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The Relationship Between the use of Computer-Based Technology and Digital Literacy Skills and the Achievement of SDG Goal 4 (Quality Education) in Primary Schools

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A B S T R A C T

This study aims to analyze the relationship between the use of computer-based technology and digital literacy skills and the achievement of SDG Goal 4 (Quality Education) in elementary schools. This study uses a correlation approach with a sample of 231 fifth-grade elementary school students in Ngemplak District, selected through purposive sampling from five schools that have implemented educational technology and digital literacy programs. Data collection was carried out through observation, questionnaires, and documentation. The results of the reliability test showed a score of 0.872 for the use of computer-based technology, 0.956 for digital literacy skills, and 0.896 for the achievement of SDG Goal 4. Data analysis uses correlation, simple linear regression, and multiple linear regression. The results showed that: (1) there was a significant relationship between the use of computer technology and the achievement of SDG Goal 4 with a significance level of 0.000 and a correlation of 0.407, (2) there was a significant relationship between digital literacy skills and the achievement of SDG Goal 4 with a significance level of 0.000 and a correlation of 0.559, and (3) there was a significant high and simultaneous relationship between the use of computer technology and digital literacy skills on achievement of SDG Goal 4 with a significance level of 0.000 and a correlation of 0.559.

1. Introduction

The progress of education in Indonesia underscores the importance of utilizing technology to improve the quality of the educational process in line with the times. (Fadilah et al., 2024). Quality education can be achieved through the use of technology and digital platforms that support more interactive, flexible, and accessible learning, especially in primary schools (Aisyah et al., 2025). 21st century education requires an innovative teaching approach that can develop 4C skills

through the use of methods, content, and technology, thereby fostering quality education in the digital age (Inovatif et al., 2025). Ainun et al. (2019) It also states that the use of technology in education has brought about significant changes in the way students acquire, process, and utilize information

Although there is still a gap in technology adoption and digital literacy due to limited infrastructure, teacher competence, and cross-regional access, the implementation of computer-based learning in several elementary schools in Ngemplak District is quite effective and has a positive impact on the learning process, although efforts to improve teachers' digital literacy still need to be improved. Advances in digital technology have brought significant changes in the world of education, where computers are used not only as a data processing tool but also as a multimedia learning tool that supports the development of concepts, knowledge, and student learning experiences in a more enriching way (Madroni, 2022). This is consistent with Pannen's (2003) definition of educational media and technology in schools in a broad sense, which includes hardware, software, and human resources that can be used to enrich students' learning experiences (Fagan, 2012). The use of computer-based learning materials helps create a more interesting, effective, and flexible learning experience, and is in line with the needs of the modern era in supporting learning activities (S. Dewi, 2022).

Digital education plays a role in supporting the achievement of the 2030 Sustainable Development Goals by improving access, opportunities, and quality of education, including through the use of computers in the learning process (Wulansari et al., 2024). The use of computers in digital learning plays a crucial role in supporting SDG 4 by increasing access, promoting inclusivity, and developing students' digital skills which can all be further strengthened through proper computer literacy training (Tasliah Lia Ade et al., 2024). Appropriate educational interventions in the form of computer literacy training can have a significant impact on improving their digital literacy skills (Ronzon et al., 2025). Digital literacy is the ability to use digital media and information in an intelligent, ethical, and safe manner, including the ability to access, understand, evaluate, and use information in an educational context(Widyawati & Karinna, 2025). Digital literacy serves as a tool to develop teaching materials that foster students' curiosity and creativity (Garcia et al., 2022). Strong digital literacy skills help students find, select, understand, and communicate information effectively, thereby increasing their independence in the learning process (Wati et al., 2023).

