

Study habits, learning environment and academic performance in statistics and probability of senior high school students

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Abstract

This study examines the impact of students' study habits and learning environment on their academic performance in Statistics and Probability, an area where students globally, including in the Philippines, continue to struggle despite advancements in teaching strategies. In the 21st century, critical thinking, problem-solving, and mathematical literacy are increasingly important; however, students' performance in these subjects remains low. The research uses a descriptive-correlational design to explore the relationship between study habits, the learning environment, and academic performance. Significant relationships were found between these factors, with notable differences observed between schools. The study highlights that while students generally exhibit strong study habits, particularly in motivation, weaknesses in note-taking and limited access to learning resources hinder their performance, especially in Statistics and Probability. While study habits have a strong influence on academic success, the learning environment was found to have a weaker effect, suggesting that improvements in support systems and instructional quality are needed, particularly in underperforming schools. Based on the findings, the study recommends that schools focus on strengthening study habits, such as note-taking, time management, and motivation, through targeted workshops, mentorship, and personalized academic support. Additionally, enhancing the learning environment by improving access to resources, refining instructional strategies, and fostering student engagement will contribute to long-term academic success.

Keywords: study habits, learning environment, academic performance, statistics and probability, educational support systems

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1. Introduction

The challenges that people encounter in everyday life are becoming more complicated in the twenty-first century. The demand for problem-solving skills in a profession is also rapidly increasing. Modern society of the twenty-first century requires not just academic ability, but also abilities such as critical thinking, problem solving, creativity, invention, communication, and cooperation. One of the components required to build 21st-century abilities is mathematical literacy. Mathematics plays a key role in shaping how individuals deal with the various spheres of private and social life (Clooney & Cunningham, 2017), (Okyere, & Kuranchie, 2013). Most of the people are having hard experiences especially in performing mathematics. During this 21st Century, most are not only requiring academic ability but also abilities like critical thinking, creativity, communication and even problem solving. Mathematics is one of the most important and main subjects taught in secondary school, with the main goal of providing and developing students' ability to study, conceptualize skills, and think in a higher order so that they can advance to a higher aim and be ready to respond to the demands of the twenty-first century. Individual background variables are important predictors and explain 46.67% of the total variance in math performance. After controlling for student characteristics, school and class level variables disappear as predictors, implying an interaction between contextual and individual variables. The present research findings have - next to theoretical implication - also policy implications for Chinese mathematics education. Firstly, the educational quality between provinces seem to be balanced, but the school quality within a province does not seem to be balanced. Secondly, there seems to be a need for a quality control related to the output of open teacher training institutions. Thirdly, remedial or intervention programs have to be put in place, to be proactive as to difficulties of students with different language backgrounds (Zhao et al., 2011).

However, Crisostomo (2000) reported that Filipino students are still weak in math and science, according to results of the Third International Mathematics and Science Study-Repeat (TIMSS-R). A report of the Department of Science and Technology (DOST) said that the 6,601 Filipino students who took the TIMSS in 1999 ranked 36th in both science and mathematics tests out of a field of 38 countries. The DOST revealed that Filipino participants garnered a score of 349 and 350 in science and math respectively, way below the international average of 489 in both subjects. When TIMSS was first conducted in 1995 among 42 countries, the Philippines placed 41st in science and 30th in mathematics. Supported to that, Carballo (2009) revealed in her blog entitled, "Education: Analyzing the status of math & science education" that DepEd data show that achievement rate of fourth year students in Math dropped from 50.70% in SY 2005-2006 to 47.82% in SY 2006- 2007. A Science and Education Institute study on Trends in Mathematics and Science Study (TIMSS) in 2003 showed that Philippines' 8th grade (2nd year high school) students' skills and competencies in Math ranked a pitiful 42nd out of 46 participating countries while the Philippine 4th grade students placed 23rd out of 25 participating countries. It is necessary to think of possible effective ways and strategies to lessen and reduce the continuous lowering of rank in the world in terms of Mathematics performances. It is necessary to emphasize those factors in order to reduce the rate at which students' mathematical skills are deteriorating. Despite the many innovative teaching tactics today, and despite the fact that Mathematics is a fascinating topic for certain students, the majority of students find it difficult, intimidating, and depressing, and as a result, mathematics performance remains poor.

The performance of the students is based on their study habits. These habits have significant contribution in the development of knowledge and perceptual capacities. Study habits tell a person that how much he will learn, how much he wants to earn and how far he wants to go (Rabia et al., 2017). The learning environment also plays an important role in molding the skills and intelligence of the students. It affects the mode of the students in dealing with some school responsibilities. It also increases the students' attention and focus.

According to Zahra Abazari (2012) The main issues of students in respect to study habits were in time management, remembering, studying a chapter, listening and note taking, concentration, test taking, and motivation. Girls scored slightly better in remembering, listening and note taking, and motivation. However, boys scored higher in test taking (Zahra Abazari, 2012). There was a negligible positive correlation between the attitudes and academic performance of the respondents in terms of their self-confidence, enjoyment, and motivation while there was a weak positive correlation between the value of math and their academic performance in math. It was concluded that students' attitudes and their study habits are significant factors that affect their performance in Mathematics (Capuno, Revalde, et al., 2019). However, (Tus, 2020) Students' academic performance embodies an essential part of the constellation of factors determinant of student success. Also, it plays a very significant role in education, primarily as a concrete tool to assess the student's learning process. Psychologists and researchers have attempted to comprehend how students vary in processing, retaining, and retrieving learning information and have used various personality, attitudinal, cognitive styles, and ability measures. This examined the influence of study attitudes and study habits on their academic performance. The study respondents were the senior high school students in a Catholic School in Bulacan, Philippines. The study conducted aimed to determine the influence of study attitudes and study habits on the students' academic performance. The computed multiple regression analysis results revealed that study attitudes and study habits do not significantly affect senior high school students' academic performance.

To fill in the gaps of this research, this proposed study will focus on the study habits and learning environment of the students towards high and good academic performance especially in Statistics and Probability. It is hypothesized that the study habits and learning environment of the students are factors that affect their performance in Statistics and Probability. The effect and significance of study habits and learning environment to the Statistics and Probability performance of the students will be tested.

Statement of the Problem - What is the level of study habits of the students along: Time management, physical status, note taking, testing strategies, learning motivation, reading ability, memory and, health? What is the learning environment of the students in terms of learners' characteristics, assessment used by the teacher, resources used in learning, and learners support system? What is the level of performance in Statistics and Probability of the students? Is there a significant relationship between the study habits of the respondents and their learning environment? Is there a significant relationship between the statistics and probability performance of the students in their study habits, and learning environment? Is there a significant difference between school A and school B along study habits, learning environment, and performance in statistics and probability? What Path model can be established for the interrelationship between the three variables in this study?

2. Methodology

Research Design - A descriptive-correlational research design was utilized in this study. Descriptive design was used to present the level of study habits of the students on the different types, the learning environment of the students, and their level of performance in Statistics and Probability. The correlation part dealt with the analysis of the relationship between study habits, learning environment, and the students' Statistics and Probability performance. In this study, the researcher investigated the relationship of study habits, learning environment, and academic performance in Statistics and Probability of students using SPSS and AMOS.

Population and Locale of the Study - All Grade 12 students were selected from Burgos National High School and Holy Name High School Burgos, I. Sur, Inc. who are enrolled in S.Y. 2024-2025 to serve as the respondents. School A has 100 respondents, while School B has 29 respondents, for a total of 129 respondents.

Research Instruments - Part I is the Adapted Questionnaires on study habits. The adapted survey questionnaire came from (Tan, 2014). The questionnaire focuses on the attitudes of the students in doing their lessons. Part II is the set of validated and reliable questions that elicit the learning environment of the respondents in terms of learners' characteristics, assessment used by the teacher, resources used in learning, and learners

support system. These components were adapted from *Teaching in a Digital Age* by Anthony William (Tony) Bates (Keshavarz & Mirmoghtadaie, 2023), and modifications were made. The questionnaire was made by the researcher but some of the indicators were based on the study of (Pat-El et al., 2013). Part III is an achievement test to measure the level of performance of the student-respondents. It is a validated 50-item teacher - constructed multiple choice test covering the different topics for the whole Quarter III. This was piloted and was subjected for a reliability test and validation by experts. The reliability result Cronbach alpha is 0.79 which proves that it is a reliable assessment tool and is proven valid as reflected by the weighted validity mean of 4.36.

