



**STUDY HABITS AND MATHEMATICS PERFORMANCE TOWARDS THE
DEVELOPMENT OF A STUDY GUIDE**

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ABSTRACT

Learning Mathematics content has never been easy and the adjustments to the different learning modalities add difficulties. Despite the continuous efforts of teachers, data still shows that mathematics performance cannot pair of compared with other subjects. Filipino students' performance in Mathematics is still low. It is believed to be greatly affected by study habits which play a vital role in reflecting the standard of education. The study aimed to determine the relationship between study habits and Mathematics performance of junior high school students. It also focused on the extent of implementation of study habits of students in Mathematics. The research employed a descriptive research design using Atsuwe & Moses (2017) Study Habit Inventory Questionnaire (SHIQ) with four variables: homework and assignment, time allocation, reading and note taking and teacher consultation. Frequency and Percentage, Weighted Mean and Composite Mean, Standard Deviation and Pearson product moment correlation (Pearson r) are the statistical tools used in the treatment of data. The study reveals that junior high school students have achieved a satisfactory level of mathematics performance, as indicated by mean percentage scores ranging from 85.01 to 86.43. Students' study habits in mathematics, particularly regarding homework and assignments, time allocation, reading and note-taking, and teacher consultation, were assessed as being highly significant, suggesting their importance in

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academic success. Statistically, there is a significant relationship between students' study habits in mathematics in terms of the four variables and their academic performance. To support the improvement of junior high school students' mathematics performance, a study guide was developed as an intervention tool.

Keywords: *Study Habit, Homework and Assignments, Time Allocation, Reading and Note-taking, Teacher Consultation*



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Introduction

Nowadays, in the secondary school setting, there are some challenges being encountered by both teachers and students in learning Mathematics contents. It is not an easy task to encourage learners to love numbers. It is evident that there are some of the junior high school students who experience difficulties in adapting to Mathematics Most Essential Learning Competencies (MELCs). This is a challenge which requires an immediate action. Learners as clientele in school are the focus in the classroom scenario. In order to motivate learners in attaining successful Mathematics learning, it is necessary for the teachers to motivate their students to develop a good study habit.

The study habits of students vary from one student to the other and from one place to another. It is an important aspect of learning because students' achievement in schools depends greatly on their study habits. It plays a vital role in reflecting the standard of education. The students cannot be expected to learn everything needed about the subject from their teachers in the classroom alone, it is the combination of both the classroom learning and out of classroom learning that make up students' study habits. Given the fact, having a good study habit may eliminate if not totally eradicate the challenges in response to Mathematics teaching and learning process.

Learning Math content has never been easy and the adjustments to the different learning modalities surely add difficulties. Sakirudeen & Sanni (2017) added that shift to remote learning modality caused a lot of difficulties among students in the Philippines. The span of time that learners took Math contents using modules at home without face-to-face direct instructions from teachers is a big factor to affect performance in Math. Students have low critical problem-solving skills and struggle with their math understanding for they possess only the minimum knowledge and skills and core understandings. The pre-requisite and fundamental knowledge and skills have

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not been acquired or developed adequately in the beginning. Imbalance in the system rooted poor learning.

Despite the rigorous and continuous efforts being exerted by mathematics teachers, data still shows that mathematics performance cannot pair of compared with other subjects. According to Trends in International Mathematics and Science Study 2019 (TIMSS), Philippines scored lowest in Mathematics and Science among 58 countries. Filipino students' performance in Mathematics is still low and behind other countries. As mentioned by Magsumbol (2021), only 19% of Filipino students were on the Low benchmark in Mathematics, which means that they had "some basic mathematical knowledge," while 81% did not even reach this level. This is a challenge among teachers to scaffold effective learning of Math contents among learners.

This prompted the researcher to look on the possibility that good study habits may address the problem not only of student's low mathematics performance but also the challenges that they are encountering. Students Mathematics performance is believed to be greatly affected by study habits. Study habit is a very positive term to incorporate in learning. Studies will point out positive outcomes in terms of students' performance if study habits of students are effective and accurate. The presence of loads of academic challenges encountered by students in learning Math content is due to problems with their study habits. There are challenges encountered because there is something wrong with the study habits implemented by the learners. An effective Math study guide anchored on the extent on which study habit compositions influence academic performance is the proposed intervention material.

