Computer Literacy, Learning Engagement and Performance of Students in Mathematics

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DOI: https://doi.org/10.47772/IJRISS.2026.100700973

Received: 03 August 2026; Accepted: 08 August 2026; Published: 18 August 2026

ABSTRACT

This study determined the levels of computer literacy and learning engagement of 110 Grade 8 students and their relationship with academic performance in Mathematics at a public high school in Negros Occidental during school year 2025–2026. Academic performance was measured using students' third-quarter grades in General Mathematics. Computer literacy was assessed using an instrument adapted from Bayucca (2020), while learning engagement was measured using a questionnaire adopted from Imran, Khan, and Aslam (2023). Descriptive and inferential statistical methods were employed to analyze the data. Results showed that the respondents demonstrated a moderate level of computer literacy, a high level of learning engagement, and an outstanding level of academic performance. Moreover, no significant relationship was found between computer literacy and academic performance, nor between learning engagement and academic performance. The findings suggest that other factors may have greater influence on students' mathematics achievement than computer literacy and learning engagement alone.

Keywords: Mathematics, computer literacy, learning engagement, academic performance, high school students

INTRODUCTION

Mathematics is a cornerstone of education, essential for developing logical reasoning and problem-solving skills. Student performance in mathematics, however, is shaped by multiple factors beyond innate ability. Two variables increasingly recognized in recent educational research are computer literacy and learning engagement. Computer literacy, as defined in updated studies, now extends beyond basic software use to include competencies in cloud applications, mobile platforms, and AI-powered tools (IT Pro, 2025; Psychological Scales, 2023). Learning engagement, meanwhile, is understood as a multidimensional construct involving behavioral participation, emotional involvement, and cognitive investment in learning activities (Wong & Liem, 2022; Wang, 2025). Together, these variables may significantly influence mathematics achievement in the digital learning era.

Recent international assessments highlight persistent challenges in mathematics education. The Programme for International Student Assessment (PISA) 2022, released in 2023, reported an OECD average mathematics score of 472, while the Philippines scored only 355, ranking near the bottom among 81 participating systems (OECD, 2023). This represents a decline compared to earlier cycles and underscores the urgent need for improvement. Moreover, PISA findings show that students with stronger ICT skills and higher engagement levels consistently perform better in mathematics (Schleicher, 2023). Yet, in the Philippine context, limited access to technology, uneven computer literacy, and low engagement remain underexplored as contributing factors to poor outcomes. With PISA 2025 preparations ongoing, there is a clear research gap in examining how these variables affect mathematics performance locally.

Computer literacy and learning engagement can be considered potential determinants of mathematics performance. Students proficient in ICT can access online tutorials, simulations, and interactive platforms that enhance mathematical understanding (Hatlevik & Tømte, 2022). Similarly, engaged learners are more likely to persist in solving complex problems and participate actively in discussions, leading to deeper comprehension (Wang, 2025). When combined, these variables may create a synergistic effect that improves mathematics

achievement. However, empirical evidence in the Philippine setting remains limited, raising the question of whether these factors can indeed serve as predictors of mathematics performance among students (OECD, 2023).

The purpose of this study was to investigate the relationship between computer literacy, learning engagement, and performance in mathematics among students. By examining these variables, the study aimed to provide insights into how technological skills and learning engagement contribute to mathematics achievement. The rationale lies in addressing the urgent need to improve mathematics performance in the Philippines, as reflected in PISA 2022 results and in anticipation of PISA 2025 (OECD, 2023; Schleicher, 2023). Findings from this study may guide educators, policymakers, and curriculum developers in designing interventions that enhance computer literacy and foster greater engagement, ultimately leading to improved mathematics outcomes.

METHODOLOGY

Research Design

This study utilized a descriptive – correlational research design. Descriptive design was used to describe the level of computer literacy, learning engagement of Grade 8 students, and their performance in Mathematics. It also used correlational design to determine the significant relationship between the level of computer literacy, engagement of Grade 8 students, and their performance in Mathematics. Correlation can demonstrate relationship between two or more variables. However, it cannot prove that changing one variable will affect the other (Cherry, 2023).

Subject and Respondents of the Study

The subject and respondents of this study were the Grade 8 High School students in one of the public secondary schools in Negros Occidental, enrolled during the school year 2025–2026.