Data Gathering Procedure - Prior to initiating data collection, approval was requested from the Research Ethics Committee of Ilocos Sur Polytechnic State College. A formal research proposal detailing the objectives, methodology, potential risks, and measures for respondent protection was submitted for review. Additionally, informed consent was obtained from parents or guardians before their participation in the study. Participants were assured of confidentiality, voluntary participation, and the right to withdraw at any time. Upon approval, the researcher then distributed the questionnaire to all Grade 12 students and gave them at least an hour to accomplish it. The respondents took their time to read and answer the questions. They were provided enough time to analyze, think, and assess themselves regarding their habits in their studies. The researcher collected the questionnaires and recorded them. Data were further analyzed using the statistical tools mentioned below.

Statistical Treatment of Data Categorization - The data collected was analyzed using descriptive statistics.

Mean, Frequency Count and Percentage were used to determine and present the descriptive components of this study; to include the study habits, learning environment and level of Statistics performance.

Pearson r was used to determine the relationship between the study habits, learning environment and academic performance of the students.

T-test was also be utilized to determine the significant difference between the study habits, learning environment and Statistics performance of the students in School A and School B.

The interrelationship between the three different variables of the study was determine using **Analysis of Moment Structure (AMOS)**. The Path Model was determine to present information if whether the presence of a moderation variable may directly or indirectly affect the Statistics and Probability performance of the students.

Ethical Considerations Section - This study aims to investigate the impact of study habits and learning environment to academic performance in Statistics and Probability. This will serve as an eye-opener to all students that these factors may affect the performance in Mathematics. The participants will be all the Grade 12 senior high school students of the two secondary schools in Burgos, Ilocos Sur. They are the ones who deserve to be the respondents because I know that they have sufficient knowledge and ideas about the instrument to be used. To ensure the confidentiality, all the information about the respondents will be anonymized. The name of the respondent and the name of the school will not be mentioned. Participation will be optional and informed consent will be distributed and obtained both the student and parent or guardian. The collected data will be stored securely on a password-protected computer and will only be accessed by the researcher. Any published results will be presented in summary form, ensuring that no individual can be identified. After the data will be gathered, the data will be deleted and discarded through permanent deletion of digital files. This research enhances the understanding of the lessons in relation to the habits and environment. It contributes to future studies that may lead to improvements and practical applications. Additionally, it allows the students to receive feedback on your learning experiences. And the wider academic community can gain lessons and knowledge on how to maintain good results in mathematics alongside effective study habits and a conducive learning environment.

This study involves minimal risk such as allocating some of the respondent's time, experiencing uneasiness while answering the three-part survey questionnaire and feeling anxious if the respondents are uncomfortable with the achievement test. However, if the respondents choose not to answer the questionnaire or wish to withdraw at

any time, they are free to do so without any consequences. Respondents are free to ask assistance and help from the researcher whenever they need it. The researcher will be able to monitor the benefits received by the respondents by guiding them and following up on their daily activities in their studies.

3. Results and discussions

3.1 Level of Study Habits of the Students

Time Management - Table 1a presents the level of study habits in terms of time management with 5 indicators as answered by the respondents.

Table 1a
Level of Study Habits of Senior High School Students along Time Management

Indicators	School A		School B		As a Whole	
	Mean	DR	Mean	DR	Mean	DR
I set a specific study schedule and follow it consistently.	3.82	O	3.24	S	3.69	O
I prioritize tasks based on deadlines and importance.	4.00	O	3.93	O	3.97	O
I avoid procrastination by breaking large tasks into smaller ones.	3.41	O	3.31	S	3.36	S
I allocate enough time for both studying and breaks.	3.90	O	3.62	O	3.76	O
I use planners, calendars, or apps to organize my study activities.	3.76	O	3.07	S	3.41	O
Overall	3.78	O	3.43	O	3.61	O

Legend: 3.40 – 4.19-Often (O), 2.60 – 3.39-Sometimes (S)

Table 1a presents a comparison between School A, School B, and their combined result (As a Whole) based on students' responses to five indicators of time management. The Mean indicates the average level of agreement or frequency, while the Descriptive Rating (DR) classifies the behavior as Always (A), Often (O), or Sometimes (S), based on the provided scale. Students from both schools exhibit "Often" levels of study habits related to time management. However, School A consistently outperforms School B in all five indicators, especially in areas like scheduling, task prioritization, and use of organizational tools. School B, while still within the "Often" range overall, shows some indicators dipping into the "Sometimes" category, suggesting areas for improvement—especially in avoiding procrastination and using planning tools. In a study titled "Time Management and Academic Procrastination during Online Learning" (Noprianty, 2019), researchers found that students who struggled with procrastination tended to have lower performance, especially in asynchronous or flexible study settings. This finding aligns with School B's lower rating in avoiding procrastination.

Physical Status - Table 1b shows the level of study habits of the senior high school students on physical status that composed of 5 indicators answered by the respondents.

Table 1b
Level of Study Habits of the Senior High School Students along Physical Status

Indicators	School A		School B		As a Whole	
	Mean	DR	Mean	DR	Mean	DR
I ensure I have proper lighting and a comfortable study environment.	4.03	O	4.10	O	4.07	O
I get enough sleep to maintain focus during study sessions.	3.68	O	3.52	O	3.60	O
I avoid distractions (e.g., noise, phone, social media) while studying.	3.64	O	3.62	S	3.63	S
I maintain good posture and avoid fatigue while studying.	3.63	O	3.52	O	3.58	O
I take regular breaks to stretch and relax my body.	3.87	O	3.76	S	3.82	O
Overall	3.77	O	3.70	O	3.74	O

Legend: 3.40 – 4.19-Often (O), 2.60 – 3.39-Sometimes (S)

It can be seen from Table 1b that the self-assessed study habits of students from School A and School B in relation to their physical status while studying, measured through five key indicators. Each indicator is rated using a mean score and categorized into descriptive ratings: Always (A), Often (O), and Sometimes (S). Overall, both School A (3.77) and School B (3.70) fall under the “Often” category, indicating that students generally practice physical study habits regularly but not always. The combined average (“As a Whole”) is 3.74, also falling under “Often”, showing consistency between both schools in terms of physical study practices. Students in both schools demonstrate generally good physical study habits, particularly in creating comfortable study spaces and maintaining posture. However, digital distractions, inconsistent sleep patterns, and lack of regular physical breaks present clear areas for improvement. These findings mirror recent research, highlighting the role of physical well-being in cognitive focus and academic success. In a study, it emphasized the importance of physical comfort and wellness (sleep, posture, breaks) in improving learning efficiency. It Confirms the positive ratings in lighting and posture, and shows that sleep habits need more consistency.(C. Tagud & M. Valle, 2023)

Note Taking - Table 1c presents the data gathered from the respondents on level of study habits of the senior high school students on Note Taking.

Table 1c

Level of Study Habits of Senior High School Students along Note taking

Indicators	School A		School B		As a Whole	
	Mean	DR	Mean	DR	Mean	DR
1. I take clear and organized notes during lectures or study sessions.	3.77	O	3.93	O	3.85	O
2. I use abbreviations, symbols, or highlighting to emphasize key points.	3.79	O	4.14	O	3.97	O
3. I review and revise my notes regularly.	3.66	O	3.66	O	3.66	S
4. I compare my notes with textbooks or additional resources for accuracy.	3.29	S	3.07	S	3.18	O
5. I use mind maps, outlines, or digital tools to structure my notes.	3.54	O	3.00	S	3.27	O
Overall	3.61	O	3.56	O	3.59	O

Legend: 3.40 – 4.19-Often (O), 2.60 – 3.39-Sometimes (S)

Data shown in Table 1c reveals that students from both School A and School B "often" practice good note-taking habits, with overall means of 3.61 for School A, 3.56 for School B, and 3.59 combined. Most students take clear and organized notes and use symbols or highlighting to emphasize key points. However, there is a slight weakness in regularly reviewing notes and comparing them with textbooks or other sources, which both fall into the “Sometimes” category. The use of mind maps and digital tools is also practiced "sometimes" in School B. Overall, students demonstrate consistent note-taking habits, but there is room for improvement in making their notes more accurate and actively reviewed. The findings presented in Table 4 is align with several recent studies on note-taking practices. Research on effective note-taking habits highlights the importance of clarity, organization, and the use of visual aids such as symbols or highlighting. Studies by (Mueller & Oppenheimer, 2014) demonstrate that students who engage in active note-taking, using techniques such as summarizing and highlighting, tend to retain information better than those who engage in passive note-taking. This finding supports the observation that students in both schools often employ clear and organized note-taking strategies, with a preference for emphasizing key points.