The Sustainable Development Goals (SDGs) are a set of goals agreed upon by United Nations member states in 2015 as a universal effort to end poverty, protect the planet, and promote peace and prosperity by 2030 (Lestari et al., 2024). Sustainable development aims to improve the quality of life without disrupting the balance of ecosystems, with education serving as a key component in supporting development centered on human and social aspects (Situmeang et al., 2021). The SDGs have 17 goals, one of which is Quality Education (Goal 4) (Partini et al., 2025). One of the 17 Sustainable Development Goals, SDG 4 on Quality Education, aims to ensure inclusive, equitable, and quality education and promote lifelong learning opportunities for all by 2030 (Magfiroh & Nugraheni, 2024). Academic

competence in Indonesia can be improved if digital literacy is mastered and applied as much as possible. Reading and writing skills using digital media involve the ability to read, understand, create, and write using information technology to learn new things (Luluk Baikuna et al., 2023). From this, it can be concluded that the use of information technology and digital literacy in the learning process has become a necessity in the current era. However, various research findings, such as those derived from Naimah et al. (2024) This study shows that students' interest in reading is low and the use of social media for entertainment, such as playing games, poses obstacles to the implementation of digital literacy programs, resulting in less effective learning and poor students' understanding of the material.

The Sustainable Development Goals (SDGs) represent a global effort to improve human well-being and protect the environment by 2030, with education playing a crucial role in improving the quality of human resources (Cahyani et al., 2025). Therefore, it is hoped that this program can improve the standard of education in Indonesia; The achievement of the SDGs in the field of education can be supported through Education for Sustainable Development (ESD) by utilizing computer technology, digital literacy, and digital learning platforms to create quality, inclusive, and relevant education, as well as expand access and effectiveness of learning(Wulandari, 2024). Supported by previous research conducted by Devi Widiyantti et al. (2024) This study concludes that digital literacy plays an important role in preparing elementary school students to face the digital era and in achieving SDG 4 through the development of technology skills, critical thinking, creativity, and understanding of digital ethics and security. This effort requires support through curriculum integration, teacher professional development, and collaboration between schools, parents, and the community.

Although a lot of research on digital literacy and the SDGs has been conducted, most of them still discuss digital literacy in general and use a qualitative approach, so it has not examined the relationship between the use of computer-based technology, digital literacy skills, and the achievement of SDG 4 from a quantitative perspective. Therefore, this study focuses on analyzing the relationship between the use of computer technology and digital literacy and the achievement of Quality Education in elementary schools as an effort to provide empirical evidence and recommendations for the education sector in the digital era.

2. Methodology

Research Design

This study uses a quantitative approach using a correlational research design, with the aim of determining whether there is a relationship between the variables studied and, if so, how strong the relationship is (Zahro, 2023). The research design used is a correlational design, in which the researcher does not apply specific treatments but only observes the natural relationship between independent and dependent variables (Rangkuti & Albina, 2025). The independent variables in this study are the use of computer-based technology (X_1) and digital literacy skills (X_2), while the

dependent variable is the achievement of SDG Goal 4 (Quality Education) (Y). Through this design, this study not only examines the relationship between each independent variable and the dependent variable but also examines the simultaneous relationship between the two independent variables and the achievement of quality education in elementary schools (Nurhaswinda, 2025).

Participants and Sampling

This research was conducted in several elementary schools, both private and public, located in Ngemplak District, Sleman Regency, Yogyakarta. This location was chosen because several previous studies have examined digital literacy practices in elementary schools in Yogyakarta. The Yogyakarta region is considered representative because the Information and Communication Technology (ICT)-based curriculum has been implemented at the elementary level (Priyanti & Haryanto, 2023). The research is scheduled to take place from August 2025 to March 2026. The research population consists of elementary schools in Ngemplak District, Sleman Regency, which have implemented learning technology and digital literacy programs. This study selected fifth grade students from elementary schools in Ngemplak District as the research population based on several considerations that have been explained by Sulistiyana et al., (2024) Fifth grade students, who are about 10-11 years old, are in the concrete operational stage according to Piaget's theory; Thus, they are able to think logically, understand rules, and demonstrate qualities of self-control that are relevant to research on the development of independence and discipline (Scott, 2021). The research sample was selected using purposive sampling, in which five elementary schools that met the criteria for the application of learning technology and active digital literacy programs were selected, as they were considered the most relevant and informative based on the research objectives (Memon et al., 2025).

