likely that by entering kindergarten, children have already encountered various popular forms of digital communication. [3]

Digital literacy, touted as a new issue, has become an essential skill in the digital era for individuals of all ages, from children to parents. Reading literacy is no longer the sole literacy required by individuals; it also encompasses knowledge in utilizing and understanding information and communication technology, commonly known as the use of technological devices. The American Library Association's Digital Literacy Task Force defines digital literacy as using information and communication technologies to

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find, evaluate, create, and communicate information, which requires cognitive and technical skills. Digital literacy can be viewed from three perspectives: (1) discovering and consuming digital content, (2) creating digital content, and (3) communicating and sharing it. [4]

The ongoing Covid pandemic, which has lasted for 4 years, has impacted adults and children's growth and development. It urges parents to maximize their role in supporting and guiding their children at home. The issues that arise vary depending on the child's age stage. Preschool children will face different challenges compared to elementary school children, and similarly, elementary school children will have different issues compared to middle school (junior high school) students, and so on for high school students. One of the problems identified by school teachers for middle school students includes the digital divide, where not all children have equal access to technology and the internet.

METHOD

The research method, in essence, is a scientific characteristic employed to obtain information for specific purposes and objectives. [5] This study adopts a quantitative descriptive research design with an ex post facto approach. Ex post facto, meaning "after the fact," involves data collection through surveys. Ex post facto research aims to identify causes that may explain changes in behavior, symptoms, or phenomena caused by an event, behavior, or factors that have influenced changes in the independent variables that have already occurred. [6] The survey research method is an investigation conducted to obtain facts from existing phenomena and to identify factual shortcomings. In line with the above explanation, this research positions facilities, learning motivation, and parental involvement as independent variables, while digital literacy is the dependent variable.

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The population refers to a group of subjects targeted for generalizing research findings. [7] The population in this study comprised active 7th and 8th-grade students from State Junior High School 4 Pakem (SMP Negeri 4 Pakem), with a total of 163 students in 7th grade and 159 students in 8th grade. A sample was a subset of the population that was selected as a data source and could represent the entire population (Susila & Suyanto, 2015).

The determination of the sample in this research was done using Random Sampling. Based on the Slovin formula calculation, the research sample consisted of 178 students.

Data Collection Technique

The data collection instrument used in this research was a questionnaire to gather data on the availability of facilities and infrastructure, learning motivation, students' digital literacy, and parental involvement.

Data Analysis

The purpose of conducting the test for analysis requirements is to determine whether the collected data meet the conditions for analysis. This test involves selected statistical techniques. The analysis requirements include testing for normality and multicollinearity. The following will be explained in detail:

Hypothesis testing in this research includes correlation and multiple regression analyses, as this study has three independent variables. Correlation analysis aims to test the relationship between each independent variable and the dependent variable. Hypothesis testing using the multiple linear regression method is necessary to determine the extent of the simultaneous relationship between the independent variables X_1, X_2, and X_3 on the group of dependent variables Y. [8]

RESULTS OF DATA ANALYSIS

Prerequisite Test

Normality Test

Normality testing is conducted to examine whether the data distribution of the variables used in the analysis follows a normal distribution. The normality test of data is performed using the Kolmogorov-Smirnov test.

Tabel 1. Results of Normality Test

Variabel	Kolmogorov-Smirnov Z	Sig.
Infrastructure (X1)	1,109	0,171
Learning Motivation (X2)	1,245	0,090
Parental Role (X3)	1,003	0,267
Digital Literacy (Y)	1,318	0,062

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The normality test results for the facilities variable yielded a significance value of 0.171, for the learning motivation variable it was 0.090, for the parental involvement variable it was 0.267, and for the digital literacy variable it was 0.062. Since the significance values obtained from the normality tests for all research variables are greater than 0.05 (p>0.05), it can be stated that all the data used in this study follow a normal distribution.