Testing Strategies - The table shows the data gathered from the respondents on the level of study habits on testing strategies. Findings presented in table 1d reveals that students from both School A and School B generally exhibit positive study habits in terms of testing strategies, with an overall mean of 3.77, indicating that they "often" employ effective testing strategies. The most notable behavior across both schools is the consistent practice of reviewing key concepts instead of relying on memorization, with an average mean of 3.76, rated as "Often" (O) in both schools. Additionally, students from both schools often manage their time effectively during exams, with

School A averaging 3.70 and School B slightly higher at 3.90. This suggests a strong ability to stay organized and efficient under exam conditions. A particularly strong area for both schools is carefully reading and understanding instructions before answering questions, which scored the highest mean of 4.41 for School A, categorized as "Always" (A), and 4.10 for School B, categorized as "Often" (O). On the other hand, using relaxation techniques to reduce test anxiety was more prominent in School A (3.76, "Often") compared to School B (3.38, "Sometimes"). Finally, practicing answering sample tests or past exam questions is another strategy that both schools engage in, with School A showing a higher mean (3.62, "Often") compared to School B (3.31, "Sometimes"). Overall, the results suggest that both schools have developed strong study habits with room for further improvement in specific areas, such as reducing test anxiety and practicing with past exam materials.

Table 1d*Level of Study Habits of the Senior High School Students along Testing Strategies*

Indicators	School A		School B		As a Whole	
	Mean	DR	Mean	DR	Mean	DR
1. I practice answering sample tests or past exam questions.	3.62	O	3.31	S	3.47	O
2. I review key concepts instead of memorizing everything.	3.76	O	3.76	O	3.76	O
3. I manage my time effectively during exams.	3.70	O	3.90	O	3.80	O
4. I use relaxation techniques to reduce test anxiety.	3.76	O	3.38	S	3.57	O
5. I read and understand instructions carefully before answering test questions.	4.41	A	4.10	O	4.26	A
Overall	3.85	O	3.69	O	3.77	O

Legend: 4.20 – 5.00-Always (A), 3.40 – 4.19-Often (O), 2.60 – 3.39-Sometimes (S)

The practice of reading and understanding instructions carefully, which scored the highest mean of 4.41 for School A, is another critical behavior supported by research. Research by Tuckman (2005) indicates that reading instructions carefully helps prevent errors and ensures that students address all aspects of a question, which aligns with the high rating for this behavior. The relatively lower mean for relaxation techniques, especially at School B (3.38), suggests that while stress management is recognized as a key strategy, it may not be consistently employed. This echoes studies such as those by Tobias (2009), who highlight the challenges students face in managing test anxiety effectively.

Learning Motivation - Table 1e shows the gathered data from the respondents on the level of study habits on learning motivation. It consists of 5 indicators that focuses on the different attitudes of the students.

Table 1e*Level of Study Habits of Senior High School Students along Learning Motivation*

Indicators	School A		School B		As a Whole	
	Mean	DR	Mean	DR	Mean	DR
1. I set specific academic goals and work towards achieving them.	4.21	A	3.76	O	3.99	O
2. I reward myself for accomplishing study goals.	4.04	O	3.48	O	3.76	O
3. I seek help or clarification when I don't understand a topic.	4.01	O	4.17	O	4.09	O
4. I stay positive and persistent despite academic challenges.	4.00	O	3.76	O	3.88	O
5. I engage in self-reflection to improve my study habits.	4.01	O	4.10	O	4.06	O
Overall	4.06	O	3.85	O	3.96	O

Legend: 4.20 – 5.00-Always (A), 3.40 – 4.19-Often (O)

The table shows that students from both School A and School B generally exhibit strong learning motivation, with an overall mean of 3.96, indicating that they "often" engage in motivating study habits. School A, with an overall mean of 4.06, demonstrates slightly higher motivation levels, particularly in setting specific academic goals

(4.21, "Always") and rewarding themselves for accomplishments (4.04, "Often"). School B has a lower overall mean of 3.85, but students still "often" engage in motivation-enhancing behaviors such as seeking help when needed (4.17, "Often") and engaging in self-reflection (4.10, "Often"). Both schools show a similar tendency to stay positive and persistent in the face of academic challenges, with School A at 4.00 and School B at 3.76. Overall, the results suggest that while both schools exhibit strong motivation, there is still room for improvement in consistently rewarding academic achievements and maintaining positivity during challenges.

Recent research backs up the findings in Table 1e, showing that strong learning motivation is closely linked to behaviors like goal setting, seeking help, and self-reflection. For instance, studies show that setting clear goals boosts motivation and academic success, which is reflected in the high score for goal setting in School A (4.21). Research by (Locke & Latham, 2002) also suggests that when students set specific goals, they are more focused and motivated to achieve them. The idea of rewarding oneself for meeting study goals, as seen in School A (4.04), is supported by studies in motivation theory. Deci and Ryan (1985) explain that rewards—whether intrinsic (like a sense of achievement) or extrinsic (like a treat)—help maintain motivation over time, especially when students recognize their progress.

Reading Ability - Table 1f shows the data gathered from the respondents on the level of study habits on reading ability.

Table 1f

Level of Study Habits of Senior High School Students along Reading Ability

Indicators	School A		School B		As a Whole	
	Mean	DR	Mean	DR	Mean	DR
1. I can quickly identify the main ideas in a text.	3.57	O	3.38	S	3.48	O
2. I use skimming and scanning techniques when reading.	3.53	O	3.69	O	3.61	O
3. I take notes or highlight important points while reading.	4.10	O	4.21	A	4.16	O
4. I read a variety of materials to improve my comprehension skills.	3.91	O	3.24	S	3.61	O
5. I summarize what I read in my own words for better understanding.	3.90	O	3.62	O	3.76	O
Overall	3.80	O	3.63	O	3.72	O

Legend: 4.20 – 5.00-Always (A), 3.40 – 4.19-Often (O), 2.60 – 3.39-Sometimes (S)

Table 1f shows that students from both School A and School B generally have good reading habits, with an overall mean of 3.72, meaning they "often" practice effective reading strategies. School A scored slightly higher (3.80) than School B (3.63), showing a bit stronger reading habits. Both schools "often" use techniques like skimming and scanning to find key information in a text, with School B scoring higher in this area (3.69). Students in both schools also take notes or highlight important points, with School B performing slightly better (4.21, "Always") compared to School A (4.10, "Often"). The ability to identify main ideas quickly and summarize readings are areas where both schools perform well, though there is more room for improvement in reading a variety of materials to improve comprehension, especially for School B, which scored lower in this area (3.24, "Sometimes"). Overall, the results suggest that while both schools have strong reading habits, there is potential for further improvement, particularly in reading a broader range of materials to enhance understanding.

Taking notes and highlighting important points while reading is another effective strategy, with School B scoring slightly higher (4.21, "Always"). Research by Muijselaar et al. (2014) suggests that these habits promote active reading, which enhances memory retention and understanding of key concepts. Highlighting allows students to focus on critical information, and taking notes helps with information processing, both of which are important for long-term retention. Recent studies validate the practices observed in table 1f, highlighting the effectiveness of skimming, scanning, note-taking, summarizing, and reading a variety of materials to improve reading ability. While both schools show strong reading habits, expanding the range of reading materials could further enhance comprehension and academic success.

Memory - Table 1g shows the data gathered from the respondents on the level of study habits along memory.