Data Collection and Instruments

This study uses questionnaires and observations as data collection methods. The questionnaire was designed to measure technology use, digital literacy skills, and progress towards SDG 4 using a Likert scale of 1-4, and its validity was tested to ensure that the instrument could accurately measure the aspects studied (Krisnawati et al., 2024). This study uses content validity and empirical validity to ensure the alignment of the instruments with the research variables, as well as a reliability test using Cronbach alpha to assess the consistency of the Likert scale instrument before analyzing the data to examine the relationship between the use of computer technology, digital literacy, and the achievement of SDG 4 (Quality Education). The following is presented in table 1 of the learning outcomes below

Table 1. Learning Outcomes

Variable Indicators	Variable Indicators
Computer Usage (X1)	• Intensity of Computer Use • Technology Skills • Benefits of Using a Computer

Digital Literacy Skills (X2)	• Functional and Advanced Skills • Creativity • Collaboration • Communication • Ability to find and select information • Critical Thinking and Evaluation • Cultural and Social Understanding • Electronic Security
SDG Goal 4 (Quality Education) (Y)	• Minimum Reading and Math Proficiency Standards • Basic Education Facilities and Services

Questionnaire items are adjusted to the indicators of each variable to measure student responses objectively and systematically.

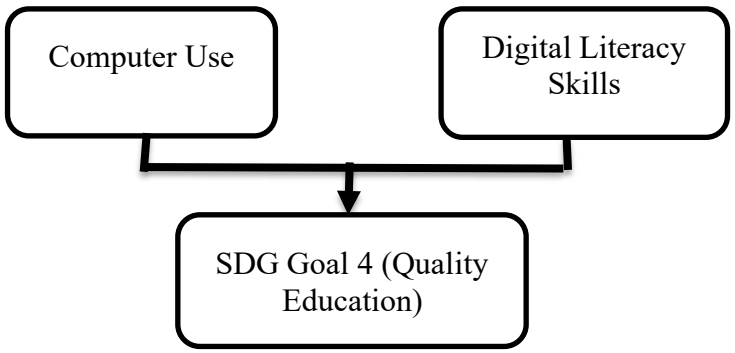

Figure 1. Design Research Instruments

The validity of the research instrument is tested through content validity and empirical validity to ensure that each item accurately measures the research variable. Content validity was assessed through expert evaluation, while empirical validity was determined using Pearson's Product-Moment correlation test on SPSS version 27 with 112 respondents and a significance level of 5%. This resulted in 16 valid items for the variable use of computer technology, 22 valid items for the SDG 4 (Quality Education) variable, and 28 valid items for the digital literacy skills variable.

The results of the reliability test using Cronbach's Alpha coefficient showed that the research instrument was reliable, since all values ≥ 0.70: the X1 variable was 0.872 (good), the X2 variable was 0.956 (good), and the Y variable was 0.896 (very good). As a result, these instruments are considered consistent and suitable for data collection. Furthermore, data analysis begins with descriptive statistics through the calculation of averages, medians, and standard deviations to describe the characteristics and trends of the research data.

Before conducting a double linear regression analysis, this study first conducted a parametric statistical prerequisite test, namely a normality test using the Kolmogorov – Smirnov test, because the sample size is greater than 50, to ensure that the data is distributed normally, and a linearity test using "Test for Linearity" in SPSS to ascertain the relationship between linear variables, with the significance

criteria of Linearity < 0.05 and Deviation from Linearity > 0.05 (Montania, 2019). Furthermore, a multicollinearity test was conducted to find out if there was a very strong relationship between the independent variables of computer technology use (X1) and digital literacy skills (X2) (Scott, 2021). The purpose of the multicollinearity test is to ensure that the use of computer-based technology (X1) and digital literacy skills (X2) are two distinct but complementary constructs, making them suitable for simultaneous analysis in explaining the achievement of SDG Goal 4 (Y).