Population and Sample Size

The Grade 8 students in one of the public secondary schools in Negros Occidental in the school year 2025–2026 has a population of 110 students. All of them was utilized as respondents of the study.

Data Gathering Instrument

The study utilized a standardized data gathering instrument to measure computer literacy of the students. It was adopted from Bayucca (2020). It is composed of 7 components namely: basic computer commands, Microsoft Word, Microsoft Excel, Microsoft PowerPoint, Microsoft Publisher, Google Apps; and other Computer Applications. Both basic computer commands, Microsoft Excel, and Microsoft PowerPoint consist of 10 items, 9 items for Google Apps, 7 items for other computer applications, and Microsoft Publisher have 6 items. It is answerable by highly proficient- 4, proficient- 3, below proficient-2, and below basic proficient-1.

On the level of learning engagement of students, it was adopted from Imran, Khan and Aslam's (2023) study titled: "Development and Validation of Student Engagement Questionnaire. This is comprised of 20 item questions and it was scored based on a 5-point scale from strongly disagree (1) to strongly agree (5). However, some of the items were modified to suit the intended respondents and purpose of this study.

Data Analyses

After the data collection, the data were tallied, tabulated, and analyzed using the appropriate statistical tools.

To answer the statement of the problem 1 which states, what is the level of computer literacy of Grade 8 students, mean and standard deviation was used.

The formula for mean is presented below:

$$\bar{x} = \frac{\sum x}{n}$$

Where:

$\bar{x}$ = mean

n= sample size

The formula for standard deviation is presented below:

$$\sigma = \sqrt{\frac{\sum_{i=1}^{N}(x_i - \mu)^2}{N}}$$

Where:

σ = population standard deviation

X = each data value

μ = population mean

N = total number of observations

$\sum$ = summation symbol

The mean scores in problem number 1 were interpreted as follows:

Scale	Adjectival Value	Mean Score Range	Interpretation	Verbal Description
4	Highly Proficient	3.26 – 4.00	Very High	Students demonstrate a very high level of computer literacy, exhibiting advanced knowledge, skills, and confidence in using computers, digital applications, and technology to accomplish academic and practical tasks independently and effectively.
3	Proficient	2.51 – 3.25	High	Students demonstrate a high level of computer literacy, possessing adequate knowledge and skills to use computers and digital technologies efficiently for most academic and everyday tasks with minimal assistance.
2	Basic Proficient	1.75 – 2.50	Low	Students demonstrate a low level of computer literacy, possessing only basic knowledge and skills in using computers and requiring guidance when performing various digital tasks.
1	Below Basic Proficient	1.00 – 1.74	Very Low	Students demonstrate a very low level of computer literacy, showing limited knowledge, skills, and confidence in using computers and digital technologies and requiring substantial assistance to perform basic computer-related tasks.

To answer the statement of the problem 2 which states, what is the level of computer literacy of Grade 8 students, mean and standard deviation was used.

The mean scores in the statement of the problem number 2 were interpreted as follows:

Scale	Adjectival Value	Mean Score Range	Interpretation	Verbal Description
5	Strongly Agree	4.21-5.00	Very High	Students demonstrate a very high level of learning engagement, consistently participating actively, showing strong interest, motivation, and commitment to learning activities.
4	Agree	3.41-4.20	High	Students demonstrate a high level of learning engagement, frequently participating in learning activities and exhibiting positive interest and involvement in the learning process.
3	Neutral	2.61-3.40	Moderate	Students demonstrate a moderate level of learning engagement, participating in learning activities at an average level with occasional interest and involvement.
2	Disagree	1.81-2.60	Low	Students demonstrate a low level of learning engagement, showing limited participation, interest, and commitment to learning activities.
1	Strongly Disagree	1.00-1.80	Very Low	Students demonstrate a very low level of learning engagement, rarely participating in learning activities and exhibiting minimal interest, motivation, and involvement in the learning process.

To answer statement of the problem 3 which states, what is the level of academic performance of Grade 8 learners, mean was used aligned to DepEd Order 8, s. 2015.