Multicollinearity Test
The multicollinearity test examines whether there is a strong correlation among the independent variables in the regression model. If such a correlation exists, it indicates the presence of multicollinearity issues. To detect multicollinearity, it is used Variance Inflation Factor (VIF) and Tolerance values. If the VIF value is above 10 or the tolerance value is below 0.1, it indicates the presence of multicollinearity. [9]

Table 2. Results of Multicollinearity

Variable	VIF	*Tolerance*	Conclusion
Infrastructure	1,145	0,873	no multicollinearity
Learning Motivation	1,712	0,584	no multicollinearity
Parental Role	1,769	0,565	no multicollinearity

The results of the multicollinearity test indicate that all independent variables, namely facilities, learning motivation, and parental involvement, have tolerance values above 0.1 and VIF values below 10. Therefore, it can be concluded that there is no multicollinearity in the regression model used in this study.

Hypothesis testing
Hypothesis 1
Table 3. Correlation Analysis on Hypothesis 1

Variable	r count	r table (n=178)	Sig.	Ket
Infrastructure Digital Literacy	0,407	0,148	0,000	Positive Significant

The first hypothesis proposed in this study states, "There is a positive and significant relationship between facilities and students' digital literacy in junior high school." The correlation analysis yielded a computed correlation coefficient (r) of 0.407 with a significance value 0.000. The r table value for n = 178 at a significance level of 5% is 0.148. Because the value of r count is greater than r table (0.407 > 0.148) and the significance is less than 0.05 (p <0.05), it means that there is a positive and significant relationship between infrastructure and digital literacy in junior high school students, so the first hypothesis is accepted.
Hypothesis 2

Table 4. Correlation Analysis on Hypothesis 2

Variable	r count	r table (n=178)	Sig.	Ket
Learning motivation Digital Literacy	0,449	0,148	0,000	Positive significant

The second hypothesis proposed in this study states, "There is a positive and significant relationship between learning motivation and students' digital literacy in junior high school." The correlation analysis yielded a computed correlation coefficient (r) of 0.449 with a significance value of 0.000. The r table value for n = 178 at a significance level of 5% is 0.148. Because the value of r count is greater than r table (0.449> 0.148) and the significance is less than 0.05 (p <0.05), it means that there is a positive and significant relationship between learning motivation and digital literacy of junior high school students, so the second hypothesis is accepted.
Hypothesis 3

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Table 5. Correlation Analysis on Hypothesis 3

Variabel	r count	r table (n=178)	Sig.	Ket
Parental role Digital literacy	0,508	0,148	0,000	Positive significant

The third hypothesis put forward in this study states, "There is a positive and significant relationship between the role of parents and digital literacy of junior high school students", the results of the correlation analysis show an r_{count} of 0.508 with a significance value of 0.000. The r_{table} for n = 178 at a significance level of 5% is 0.148. Because the value of r_{count} is greater than r_{table} (0.508 > 0.148) and the significance is less than 0.05 (p <0.05), it means that there is a positive and significant relationship between the role of parents and the digital literacy of junior high school students, so the third hypothesis accepted.
Hypothesis 4

Table 6. Analysis Result of Multiple Regression

Variable	Regression Koefisien	t count	Sig.	Explanation
Infrastructure	0,397	3,768	0,000	Significant
Learning motivation	0,224	2,205	0,029	Significant
Parental role	0,334	3,775	0,000	Significant
Constanta : 17,406				
R^2 : 0,339				
F_{count} : 29,693				
Sig. : 0,000				

The fourth hypothesis of this study states, "There is a positive and significant relationship between infrastructure, learning motivation, and the role of parents with the digital literacy of junior high school students." The results of multiple regression analysis obtained a calculated F value of 29.693 with a significance of 0.000. Because the significance value is less than 0.05 (p <0.05), there is a positive and significant relationship between infrastructure, learning motivation, and the role of parents in the digital literacy of junior high school students, so hypothesis 4 is accepted. Thus the variables of infrastructure, learning motivation, and the role of parents are predictors of junior high school students digital literacy.

The analysis resulted in a coefficient of determination (R^2) value of 0.339. This indicates that the combined influence of facilities, learning motivation, and parental involvement on digital literacy is 33.9%, while the remaining 66.1% is influenced by other factors not examined in this study. The magnitude of the influence of each research variable can be observed from their respective effective contributions.