The heteroscedasticity test is performed to determine whether or not there is heteroscedasticity in the regression model, where a good regression model is one that does not show heteroscaddasticity or has a constant residual variance (Kumayas et al., 2024), Hypothesis testing in this study includes a Product-Moment correlation test to determine whether there is a relationship between variables or not, as well as multiple linear regression tests to analyze the direction and magnitude of the influence of two or more independent variables on a single dependent variable, either simultaneously or partially, and to predict changes in dependent variables based on changes in independent variables. (Scott, 2021). The purpose of this study is to ensure that the regression model used to analyze the relationship between the use of computer-based technology and digital literacy skills with the achievement of SDG Goal 4 meets classical assumptions, so that the results of the analysis can be trusted.

3. Results and Discussion

Results

Prerequisite Test Results

Based on the results of the preliminary analysis of 231 respondents, all research data were found to meet the assumptions of regression analysis. The Kolmogorov-Smirnov normality test yielded a statistic of 0.053 with Asymp. Sig. (2-tailed) 0.200 > 0.05, indicates that the residual data is distributed normally. The linearity test showed a linear relationship between the use of computer-based technology (X1) and the achievement of SDG 4 (Y) with a sig value of 0.915 > 0.05, as well as between digital literacy skills (X2) and the achievement of SDG 4 (Y) with a sig value of 0.120 > 0.05. The multicollinearity test showed a VIF value of 1.201 < 10 and a tolerance of 0.832 > 0.1, indicating no multicollinearity. In addition, the Glejser heteroscedasticity test showed significance values of 0.103 > 0.05 for the X1 variable and 0.107 > 0.05 for the X2 variable, indicating that the regression model did not show heteroskadasticity. Thus, all prerequisite tests have been met, and regression analysis can be resumed.

Description of Statistics

This study involved 231 respondents, who were fifth-grade students out of five elementary schools in Ngenplak District, and examined two independent variables

of Technology Use (X1) and Digital Literacy Skills (X2) and one dependent variable of SDG Goal 4: Quality Education (Y). The results for each variable are described and interpreted based on the predefined categories. A detailed description of the research data obtained for each variable is described as follows:

a. Use of Computer-Based Technology (X1)

The variable data of Computer-Based Technology in this study was collected through the distribution of a questionnaire containing 16 items. The score range for the items in this study uses a Likert scale of 1-4. The data obtained was then processed and analyzed using SPSS version 27. The following table presents the results of descriptive statistical analysis for the Computer-Based Technology variable as seen in Table 2 of the descriptive statistics for the computer-based technology variable below.

Table 2. Descriptive Statistics for Computer-Based Technology Variables

Means	Median	Mode	Std. Deviation	Variance	Range	Minimum	Maximum	Quantity
57.77	58.00	60	4.129	17.049	14	50	64	13.344

Based on the descriptive table above, it can be seen that the Computer-Based Technology (X1) variable has an average of 57.77, median 58.00, mode 60, standard deviation of 4,129, variance of 17,049, range of 14, minimum value of 50, maximum value of 64, and total of 14. of 4,129, variance 17,049, range 14, minimum value of 50, maximum value of 64, and total of 13,344. The results of the descriptive analysis can be used to categorize the variables of Computer-Based Technology Use (X1) by referring to the criteria in table 3 of the criteria for the level of computer-based technology adoption below.