Range	Interpretation
90-100	Outstanding
85-89	Very Satisfactory
80-84	Satisfactory
75-79	Fairly Satisfactory
Below 75	Did not meet expectation

To test the relationship between the level of computer literacy and their performance in Mathematics performance of Grade 8 learners, which stated in problem number 4, Spearman Rank Order Coefficient Correlation was used.

The formula for Spearman Rank Order Coefficient Correlation is presented below:

$$r_s = 1 - \frac{6 \sum D^2}{n\,(n^2 - 1)}$$

where:

r_s = Spearman Rank Order Coefficient Correlation

$\sum D^2$ = sum of the squares of the difference between rank x and rank y

n = number of data pairs

6 = constant

To test the relationship between the level of learning engagement and their performance in Mathematics performance of Grade 8 learners, which stated in problem number 4, Spearman Rank Order Coefficient Correlation was used.

RESULTS AND DISCUSSION

This chapter presents, analyzes, and interprets the data gathered in the study. The information is arranged in an organized manner to clearly address the research questions and objectives, with the use of appropriate statistical methods and tools for accurate interpretation of the results.

Level of Computer Literacy

Table 1 below shows the level of computer literacy of Grade 8 students.

Table 1. Level of Computer Literacy of Students in terms of Basic Computer Commands, Microsoft Word, Microsoft Excel, Microsoft PowerPoint, Microsoft Publisher, Google Apps and other Computer Application.

Statements	Mean	SD	Interpretation
Basic Computer Commands	**3.51**	**0.50**	**High**
1. starting shutting down the computer	3.71	0.59	High
2. encoding data	3.32	0.81	Moderate
3. printing single documents	3.46	0.80	Moderate
4. printing tiled documents	3.21	0.86	Moderate
5. setting-up margins/orientation/paper size/column	3.53	0.72	High
6. saving document manually and using shortcut keys	3.57	0.71	High
7. copy, move and paste text/picture/document	3.66	0.63	High
8. recovering text (bold italic, underline etc.)	3.63	0.60	High
9. formatting text (bold, italic, underline, etc.	3.61	0.62	High
10. inserting header/footer page number	3.36	0.85	Moderate
Microsoft Word	**3.51**	**0.53**	**High**
1. Changing font size/font style of test	3.72	0.60	High
2. Inserting images/tables/charts/word arts	3.57	0.66	High
3. Inserting bullets/numbers	3.58	0.68	High
4. Using watermarks, /page color/page borders	3.26	0.84	Moderate
5. Aligning text (align left, center, align right)	3.66	0.66	High

6. Informs them about activities that affect employees	3.27	0.81	Moderate
Microsoft Excel	**3.34**	**0.59**	**Moderate**
1. emerging splitting cells	3.23	0.85	Moderate
2. inserting images	3.23	0.98	Moderate
3. formatting cells of number	3.26	0.87	Moderate
4. filling a series of number	3.24	0.84	Moderate
5. computing using a formula	3.28	0.85	Moderate
6. sorting alphabetically/ascending/descending			
7. inserting and deleting columns/rows	3.37	0.84	Moderate
8. adding another worksheet/spreadsheet	3.41	0.80	High
9. renaming sheets	3.48	0.78	High
10. adjusting the width and height of cells	3.44	0.83	High
Microsoft PowerPoint	3.48	0.73	High
1. opening a new document	**3.40**	**0.57**	**Moderate**
2. inserting a new slide	3.65	0.65	High
3. formatting background	3.69	0.63	High
4. inserting background	3.53	0.72	High
5. inserting images/shapes/tables/charts	3.52	0.67	High
6. formatting images/shapes/tables/charts	3.49	0.74	High
7. designing the slides	3.45	0.78	High
8. applying animations	3.57	0.68	High
9. applying hyperlinks	3.31	1.00	Moderate
10. producing learning software (SIM, SLK)	2.93	1.10	Moderate
Microsoft Publisher	2.82	1.14	Moderate
1. creating a blank page	**3.26**	**0.74**	**Moderate**
2. inserting images/textbooks/word art	3.55	0.76	High
3. inserting picture holder	3.38	0.93	Moderate
4. changing templates	3.22	0.93	Moderate
5. choosing a publication page	3.35	0.87	Moderate