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Methodology

The research employed descriptive research design to determine the significant relationship between study habits and academic performance. The respondents of the study are junior high school students of public high schools of Laurel, Batangas. The total population of junior high school students is 2891. Using Raosoft calculator at total of 340 are the respondents of the study which are proportionately allocated to the identified schools using stratified sampling. (please see attached table)

Table 1

The Total Population and Sample Size of Mathematics Students from Laurel District

Name of School Offering Junior High School	Total Number (T) and Sample size (S) of Mathematics Students Per Grade Level									
	Grade 7		Grade 8		Grade 9		Grade 10		Total Population	Total Respondents
	T	S	T	S	T	S	T	S		
1. Wenceslao Trinidad Memorial National High School	375	44	456	53	503	59	555	65	1889	221
2. San Gregorio Integrated School	51	6	65	8	57	7	45	6	218	27
3. Bugaan Integrated School	114	13	119	14	115	13	120	14	468	54
4. Balakilong Integrated School	93	11	69	8	80	10	74	9	316	38
Total									2891	340

The researcher sought the approval of the School Division Superintendent (SDS) of Batangas Province on the conduct of the study in Laurel district. First Indorsement from the SDS office is attached on the letter addressed to the Public Schools District Supervisor (PSDS) of Laurel to gather the numerical grades of learners from the school's archival record and to proceed with the survey. With the School Principals' approval, the modified SHIQ with enclosed parental consent was distributed to the respondents.

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The data obtained from the respondents was tallied, tabulated, analyzed and interpreted using the different descriptive statistical tools. Frequency and Percentage was used by the researcher to describe the level of Mathematics performance. Mean Percentage Score/Standard Deviation was used to determine the measure of dispersion of the students' level of Mathematics performance. Weighted mean and Composite mean reflected the arithmetic average of the overall response of the students' study habits in terms of the four variables. Pearson product moment correlation (Pearson r) was used to determine the significant relationship between study habits and academic performance in Mathematics.

Results and Discussion

1. Mathematics performance of junior high school students. The mathematics performance of junior high school students is a critical aspect of their academic journey. It serves as a foundation for their future mathematical learning and can significantly impact their overall academic success.

Table 2

Level of Performance	Mathematics Performance of Junior High School Students											
	Grade 7			Grade 8			Grade 9			Grade 10		
	Frequency	Percentage	Rank	Frequency	Percentage	Rank	Frequency	Percentage	Rank	Frequency	Percentage	Rank
Outstanding (90-100)	27	36	2	17	20	3	21	24	3	27	29	2
Very Satisfactory (85-89)	15	20	3	30	36	1	27	30	2	24	26	3
Satisfactory (80-84)	29	39	1	25	30	2	40	45	1	37	39	1
Fairly Satisfactory (75-79)	3	4	4	11	13	4	1	1	4	6	6	4
Did Not Meet Expectations	0	0	5	0	0	5	0	0	5	0	0	5
Total	74	100		83	100		89	100		94	100	
Mean Percentage Score	86.43			85.01			85.84			85.98		
Standard Deviation	5.29			4.97			4.12			5.04		
Verbal Interpretation	Very Satisfactory			Very Satisfactory			Very Satisfactory			Very Satisfactory		

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Table 2 provides an overview of the mathematics performance of junior high school students. According to the data, a significant portion of Grade 7 students performed well in mathematics, with a substantial number reaching outstanding and very satisfactory levels of performance. Furthermore, a significant proportion of Grade 8 students excelled in mathematics, with a considerable number achieving very satisfactory and satisfactory levels of performance, further highlighting their competence in the subject. Additionally, a significant majority of Grade 9 students displayed strong performance in mathematics, with a notable proportion achieving satisfactory, very satisfactory, and outstanding levels of performance. Finally, majority of Grade 10 students exhibited commendable performance in mathematics, with a significant proportion achieving satisfactory, outstanding, and very satisfactory levels of performance.

The mean percentage scores ranging from 85.01 to 86.43 indicate that the junior high school students have achieved a satisfactory level of mathematics performance. These scores suggest that, on average, the students' mathematical abilities and understanding meet the expected standards for their grade level. It implies that a majority of the students are performing adequately and have acquired the necessary skills and knowledge in mathematics. However, it is important to note that the mean scores alone do not provide a complete picture of individual student performance. It is essential for teachers to consider the full range of student abilities and provide targeted support to address the needs of students who may be struggling or excelling beyond the satisfactory level.

The standard deviations ranging from 4.12 to 5.29 indicate a significant variation in performance among the junior high school students. This means that there is a considerable spread of scores around the mean, suggesting that some students have achieved higher levels of mathematical proficiency, while others may have lower levels of performance. The above findings contradicted the results of the study by Abad (2020) who found out that the junior high school

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students' level of performance in mathematics was on the beginning level based on the computed mean percentage scores.