Table 3. Criteria for the Adoption Rate of Computer-Based Technology

Nope.	Category	Interval
1	Height	M + SD < X
2	Medium	M – SD < X < M + SD
3	Low	X< M – SD

Note:
X: Total score obtained by students
SD: Standard Deviation
M: Means
To calculate the percentage, use the following formula:

$$Precentage = \frac{Frequency}{Total\ Number\ of\ Respondents} x100$$

Based on the above-average results and standard deviations, the following categories of computer-based technology use are identified as shown in Table 4 of the categories of computer-based technology adoption rates below.

Table 4. Categories of Computer-Based Technology Adoption Rate

No	Digital Literacy Skills Category	Interval	Frekuency	Precenntage %
1	Height	X > 61	45	19,48%
2	Medium	53 ≤ X ≤ 61	135	58,87%
3	Low	X ≤ 53	50	21,65%
	Quantity		231	100%

The above variable categories can be interpreted as follows: 1) High, meaning that students get high scores in the use of computer-based technology; 2) Medium, meaning that students receive a moderate score in the use of computer-based technology; 3) Low, meaning that students receive low scores in the use of computer-based technology. Based on the table above, 45 students (19.84%) obtained high marks in the use of computer-based technology, 135 students (58.87%) obtained medium marks, and 50 students (21.65%) obtained low marks. Therefore, it can be concluded that the majority of fifth-grade students from 5 elementary schools in Ngemplak District get moderate scores for the use of computer-based technology.

b. Digital literacy skills (X2)

The variable data of Digital Literacy Skills in this study was obtained through the distribution of questionnaires containing 28 items. The score range for the items in this study uses a Likert scale of 1-4. The collected data is then processed and analyzed using SPSS version 27. The following table presents the results of descriptive statistical analysis for the Digital Literacy Skills variable as shown in table 5

Table 5. Descriptive Statistics for Digital Literacy Skill Variables

Means	Median	Mode	Std. Deviation	Varians	Range	Minimum	Maximum	Quantity
77.65	79.00	80	8.851	78.340	50	50	100	17938

Based on the descriptive table above, it can be seen that the Digital Literacy Ability (X2) variable has an average of 77.65, median 79.00, mode 80, standard deviation of 8,851, variance 78,340, range 50, minimum score of 50, maximum score of 100, and count of 100. 8,851, variance 78,340, range of 50, minimum value of 50, maximum value of 100, and a total of 17,938. The categories of digital literacy skills are as follows as seen in Table 6 of the categories of computer-based technology use levels below.

Table 6. Categories of Computer-Based Technology Use Rates

No	Categories of Digital Literacy Ability	Interval	Frekuency	Percentage %
1	Height	X > 86	35	15,15%
2	Medium	68 ≤ X ≤ 86	157	67,97%
3	Low	X ≤ 68	39	16,88%
Quantity			231	100%

Based on the table above, 35 students (15.15%) scored high on digital literacy, 157 students (67.97%) scored moderate, and 39 students (16.88%) scored low. Therefore, it can be concluded that the majority of fifth-grade students from 5 elementary schools in Ngemplak District obtained moderate digital literacy scores.

c. Achievement of SDG Goal 4: Quality Education (Y)

Similar to the variables of computer-based technology use and digital literacy skills, the variable data on the achievement of SDG Goal 4 (Quality Education) in this study was collected through the distribution of a questionnaire containing 22 items. The score range for the items in this study uses a Likert scale of 1-4. The collected data is then processed and analyzed using SPSS version 27. The following table presents the results of descriptive statistical analysis for the variable "Achievement of SDG Goal 4 (Quality Education)" as shown in table 7, namely the descriptive data table for the variable of achieving SDG Goal 4.