6. formatting publication	3.00	0.94	Moderate
Google Apps	3.09	0.98	Moderate
1. internet browsing	**3.44**	**0.55**	**High**
2. using email (reading and sending emails)	3.68	0.70	High
3. downloading and savings files from the internet	3.52	0.75	High
4. using chat rooms and forums (Facebooks, Twitter, Instagram)	3.63	0.67	High
5. publishing a personal blog	3.64	0.75	High
6. designing a web page or personal site	3.11	0.95	Moderate
7. goggle-sheets	2.97	1.06	Moderate
8. google drive	3.38	0.82	Moderate
9. goggle scholar (research, articles, journals, publications)	3.45	0.79	High
Other Computer Applications	3.57	0.69	High
1. adobe Photoshop	**2.86**	**0.78**	**Moderate**
2. power director	2.83	0.98	Moderate
3. movie maker	2.77	1.00	Moderate
4. windows media	2.76	1.04	Moderate
5. acrobat reader	2.83	1.04	Moderate
6. searching for saved data in USB or other storage	2.83	0.95	Moderate
7. setting up a projector	3.23	0.89	Moderate
Computer Literacy as a Whole	2.78	1.07	Moderate
	3.33	**0.48**	**Moderate**

Legend: (4.21-5.00)-Very High; (3.41-4.20)-High; (2.61-3.40)-Moderate; (1.81-2.60)-Low; (1.00-1.80)-Very Low

Table 1 presents the level of computer literacy of the respondents, in terms of basic computer commands, the respondents obtained a high rating (M = 3.51, SD = 0.50). This indicates that students are generally capable of performing essential computer operations needed in their academic activities. The small standard deviation suggests that the respondents had fairly consistent responses, indicating a common level of familiarity with basic computer functions. Skills such as starting and shutting down the computer (M = 3.71, SD = 0.59), copying and pasting documents (M = 3.66, SD = 0.63), and formatting text (M = 3.61, SD = 0.62) received high ratings, showing that students are comfortable with routine computer functions. However, indicators such as printing tiled documents (M = 3.21, SD = 0.86), encoding data (M = 3.32, SD = 0.81), and inserting headers and page numbers (M = 3.36, SD = 0.85) were only rated moderate. The relatively larger standard deviations in these indicators suggest greater variability in students' responses, implying that some students are less confident in performing technical document-processing tasks.

The findings imply that students already possess functional computer skills that support everyday academic requirements, but additional training in technical formatting and document preparation may still be necessary.

This finding supports the study of Rahayu and Wirza (2020), who emphasized that students tend to be more confident in basic computer operations than in more technical digital tasks requiring advanced manipulation and formatting skills.

For Microsoft Word, (M = 3.51, SD = 0.53) was interpreted as high. This indicates that respondents are generally proficient in using Microsoft Word for preparing assignments, reports, and other academic outputs. The relatively small standard deviation indicates that students' responses were fairly uniform, suggesting similar experiences and competency levels in using the application. Changing font styles and sizes (M = 3.72, SD = 0.60), aligning text (M = 3.66, SD = 0.66), and inserting images, tables, and bullets (M = 3.57–3.58) all received high ratings, reflecting students' familiarity with common word-processing functions. Meanwhile, using watermarks and page borders (M = 3.26, SD = 0.84) was rated moderate. The larger standard deviation indicates more varied responses, suggesting differences in students' exposure to advanced formatting features.

The findings imply that students are already capable of using Microsoft Word for common academic tasks such as preparing reports, assignments, and classroom requirements. Their strong familiarity with basic formatting, text alignment, and inserting visual elements suggests that they can efficiently create organized and presentable documents needed in their studies. However, the moderate rating in using advanced formatting features such as watermarks and page borders indicates that some students still have limited exposure to more technical functions of the application. This suggests that students are capable of producing organized academic documents, although some advanced editing and layout features may require further enhancement. Similar findings were noted by Sá and Serpa (2020), who explained that learners are generally proficient in basic productivity applications but demonstrate lower competence in specialized formatting functions.

