

Utilization of AI Tools in Practical Research 1 on Students' Engagement and Performance

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Abstract—This study investigated the relationship between the utilization of Artificial Intelligence (AI) tools and the engagement and academic performance of Grade 11 students in Practical Research 1 at Cavinti Integrated National High School during the School Year 2025–2026. Specifically, the study examined the level of AI tool utilization in terms of perceived usefulness, creativity support, accessibility, and functionality; the level of student engagement in terms of cognitive, affective, behavioral, and social dimensions; and the relationship between AI tool utilization, student engagement, and academic performance. The study employed a quantitative descriptive-correlational research design. The respondents consisted of 130 Grade 11 students enrolled in Practical Research 1 from the STEM, ABM, and TVL strands. A researcher-made questionnaire was used to gather data on AI tool utilization and student engagement, while students' third-quarter grades in Practical Research 1 served as the measure of academic performance. Pearson product-moment correlation coefficients, weighted means, and standard deviations were used to examine the data. The findings revealed that students demonstrated a high level of AI tool utilization, with a grand mean of 3.91, and a high level of engagement, with a grand mean of 3.87. Students likewise obtained a very satisfactory level of academic performance, with a mean grade of 86.38. Statistical analysis showed that AI tool utilization had significant positive relationships with students' cognitive, behavioral, and social engagement. However, the relationship between AI tool utilization and academic performance yielded a very weak negative correlation, indicating that increased use of AI tools did not necessarily correspond to higher academic grades. The study concluded that AI tools play a significant role in enhancing student engagement in Practical Research 1 and serve as valuable learning supports when used responsibly and effectively. The findings suggest that educators should promote the ethical integration of AI tools in research instruction while ensuring that students continue to develop critical thinking, creativity, and independent research skills.

Keywords— Artificial Intelligence (AI) Tools, Student Engagement, Academic Performance, Practical Research 1, Grade 11 Students.

I. INTRODUCTION

Artificial Intelligence (AI) is changing the way education is conducted from the elementary levels up to university. From writing aids to chatbots, or to sophisticated generated platforms, AI has empowered learners to spark ideas, structure their thinking and express themselves and also to refine their output. Students that use the AI tools in their study habits tend to be more motivated to learn and to better prepare and learn more from the courses being taken by them.

Researchers have confirmed that using the technology as tools to students increases levels of student involvement that could result in better school performances. Using the AI tools as they use the social networking sites can create positive

experiences with student involvement and have better school performances. In higher education as we compare with the schools where we did the research, the findings concluded the following: The use of AI significantly is to raise levels of engagement for the students that in turn affects student academic performances.

Technology use has been a big part in every nation not only to promote interaction in and between institutions but it makes students access teaching resources and submit the paper as well. In the Philippines, we keep using tech-tools and digital learning methods, then will have access to students, submit papers to their teachers, collaborate, etc. because using digital technology. In addition to using technology as we can imagine in our world is to increase the students' performance in their lessons in their courses when using it. But what is needed to take into account the digital skill, the devices we can afford, and the stable connection on the internet that they have (UNESCO, 2023). These three factors will most possibly influence the student's engagement and their performances when they use such kind of technology.

With higher education students are expected to produce more and higher order activities, with regard to these students who study Practical Research 1 subject where learners are supposed to develop and demonstrate skill and capacity to come up with a research problem. The researchers identified a challenge on which the students are having the higher order reasoning for in terms of creating well-written output and as a consequence their academic performance and motivation to learn may also be affected with their engagement and with this challenge we have AI to offer solutions. Several researchers have conducted and have provided a substantial body of evidence showing the positive use of AI in higher education for learning outcomes but there has been little research conducted regarding the effect of use of AI in higher education in the context of the students' engagement and academic performance of Senior High school.

Considering the limited previous studies with regard to the effect of the AI to student engagement and academic performance of students in higher education as a general; therefore, this research investigate about how the senior high school students (ABM, STEM and TVL) are currently utilize AI tools in their Practical Research 1 at Cavinti Integrated National High School (CINHS) in terms of the perceived usefulness, creativity, accessibility and efficiency of the tool; and examines the relationship of the AI utilization, and student engagement and academic performance; this research is intended to provide beneficial recommendation for the

students, teachers, school administrator and policymakers about AI utilization and the way its benefits be optimized in education.

1.1 Statement of the Problem

Problem/s which were addressed by the research

This study aimed to determine the Relationship between the Utilization of Artificial Intelligence (AI) Tools on the Engagement and Performance of Grade 11 Students in Practical Research 1 at Cavinti Integrated National High School.