Table 7. Descriptive Data for the Variable "Achievement of SDG Goal 4 (Quality Education)"

Means	Median	Mode	Std. Deviation	Varians	Range	Minimum	Maximum	Quantity
73.71	76.00	78	9.840	96.822	39	50	89	17028

Based on the descriptive table above, it can be seen that the variables for achieving SDG Goal 4 (Quality Education) have an average of 73.71, a median of 76.00, a mode of 78, a standard deviation of 9,840, a variance of 96,822, a range of 39, a minimum score of 50, a maximum score of 89, and a total of 100. of 9,840, variance 96,822, range of 39, minimum score of 50, maximum score of 89, and a total of 17,028. The category of achievement of SDG Goal 4 (Quality Education) as shown in Table 8 of the category of achievement level of SDG Goal 4 (Quality Education) below.

Table 8. SDG Goal 4 Achievement Level Category (Quality Education)

No	Digital Literacy Level	Interval	Frekuency	Percentage %
1	Height	X > 83	52	22,51%
2	Medium	63 < X < 83	147	63,64%
3	Low	X < 63	32	13,85%
Quantity			231	100%

The categories of variables above can be interpreted as follows: 1) High, meaning that students get high scores to achieve SDG Goal 4 (Quality Education); 2) Medium, meaning that students receive a moderate score to achieve SDG Goal 4 (Quality Education); 3) Low, meaning that students get low scores to achieve SDG Goal 4 (Quality Education). Based on the table above, 52 students (22.51%) obtained high scores for the achievement of SDG Goal 4 (Quality Education), 147 students (63.64%) received medium scores, and 32 students (13.85%) received low scores for SDG Goal 4 (Quality Education). Therefore, it can be concluded that the

majority of fifth-grade students from 5 elementary schools in Ngemplak District get moderate scores for SDG Goal 4 (Quality Education).

Correlation Test

The correlation test in this study used the Pearson Product-Moment correlation technique to determine the relationship between the variables of computer technology use (X1), digital literacy skills (X2), and the achievement of SDG Goal 4 (Y). This study involved a total of 231 students. Based on the results of the analysis, the following findings are shown in table 9 of the analysis of the moment correlation test of Pearson products which can be seen in the table below:

Table 9. Pearson Product Moment Correlation Test Analysis

Variabel	Achievement of SDG Goal 4 (Quality Education)	XY Significance Value
Use of Computer-Based Technology	0,407	0,000
Digital Literacy Skills	0,559	0,000

The correlation coefficient table can be seen in table 10 below.

Table 10. Correlation coefficient table

Kafein Interval (r)	Category
0,00 - 0,199	Very low
0,20 – 0,399	Low
0,40 – 0,599	Medium
0,60 – 0,799	Height
0,80 – 1,00	Very high

Based on the results of the correlation table, the first correlation test examines the relationship between the use of computer technology and the achievement of SDG Goal 4 (Quality Education). The results of the analysis showed an R value of 0.407 with a significance level (sig) of 0.000 < 0.05; Therefore, it can be concluded that there is a positive, moderate, and significant relationship between the use of computer-based technology and the achievement of SDG Goal 4 (Quality Education). The positive relationship in the results of this study implies that the higher the use of computer-based technology (X1), the higher the achievement of SDG Goal 4 (Y).

Furthermore, the relationship between digital literacy and the achievement of SDG Goal 4 (Quality Education). Based on the correlation test table, the R value is 0.559 with a significance level of 0.000 < 0.05; therefore, it can be stated that there is a strong and significant positive relationship between digital literacy and the achievement of SDG Goal 4 (Quality Education). The positive relationship in the results of this study can be interpreted that the higher the digital literacy skills (X2), the higher the achievement of SDG Goal 4: Quality Education (Y).