In terms of Microsoft Excel, the respondents obtained a moderate rating (M = 3.34, SD = 0.59). This indicates that spreadsheet-related skills remain moderately developed among the respondents. The relatively small standard deviation suggests that students generally shared similar levels of competency in Excel-related tasks. Most indicators, such as computing formulas (M = 3.28, SD = 0.85), formatting cells (M = 3.26, SD = 0.87), sorting data (M = 3.37, SD = 0.84), and filling number series (M = 3.24, SD = 0.84), were interpreted as moderate. The larger standard deviations in these indicators indicate greater variation in responses, implying that some students experience difficulty in spreadsheet manipulation and formula-based tasks. However, inserting and deleting columns or rows (M = 3.41, SD = 0.80), renaming sheets (M = 3.44, SD = 0.83), and adjusting cell sizes (M = 3.48, SD = 0.73) received high ratings, showing that students are more comfortable with basic editing functions.

The findings imply that respondents possess limited competency in analytical and computational spreadsheet applications, which may affect their ability to perform data-related academic tasks effectively. This result is consistent with the study of Talan (2021), which found that students often experience difficulty in spreadsheet applications because these require logical and computational skills.

For Microsoft PowerPoint, the overall mean of 3.40 (SD = 0.57) was interpreted as moderate. This indicates that students have an adequate ability to create and prepare presentations for classroom activities. The relatively small standard deviation suggests that respondents had comparable experiences and levels of familiarity in using PowerPoint. Students demonstrated competence in opening new presentations (M = 3.65, SD = 0.65), inserting slides (M = 3.69, SD = 0.63), formatting backgrounds (M = 3.53, SD = 0.72), and designing slides (M = 3.57, SD = 0.68), all of which were rated high. However, applying hyperlinks (M = 2.93, SD = 1.10) and producing learning software such as SIM or SLK (M = 2.82, SD = 1.14) received moderate ratings. The relatively high standard deviations indicate wider variability in students' responses, suggesting unequal exposure and proficiency in advanced multimedia and interactive presentation tools.

The findings imply that students possess sufficient knowledge and skills in using Microsoft PowerPoint for basic classroom presentations and academic reporting. Their strong performance in creating slides, formatting backgrounds, and designing presentations suggests that they are capable of preparing visually organized

presentation materials needed in school activities. This suggests that while students are familiar with basic presentation preparation, they still need improvement in integrating interactive and advanced multimedia features into presentations. Chou et al. (2021) similarly found that students are generally more skilled in preparing visual presentations than in developing interactive digital instructional materials.

In terms of Microsoft Publisher, the respondents obtained a moderate rating (M = 3.26, SD = 0.74). This indicates that students possess only average familiarity with desktop publishing applications. The moderate standard deviation suggests that responses varied to some extent, reflecting differences in students' exposure to and experience with publication software. Creating a blank publication page (M = 3.55, SD = 0.76) was rated high, while inserting picture holders (M = 3.22, SD = 0.93), formatting publications (M = 3.09, SD = 0.98), and choosing publication pages (M = 3.00, SD = 0.94) were rated moderate. The larger standard deviations for these indicators imply greater differences in students' proficiency levels.

The results imply that students may not be regularly exposed to publication and layout software in their academic activities, limiting the development of their publishing and design-related skills. This supports the findings of Nguyen and Habók (2021), who emphasized that students' digital competencies are often concentrated on commonly used applications while specialized software skills remain less developed.

For Google Apps, the category was rated high overall (M = 3.44, SD = 0.55). This indicates that students are generally comfortable using online platforms and internet-based tools for communication, research, and academic activities. The relatively small standard deviation suggests that students shared similar experiences and confidence levels in using Google-based applications. Internet browsing (M = 3.68, SD = 0.70), downloading files (M = 3.63, SD = 0.67), using email (M = 3.52, SD = 0.75), and accessing Google Scholar resources (M = 3.57, SD = 0.69) all received high ratings. However, publishing blogs (M = 3.11, SD = 0.95) and designing web pages (M = 2.97, SD = 1.06) were rated moderate. The larger standard deviations indicate greater variability in responses, suggesting that students differ in their confidence and exposure to digital content creation.

This implies that students are more familiar with accessing and consuming digital information than creating online content and web-based outputs. Tang and Chaw (2022) similarly noted that students tend to demonstrate stronger skills in online communication and information access than in web development and digital production.