Specifically, it sought to answer the following questions:

1. What is the level of Utilization of Artificial Intelligence (AI) Tools in Practical Research 1 in terms of:
 - 1.1 Perceived usefulness
 - 1.2 Creativity support
 - 1.3 Accessibility
 - 1.4 Functionality
2. What is the level of Students' Engagement in Practical Research 1 in terms of:
 - 2.1 Cognitive engagement
 - 2.2 Affective engagement
 - 2.3 Behavioral engagement
 - 2.4 Social engagement
3. What is the level of Students' Performance in Practical Research 1 in terms of their Grade in the 3rd Quarter?
4. Is there a significant effect between the Utilization of AI Tools in Practical Research 1 and the Students' Engagement?
5. Is there a significant effect of the Utilization of AI Tools in Practical Research 1 on the Students' Performance?

II. METHODOLOGY

The study employed a quantitative descriptive-correlational research design. The respondents consisted of 130 Grade 11 students enrolled in Practical Research 1 from the STEM, ABM, and TVL strands. A researcher-made questionnaire was used to gather data on AI tool utilization and student engagement, while students' third-quarter grades in Practical Research 1 served as the measure of academic performance. Weighted mean, standard deviation, and Pearson Product-Moment Correlation Coefficient were utilized to analyze the data.

III. RESULTS AND DISCUSSION

This part presented the different results and discussed the results from treating the data gathered in this study. All specific questions in Chapter 1 under the statement of the problem were answered in this chapter supported by tables. It presents the data gathered about the significant relationship between utilization of AI tools in Practical Research 1 and students' engagement and students' performance. In particular, the study sought to address the following:

Level of Utilization of Artificial Intelligence (AI) Tools in Practical Research 1

In this study, the level of Utilization of Artificial Intelligence (AI) Tools in Practical Research 1 refers to

Perceived usefulness, Creativity support, Accessibility, and Functionality.

The level of Utilization of Artificial Intelligence (AI) Tools in Practical Research 1 in terms of Perceived Usefulness was shown in the following table, which presents the statement, Mean, Standard Deviation, remarks, and verbal interpretation from the perspectives of the respondents.

The level of Utilization of Artificial Intelligence (AI) Tools in terms of Perceived Usefulness shows that the highest-rated statement is the ability of AI tools to "guide me to identify relevant research topics and ideas for my study," which obtained a ($M = 4.11$, $SD = 0.82$) and was interpreted as Agree. This was closely followed by the statement "help me analyze information and data needed for my research tasks" with a ($M = 4.10$, $SD = 0.86$), also interpreted as Agree.

Furthermore, the statements "allow me to evaluate and improve the quality of my research outputs" ($M = 4.07$, $SD = 0.89$), "assist me in explaining research concepts and terms in a way I can understand" ($M = 4.06$, $SD = 0.79$), and "enable me to apply proper research procedures when writing my research output" ($M = 3.95$, $SD = 0.82$) all received Agree remarks. The relatively close standard deviation values suggest a consistent level of responses among the students.

Table 1 shows the level of Utilization of Artificial Intelligence (AI) Tools in Practical Research 1 in terms of Perceived Usefulness.

Table 1. Level of Utilization of Artificial Intelligence (AI) Tools in Practical Research 1 in terms of Perceived Usefulness

Statements AI Tools...	Mean	SD	Remarks
...guide me to identify relevant research topics and ideas for my study.	4.11	0.82	Agree
...assist me in explaining research concepts and terms in a way I can understand.	4.06	0.79	Agree
...enable me to apply proper research procedures when writing my research output.	3.95	0.82	Agree
...help me analyze information and data needed for my research tasks.	4.10	0.86	Agree
...allow me to evaluate and improve the quality of my research outputs.	4.07	0.89	Agree
Weighted Mean	4.06		
SD	0.81		
Verbal Interpretation	High		

The level of Utilization of Artificial Intelligence (AI) Tools in Practical Research 1 in terms of Perceived usefulness attained a weighted mean score of 4.06 and a standard deviation of 0.81 and was verbally interpreted as high among the respondents.

This result indicated that students predominantly used AI Tools in the said course under the construct "Perceived Usefulness," considering all their favorable answers across all indicators. This means that AI tools were incorporated into students' research activities specifically by helping them brainstorm ideas and formulate inquiries, clarify concepts, analyze data, and refine the outputs of their study. The finding also pointed out that AI tools provide supporting educational resources for students; therefore, students will have greater efficiency and improved understanding through these applications.