After conducting a correlation analysis, the next step is to perform a multiple regression test. Double linear regression analysis is used when there are at least two

independent variables; Multiple linear regression is performed to determine the direction and magnitude of the relationship between two or more independent variables and one dependent variable. This test was carried out using the Determination Coefficient (R) test, the F test, and the t-test using SPSS version 27. The results of the analysis are presented in table 11 of the summary of the determination coefficient analysis test below:

Table 11. Summary of the Determination Coefficient Analysis Test

Summary				
Model	**R**	**R Square**	**Customized R Box**	**Std. Estimation Error**
1	0,592	0,351	0,345	7,964

The determination coefficient is used to determine the extent to which independent variables collectively explain the dependent variables. The closer the value of R^2 is to 1, the greater the proportion of the variance of the dependent variable that can be explained by the independent variable. Based on the table of results from the analysis of the determination coefficient, it is known that the Adjusted R-Square value is 0.345; Therefore, it can be concluded that the combined contribution of independent variables to dependent variables is 34%. The results of the analysis are presented in table 12 below:

Table 12. Analysis of Test F

ANOVA						
	Model	**Number of Squares**	**df**	**Maen Field**	**F**	**Tanda**
1	Back	7806.641	2	3903.321	61.535	000b
	Rest	14462.502	228	63.432		
	Quantity	22269.143	230			

The results of the F-test showed an F value of 61.535 with a significance level (sig) of 0.000 < 0.05; therefore, it can be concluded that the variables of the use of computer-based technology and digital literacy skills simultaneously have a significant effect on the achievement of SDG 4: Quality Education. Thus, increasing the use of computer-based technology and digital literacy skills will have a positive impact on the achievement of Quality Education. The results of the analysis are presented in table 12 of the multiple linear regression t-test analysis below:

Table 12. Multiple Linear Regression T Test Analysis

Koefisiensa						
Model		**Non-Standard Coefficients**		**Standard Coefficients**		
		B	**Std. Error**	**Beta version**	**t**	**Tanda**
1	(Konstan)	0,592	7,571		0,474	0,000
	x2	0,524	0,065	.472	8,062	0,000
	x1	0,509	0,139	.214	3,652	0,000

Based on the results of the T-test for multiple linear regression, it can be seen that the significance value (sig) of the X1 variable is 0.000 < 0.05; therefore, it can be concluded that the variable X1 has a significant influence on the variable Y. The significance value (sig) of the variable X2 is 0.000 < 0.05, so it can be concluded that the variable X2 has a significant influence on the variable Y. Therefore, the regression equation obtained is: Y = 3.592 + 0.505X1 + 0.524X277. The constant value obtained is 3.592. The regression coefficient of the computer-based technology use variable (X1) is positive (+) at 0.509, which implies that if the use of computer-based technology (X1) increases, the achievement of SDG Goal 4: Quality Education will also increase, and vice versa. The digital literacy skill coefficient (X2) is positive (+) of 0.524, which implies that if digital literacy skills improve, the achievement of SDG Goal 4: Quality Education will also increase, and vice versa. Therefore, the variable with greater influence on the dependent variable (Y) is X2: digital literacy skills.

Discussion

Based on the results of the correlation test table analysis, the first correlation test seeks to identify the relationship between the use of computer technology and the achievement of SDG Goal 4 (Quality Education). The results of the analysis showed an R value of 0.407 with a significance level (sig) of 0.000 < 0.05; Therefore, it can be concluded that there is a positive, moderate, and significant relationship between the use of computer-based technology and the achievement of SDG Goal 4 (Quality Education). The positive relationship in the results of this study implies that the higher the use of computer technology (X1), the higher the achievement of SDG Goal 4 (Quality Education) (Y).

In an effort to improve the quality of education, many factors affect this quality; One of these factors is technology, which plays a role in improving the quality of the teaching and learning process in schools (Putri et al., 2024). The use of technology in education offers significant benefits in improving the quality of education through more interactive, flexible, and accessible learning, while supporting the development of digital skills, critical thinking, creativity, and student learning success in the modern era (Wang, 2024). Digital technologies, such as computer labs and internet access, play a critical role in improving the efficiency, accessibility, and effectiveness of learning, while helping to reduce social disparities and support the acceleration of SDG 4 achievement and continuing education, especially in developing countries (Andriyanto & Asrori, 2025).