Other Computer Applications obtained a moderate rating (M = 2.86, SD = 0.78), which was the lowest among the categories. This indicates that students possess limited proficiency in multimedia editing and technical applications. The relatively larger standard deviation suggests greater variability in responses, implying that students' experiences and exposure to these applications differ considerably. Applications such as Adobe Photoshop, Power Director, Movie Maker, and projector setup were all rated moderate, indicating insufficient familiarity with advanced multimedia and technical tools.

These findings imply that students may have limited opportunities to develop advanced multimedia and technical skills due to insufficient exposure, training, or available resources. This is supported by Nguyen and Habók (2021), who emphasized that without continuous exposure and guided instruction, students often remain less competent in specialized digital applications.

Overall, the findings reveal that the respondents possess moderate computer literacy skills necessary for academic and digital learning activities, as reflected in the overall (M = 3.33, SD = 0.48). The relatively small standard deviation indicates that respondents generally shared similar perceptions regarding their computer literacy levels. Students demonstrated stronger competencies in basic computer operations, Microsoft Word, and Google Apps, while spreadsheet functions, multimedia applications, and advanced digital production tools were less developed.

The findings imply that although students are capable of navigating technology for communication and academic tasks, continuous training and technology integration remain necessary to strengthen their digital competence and prepare them for more advanced educational and professional demands. These findings are consistent with

studies emphasizing that digital literacy is an essential component of academic success and lifelong learning, particularly in technology-driven educational environments (Tang & Chaw, 2022; Sá & Serpa, 2020).

Level of Learning Engagement

Table 2 below shows the level of learning engagement of Grade 8 students in one of the public secondary schools in Negros Occidental for the school year 2025 – 2026.

Table 2. Level of Learning Engagement of Grade 8 Students.

Statements	Mean	SD	Interpretation
1. I connect new lessons in class to my prior knowledge and experiences.	4.35	0.81	Very High
2. I relate what I learn to real-life situations while studying.	3.97	0.90	High
3. I combine knowledge from different classes on the same topic in new ways as I study.	4.05	0.91	High
4. I create my own examples and memory aids to better understand important concepts.	4.06	1.01	High
5. I review a topic repeatedly until I fully grasp it if I struggle to understand.	4.21	0.99	Very High
6. I feel happy when I attend class lectures.	3.28	1.10	Moderate
7. I am genuinely interested in the subjects I study in class.	3.75	0.94	High
8. I share my academic difficulties with teachers whenever I have the chance or feel it is necessary.	3.37	1.10	Moderate
9. I actively seek clarification from my teacher when I do not understand the lesson.	3.79	1.05	High
10. I seek help from my classmates whenever I need support.			
11. I give my full attention during class sessions.	4.32	0.77	Very High
12. I ask questions during lectures and other teaching sessions.	3.69	.82	High
13. I contribute to class discussions by sharing my ideas about the topic.	3.80	0.98	High
14. I regularly monitor my academic progress by discussing my performance with the teachers.	3.63	1.09	High
15. I feel positive when working as part of a team on assigned tasks.	3.43	1.13	High
Learning Engagement Overall Mean	4.03	1.13	High
	3.85	**.55**	**High**

Legend: (4.21-5.00)-Very High; (3.41-4.20)-High; (2.61-3.40)-Moderate; (1.81-2.60)-Low; (1.00-1.80)-Very Low

Table 2 presents the level of learning engagement of the respondents, among the indicators, connecting new lessons to prior knowledge and experiences (M = 4.35, SD = 0.81), seeking help from classmates whenever support is needed (M = 4.32, SD = 0.77), and reviewing topics repeatedly until they are fully understood (M =

4.21, SD = 0.99) received very high ratings. The relatively moderate standard deviations indicate that although responses varied slightly, most students strongly agreed with these statements. These findings suggest that students demonstrate cognitive and collaborative engagement by relating lessons to personal experiences, practicing persistence in learning, and depending on peer support to improve understanding.

This supports the study of Anyichie and Butler (2023), which emphasized that active participation, help-seeking behavior, and cognitive involvement are important dimensions of student engagement that contribute to academic progress and meaningful learning experiences.