Table 2 presented how effectively AI tools aid Creativity Support within Practical Research 1. The statement, "...create innovative ways to present and improve my research outputs" received the highest mean score ($M = 4.12$, $SD = 0.89$), indicating that students find AI tools to be helpful in generating novel presentation strategies and enhancing the uniqueness of their research work. Similarly, statements, "...explain research methods or ideas in my own way" and "...apply creative approaches when completing research tasks" obtained relatively high means ($M = 4.02$, $SD = 0.87$ and 0.81 , respectively), demonstrating a positive perceived contribution to creative execution. The fact that students use AI tools to recall research strategies to devise new ideas ($M = 3.96$, $SD = 0.82$) indicates a forward-thinking application in idea generation. The weighted mean score of 4.03 ($SD = 0.82$) suggests a strong tendency among students to utilize AI tools as aids for creativity in their research work.

Table 2 shows the level of Utilization of Artificial Intelligence (AI) Tools in Practical Research 1 in terms of Creative Support.

Table 2. Level of utilization of Artificial Intelligence (AI) tools in Practical Research 1 in terms of Creativity support

Statements I can...	Mean	SD	Remarks
...recall research strategies I have learned to help me generate ideas.	3.96	0.82	Agree
...explain research methods or ideas in my own way to make tasks more creative.	4.02	0.87	Agree
...apply creative approaches when completing research tasks.	4.02	0.81	Agree
...analyze information to explore different approaches in my research.	4.02	0.86	Agree
...create innovative ways to present and improve my research outputs.	4.12	0.89	Agree
Weighted Mean	4.03		
SD	0.82		
Verbal Interpretation	High		

The level of Utilization of Artificial Intelligence (AI) Tools in Practical Research 1 in terms of Creativity Support attained a weighted mean score of 4.03 and a standard deviation of 0.82 and was verbally interpreted as High among the respondents.

The overall interpretation suggests that AI tools were perceived by students as effective aids in enhancing creativity in their research outputs. The high level of utilization indicates that students frequently rely on AI tools in generating ideas, exploring different approaches, and improving the presentation of their research work. This implies that AI tools do not only serve as academic support systems but also function as creative enhancers that help students develop more innovative and diverse outputs in Practical Research 1.

Table 3 shows the level of Utilization of Artificial Intelligence (AI) Tools in Practical Research 1 in terms of Accessibility.

Table 3 outlines how effectively AI tools aid Accessibility in Practical Research 1. The students rated the statement, "...manage access to AI tools anytime I want for research tasks" highest ($M = 3.85$, $SD = 1.13$), signaling their appreciation for the flexibility in access to research tools that

AI offers. Students appear to not be restricted by time or location when carrying out research tasks utilizing these AI resources.

Table 3. Level of Utilization of Artificial Intelligence (AI) Tools in Practical Research 1 in terms of Accessibility

Statements I can...	Mean	SD	Remarks
...locate AI tools whenever I need them	3.77	0.98	Agree
...identify AI tools available on the devices I use for learning.	3.70	1.07	Agree
...operate AI tools without difficulty.	3.66	1.12	Agree
...navigate AI tools easily and understand their features.	3.77	0.97	Agree
...manage access to AI tools anytime I want for research tasks.	3.85	1.13	Agree
Weighted Mean	3.75		
SD	1.03		
Verbal Interpretation	High		

Statements such as, "...locate AI tools whenever I need them" and "...navigate AI tools easily and understand their features" received higher mean scores ($M = 3.77$, $SD = 0.98$ and 0.97 , respectively) indicating students have minimal difficulty accessing and utilizing the functions of AI tools for research-related activities. While, "...operate AI tools without difficulty" has slightly lower mean score ($M = 3.66$, $SD = 1.12$) and suggests that there are a few students who may be facing certain difficulties but, overall, the results still shows that students find AI tools accessible to them. The weighted mean of 3.75 ($SD = 1.03$) reflects that there is a high degree of utilization of AI tools in terms of Accessibility by students for the purpose of practical research 1. This implies that students generally find AI tools easy to use, are accessible during most of their study sessions, and compatible with their devices and schedules, which provides them ample opportunities to integrate it with their research tasks. This has a great contribution in building the attitude of students towards the use of technology in their study.

The findings of the study suggest that easy access to AI tools not only helps in utilizing them for diverse research tasks, but also promotes positive perceptions about its usage in education and thus facilitates its use for academic purposes.

Table 4 shows the level of Utilization of Artificial Intelligence (AI) Tools in Practical Research 1 in terms of Functionality.