In the digital era, the use of computer-based technology in education is in line with the Regulation of the Minister of Education and Culture No. 65 of 2013, which emphasizes the integration of technological innovation into the educational process; As a result, computer technology plays an important role in improving the quality of education (Dewi, 2024). Muvliva, (2024) Advances in Information and Communication Technology (ICT) support the development of innovative learning and play an important role in improving the quality of education through more engaging, flexible, individual-centered learning, and expanding access to information and collaboration between teachers and students, including in distance

learning (Putri et al., 2024). This technology allows for personalized learning, a more engaging way of presenting material, and easy access to information regardless of time or location. In addition, computer technology also creates wider collaboration opportunities between students and teachers, including in distance learning situations (Ilham et al., 2025).

The use of computers in education has made the teaching and learning process more interesting Stianingsih & Al Farisi, (2024) The use of computer technology in learning supports students in independent learning according to their abilities and facilitates access to online learning resources, thereby improving the quality of learning. The results of the correlation test showed an R value of 0.559 with a significance level of $0.000 < 0.05$, showing a strong and significant positive relationship between digital literacy skills and the achievement of SDG 4 (Quality Education). Increasing digital literacy also plays a role in creating equal opportunities, reducing social inequality, and improving the quality of education in Indonesia (Ramadani, 2024) Digital literacy plays an important role in sustainable development by providing greater access to education, economy, innovation, and collaboration (Erlinnawati & Purwanto, 2024).

Digital literacy encompasses a wide range of skills related to the use and management of digital information that contribute positively to improving the quality of learning (Ifran & Sapta, 2025). This is also consistent with research conducted by Rosyidah et al., (2025) Digital literacy plays a strategic role in improving the quality of learning, expanding access to education, and preparing a competent workforce for the Society 5.0 era. Indonesia strives to achieve prosperity through its SDGs programs, focusing on quality education that can be realized by optimizing the education system and strengthening digital literacy (Tasliah Lia Ade et al., 2024). Digital literacy plays a critical role in improving the quality of education by expanding access to learning, increasing participation, and supporting adaptive learning, making it a key element in educational transformation and in preparing students to navigate technological advances in the modern era (Sun et al., 2022)

The goal of SDG 4 is to improve the quality of education. Digital literacy plays a key role in achieving this goal by expanding access to knowledge and information, thus enabling effective and interactive learning. This perspective is in line with research conducted by Eka et al., (2024) Digital literacy can improve students' thinking and communication skills, especially in problem solving, so that it has a positive impact on the quality of education in the era of globalization. Students with strong digital literacy will be able to engage in modern learning processes, develop critical thinking skills, and interact wisely in a digital environment, all of which will have a positive impact on the quality of their education. Conversely, a lack of digital literacy can lead to misuse of technology, such as cyberbullying, the spread of misinformation, privacy violations, device addiction, and a decline in online communication ethics(Ifran & Sapta, 2025).

4. Conclusion

Based on the findings of the research, it can be concluded that the use of computer-based technology and digital literacy skills has a positive and significant relationship with the achievement of SDG Goal 4 (Quality Education). The results of the correlation test showed that the use of computer-based technology had a moderate positive relationship with the achievement of SDG Goal 4, contributing sixteen percent. This shows that the higher the use of computer technology in learning, the higher the quality of educational achievement. Meanwhile, digital literacy skills have a strong and significant positive relationship with a contribution of thirty-one percent, which means that improving digital literacy skills has a greater impact on the achievement of educational quality. Furthermore, the results of multiple regression tests using the F-test showed that the use of computer-based technology and digital literacy skills simultaneously had a significant effect on the achievement of SDG Goal 4 (Quality Education). Thus, this study successfully shows that technology integration and the improvement of digital literacy are important factors in supporting the improvement of the quality of education in line with the goals of sustainable development in the field of quality education.

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