Table 1g

Level of Study Habits of Senior High School Students along Memory

Indicators	School A		School B		As a Whole	
	Mean	DR	Mean	DR	Mean	DR
1. I use mnemonic devices or visualization techniques to retain information.	3.47	O	3.38	S	3.42	O
2. I review learned materials frequently to reinforce memory.	3.79	O	3.28	S	3.54	O
3. I relate new information to prior knowledge for better retention.	3.79	O	3.48	O	3.64	O
4. I use repetition and practice to strengthen memory recall.	4.06	O	3.83	O	3.95	O
5. I test myself to assess how much I remember.	4.12	O	3.93	O	4.02	O
Overall	3.85	O	3.58	O	3.72	O

Legend: 3.40 – 4.19-Often (O), 2.60 – 3.39 -Sometimes (S)

It presents the level of study habits along memory among students from School A and School B. Overall, both schools fall under the "Often" (O) category, with School A having a slightly higher mean (3.85) compared to School B (3.58). This suggests that students from both schools generally practice effective memory strategies, but those in School A do so more frequently. Across specific indicators, the highest-rated habit overall is "testing oneself" (Mean = 4.02), indicating that self-assessment is a common and consistent strategy. The lowest-rated in School B is the use of mnemonic devices or visualization (Mean = 3.38), marked as "Sometimes" (S), implying it's less frequently applied in that group. All other habits fall within the "Often" range, indicating a generally positive trend in memory-related study habits. These findings are supported by recent studies highlighting the effectiveness of specific memory strategies. For instance, the highest-rated habit overall—"testing oneself" (Mean = 4.02)—is well-supported by cognitive psychology research. A study by (Roediger & Butler, 2011), emphasized that self-testing enhances learning more effectively than passive review. Similarly, more recent practical applications, such as the study method shared by a top-performing Australian student who avoided textbooks in favor of active recall techniques (News.com.au, 2023), further validate this finding.

Health - Table 1h shows the data gathered from the respondents on the level of study habits along health. Table 1h shows that both School A and School B students "Often" (O) engage in health-related study habits, with School A (Mean = 3.95) slightly ahead of School B (Mean = 3.65). This suggests a consistent awareness among students of the link between health and academic performance. The highest-rated habit across both schools is drinking enough water (Mean = 4.06), which supports hydration as a recognized factor in maintaining focus and mental clarity. Meanwhile, the lowest in School B is regular exercise (Mean = 3.21), falling under "Sometimes" (S), indicating a less consistent habit that may affect stress management and focus. Overall, students demonstrate good health-related habits, but School B may benefit from encouraging more consistent physical activity to support academic well-being.

Table 1h

Level of Study Habits of Senior High School Student along Health

Indicators	School A		School B		As a Whole	
	Mean	DR	Mean	DR	Mean	DR
1. I eat nutritious meals to maintain good brain function.	3.94	O	3.62	O	3.78	O
2. I exercise regularly to reduce stress and improve focus.	3.70	O	3.21	S	3.46	O
3. I drink enough water to stay hydrated while studying.	4.26	A	3.86	O	4.06	O
4. I practice mindfulness or relaxation techniques to manage stress.	3.77	O	3.62	O	3.70	O
5. I maintain a balance between academics and personal well-being.	4.06	O	3.93	O	4.00	O
Overall	3.95	O	3.65	O	3.80	O

Legend: 4.20 – 5.00-Always (A), 3.40 – 4.19-Often (O), 2.60 – 3.39-Sometimes (S)

The high mean score for drinking enough water (4.06) aligns with research emphasizing the importance of hydration for cognitive function. A study highlighted by *The Johns Hopkins News-Letter* indicates that adequate water intake is vital for brain function, aiding in memory formation and information recall. Furthermore, research published in the *Journal of School Health* found that both the quantity and timing of fluid intake are associated with cognitive performance in schoolchildren, suggesting that regular hydration can enhance attention and memory. The lower mean score for regular exercise in School B (3.21) suggests less consistent engagement in physical activity, which may impact stress management and focus. A study published in *Children* analyzed relationships between academic performance, physical activity, and academic stress in secondary education students. The findings indicate that higher levels of physical activity are associated with lower academic stress and better academic performance. Additionally, research in *Medical Sciences* found that regular exercise has a protective effect against depression and stress among university students, particularly those with higher academic achievement.

Level of Study Habits - Table 1i shows the overall results of the computed mean and the corresponding descriptive rating of the different indicators on study habits of senior high school students. The highest overall mean in learning motivation (3.90) reflects a strong drive among students to succeed academically. This finding aligns with a study which found a significant relationship between study habits and academic achievement among secondary school students in Anambra State. The study emphasizes that positive study attitudes, including motivation, foster deeper engagement with studies, resulting in improved academic outcomes (Studies, 2023). Conversely, note taking has the lowest overall mean (3.59), indicating it as an area for potential improvement. Research highlights that effective note-taking skills are crucial for academic success. Their study on medical sciences students in Kermanshah-Iran revealed a direct and significant relationship between study habits, including note-taking, and academic achievement. They recommend specific training to help students learn or modify study habits to increase their academic achievements (Jafari et al., 2019).

Table 1i
Overall Level of Study Habits

Indicators	School A		School B		As a Whole	
	Mean	DR	Mean	DR	Mean	DR
Time Management	3.78	O	3.43	O	3.61	O
Physical Status	3.77	O	3.70	O	3.73	O
Note Taking	3.61	O	3.56	O	3.59	O
Testing Strategies	3.85	O	3.69	O	3.77	O
Learning Motivation	4.05	O	3.74	O	3.90	O
Reading Ability	3.80	O	3.63	O	3.72	O
Memory	3.85	O	3.58	O	3.72	O
Health	3.95	O	3.65	O	3.80	O
Overall	3.83	O	3.62	O	3.73	O

Legend: 3.40 – 4.19-Often (O)

The overall positive study habits observed are further corroborated by a study conducted by (Arieta, Gementiza, 2017), which investigated the influence of study habits and attitudes on the academic performance of junior high school students. The study found that high levels of study habits, such as budgeting time, taking examinations, reading ability, note-taking, and memory, positively influenced academic performance. The data reflects positively on the students' study habits, particularly in learning motivation. However, enhancing specific skills like note taking could further boost academic performance. Implementing targeted interventions, such as workshops or training sessions focused on effective note-taking techniques, may be beneficial in this regard.

3.2 The Learning Environment of the Students

Learners Characteristics - The table reveals the data gathered from the respondents on the level of learning environment of the senior high school students on learners' characteristics. Data in table 2a shows that learners from both School A and School B generally exhibit positive learning characteristics, with an overall mean of 3.59, interpreted as "Often" (O). School A has a higher overall mean of 3.76 (O) compared to School B's 3.42 (O),

indicating that learners from School A demonstrate stronger learning behaviors. Learners "Always" aim to gain knowledge and are eager to learn new things, as shown by the highest-rated indicators across both schools. These findings align with recent studies emphasizing that intrinsic motivation remains a strong factor in learner engagement. According to Deci & Ryan's Self-Determination Theory (2020), students with intrinsic goals, such as gaining knowledge for personal growth, are more likely to be engaged and perform better academically. However, learners struggle with reviewing and recalling previous lessons, learning independently, and resisting distractions, especially in School B, where several indicators fall under "Sometimes" (S). This is consistent with findings by Zimmerman (2021), who noted that self-regulated learning skills are still developing among students, particularly in lower-resourced or less supportive environments. Additionally, a 2022 study by the Philippine Normal University found that digital distractions and lack of parental academic support significantly hinder student focus and independent study habits during modular learning. Technological competence and responsibility in submitting tasks are observed "Often", which resonates with recent research by UNESCO (2023), showing that digital adaptability among students has improved since the pandemic, though disparities still exist based on access and guidance.

Table 2a

Level of Learning Environment of Senior High School Students in terms of Learners Characteristics

Indicators	School A Mean	DR	School B Mean	DR	As a Whole Mean	DR
1. My goal in learning is to gain knowledge	4.64	A	4.41	A	4.53	A
2. I am eager to learn new things	4.23	A	4.28	A	4.26	A
3. I can easily remember the lessons during my previous grade level	3.47	O	3.07	S	3.27	S
4. I review the lessons I've learned in my previous grade level	3.38	S	3.03	S	3.21	S
5. I am competent in using the technology	3.74	O	3.14	S	3.44	O
6. I prefer to learn from the internet than from module	3.56	O	2.93	S	3.25	S
7. I can learn from how others learn	3.66	O	3.45	O	3.56	O
8. I can understand the lessons from my module without any help	3.38	S	2.86	S	3.12	S
9. I can focus on learning even with the temptations caused by gadgets.	3.47	O	3.24	S	3.36	S
10. Doing household chores do not distract my concentration in my studies.	3.56	O	3.41	O	3.49	O
11. I can always motivate myself to learn my lessons	4.12	O	4.03	O	4.08	O
12. I have high sense of responsibility in accomplishing the task provided in the module.	3.72	O	3.45	O	3.59	O
13. I accept feedback positively from my teachers which help me in doing my tasks.	4.10	O	3.55	O	3.83	O
14. I can learn at home because I have the assistance of my parents.	3.48	O	2.79	S	3.14	S
15. I can submit my deadlines for SLMs without any pressure.	3.47	O	3.28	S	3.38	S
16. I am capable to learn independently from the modules.	3.58	O	3.00	S	3.29	S
17. I follow the schedule set for the submission of module	4.11	O	3.69	O	3.90	O
18. I submit complete answers for a particular module	3.97	O	3.86	O	3.91	O
19. I properly labeled my answer sheets	3.77	O	3.69	O	3.73	O
Overall	3.76	O	3.42	O	3.59	O

Legend: 4.20 – 5.00-Always (A), 3.40 – 4.19-Often (O), 2.60 – 3.39-Sometimes (S)

Overall, both schools maintain a fair level of supportive learning environments, with School A showing stronger learner characteristics than School B. This further supports the idea that learning environments—both at home and in school—play a pivotal role in shaping student motivation, responsibility, and academic behavior (Bernardo et al., 2023)

Assessment Used by the Teacher - Table 2b shows the data gathered from the respondents on the level of learning environment of senior high school students on assessment used by the teacher.