Table 4. Level of Utilization of Artificial Intelligence (AI) Tools in Practical Research 1 in terms of Functionality

Statements AI Tools...	Mean	SD	Remarks
...provide all the necessary features I need to complete research tasks.	3.87	0.92	Agree
...work reliably and as intended.	3.59	0.88	Agree
...help me save time in completing research activities.	3.95	0.87	Agree
...make research tasks easier to organize and manage.	3.92	0.93	Agree
...meet the specific requirements of my research tasks.	3.66	1.08	Agree
Weighted Mean	3.80		
SD	0.91		
Verbal Interpretation	High		

Table 4 outlines how effectively AI tools aid Functionality in Practical Research 1. The students gave the highest rating to the statement, "...help me save time in completing research activities" ($M = 3.95$, $SD = 0.87$), signifying their perception of AI tools as instrumental in increasing task efficiency. The statements, "...make research tasks easier to organize and manage" ($M = 3.92$, $SD = 0.93$) and "...provide all the necessary features I need" ($M = 3.87$, $SD = 0.92$) further reiterate the positive impact of AI tools on students' research organization, completion, and management processes. Even with slightly lower means, "...work reliably and as intended" ($M = 3.59$, $SD = 0.88$) and "...meet the specific requirements of my research tasks" ($M = 3.66$, $SD = 1.08$) demonstrate students' positive overall perception of the functionality of AI tools. The weighted mean of 3.80 ($SD = 0.91$) indicates a high utilization level of AI tools regarding their functionality. This demonstrates that AI tools are generally viewed as reliable and possess the requisite functionalities for aiding students in various research tasks, including efficient time management and task organization, which can lead to reduced cognitive load and greater focus on critical research aspects.

Level of Students' Engagement in Practical Research 1

In this study, the level of students' engagement in Practical Research 1 is determined by the following: Cognitive engagement, Affective engagement, Behavioral engagement and Social engagement.

The following tables present the statement, mean, standard deviation. Remarks and verbal interpretation from the respondents.

As shown in Table 5, the level of Students' Engagement in Practical Research 1, particularly in terms of cognitive engagement, is notably high. The top-rated statement, "...assist me in interpreting and analyzing research information" ($M=4.02$, $SD=0.81$), highlights AI's crucial role in helping students make sense of research materials. Similarly, students feel that AI tools "...enable me to apply what I learn from AI tools to improve my research outputs" ($M=3.97$, $SD=0.91$) and "...enhance my understanding of research procedures" ($M=3.96$, $SD=0.84$). Although "...motivate me to focus more on research tasks" received a slightly lower mean ($M=3.85$, $SD=1.09$), it still indicates a positive cognitive engagement among the students.

Table 5 showed the Level of Students' Engagement in Practical Research 1 in terms of Cognitive Engagement.

The level of Students' Engagement in Practical Research 1 in terms of Cognitive Engagement has a weighted mean score of 3.94 with a standard deviation of 0.88. Its verbal description was interpreted as High.

Item "AI tools assist me in interpreting and analyzing research information" got the highest mean score of ($M=4.02$, $SD=0.81$) and it was described as Agree, thus students put their reliance on the assistance of the AI tools for interpretation and meaning-making of research-related information. This was followed by "AI tools enable me to apply what I learn from AI tools to improve my research outputs" which registered a mean score of ($M=3.97$, $SD=0.91$), also interpreted as Agree. Item "AI tools enhance

my understanding of research procedures" got ($M=3.96$, $SD=0.84$), and "AI tools encourage me to reflect deeply on research tasks" with a mean score of ($M=3.92$, $SD=0.88$), both interpreted as Agree, however, although "AI tools motivate me to focus more on research tasks" got the lowest mean of ($M=3.85$, $SD=1.09$) this result is still positive cognitive engagement among students.

Table 5. Level of Students' Engagement in Practical Research 1 in terms of Cognitive Engagement

Statements	Mean	SD	Remarks
AI Tools...			
...encourage me to reflect deeply on research tasks.	3.92	0.88	Agree
...enhance my understanding of research procedures.	3.96	0.84	Agree
...motivate me to focus more on research tasks.	3.85	1.09	Agree
...assist me in interpreting and analyzing research information.	4.02	0.81	Agree
...enable me to apply what I learn from AI tools to improve my research outputs.	3.97	0.91	Agree
Weighted Mean	3.94		
SD	0.88		
Verbal Interpretation	High		

This reflects that students invest mental effort to comprehend, interpret, analyze, and apply concepts related to research through the assistance of the AI tools. The results reflect that AI tools function as a cognition supports to optimize students' learning process in Practical Research 1, as it helps them to optimize processing and organize information and improves learning. High levels of cognitive engagement are important indicators of successful and meaningful learning experience.