On the other hand, feeling happy while attending class lectures (M = 3.28, SD = 1.10) and sharing academic difficulties with teachers whenever necessary (M = 3.37, SD = 1.10) were rated moderate. The relatively larger standard deviations indicate greater variability in responses, suggesting that students differed in their emotional comfort and openness in communicating their academic concerns. These findings may imply that while students are academically engaged, some may still experience hesitation, anxiety, or a lack of confidence in expressing difficulties to teachers.

This observation is consistent with findings that emotional engagement and willingness to participate are affected by students' comfort level, motivation, and classroom relationships (Farikah et al., 2023).

Level of learning engagement overall (M = 3.85, SD = 0.55), interpreted as high. This indicates that students were generally engaged in their learning experiences through participation, collaboration, and active involvement in classroom activities. The relatively small standard deviation suggests that the responses were fairly consistent, showing that most students shared similar perceptions regarding their engagement in learning. The findings further suggest that students are not merely passive recipients of information but are actively engaged in understanding lessons, collaborating with peers, and managing their own learning experiences. Such engagement is important because students who actively participate in class discussions and learning tasks are more likely to achieve stronger academic performance, motivation, and critical thinking skills.

This result supports the idea that meaningful engagement contributes significantly to positive learning outcomes and overall academic development. Similar findings were emphasized by Bond et al. (2021), who noted that student engagement remains a key factor influencing academic achievement, participation, and learner motivation across different educational settings. Likewise, Fredricks et al. (2023) highlighted that behavioral, emotional, and cognitive engagement are strongly associated with students' academic success and persistence in learning.

Level of Academic Performance

Table 3 below shows the level of academic performance of Grade 8 students.

Table 3. Level of Academic Performance of Grade 8 Students.

Level of Academic Performance	f	Mean	Interpretation
Outstanding	90	92.49	Outstanding
Very Satisfactory	25		
Satisfactory	0		
Fairly Satisfactory	0		
Did Not Meet Expectations	0		
Total	115		

Legend: (90-100)-Outstanding; (85-89)-Very Satisfactory; (80-84)-Satisfactory; (75-79)-Fairly Satisfactory; (Below 75)-Did Not Meet Expectations

Table 3 presents the level of academic performance of the respondents. The findings revealed that the majority of the respondents were classified under the Outstanding level, with a frequency of 90 students and a mean score of 92.49, interpreted as Outstanding. This indicates that most of the respondents were able to demonstrate excellent academic achievement and consistently performed beyond the expected learning competencies and standards. The high mean score suggests that students were able to complete academic tasks effectively and maintain strong performance across their subjects.

The findings imply that students possess strong academic motivation, discipline, and learning engagement, which contributed to their excellent academic standing. The high number of students classified as Outstanding may also indicate that the instructional support, learning materials, and teaching strategies provided by the institution were effective in helping students achieve favorable academic outcomes. Moreover, the results suggest that students were able to adapt well to the academic demands and learning environment, enabling them to sustain high levels of performance.

This finding is supported by Bond et al. (2021), who emphasized that academic success is strongly influenced by effective instructional support, learner engagement, and access to appropriate learning resources. Similarly, Gonzales and Bonotan (2022) noted that students who receive adequate academic guidance and consistent learning support are more likely to demonstrate higher academic achievement and stronger academic motivation.

Relationship between Computer Literacy and Academic Performance

Table 4 below shows the relationship between computer literacy and academic performance of Grade 8 students.

Table 4. Relationship between Computer Literacy and Academic Performance.

Variable	Test Statistics (r_s)	p-value	Decision for H_o	Interpretation
Computer Literacy vs. Academic Performance	0.163	0.081	Fail to Reject H_o	Not Significant

Table 4 presents the relationship between computer literacy and academic performance, using Spearman's rho correlation. The results revealed a correlation coefficient of r_s = 0.163 with a p-value of 0.081. Since the p-value is higher than the 0.05 level of significance, the null hypothesis was failed to rejected. This indicates that there is no significant relationship between computer literacy and academic performance. In other words, students' level of computer literacy does not show a meaningful association with their academic performance in this study.

This finding implies that being computer literate alone may not directly translate into higher academic achievement. While digital skills are important in today's learning environment, they may not be sufficient on their own to improve grades or overall academic outcomes. Other factors such as learning motivation, study habits, instructional quality, access to learning resources, and socio-economic background may have a stronger influence on students' academic performance. This supports the idea that ICT skills function more as enabling tools rather than direct predictors of achievement.