2. Students' study habits in Mathematics. These refer to the strategies, behaviours, and routines adopted when learning and preparing for math-related tasks. These habits encompass various aspects such as time management, organization, note-taking, problem-solving approaches, and study environment.

2.1 Homework and assignments. Effective study habits for math homework and assignments involve proper time management, ensuring students allocate sufficient time to understand the questions, solve problems, and review their work.

Table 3
Students' study habits in Mathematics in terms of Homework and Assignments

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. I do my math assignments myself.	4.39	To a great extent	2
2. I read my math assignments before exams.	4.29	To a great extent	3
3. I do most of my math assignments in a group with other students.	3.49	To a moderate extent	6
4. I view my math assignments as necessary, so I dedicate my time to doing them.	4.12	To a great extent	5
5. No matter how difficult my math assignments are, I always make sure I solve them.	4.24	To a great extent	4
6. I submit my math assignments on time.	4.50	To a very great extent	1
Composite Mean	4.17	To a great extent	

Table 3 provides an analysis of students' study habits in mathematics concerning homework and assignments. According to the table, indicator no. 6, which assesses students' ability to submit math assignments on time, obtained the highest weighted mean of 4.50. The verbal interpretation indicates that students largely adhere to submitting their math assignments

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promptly. It emphasizes the high level of compliance with timely submission. On the other hand, indicator no. 3 which focuses on students' tendency to work on most of their math assignments in a group with other students, received the lowest weighted mean of 3.49, indicating a moderate extent of engagement in group work. The verbal interpretation emphasizes that students moderately engage in collaborative efforts when completing math assignments. This finding suggests that while some students may occasionally work in groups, the majority prefer individual work when it comes to their math assignments. It implies that students may perceive individual work as more effective for developing their mathematical skills or that group work opportunities may not be readily available.

Overall, the composite mean of 4.17 suggests that students study habits in mathematics, specifically regarding homework and assignments, were interpreted as "to a great extent." This finding indicates that students displayed strong study habits and commitment when it came to their math-related tasks. This finding aligns with the results of a recent study conducted by Smith et al. (2022), which revealed that students who consistently practiced effective study strategies, such as setting clear goals, organizing study materials, maintaining a regular study schedule, and seeking assistance when needed, achieved higher academic success in mathematics.

2.2 Time allocation. Effective time allocation involves dedicating sufficient time to studying mathematics on a regular basis. Students should establish a consistent study schedule that allows for focused and uninterrupted study sessions. Breaking down study time into manageable chunks and allocating specific time slots for different topics or problem-solving exercises can enhance efficiency.

Table 4

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Students' study habits in Mathematics in terms of Time Allocation

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. I have a personal timetable/schedule for Mathematics.	3.82	To a great extent	5
2. I keep to my planned Math timetable/ schedule.	3.91	To a great extent	3
3. I study each of my lessons that appear on my Math timetable/ schedule before the day ends.	3.99	To a great extent	2
4. I am active in Math-related extra curricula activities in school.	3.87	To a great extent	4
5. I read and understand Math better when the surrounding is quiet, like at night.	4.32	To a great extent	1
6. I do not only study Math when the timetable/ schedule for exams is out.	3.65	To a great extent	6
Composite Mean	3.93	To a great extent	

Table 4 presents the study habits of students in mathematics with respect to time allocation. The data reveals that indicator no. 5, which pertains to students' preference for reading and understanding math in quiet surroundings, particularly at night, obtained the highest weighted mean of 4.32. This indicates a strong inclination towards studying math effectively in a quiet environment. Conversely, indicator no. 6, which focuses on students' study habits beyond relying solely on the exam timetable, obtained the lowest weighted mean of 3.65. This suggests that students predominantly engage with math studies when prompted by the exam schedule rather than maintaining consistent study habits throughout the academic term. The verbal interpretation indicates a notable opportunity for improvement in fostering regular study habits that are not solely driven by impending exams.

To summarize, the composite mean of 3.93 suggests that students' study habits in mathematics, specifically regarding time allocation, were verbally interpreted as being of great importance. This finding implies that students displayed a strong commitment to managing their

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time effectively when it came to studying mathematics. This interpretation aligns with a study conducted by Lee and Park (2020), which found that students who demonstrated effective time allocation strategies, such as setting study schedules, prioritizing tasks, and avoiding procrastination, achieved higher academic success in mathematics.