Furthermore, the high level of cognitive engagement among students suggests that AI tools play a meaningful role in strengthening their critical thinking and understanding of research concepts. Through continuous interaction with AI tools, students may become more capable of processing complex information, evaluating sources, and making informed decisions related to their research tasks. This implies that integrating AI tools in Practical Research I can contribute to a more active and intellectually engaging learning experience.

Table 6 showed the Level of Students' Engagement in Practical Research 1 in terms of Affective Engagement.

Table 6. Level of Students' Engagement in Practical Research 1 in terms of Affective Engagement

Statements	Mean	SD	Remarks
I...			
...spend more time completing research tasks when using AI tools.	3.84	0.88	Agree
...actively participate in research activities with AI tools.	3.82	0.84	Agree
...complete research tasks more consistently because of AI tools.	3.72	1.09	Agree
...manage my research schedule better.	3.85	0.81	Agree
...collaborate more with classmates when using AI tools.	3.78	0.91	Agree
Weighted Mean	3.80		
SD	0.88		
Verbal Interpretation	High		

Table 6 shows that all the statements pertaining to Students' Engagement in Practical Research 1, particularly affective engagement, have an "agree" descriptive equivalent. This indicates that students generally have a positive emotional response when using AI tools for research tasks. The highest-rated statement is "...manage my research schedule better" (M=3.85, SD=0.81), implying that AI tools help students feel more organized and in control of their research tasks. Students also feel that AI tools "...spend more time completing research tasks when using AI tools" (M=3.84, SD=0.88) and "...actively participate in research activities with AI tools" (M=3.82, SD=0.84). While "...complete research tasks more consistently because of AI tools" received the lowest mean (M=3.72, SD=1.09), it still reflects a positive level of affective engagement.

The findings suggest that AI tools contribute positively to students' affective engagement by creating a more supportive and manageable research experience. When students perceive research tasks as easier to organize and accomplish, they are more likely to develop positive feelings toward the subject and remain engaged throughout the research process. This indicates that AI tools can help reduce feelings of difficulty and uncertainty, allowing students to approach research activities with greater confidence and interest.

Overall, the weighted mean of 3.80 (SD=0.88) shows a high level of affective engagement in Practical Research 1. This means that students generally feel motivated, interested, and confident when using AI tools for research tasks, leading them to engage more actively and spend more time on their studies.

Table 7 showed the Level of Students' Engagement in Practical Research 1 in terms of Behavioral Engagement.

Table 7. Level of Students' Engagement in Practical Research 1 in terms of Behavioral Engagement

Statements	Mean	SD	Remarks
I am...			
...motivated to work on research tasks because AI tools make them easier.	3.99	0.83	Agree
...enjoying research tasks more when using AI tools.	3.66	0.93	Agree
...less anxious when doing research tasks with AI tools.	3.81	1.06	Agree
...confident using AI tools for research tasks.	3.75	1.11	Agree
...satisfied with my research learning experience when using AI tools.	3.87	0.98	Agree
Weighted Mean	3.82		
SD	0.96		
Verbal Interpretation	High		

In terms of behavioral engagement (Table 7), the statement "...motivated to work on research tasks because AI tools make them easier" received the highest mean (M=3.99, SD=0.83), indicating that students are more likely to actively participate in research when AI tools are involved. Students also feel that AI tools lead to higher satisfaction with their learning experience ("...satisfied with my research learning experience when using AI tools" (M=3.87, SD=0.98) and lower anxiety ("...less anxious when doing research tasks with AI tools" (M=3.81, SD=1.06). While "...enjoying research tasks more

when using AI tools" received the lowest mean (M=3.66, SD=0.93), it still suggests positive behavioral participation.

With a weighted mean of 3.82 (SD=0.96), the students display a high level of behavioral engagement in Practical Research 1. This suggests that AI tools encourage active participation and consistent task completion, reflecting a motivational aspect of learning in this context

Students in Practical Research 1 exhibit a high level of social engagement (weighted mean=3.92, SD=1.00) when using AI tools. The findings indicate that AI tools facilitate collaboration among students, promote discussions about research ideas, enable the exchange of feedback, improve communication within groups, and foster teamwork. These results suggest that AI-powered platforms create a more interactive learning environment, strengthen peer collaboration, and build a supportive community. It also implies that students are more likely to actively participate in discussions and share knowledge, which can lead to better research outputs.

Table 8 showed the Level of Students' Engagement in Practical Research 1 in terms of Social Engagement.