DISCUSSION

The Relationship between Infrastructure and Students' Digital Literacy in Junior High School

The relationship between facilities and infrastructure and students' digital literacy in junior high school was examined. The correlation analysis revealed a significant positive relationship (r = 0.407, p < 0.05) between facilities and infrastructure and students' digital literacy. This indicates that the availability of adequate facilities and infrastructure positively contributes to developing students' digital literacy skills in the context of junior high school. The results suggest that providing a conducive learning environment with appropriate technological resources can enhance students' digital literacy capabilities.

The relationship between facilities and infrastructure and students' digital literacy can be explained by the availability of adequate resources, which facilitates and simplifies the mastery of digital literacy skills among students. In this case, when students are provided with suitable facilities and infrastructure, it becomes easier for them to learn, acquire knowledge, broaden their understanding, and enhance their skills in digital literacy. As a result, students' digital literacy is more easily achieved with the availability of such facilities and infrastructure. Facilities and infrastructure play a significant role in improving learning outcomes. [10]

The presence of facilities and infrastructure also supports the learning process. The availability of learning facilities ensures that educational goals are achieved smoothly, systematically, effectively, and efficiently. [10] Students with complete facilities and infrastructure, such as ICT devices and reliable internet connectivity, can easily use and utilize these tools for learning. The learning process conducted by students can proceed smoothly and efficiently, leading to the development of better digital literacy skills.

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The findings of this study are supported by previous research, which found that the availability of facilities and infrastructure determines the success of digital literacy in online learning. [11] The consistency between the findings of this study and previous research further strengthens the notion that adequate facilities and infrastructure are essential factors in fostering students' digital literacy. The availability of appropriate facilities and infrastructure facilitates students in improving their digital literacy abilities, expanding their knowledge, and developing digital literacy skills. This enables them to effectively and efficiently utilize ICT as a valuable learning resource.

The relationship between students' learning motivation and their digital literacy in junior high school
The research data analysis yielded results that indicate a significant relationship between students' learning motivation and their digital literacy in junior high school. This is supported by the correlation analysis, which showed a computed correlation coefficient (r) of 0.449 with a significance value of 0.000 ($p<0.05$). These findings suggest that learning motivation is significantly related to students' digital literacy. The positive relationship implies that higher levels of learning motivation are associated with better-developed digital literacy skills.

The relationship between students' learning motivation and digital literacy can be explained by the fact that learning motivation drives students to exert effort and work harder to achieve their goals. In this context, students with strong motivation are more likely to actively develop their digital literacy abilities and enhance their digital skills. Motivation can be defined as the driving force or desire that compels individuals to engage in specific activities to achieve a particular goal. [12]

Students with learning motivation tend to have a keen interest and desire to develop their digital literacy. The interest and desire they have to make the learning activities more enjoyable as they align with their personal interests. [13] Furthermore, students' learning motivation can cultivate an awareness of the importance of learning. This awareness prompts students to engage in learning activities seriously. When activities are approached seriously and with determination, optimal results are more likely to be achieved. Students' awareness of the need to develop their abilities and enhance their digital literacy skills makes it easier for them to accomplish their goals. Motivation is the key to success in learning activities. [12]

These research findings are supported by previous studies that also found a relationship between motivation and the application of digital literacy. [14] The consistency between these findings and previous research suggests that learning motivation is crucial in achieving students' digital literacy. Learning motivation is a driving force, motivator, and determinant that directs students' learning activities toward better digital literacy outcomes. Learning motivation makes students more persistent, serious, and committed to their efforts in achieving their desired goal of acquiring strong digital literacy skills.

The Relationship between Parental Role and Students' Digital Literacy
The study's results showed a relationship between the role of parents and the digital literacy of junior high school students. It is evident from the results of the correlation analysis that the r count is 0.508 with a significance value of 0.000 ($p <0.05$). These results indicate that the role of parents is a significant factor in students' digital literacy.

Parental involvement is related to students' digital literacy because parents have a role as educators. As educators, parents play a role in transferring knowledge to their children, including knowledge related to digital literacy. The knowledge transfer process from parents to students supports the development of digital literacy. As educators, parents provide and transfer knowledge to their children. [14]

Parents also fulfill the role of motivators. As motivators, parents encourage and motivate students in their learning journey and in improving their digital literacy skills. Parents constantly accompany their children, encourage them when students feel demotivated, and foster progress in their learning. Such parental involvement supports the development of digital literacy.