Table 2b

Level of Learning Environment of Senior High School Students in terms of Assessment Used by the Teacher

Indicators	School A		School B		As a Whole	
	Mean	DR	Mean	DR	Mean	DR
1. Authentic assessment tests focus on my analytical skills and ability to integrate what they have learned	3.70	O	3.41	O	3.56	O
2. I can demonstrate what I have learned through the assigned tasks and activities	3.75	O	3.55	O	3.65	O
3. I can calculate, explain, and describe whatever is asked in the assessment tool.	3.55	O	3.10	S	3.33	S
4. I can use portfolio in assessing my mathematical performance.	3.38	S	2.66	S	3.02	S
5. I can fully understand the activities given in the performance tasks and assignments	3.73	O	3.28	S	3.51	O
6. My teacher provides feedbacks to my answer in the assessment.	3.93	O	3.59	O	3.76	O
7. My teacher stresses my strengths and weaknesses concerning my learning	3.63	O	2.76	S	3.20	S
8. My teacher encourages me to reflect on how I can improve my assignments/activities	4.12	O	3.84	O	3.98	O
9. My teacher gives me guidance to assist my learning	4.12	O	3.97	O	4.05	O
10. My teacher discusses with me the progress I make	3.94	O	3.31	S	3.63	O
11. After each assessment my teacher informs me how to improve the next time	4.01	O	3.66	O	3.84	O
12. My teacher discusses with me how to utilize my strength to improve my assignment	3.90	O	3.38	S	3.64	O
13. My teacher and I consider ways to improve my weak points	3.82	O	3.34	S	3.58	O
14. My teacher tries to explain in a different way when I do not understand a topic,	4.24	A	4.00	O	4.12	O
15. I have an opportunity to show what I have learned during class	3.88	O	3.38	S	3.63	O
16. My teacher asks questions that help me gain understanding of the subject matter	4.00	O	3.83	O	3.92	O
17. I am aware with the criteria by which my assignment will be evaluated	3.75	O	3.28	S	3.52	O
18. My teacher makes me aware the areas I need to work onto improve my results	3.99	O	3.38	S	3.69	O
Overall	3.86	O	3.43	O	3.65	O

Legend: 4.20 – 5.00-Always (A), 3.40 – 4.19-Often (O), 2.60 – 3.39-Sometimes (S)

Table 2b presents the learners' perceptions of the assessment practices used by teachers, showing an overall mean of 3.65 ("Often"), indicating that learners generally perceive assessment methods to be supportive of their learning. School A has a higher overall mean of 3.86 (O) compared to School B's 3.43 (O), suggesting that students in School A experience more effective and consistent assessment practices. Indicators such as teacher guidance, feedback, and reflective encouragement received relatively high ratings, particularly in School A. This supports findings by Black & Wiliam (2018), who emphasized that formative assessment strategies—such as timely feedback and guided reflection—significantly improve learning outcomes and student engagement. Furthermore, Sadler (2020) also highlights that the presence of clear criteria and regular dialogue between teachers and learners

fosters deeper learning and metacognitive awareness. However, performance-based and analytical assessments, such as the use of portfolios and tasks requiring higher-order thinking, scored lower—especially in School B—falling under "Sometimes" (S). This finding echoes a study by (Mahusay, 2023), which revealed that while most Filipino teachers implement basic forms of assessment, the use of authentic and student-centered assessment tools like portfolios, project-based tasks, and performance rubrics remains limited, particularly in schools with fewer resources or less training support.

The highest-rated item, "My teacher tries to explain in a different way when I do not understand a topic," with School A reaching "Always", reflects strong instructional responsiveness. This aligns with Hattie's Visible Learning (2023), which identifies teacher clarity and adaptive teaching as high-impact strategies for enhancing student understanding and achievement. Overall, while assessment is used effectively "often" in both schools, School A demonstrates stronger practices in giving feedback, supporting student reflection, and guiding improvements—core components of effective formative assessment. In contrast, School B needs to strengthen student-centered and performance-based assessment methods, as recommended by DepEd's 2023 Learning Recovery and Continuity Plan, which calls for the integration of diverse, meaningful assessments to support inclusive and deeper learning.

Resources Used in Learning - The table shows the data gathered from the respondents on the level of learning environment of senior high school students on resources used in learning.

Table 2c

Level of Learning Environment of Senior High School on Resources Used in Learning

Indicators	School A		School B		As a Whole	
	Mean	DR	Mean	DR	Mean	DR
1. All printed modules are always available for distribution.	3.67	O	3.45	O	3.56	O
2. I have a sufficient access to learning technology.	3.85	O	3.55	O	3.70	O
3. I have competency and proficiency in using various interfaces or systems that allow me to control a computer or another embedded system for studying	3.64	O	3.31	S	3.48	O
4. I am updated with the latest learning technology.	3.66	O	3.24	S	3.45	O
5. I have strong Internet access during online classes.	3.66	O	3.52	O	3.59	O
6. I have a sufficient access to library resources.	3.26	S	2.83	O	3.05	S
7. I have a sufficient access to laboratory equipment and materials.	3.25	S	2.45	R	2.85	S
8. I have unlimited access to textbooks, worksheets, and other instructional materials	3.42	O	2.72	S	3.07	S
9. I do not experience financial challenges when accessing learning resources and technology	3.52	O	2.93	S	3.23	S
10. Laptops or computers are available for use.	3.72	O	3.14	S	3.43	O
11. The geographical location of our home is a hotspot to access strong internet connection.	3.65	O	3.14	S	3.40	O
12. Internet access is available at all times.	3.86	O	3.48	O	3.67	O
13. Printer and photocopier machines are available at home.	3.23	S	2.62	S	2.93	S
Overall	3.57	O	3.11	S	3.34	S

Legend: 3.40 – 4.19-Often (O), 2.60 – 3.39-Sometimes (S), 1.80 – 2.59-Rare(R)

Table 2c presents the availability and accessibility of learning resources as perceived by students in School A and School B. The overall mean is 3.34, interpreted as "Sometimes" (S), suggesting that access to learning

resources is inconsistent or limited, particularly in School B. School A reported a higher overall mean of 3.57 ("Often"), indicating relatively better access, while School B's lower mean of 3.11 ("Sometimes") reflects noticeable constraints in resource availability. Resources such as printed modules, internet access, and access to computers/laptops are generally available "Often" in both schools. This finding aligns with UNESCO (2022), which reported that many schools in Southeast Asia, including the Philippines, have made strides in improving digital access following the pandemic's push for remote and blended learning. However, both schools still struggle with physical learning facilities and supplementary materials, such as libraries, laboratory equipment, and printed instructional tools, which is consistent with the Asian Development Bank (ADB, 2023) study indicating that rural and underfunded schools often lack essential learning infrastructure and materials.

The financial burden of accessing learning technology was also highlighted in the table, with both schools rating this issue below the "Often" range. This supports the findings of David et al. (2021), who emphasized that socioeconomic status significantly influences students' ability to participate fully in distance learning, with many families unable to afford stable internet, devices, or printing resources. Furthermore, Manuelli and Del Mundo (2023) found that students in remote or disadvantaged areas commonly face inconsistent access to electricity, poor internet signal, and limited ICT tools, which closely reflects the results shown for School B, especially in the indicator for laboratory access (2.45 - "Rarely"). These findings indicate that while digital access has improved, inequities in resource distribution—especially in terms of physical, printed, and home-based tools—persist and hinder the quality of independent and technology-based learning, particularly in less equipped environments like School B. The data highlights a pressing need for stronger support systems from schools and local government units, echoing the recommendation in DepEd's Basic Education Development Plan 2030 (2022) to close resource gaps and improve learning equity, especially for low-income and geographically isolated learners.