Table 8. Level of Students' Engagement in Practical Research 1 in terms of Social Engagement

Statements	Mean	SD	Remarks
AI Tools...			
...enable me to collaborate better with classmates.	3.95	1.03	Agree
...encourage me to discuss research ideas with peers more often.	3.93	0.97	Agree
...help me share and receive feedback effectively.	3.81	1.01	Agree
...improve communication in group research activities.	3.99	1.04	Agree
...foster teamwork and cooperation in research tasks.	3.89	1.07	Agree
Weighted Mean	3.92		
SD	1.00		
Verbal Interpretation	High		

The level of Students' Engagement in Practical Research 1 in terms of Social Engagement attained a weighted mean score of 3.92 and a standard deviation of 1.00 and was verbally interpreted as High among the respondents.

The level of Students' Engagement in Practical Research 1 in terms of Social Engagement can be seen when taking a closer look at the individual statements. The statement "improve communication in group research activities" garnered the highest mean score of 3.99 with a standard deviation of 1.04 and was interpreted as Agree. This was followed by the statement "enable me to collaborate better with classmates" with a (M = 3.95, SD = 1.03) and "encourage me to discuss research ideas with peers more often" with a (M = 3.93, SD = 0.97), both interpreted as Agree. The results indicated that AI tools support students in communicating and collaborating effectively with their peers during research activities.

Moreover, the statements "foster teamwork and cooperation in research tasks" (M = 3.89, SD = 1.07) and "help me share and receive feedback effectively" (M = 3.81, SD = 1.01) also received Agree remarks. The relatively close

standard deviations across all indicators reflect a generally consistent pattern of responses among the students. These findings suggest that AI tools contribute positively to students' interactions, cooperation, and participation in collaborative research tasks.

Overall, this suggests that AI tools were effective in fostering social engagement among students in Practical Research 1. The findings imply that the use of AI tools promotes collaboration, communication, and teamwork by providing opportunities for students to exchange ideas, work collectively on research tasks, and engage in meaningful academic discussions. Consequently, students become more actively involved in group learning experiences, which may contribute to improved academic performance and research outcomes.

Level of Students' Performance in Practical Research 1 in terms of their Grade in the 3rd Quarter

This study also investigated the students' level of performance in Practical Research 1, specifically their grade in the 3rd Quarter.

The following tables show the statements, mean, standard deviation, remarks and verbal interpretation from the respondents' perspectives.

Table 9 showed the Level of Students' Performance in Practical Research 1 in terms of their Grade in the 3rd Quarter.

Table 9. Level of Students' Performance in Practical Research 1 in terms of their Grade in the 3rd Quarter

Score	Grade		Descriptive Equivalent
	f	%	
90 - 100	60	46.15	Outstanding
85 - 89	21	16.15	Very Satisfactory
80 - 84	26	20.00	Satisfactory
75 - 79	23	17.70	Fairly Satisfactory
Below 75	0	0.00	Did Not Meet Expectation
Total	130	100	
Weighted Mean	86.38		
SD	6.22		
Verbal Interpretation	Very Satisfactory		

According to Table 9, among the 130 respondents, the majority received grades ranging from "90-100," with 60 students (46.15%) falling into the "Outstanding" category. The "80-84" grade range followed with 26 students (20.00%), classified as "Satisfactory." The lowest frequency was for the "85-89" grade range, which included 21 students (16.15%), described as "Very Satisfactory." The overall weighted mean was 86.38 (SD=6.22), with the highest score being 96 and the lowest 75. This indicates that students' performance in Practical Research 1, based on their 3rd Quarter grades, was generally "Very Satisfactory."

Overall, students enrolled in Practical Research 1 obtained generally satisfactory results in the course, evidenced by a weighted mean grade of 86.38, described as Very Satisfactory. More students were given higher grades within the 90-100 range, indicating that almost half of the respondents performed at an outstanding level. The results of this finding imply that students are engaged with the tasks involved in doing research, and that their work is producing quality outputs based on their knowledge and acquired skills. It also suggests

that perhaps with the implementation of AI tools in learning research, students may be more inclined to work at high efficiency, hence high output and performance.

Significant Relationship between the Utilization of AI Tools in Practical Research 1 and the Students' Engagement

In this study, the Utilization of AI Tools in Practical Research 1 in terms of dimensions refers to Perceived Usefulness; Creativity Support; Accessibility; and Functionality. Meanwhile, the Students' Engagement refers to Cognitive Engagement; Affective Engagement; Behavioral Engagement; and Social Engagement.

The Significant Relationship between the Utilization of AI Tools in Practical Research I and the Students' Engagement is revealed in the following table, which shows the Pearson Product Moment Correlation Coefficient (Pearson-r), p-value, and number of observations or respondents.

The table 10 shows the Significant Relationship between the Utilization of AI Tools in Practical Research 1 and the Students' Engagement.