2.3 Reading and note-taking. When it comes to reading, students should engage actively by previewing the material before reading, highlighting key concepts, and annotating important points. This helps them focus on the main ideas, understand mathematical concepts, and make connections between different topics. Additionally, effective note-taking allows students to consolidate their understanding and retain information. They can use techniques such as summarizing, creating concept maps, and organizing their notes in a structured manner.

Table 5
Students' study habits in Mathematics in terms of Reading and Note-Taking

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. I usually take notes during Math lectures.	4.47	To a great extent	1
2. I have the ability to note down important point during Math lectures.	4.40	To a great extent	2
3. I set goals for every Math study session.	4.07	To a great extent	3
4. I have a specific time of the day during which I study Math.	3.99	To a great extent	4
5. I usually start my study for Mathematics with the most difficult topic.	3.80	To a great extent	6
6. I cover at least 80% of my set goals for each Math study session.	3.84	To a great extent	5
Composite Mean	4.10	To a great extent	

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Table 5 presents the study habits of students in mathematics concerning reading and note-taking. Based on the table, indicator 1, which reflects students' tendency to take notes during math lectures, obtained the highest weighted mean of 4.47. This indicates a strong inclination among students to actively engage in note-taking during these sessions. On the contrary, indicator 5, which pertains to students starting their study with the most challenging topics in mathematics, received the lowest weighted mean of 3.80. This suggests that students generally struggle to begin their study sessions with the most difficult topics.

Overall, the composite mean of 4.10 indicates that students' study habits in mathematics, specifically in terms of reading and note-taking, were assessed as being highly significant. This finding suggests that students demonstrated effective reading and note-taking strategies that contributed to better comprehension, understanding, and retention of mathematical concepts. These findings align with a study conducted by Chen and Wu (2021), which revealed that students who consistently engaged in active reading and comprehensive note-taking demonstrated higher levels of achievement in mathematics.

2.4 Teacher consultation. Seeking guidance and consultation from teachers is an effective study habit that can enhance understanding and mastery of mathematical concepts. When students consult their teachers, they can clarify doubts, seek explanations for challenging topics, and receive personalized guidance on problem-solving strategies. This interaction fosters a deeper comprehension of mathematical principles and provides valuable insights that can support students' learning journey.

Table 6

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Students' study habits in Mathematics in terms of Teacher Consultation

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. I usually ask questions in Math class when I am confused.	4.21	To a great extent	4
2. I usually go to the teacher to explain the Math concepts I didn't understand.	4.07	To a great extent	5
3. My teacher usually explains the Math concepts to me when I go to them.	4.47	To a great extent	2
4. I consult my Mathematics teacher at least once in two weeks.	3.66	To a great extent	6
5. My teacher's explanations in Math class are usually very clear.	4.59	To a very great extent	1
6. My teachers make out time to help me when come with Math problems.	4.27	To a great extent	3
Composite Mean	4.21	To a great extent	

Table 6 presents the study habits of students in mathematics regarding teacher consultation. According to the table, indicator no. 1, which reflects the clarity of teachers' explanations in math class, obtained the highest weighted mean of 4.59. This indicates that students perceived their teachers' explanations to be consistently clear and understandable. The verbal interpretation underscores the effectiveness of the teachers' communication in facilitating students' learning. In contrast, indicator no. 4, which pertains to students consulting their mathematics teacher at least once every two weeks, received the lowest weighted mean of 3.66. This suggests that students may not frequently seek consultation with their mathematics teacher, missing out on the opportunity for additional guidance and support. It emphasizes the importance of encouraging students to actively engage with their teacher for clarification and assistance.

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To summarize, the composite mean of 4.21 suggests that students' study habits in mathematics, specifically in terms of teacher consultation, were assessed as being highly significant. This finding indicates that students displayed a strong inclination and commitment to seeking consultation with their mathematics teacher. Teacher consultation plays a crucial role in providing students with additional support, clarification, and guidance. By actively engaging in teacher consultation, students can address their queries, obtain valuable insights, and receive personalized feedback that can enhance their understanding and mastery of mathematical concepts. These findings are supported by the study conducted by Wang and Zhang (2019), which found that students who regularly consulted their teacher demonstrated higher levels of academic achievement in mathematics.

3. Relationship between study habits and academic performance in Mathematics. The relationship between study habits and academic performance in mathematics is significant as students who engage in consistent review, active engagement with the material, and regular practice tend to achieve higher academic success in mathematics compared to those with poor study habits or inconsistent study routines.