This result is consistent with several recent studies that also reported weak or inconsistent relationships between computer or digital literacy and academic performance. For instance, some research suggests that while ICT and computer literacy can support learning processes, their impact on academic achievement becomes more meaningful only when combined with effective instructional strategies and active student engagement (Ben Youssef, Dahmani, & Ragni, 2022; Holm, 2024). Similarly, a meta-analysis found that although ICT literacy is generally associated with better academic outcomes, the strength of this relationship varies depending on context, assessment methods, and learner characteristics (Holm, 2024; Crompton & Burke, 2024). These

findings highlight that computer literacy alone does not guarantee improved academic performance, especially when learning conditions and application opportunities are limited.

Relationship between Learning Engagement and Academic Performance

Table 5 below shows the relationship between learning engagement and academic performance of Grade 8 students.

Table 5. Relationship between Learning Engagement and Academic Performance.

Variable	Test Statistics (r_s)	p-value	Decision for H_o	Interpretation
Learning Engagement vs. Academic Performance	0.098	0.299	Fail to Reject H_o	Significant

Table 5 presents the relationship between learning engagement and academic performance using Spearman's rho correlation. The findings revealed that the computed correlation coefficient was $r_s = 0.098$ with a corresponding p-value of 0.299. The correlation coefficient indicates a very weak positive relationship between learning engagement and academic performance. However, since the obtained p-value is greater than the 0.05 level of significance, the null hypothesis was failed to rejected. This means that there is no significant relationship between learning engagement and academic performance among the respondents.

The result suggests that although students demonstrated high levels of engagement in learning activities, such engagement did not necessarily translate into higher academic performance. In other words, students' participation, collaboration, and involvement in classroom activities were not significantly associated with variations in their academic grades.

This finding may imply that academic performance is influenced by several other factors beyond engagement alone, such as learning strategies, study habits, instructional support, personal motivation, socioeconomic conditions, and access to learning resources. The findings further imply that while learning engagement remains important in promoting participation and meaningful learning experiences, it may not independently determine students' academic achievement. Students may still perform well academically despite differences in engagement levels, while others who are actively engaged may experience challenges that affect their academic outcomes. This indicates that academic performance is multifaceted and cannot be explained solely by engagement in learning activities.

This result is consistent with the study of Alhadabi and Karpinski (2020), which found that student engagement alone does not always significantly predict academic performance, as other psychological, environmental, and instructional factors also contribute to achievement outcomes. Similarly, Esteban et al. (2022) emphasized that although engagement positively influences the learning process, academic success is also shaped by motivation, self-regulation, and support systems within the learning environment.

Although the relationship between learning engagement and academic performance was not statistically significant, the findings still provide important insights for educators and institutions. The results suggest that increasing student engagement alone may not be sufficient to guarantee improved academic performance. There is a need to consider other contributing variables that may directly influence students' achievement, including academic support, teaching effectiveness, emotional well-being, and accessibility of learning resources.

CONCLUSION

From the results of the study, the following conclusions were drawn: The Grade 8 students demonstrate a generally high level of learning engagement, particularly in cognitive and collaborative dimensions. Learners actively connect new lessons to prior knowledge, seek help from peers when needed, and persist in reviewing lessons for better understanding. However, emotional engagement is less consistent, as some students show

variation in expressing academic difficulties and maintaining positive feelings during class activities. The respondents are more proficient in routine digital tasks than in higher-level or specialized computer functions. While they show strong competence in basic computer operations, Microsoft Word, and Google applications, their skills in more advanced areas, such as Microsoft Excel, PowerPoint functions beyond basic use, Publisher, and multimedia applications, are only moderately developed. The Grade 8 students generally demonstrate consistent academic success and the ability of learners to meet or exceed expected academic standards across their subjects. The Grade 8 students' level of computer literacy does not have a meaningful effect on their academic achievement within the context of the study. Learning engagement is not a determining factor of academic performance among the respondents. While students may possess varying levels of learning engagement, their academic success appears to be influenced more by other factors, such as motivation, learning strategies, and instructional support, rather than learning engagement alone.

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