Learners Support System - The table shows the data gathered from the respondents on the level of learning environment of senior high school students on learners Support System.

Table 2d

Level of Learning Environment of Senior High School Student on Learners Support System

Indicators	School A		School B		As a Whole	
	Mean	DR	Mean	DR	Mean	DR
1. My parents support me to learn at home.	4.10	O	3.83	O	3.97	O
2. My parents have the capacity to facilitate the modular learning sessions for me.	3.46	O	3.21	O	3.34	O
3. My parents and other members of the family assist me in answering the SLMs	3.48	O	3.10	S	3.29	O
4. My parents provide materials for my project	4.18	O	4.28	A	4.23	A
5. My parents help me in making my projects.	3.64	O	3.07	S	3.36	S
6. My parents communicate to my teachers if there are some unclarified instructions.	3.53	O	3.21	S	3.37	S
7. My parents can manage to help me learn while looking for ways to earn.	3.83	O	3.34	S	3.59	O
Overall	3.75	O	3.43	O	3.59	O

Legend: 4.20 – 5.00-Always (A), 3.40 – 4.19-Often (O), 2.60 – 3.39-Sometimes (S)

Table 2d shows learners' perceptions of the support system they receive at home, with an overall mean of 3.59 ("Often"), suggesting that students generally feel supported by their families in their learning. School A has a higher overall mean of 3.75, while School B recorded 3.43, both falling under "Often", though support appears more consistent in School A. The highest-rated indicator overall is "My parents provide materials for my project" with a mean of 4.23 ("Always"), reflecting strong material support across both schools, particularly in School B. However, indicators related to parental assistance in academic tasks, such as helping with SLMs (Self-Learning Modules) or communicating with teachers, show lower means, with some falling under "Sometimes" (S)—notably

in School B. This reflects a gap in active academic engagement, despite general emotional and financial support. These findings align with research from (Mahusay, 2023), which indicates that while Filipino parents are generally supportive, many lack the time, confidence, or educational background to effectively facilitate modular learning—especially in low-income and rural settings. Similarly, UNICEF Philippines (2021) highlighted that parental support during distance learning is more about encouragement and material provision, rather than instructional help, due to limited familiarity with subject content or work-related constraints.

The disparity between School A and School B also echoes findings by David et al. (2021), showing that urban or better-resourced families tend to provide more academic support, while families in rural areas or with lower income levels are less able to assist regularly—a reality exacerbated by overlapping responsibilities like income generation. Furthermore, (Mahusay, 2023) emphasize that effective learner support systems depend not just on willingness, but also on parent training, school communication, and socioeconomic factors, all of which affect how much meaningful help learners receive at home. In summary, while both schools show a generally supportive home learning environment, the results underline the need for more structured and inclusive parental engagement strategies, especially in less advantaged communities like School B, to help bridge gaps in home-based learning facilitation.

Level of Learning Environment - The table below shows the overall results of the computed mean and the corresponding descriptive rating of the different indicators of learning environment of senior high school students.

Table 2e

Summary Table on the Level of Learning Environment of Senior High School Students.

Indicators	School A		School B		As a Whole	
	Mean	DR	Mean	DR	Mean	DR
1. Learners Characteristics	3.76	O	3.43	O	3.60	O
2. Assessment Used by the Teacher	3.86	O	3.43	O	3.65	O
3. Resources used in Learning	3.57	O	3.11	S	3.34	S
4. Learners Support System	3.75	O	3.43	O	3.59	O
Overall	3.74	O	3.35	S	3.55	O

Legend: 3.40 – 4.19-Often (O), 2.60 – 3.39-Sometimes (S)

Table 2e presents the overall level of the learning environment in both schools. The combined mean is 3.55, interpreted as "Often" (O), indicating that students generally experience a supportive learning environment. School A demonstrates a higher overall mean (3.74 - "Often") compared to School B's 3.35 ("Sometimes"), showing that School A provides a more favorable learning setting. The strongest areas across both schools are teacher assessments (3.65) and learner characteristics (3.60), suggesting that students are motivated and teachers are effectively using assessments to guide learning. However, resources used in learning received the lowest mean (3.34 – "Sometimes"), especially in School B, which highlights inequities in access to learning tools and materials. This is supported by recent studies such as UNESCO (2022) and DepEd Philippines (2021), which report that urban schools tend to offer better access to learning materials and technology, while rural and lower-income schools face significant resource limitations, directly affecting the quality of education. In conclusion, while both schools maintain a generally supportive learning environment, addressing gaps in resource availability, particularly in School B, is essential to ensure equity and effectiveness in education delivery.

3.3 Level of Performance of the Students in Statistics and Probability

Table 3 presents the level of performance in Statistics and Probability among respondents from two schools based on the results of the achievement test. The performance is measured based on mean scores and interpreted using a set of statistical limits. Table 3 reveals that the level of performance in Statistics and Probability among Senior High School students from both School A and School B is classified as "Poor," based on their mean scores of 15.43 and 20.03, respectively. The overall mean of 16.46 reinforces this low level of performance across both institutions. These findings highlight the urgent need to enhance instructional strategies and implement targeted interventions aimed at improving students' comprehension and application of statistical concepts. The results are consistent with the established statistical limits, thereby confirming a pattern of underachievement in this area.

Table 3*Level of Performance in Statistics and Probability of Senior High School Students*

Respondents	Mean	Statistical Limit
School A	15.43	Poor
School B	20.03	Poor
Overall	16.46	Poor

Legend: 1 - 20 - Poor

3.4 Significant relationship between the study habits of the respondents and their learning environment?

It explores whether there is a significant relationship between the study habits of the respondents and their learning environment. This seeks to determine if students' academic behaviors are influenced by the conditions and support systems present in their surroundings.

Table 4*Relationship between Study Habits and Learning Environment of Senior High School Students*

Study Habits	Learning Environment							
	Learners Characteristics Computed		Assessment Used by Teacher Computed		Resources Used in Learning Computed		Learner Support System Computed	
	r	DC	R	DC	r	DC	r	DC
Time Management	0.669**	Strong	0.597**	Strong	0.581**	Strong	0.459**	Medium
Physical Status	0.507**	Strong	0.441**	Medium	0.461**	Medium	0.406**	Medium
Note Taking	0.581**	Strong	0.512**	Strong	0.514**	Strong	0.354**	Medium
Testing Strategies	0.607**	Strong	0.555**	Strong	0.487**	Medium	0.463**	Medium
Learning Motivation	0.648**	Strong	0.660**	Strong	0.496**	Medium	0.423**	Medium
Reading Ability	0.604**	Strong	0.553**	Strong	0.457**	Medium	0.399**	Medium
Memory	0.674**	Strong	0.555**	Strong	0.484**	Medium	0.370**	Medium
Health	0.625**	Strong	0.626**	Strong	0.564**	Strong	0.522**	Strong

Legend: ** Correlation is significant at the 0.01 level (2-tailed)

± 0.50 - ± 0.99 - Strong Correlation

± 0.30 - ± 0.49 - Medium Correlation

All correlation values in the table are marked with **, indicating that each relationship is statistically significant. This means that there is a reliable connection between different aspects of study habits and components of the learning environment. The strength of these relationships varies from medium to strong, based on the magnitude of the correlation coefficients (r-values).

The findings reveal that Time Management exhibits strong positive correlations with Learners Characteristics ($r = 0.669$), Assessment Used by Teacher ($r = 0.597$), and Resources Used in Learning ($r = 0.581$), while showing a medium correlation with the Learner Support System ($r = 0.459$). This suggests that students who manage their time well tend to demonstrate more positive learner traits, better engagement with assessments, and effective utilization of learning materials, although the influence on support systems is moderately felt. Physical Status shows a strong correlation with Learners Characteristics ($r = 0.507$) and medium correlations with other components of the learning environment, indicating that physical health strongly influences personal academic traits and moderately affects assessments, resources, and support systems. Note Taking has strong correlations with Learners Characteristics ($r = 0.581$), Assessment Used by Teacher ($r = 0.512$), and Resources Used in Learning ($r = 0.514$), but only a medium correlation with the Learner Support System ($r = 0.354$), implying that effective note-taking enhances cognitive and academic interactions but has less impact on institutional support.