The role of parents to students' digital literacy is also related to their role as guides. Parents guide and direct students throughout the learning process. The guidance provided by parents helps students focus on developing their digital literacy skills. Parents also provide guidance when their children misuse information and communication technology (ICT), improving their children's ability to utilize ICT effectively. Every mistake is guided and directed so children have better digital literacy skills. Parents play a key role in guiding students as they have a close relationship with them, allowing them to monitor their behavior and development. [15]

The findings of this study align with previous research, which found a positive and significant relationship between digital literacy and the combined role of parents in fostering students' critical thinking skills in junior high school. [16] The consistency between these findings and previous research indicates that parents have an important role in shaping students' digital literacy. Parents who fulfill their role effectively support students' learning activities, making them more effective and focused, thus facilitating the achievement of digital literacy skills.

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The Relationship of Facilities and Infrastructure, Learning Motivation, Parental Involvement, towards Students' Digital Literacy In Junior High School

The study results showed a relationship between infrastructure, learning motivation, and the role of parents with the digital literacy of junior high school students. As evidenced by the results of multiple regression analysis, the F_{count} was 29.693 with a significance of 0.000 ($p < 0.05$). The variables of infrastructure, learning motivation, and the role of parents are significantly related to the digital literacy of junior high school students.

The combined influence of facilities and infrastructure, learning motivation, and parental involvement on students' digital literacy is 33.9%, with facilities and infrastructure contributing 10.2%, learning motivation contributing 8%, and parental involvement contributing 15.7%. Based on these results, it is evident that parental involvement has the greatest contribution.

Facilities and infrastructure, learning motivation, and parental involvement have been found to have a significant relationship with students' digital literacy. Facilities and infrastructure, and parental involvement are external factors that influence the development of students' digital literacy. Adequate facilities and infrastructure are crucial in achieving digital literacy, as they provide the necessary resources and tools for digital learning. Parental involvement, on the other hand, contributes to the development of digital literacy through various roles, including that of an educator, motivator, facilitator, and guide in enhancing students' digital literacy skills. Learning motivation, as an internal factor, serves as a driving force and determines the direction of students' learning as they develop their digital literacy.

Students' digital literacy can be easily achieved when these three factors are adequately and ideally fulfilled. This emphasizes the importance of providing students with adequate facilities and infrastructure, high motivation, and effective parental involvement to promote the development of digital literacy. The success of learning is influenced by interconnected factors, including the students themselves, instrumental elements such as facilities and infrastructure, and environmental factors, with each input mutually influencing educational success. [17] Among these factors, student motivation, instrumental factors such as facilities and infrastructure, and the environmental factor of parental involvement all play a significant role in shaping students' digital literacy.

CONCLUSION

Based on the results of data analysis and discussion that has been carried out, the conclusions of this study are as follows (1) There is a relationship between infrastructure and digital literacy of junior high school students. The results of the correlation analysis showed that the r value was 0.407 with a significance value of 0.000 ($p < 0.05$). (2) There is a relationship between students' learning motivation and the digital literacy of junior high school students. The results of the correlation analysis showed that the r_{count} was 0.449 with a significance value of 0.000 ($p < 0.05$). (3) There is a relationship between the role of parents and the digital literacy of junior high school students. The results of the correlation analysis showed that the r_{count} was 0.508 with a significance value of 0.000 ($p < 0.05$). (4) There is a relationship between infrastructure, learning motivation, and the role of parents in the digital literacy of junior high school students. The results of multiple regression analysis obtained F_{count} of 29.693 with a significance of 0.000 ($p < 0.05$).

Based on the findings, it recommends that schools should facilitate students with ICT infrastructure, internet connectivity, and school policies that support students in developing their digital literacy. For parents of students, it is suggested to maximize the role of parents in developing their child's digital literacy by guiding, mentoring, and monitoring their child's use of ICT to achieve optimal digital literacy. For students, it is recommended to make the most of the available ICT infrastructure to develop their digital literacy. For future researchers, it is suggested to investigate other variables that influence digital literacy to complement the findings of this study.

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