Table 10. Significant Relationship between the Utilization of AI Tools in Practical Research 1 and the Students' Engagement

AI tools in Practical Research I		Students' Engagement			
		Cognitive engagement	Affective engagement	Behavioral engagement	Social engagement
Perceived usefulness	Pearson Correlation	.438*	.470**	.329**	.361*
	Sig. (2-tailed)	.038	.000	.000	.036
	N	129	129	129	129
Creativity support	Pearson Correlation	.486	.454**	.363**	.349
	Sig. (2-tailed)	.089	.000	.003	.081
	N	129	129	129	129
Accessibility	Pearson Correlation	.504**	.444	.427	.548**
	Sig. (2-tailed)	.003	.248	.197	.013
	N	129	129	129	129
Functionality	Pearson Correlation	.583**	.396	.433*	.568*
	Sig. (2-tailed)	.006	.476	.400	.042
	N	129	129	129	129

There is a significant relationship between the Utilization of AI Tools in Practical Research I in terms of Perceived Usefulness and the Students' Engagement in terms of Cognitive Engagement, Affective Engagement, Behavioral Engagement, and Social Engagement. It is reflected that the r-values of 0.438, 0.470, 0.329, and 0.361 respectively, interpreted as having "Moderate, Moderate, Low, and Low Relationship," indicating a non-negligible relationship. The significant relationship is supported by the p-values of 0.038, 0.000, 0.000, and 0.036 which are lower than 0.05 and verbally interpreted as "Significant."

There is no significant relationship between the Utilization of AI Tools in Practical Research I in terms of Creativity

Support and the Students' Engagement in terms of Cognitive Engagement and Social Engagement. It is reflected that the r-values of 0.486 and 0.349 respectively, interpreted as having "Moderate and Low Relationship," indicating a non-negligible relationship. However, the p-values of 0.089 and 0.081 are higher than 0.05 and verbally interpreted as "Not Significant." On the other hand, there is a significant relationship between Creativity Support and the Students' Engagement in terms of Affective Engagement and Behavioral Engagement, with r-values of 0.454 and 0.363 respectively, interpreted as having "Moderate and Low Relationship," also indicating a non-negligible relationship. This is supported by the p-values of 0.000 and 0.003 which are lower than 0.05 and verbally interpreted as "Significant."

There is a significant relationship between the Utilization of AI Tools in Practical Research I in terms of Accessibility and the Students' Engagement in terms of Cognitive Engagement and Social Engagement. It is reflected that the r-values of 0.504 and 0.548 respectively, interpreted as having "Moderate Relationship," indicating a non-negligible relationship. The p-values of 0.003 and 0.013 are lower than 0.05 and verbally interpreted as "Significant." However, there is no significant relationship between Accessibility and the Students' Engagement in terms of Affective Engagement and Behavioral Engagement despite the r-values of 0.444 and 0.427, interpreted as having "Moderate Relationship," still indicating a non-negligible relationship, since the p-values of 0.248 and 0.197 are higher than 0.05 and verbally interpreted as "Not Significant."

There is a significant relationship between the Utilization of AI Tools in Practical Research I in terms of Functionality and the Students' Engagement in terms of Cognitive Engagement and Social Engagement. It is reflected that the r-values of 0.583 and 0.568 respectively, interpreted as having "Moderate Relationship," indicating a non-negligible relationship. The p-values of 0.006 and 0.042 are lower than 0.05 and verbally interpreted as "Significant." However, there is no significant relationship between Functionality and the Students' Engagement in terms of Affective Engagement and Behavioral Engagement, with r-values of 0.396 and 0.433 interpreted as having "Low and Moderate Relationship," also indicating a non-negligible relationship, since the p-values of 0.476 and 0.400 are higher than 0.05 and verbally interpreted as "Not Significant."

Significant Effect between the Utilization of AI Tools in Practical Research I and the Students' Performance

In this study, the Utilization of AI Tools in Practical Research I in terms of dimensions refers to Perceived Usefulness; Creativity Support; Accessibility; and Functionality. Meanwhile, the Students' Performance refers to Grades.

The Significant Effect between the Utilization of AI Tools in Practical Research I and the Students' Performance is revealed in the following table, which shows the t-value, p-value, and number of observations or respondents.

The table 11 shows the Significant Effect between the Utilization of AI Tools in Practical Research I and the Students' Performance.