Testing Strategies are strongly correlated with Learners Characteristics ($r = 0.607$) and Assessment ($r = 0.555$), and show medium correlations with Resources ($r = 0.487$) and the Support System ($r = 0.463$), suggesting that well-developed testing habits relate closely to academic performance and assessment methods, while having moderate ties to resources and support. Learning Motivation demonstrates strong relationships with Learners Characteristics ($r = 0.648$) and Assessment ($r = 0.660$), and medium correlations with Resources ($r = 0.496$) and the Support System ($r = 0.423$), indicating that motivation is significantly influenced by personal attributes and teacher practices, but only moderately by available resources and support. Similarly, Reading Ability is strongly linked to Learners Characteristics ($r = 0.604$) and Assessment ($r = 0.553$), and moderately related to Resources ($r = 0.457$) and Support Systems ($r = 0.399$), showing that strong reading skills support academic development and assessment interaction, with moderate enhancement of access to learning tools and support. Memory shows strong associations with Learners Characteristics ($r = 0.674$) and Assessment ($r = 0.555$), and medium correlations with Resources ($r = 0.484$) and Support System ($r = 0.370$), suggesting that memory is vital for academic traits and assessment engagement, while playing a moderate role in resource use and support reception. Lastly, Health stands out for having strong correlations across all components—Learners Characteristics ($r = 0.625$), Assessment ($r = 0.626$), Resources ($r = 0.564$), and Support System ($r = 0.522$)—highlighting that students' overall well-being significantly and consistently contributes to all areas of their learning environment.

The study reveals significant and mostly strong positive correlations between students' study habits and various aspects of their learning environment. Time management, memory, motivation, and health show particularly strong links to learner characteristics and assessment methods. Health stands out as the only habit with strong correlations across all areas, indicating its broad impact. Other habits like note-taking, testing strategies, and reading ability also show strong relationships with learner traits and teaching practices, but only moderate connections to resources and support systems. Overall, the results emphasize that effective study habits, especially those related to personal well-being and organization, play a crucial role in shaping a positive and productive learning environment.

Relationship Between Statistics and Probability Performance and Study Habits - This section examines whether there is a significant relationship between students' study habits and their performance in Statistics and Probability. It seeks to determine if effective study practices contribute to better academic outcomes in the subject.

Table 5a

Relationship Between Study Habits and Statistics and Probability Performance of Senior High School Students

Study Habits	Statistics and Probability Performance	
	Computed r	Degree of Correlation
1. Time Management	-0.156**	Small
2. Physical Status	-0.033**	Small
3. Note Taking	-0.027**	Small
4. Testing Strategies	-0.090**	Small
5. Learning Motivation	-0.066**	Small
6. Reading Ability	-0.035**	Small
7. Memory	-0.038**	Small
8. Health	-0.046**	Small

Legend: ** Correlation is significant at the 0.01 level (2-tailed)
 ± 0.01 - ± 0.29 - Small Correlation

Table 5a presents the relationship between various study habits and the performance of Senior High School students in Statistics and Probability. The computed correlation coefficients (r) for all variables fall within the small correlation range (± 0.01 to ± 0.29), indicating a weak negative relationship between the students' study habits and their performance in the subject. Among the eight study habits examined, time management showed the highest negative correlation ($r = -0.156$), followed by testing strategies ($r = -0.090$). Although these relationships are statistically significant at the 0.01 level, the weak correlation suggests that improvements in study habits alone may not strongly influence academic performance in Statistics and Probability. The findings imply that while study habits do play a role, other factors—such as teaching methods, prior knowledge, or learning environment—may have a more substantial impact on students' performance. This highlights the need for a more holistic approach in

supporting students' academic success in the subject.

Relationship Between Statistics and Probability Performance and Learning Environment - This section examines whether there is a significant relationship between students' learning environment and their performance in Statistics and Probability. It seeks to determine if effective study practices contribute to better academic outcomes in the subject.

Table 5b

Relationship Between Learning Environment and Statistics and Probability Performance of Senior High School Students

Learning Environment	Statistics and Probability Performance	
	Computed r	Degree of Correlation
1. Learners Characteristics	0.087**	Small
2. Assessment Used by Teacher	-0.089**	Small
3. Resources Used in Teaching	-0.141**	Small
4. Learners Support System	-0.085**	Small

Legend: ** Correlation is significant at the 0.01 level (2-tailed)
 ± 0.01 - ± 0.29 - Small Correlation

Table 5b shows the relationship between various components of the learning environment and students' performance in Statistics and Probability. All computed correlation coefficients (r) fall within the small correlation range (± 0.01 to ± 0.29), indicating weak relationships. The highest positive correlation was found between learners' characteristics and academic performance ($r = 0.087$), suggesting that students' individual traits—such as motivation, attitude, and engagement—may have a slight influence on their achievement. On the other hand, resources used in teaching showed the most notable negative correlation ($r = -0.141$), followed by assessment used by teachers ($r = -0.089$), and learner support system ($r = -0.085$). Although these correlations are statistically significant, their small magnitude implies that the learning environment has only a limited influence on students' performance in Statistics and Probability. These results suggest that other factors—such as curriculum content difficulty, teaching styles, or individual cognitive abilities—may play a more significant role in shaping student outcomes in this subject.

3.5 Significant Difference between School A and School B

The tables present the significant differences between School A and School B in three key areas: study habits, learning environment, and performance in Statistics and Probability. Through paired samples testing, the data aims to identify which aspects show meaningful gaps between the two schools, offering insights into factors that may influence student learning and academic outcomes.

Study Habits

Table 6a

Significant Differences Between the Two Different Schools on the Study Habits of the Students

Study Habits Indicators	School A Mean	School B Mean	Mean Difference	Computed t	P-Value	Significance
Time Management	3.8345	3.4345	0.40000	-2.646*	0.013	Significant
Physical Status	3.8897	3.7034	0.18621	-1.199 ^{ns}	0.241	Not Significant
Note Taking	3.6552	3.5586	0.09655	-0.579 ^{ns}	0.567	Not Significant
Teaching Strategies	3.8828	3.6897	0.19310	-1.140 ^{ns}	0.264	Not Significant
Learning Motivation	4.0552	3.7379	0.31724	-2.074*	0.047	Significant
Reading Ability	3.7517	3.6276	0.12414	-0.742 ^{ns}	0.465	Not Significant
Memory	3.8483	3.5793	0.26897	-1.648 ^{ns}	0.110	Not Significant
Health	3.8383	3.6483	0.20000	-1.135 ^{ns}	0.266	Not Significant

Legend: ** - significant at 0.01 level * - significant at 0.05 level ns – not significant

Table 6a shows significant differences in Time Management and Learning Motivation, where School A students scored higher. This suggests they manage their time more effectively and are more motivated to learn. With regards to time management, it was identified as a strong predictor of academic success (Journal of Educational Psychology, 2023). School A likely fosters better time-related habits. And Learning Motivation was

linked to school culture and teaching quality (Frontiers in Psychology, 2023), indicating School A might have more engaging educational practices. Other indicators (e.g., Note Taking, Memory, Health) showed no significant differences, aligning with recent research (APA, 2024) that these are often individual-based and not strongly influenced by school environment. School B may benefit from enhancing support systems in time management and motivation through targeted programs or interventions.

Learning Environment

Table 6b

Significant Differences Between the Two Different Schools on the Learning Environment of the Students

Study Habits Indicators	School A Mean	School B Mean	Mean Difference	Computed t	P-Value	Significance
Learner's Characteristics	3.8500	3.4310	-0.41897	-4.068**	0.000	Highly Significant
Assessment Used by Teacher	3.9438	3.4276	-0.51621	-4.009**	0.000	Highly Significant
Resources Used in Teaching	3.6283	3.1062	-0.52207	-3.579**	0.001	Highly Significant
Learners Support System	3.7138	3.4345	-0.27931	-1.628 ^{ns}	0.115	Not Significant

Legend:** - significant at 0.01 level ns – not significant

It shows highly significant differences in three areas of the learning environment between the two schools—Learner's Characteristics, Assessment Used by Teachers, and Resources Used in Teaching—with School A scoring notably higher in all. On Learner's Characteristics it was strongly influenced by the school climate and teaching practices (*Educational Review, 2024*). School A's higher score suggests a more supportive and engaging environment for student growth. On assessment, studies (e.g., *Assessment in Education, 2023*) highlight that modern, varied assessments improve learning outcomes—indicating School B may be using more effective evaluation methods. And on teaching resources, access to quality teaching materials is a key factor in academic performance (*UNESCO Report, 2023*), and School A's higher score supports this. The Learners Support System showed no significant difference, suggesting both schools offer similar levels of academic and emotional support. Findings imply that School B may need to enhance teaching tools, improve assessment practices, and foster learner-centered strategies to match the learning environment quality of School A.