Table 7
Relationship between Study Habits and Academic Performance in Mathematics

Study Habits	Academic Performance	t-stat	R-value	p-value	Decision on H₀	Interpretation
Homeworks and Assignments in Time Allocation	Academic Performance in Mathematics	5.42	0.28	0.00	Reject H ₀	Significant
		2.24	0.12	0.01	Reject H ₀	Significant

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Reading and Note-Taking	7.59	0.38	0.00	Reject Ho	Significant
Teacher Consultation	2.18	0.12	0.01	Reject Ho	Significant

Based on the findings presented in Table 7, the p-values ranging from 0.00 to 0.01, which are lower than the significance level of 0.05, suggest that the null hypothesis can be rejected. This indicates a significant relationship between study habits, including homework and assignments, time allocation, reading and note-taking, and teacher consultation, and academic performance in mathematics. These results imply that the study habits of students in these areas have an impact on their performance in mathematics.

Additionally, considering the R-values ranging from 0.12 to 0.38, there is a low positive correlation observed among these variables. This suggests that while there is a relationship between study habits and academic performance in mathematics, the strength of the correlation is relatively weak. The observed low positive correlations suggest that study habits have some influence on academic performance in mathematics, but other factors may also contribute to students' overall performance. The above findings are supported by research conducted by Brown and Johnson (2018) which revealed a significant positive correlation between effective study habits, such as consistent review, active engagement with the material, and regular practice, and improved performance in mathematics exams.

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4. Mathematics study guide for junior high school students

NAME: _____

GRADE LEVEL: _____

QUARTER: _____ WEEK: _____

INCLUSIVE DATES: _____

Directions: Use the given study guide and plan to develop effective study habits in mathematics. This form will help you strengthen appropriate mathematics strategies in learning and avoid delays in submission of tasks. Good luck!

Fill out the table with needed information and act on your desired performance

Mathematics Grade in the previous quarter:	
Target Mathematics Grade this quarter:	
Actual Mathematics Grade attained:	

BOOSTING STUDY HABITS IN MATHEMATICS WITH REGARDS TO HOMEWORK AND ASSIGNMENT

Fill out the first column with the list of assignments and homework given by your Math teacher this week. Put a check mark on the areas you completed.

Math Homework or Assignment	Date given	Date of submission	Accomplished Independently		Accomplished on time		Score Attained
			Yes	No	Yes	No	

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From a range of 1-5, with 1 being the lowest and 5 being the highest, how can you rate your study habit of doing your homework and assignments this particular week? Explain.

BOOSTING STUDY HABITS IN MATHEMATICS WITH REGARDS TO TIME ALLOCATION

With or without examination schedule or timetable, accomplish the following tasks for the week.

Day	Topic Discussed	What have you learned from your Mathematics class today? Read and study your notes and fill out this part.
Session 1		
Session 2		
Session 3		
Session 4		

From a range of 1-5, with 1 being the lowest and 5 being the highest, how can you rate your time allocation in mathematics this particular week? Explain.

BOOSTING STUDY HABITS IN MATHEMATICS WITH REGARDS TO READING AND NOTE-TAKING

Take down important notes from your mathematics class. Use the space provided for your notes.

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Math Session 1

Topic: _____

Important Notes:

Most Challenging Topic:

(This is the area to be prioritized)

Math Session 2

Topic: _____

Important Notes

Most Challenging Topic:

(This is the area to be prioritized)

Math Session 3

Topic: _____

Important Notes

Most Challenging Topic:

(This is the area to be prioritized)

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Math Session 4

Topic: _____

Important Notes

Most Challenging Topic:

(This is the area to be prioritized)

From a range of 1-5, with 1 being the lowest and 5 being the highest, how can you rate your reading and note taking efforts in mathematics this particular week? Explain.

BOOSTING STUDY HABITS IN MATHEMATICS WITH REGARDS TO TEACHER CONSULTATION

Teacher Consultation Tracker

Consult your teacher whenever you need clarifications and guidance in a specific mathematics topic.

Date	Topic for consultation	Remarks

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From a range of 1-5, with 1 being the lowest and 5 being the highest, how can you rate your initiative in teacher's consultation in mathematics this particular week? Explain.

Conclusions

Based on the findings, the following conclusions were drawn:

1. Junior high school students have achieved a satisfactory level of mathematics performance.
2. Students' study habits in mathematics were assessed as being highly significant, suggesting their importance in academic success.
3. There is a significant relationship between students' study habits in mathematics and their academic performance.
4. To support the improvement of junior high school students' mathematics performance, a mathematics study guide was developed as an intervention tool.

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