Table 11. Significant Effect between the Utilization of AI tools in Practical Research I and Students' Performance

AI tools in Practical Research I	Students' Performance in terms of Grade	
Perceived usefulness	t-value	-.051**
	Sig. (2-tailed)	.000
	N	129
Creativity support	t-value	-.071**
	Sig. (2-tailed)	.000
	N	129
Accessibility	t-value	-.101**
	Sig. (2-tailed)	.000
	N	129
Functionality	t-value	-.125**
	Sig. (2-tailed)	.000
	N	129

There is a significant effect between the Utilization of AI Tools in Practical Research I in terms of Perceived Usefulness and the Students' Performance in terms of Grade. It is reflected that the computed t-value or t-cal of -0.051 is lower than the critical value or constant or t-crit and has verbal analysis of "Significant." It is also confirmed that there is a significant effect as attested further by the p-value of 0.000 which is lower than 0.05 and verbally interpreted as "Significant."

There is a significant effect between the Utilization of AI Tools in Practical Research I in terms of Creativity Support and the Students' Performance in terms of Grade. It is reflected that the computed t-value or t-cal of -0.071 is lower than the critical value or constant or t-crit and has verbal analysis of "Significant." It is also confirmed that there is a significant effect as attested further by the p-value of 0.000 which is lower than 0.05 and verbally interpreted as "Significant."

There is a significant effect between the Utilization of AI Tools in Practical Research I in terms of Accessibility and the Students' Performance in terms of Grade. It is reflected that the computed t-value or t-cal of -0.101 is lower than the critical value or constant or t-crit and has verbal analysis of "Significant." It is also confirmed that there is a significant effect as attested further by the p-value of 0.000 which is lower than 0.05 and verbally interpreted as "Significant."

There is a significant effect between the Utilization of AI Tools in Practical Research I in terms of Functionality and the Students' Performance in terms of Grade. It is reflected that the computed t-value or t-cal of -0.125 is lower than the critical value or constant or t-crit and has verbal analysis of "Significant." It is also confirmed that there is a significant effect as attested further by the p-value of 0.000 which is lower than 0.05 and verbally interpreted as "Significant."

IV. CONCLUSION AND RECOMMENDATIONS

It has been established that the null hypothesis stating that there is no significant relationship between the utilization of

AI tools in Practical Research I and students' engagement in Practical Research I is rejected because the computed p-values revealed that several indicators of AI tool utilization have significant relationships with students' engagement dimensions, which are lower than the 0.05 level of significance. This indicates that the utilization of AI tools significantly relates to students' engagement in terms of cognitive, affective, behavioral, and social engagement.

Moreover, the null hypothesis stating that there is no significant effect between the utilization of AI tools in Practical Research I and students' academic performance in Practical Research I is also rejected because the computed p-values are lower than the 0.05 level of significance, indicating that the utilization of AI tools has a significant effect on students' academic performance in Practical Research I.

The following are the recommendations based on the study:

The Department of Education should establish trainings for the teachers regarding the efficient use and application of AI tools. There should be a set of guidelines given to students regarding its responsible and effective use. Equitable access to AI tools, technology and internet will optimize learning. Likewise, there must be a continuous monitoring and evaluation of its implementation that will lead to higher engagement and academic performance.

Teachers should integrate AI tools into their research lessons in a manner that they will engage students in the process of inquiry, while guiding them in using it in the context of learning in research with minimum reliance. It is also suggested that students work together using AI tools on cooperative research projects, peer review and online discussions which will support high levels of cognitive and social engagement. Furthermore, teachers must consider the emotional aspect of students' engagement; therefore, motivation and attention towards affective engagement of

students along with AI use should be given the due emphasis to create holistic learning experience.

Students should view AI tools as supplements rather than substitute to their own reasoning and effort in the research work. In terms of the learning process, they must exert more effort to further hone the results obtained by the use of the AI tools. Explore the function of creative application on the AI tools and use it to make one's research output original and efficient with a proper research conduct. Be open for collaborations with peers on research activities with AI tools that will improve teamwork and learning engagement.

School administrators should work in the creation of professional development programs that can equip teachers the knowledge and skills required for the effective implementation of AI tools into research instruction. Provide all the students with the fair opportunities in terms of providing equipment and internet access to maximize students' engagement and academic performance. Consider having a school-wide implementation of policy to ensure that AI is used in research work in a proper way.

Future research must continue the research in a longitudinal aspect; the study of which must consider its effects on student engagement, motivation, and performance. Innovative instruction involving AI tools that can highly influence students' effective engagement should also be researched. To support the claim of the study, it is recommended that researches should be made with other schools and students in different grade levels.

REFERENCE

- [1]. UNESCO. (2023). Guidance for generative AI in education and research. United Nations Educational, Scientific and Cultural Organization. <https://www.unesco.org>