Performance in Statistics and Probability

Table 6c

Significant Differences Between the Two Different Schools on the Performance in Statistics and Probability of the Students

	School A Mean	School B Mean	Mean Difference	Computed t	P-Value	Significance
Achievement Test	15.1034	20.0345	-4.9311	-4.068**	0.000	Highly Significant

Legend: ** - significant at 0.01 level

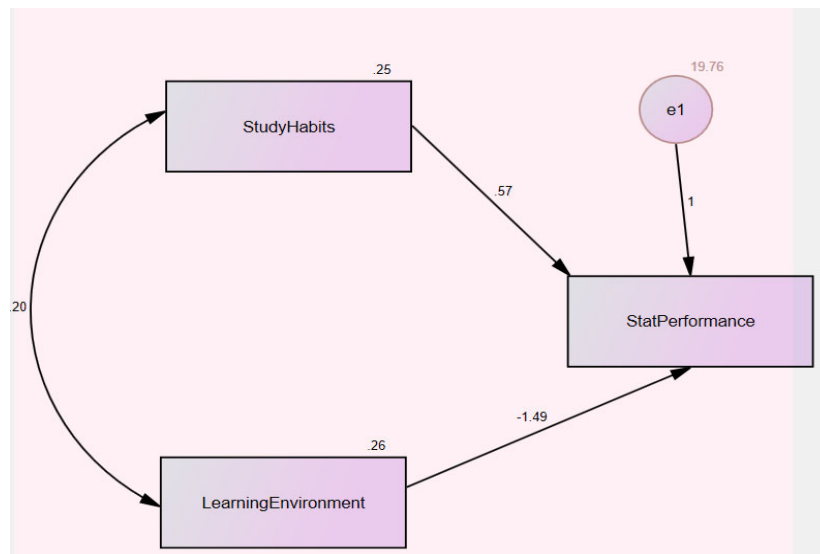
The results in table 6c reveal a clear performance gap between the two schools, with students from School B significantly outperforming those from School A in Statistics and Probability based on the achievement test. The reported mean scores show a notable difference of approximately five points (20.0345 for School B versus 15.1034 for School A). The computed difference is 4.9311, indicating a substantial disparity. The computed t-value of -4.068, along with a p-value of 0.000 ($p < 0.01$), confirms that the difference in performance is statistically highly significant.

This finding aligns with recent studies in mathematics education. For instance, research from the OECD (2023) highlights that schools with better instructional quality, more qualified educators, and access to enhanced learning resources generally achieve stronger outcomes in mathematics-related subjects, including statistics. This suggests that School B may benefit from such educational advantages. Similarly, Hattie (2021) emphasizes the role of a

positive and engaging learning environment in boosting academic achievement. A well-structured and motivating school atmosphere could be contributing to School B's superior performance. Furthermore, recent educational frameworks advocate for the integration of real-life data and technology in the teaching of statistics, which has been shown to improve student understanding and retention (Zhou et al., 2022). If School B employs such innovative methods, it may further explain the observed gap.

In summary, the data strongly supports the conclusion that School B outperforms School A in Statistics and Probability, and this statistically significant difference is well-supported by current research emphasizing the importance of teaching quality, school environment, and modern educational practices.

The Path Model showing the Interrelationship of Study Habits, Learning Environment and Statistics Performance



This path diagram illustrates the structural relationships among three variables: Study Habits, Learning Environment, and Statistical Performance. The model aims to determine how Study Habits and Learning Environment influence students' performance in Statistics. The strong positive path from Study Habits to Statistical Performance (0.57) in the model is well-supported by previous research. Credé and Kuncel (2008), in their meta-analysis, concluded that study habits, skills, and attitudes are strong predictors of academic success—often more influential than intelligence or standardized test scores. Their findings highlight the foundational role of effective study behaviors in supporting academic achievement, particularly in demanding subjects like Statistics. Similarly, Robbins et al. (2004) emphasized the importance of psychosocial factors, including motivation and self-regulated learning, in predicting academic outcomes. This aligns closely with the model's significant path, reinforcing that students who possess strong study habits are more likely to perform well in Statistics due to their ability to manage time, remain motivated, and engage deeply with course content. Additionally, there is a positive correlation (0.20) between Study Habits and Learning Environment, signifying that improvements in one are somewhat associated with improvements in the other, although the relationship is relatively weak.

In some research, it indicates that supportive learning environments help shape and encourage effective study habits, reinforcing the positive path in your model. The error term (e1) associated with Statistical Performance has a variance of 19.76, which indicates the portion of variance in Statistical Performance not explained by the model. In total, the model suggests that Study Habits are a key positive predictor of students' success in Statistics, while the role of Learning Environment is complex and may involve mediating or confounding variables that merit further exploration.

4. Conclusion

This presents the conclusion drawn from the findings of the study. It summarizes the key results in relation to the research objectives and provides insights into their implications.

- Students generally exhibit positive study habits, with learning motivation as their strongest trait, reflecting a strong drive for academic success. However, note-taking is the weakest area, indicating a need for improvement. This suggests that teachers should emphasize effective note-taking strategies in their instruction, while students should actively practice and refine their own note-taking skills to better support their learning.
- Both schools provide a generally supportive learning environment that boosts student performance. Strengths include effective teacher assessments and motivated learners, though limited learning resources remain a key challenge. This implies that teachers should continue using effective assessment practices while advocating for better resources, and students should maintain their motivation and make the most of available materials to support their learning.
- Poor performance in Statistics and Probability among Senior High School students reveals a major gap in understanding and applying statistical concepts. This implies that teachers need to adopt more practical and engaging teaching methods to strengthen conceptual understanding, while students should seek additional practice and actively participate in learning activities to build their skills.
- There is a strong positive link between study habits and the learning environment, with factors like time management, motivation, memory, and health highlighting the importance of supportive educational settings. This implies that teachers should create a structured and encouraging classroom atmosphere, while students should develop disciplined study routines and prioritize their well-being to maximize their academic potential.
- The learning environment has a weak impact on students' performance in Statistics and Probability. This implies that teachers should not only focus on providing resources but also strengthen direct instructional approaches and student engagement, while students must take greater personal responsibility for their learning by developing stronger study habits and seeking help when needed.
- Supportive educational environment, with strong study habits, motivated learners, effective teaching, and sufficient resources, is key to student success, especially in subjects like Statistics and Probability. This implies that teachers must consistently foster a positive and resource-rich learning environment, while students should cultivate strong study habits and stay motivated to fully benefit from the support provided.
- While study habits, particularly learning motivation, testing strategies, and health, play a vital role in student success in Statistics, the learning environment's complex and weaker influence highlights the need for further research, with strengthening study habits remaining a key strategy for improving academic outcomes. This implies that teachers should prioritize helping students develop effective personal study strategies alongside teaching content, while students must take an active role in improving their own habits to enhance their academic performance.

Recommendations

- Schools focus on improving note-taking skills through targeted training and strategies, while continuing to foster and build on students' strong learning motivation.
- Schools enhance access to learning resources to complement their effective assessments and motivated learners, ensuring a more equitable and comprehensive learning environment.

- Targeted interventions, such as focused tutorials and practical exercises, be implemented to address the gap in understanding and applying statistical concepts.
- Schools further promote time management, motivation, memory techniques, and health initiatives to enhance both study habits and the learning environment for better student outcomes.
- Schools strengthen the learning environment in Statistics and Probability by improving teaching resources, instructional methods, and student engagement to better support academic performance in these areas.
- Schools maintain and strengthen their supportive educational environments by ensuring access to sufficient resources, effective teaching, and continued focus on developing strong study habits and learner motivation.
- Schools focus on strengthening study habits, especially motivation, testing strategies, and health, while further research is conducted to better understand the learning environment's impact on academic outcomes.

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