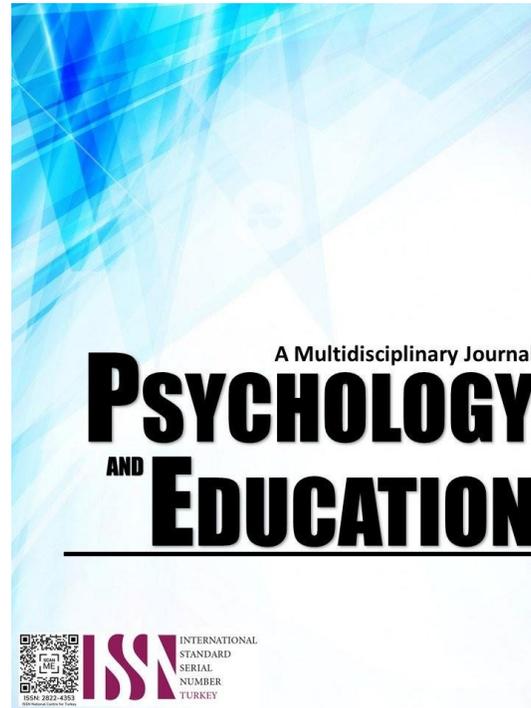


THE MEDIATING EFFECT OF TIME MANAGEMENT SKILLS ON THE RELATIONSHIP BETWEEN HOMEWORK LOAD AND MATHEMATICS ACHIEVEMENT AMONG BSED MATHEMATICS COLLEGE STUDENTS



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The Mediating Effect of Time Management Skills on the Relationship Between Homework Load and Mathematics Achievement among BSEd Mathematics College Students

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Abstract

The purpose of the study was to determine the mediating effect of time management skills on the relationship between homework load and mathematics achievement among mathematics college students. The study is quantitative non-experimental research that utilizes descriptive-correlational, and mediation analyses. Using stratified random sampling specifically proportional allocation for the sampling techniques and Slovin's formula with 0.05 margin of error for the sample size, a sample of 150 randomly selected mathematics education students answered the surveys on the three variables. Results showed that the level of homework load and mathematics achievement were in all high level. Moreover, the level of time management skills is also at a high level. Results also revealed that the relationship between homework load and mathematics achievement, homework load and time management skills, and time management skills and mathematics achievement among first to fourth-year mathematics students were significant. Moreover, the results showed that time management skills fully mediated the relationship between homework load and mathematics achievement. This means that giving students more homework in math can initially help improve their basic understanding. However, this benefit may fade if the homework time is not well-managed. Teachers should also think about the amount of homework they give students, as well as their thinking strategies and how they manage resources. These factors can influence how well teaching quality relates to satisfaction with math. In summary, this study shows that well-organized schedule can help improve the amount of homework done and the success in math.

Keywords: *homework load, mathematics achievement, time management skills, mediation analysis*

Introduction

Effective time management is crucial for math success in college due to increased academic demands. Different aspects of homework, identifiable and measurable on their own, contribute to this multifaceted process (Guo & Fan, 2018).

Procrastination in academic tasks, particularly in mathematics, negatively impacts students' performance. Delaying assignments leads to increased stress, frustration, poor grades, reduced motivation, non-compliance with tasks, and low-quality intellectual outputs. Research suggests that, in certain cases, this may contribute to significant challenges such as low self-esteem and depression (Kurtovic et al., 2019).

In Taiwan, many pupils continue to fall behind in mathematical achievement and are classified as low-performing learners in the discipline. The results of the 2015 PISA and Trends in Mathematics and Science Study (TIMSS) showed a problem for Taiwan. Although Taiwanese students performed better on average in mathematics literacy than students from other nations, there was still a considerable proportion of low-achieving children in Taiwan. Furthermore, most Taiwanese pupils demonstrate a lack of motivation and confidence in mastering mathematics (Yeh et al., 2019).

In the Philippines, PISA 2018 revealed alarming results with Filipino students ranking among the lowest performers globally in mathematics. Less than 20% demonstrated minimum proficiency (Level 2), while over 50% displayed very low proficiency (below Level 1). This specifically focuses on high levels of calculus, arithmetic sequence, probability, algebra, number theory, and differential equations and systems. Students are found to have low grades and logical reasoning which hinders their achievement in math. Various factors affect mathematics achievement, including the roles of teachers, school leaders, students, and parents, as well as how much influence each group has and the impact of those influences. However, there have been no studies that combine these different factors to analyze their overall effect on mathematics achievement in the Philippines. Students in the Philippines are significantly behind their peers worldwide in math skills. This gap in mathematics achievement presents a serious challenge for the education system in the Philippines and requires immediate attention to meet global standards (Department of Education, 2019).

The urgent necessity to bridge the research gap in understanding factors affecting undergraduate students' assignment completion rates underscores the imperative for collaborative efforts. By harnessing interdisciplinary expertise, researchers can undertake a thorough exploration into the interconnected domains of educational policies, equity considerations, mental health ramifications, and career preparedness. Moreover, conducting such a study holds relevance for school enhancement, offering invaluable insights into time management skills and their mediating role on the correlation between homework load and mathematics achievement among college students. This study, situated within the context of mathematics education, provides a novel perspective that could inform educational practices and policies, empowering college administrators to cultivate a supportive and conducive learning milieu, thereby augmenting student success in higher education.

In connection, numerous studies have explored the link between time management, homework load, and math achievement. The

researcher aimed to analyze how time management impacts the relationship between homework and math performance. This study fills a gap by adding new insights to existing literature. To cite some established studies, the study of Xu et al. (2014), entitled “Modeling Student’s Time Management in Math Homework” and Vasquez et al. (2015) entitled “Exploring Home-School Value Conflicts: Implications for Academic Achievement and Well-Being among Latin First Generation Students” highlight the importance of time management in enhancing math performance. In contrast, the proposed study focuses on mathematics education students. It investigates how time management mediates the connection between homework load and math achievement specifically for mathematics major students. By narrowing the focus to this group, the research aims to provide tailored strategies to improve academic performance in mathematics. This specialized approach may offer more targeted solutions for mathematics major students.

Lastly, this study will contribute to the body of literature both within our institution and beyond. Copies of the study and its findings will be shared at various research conferences and with related agencies to promote scholarly exchange and the use of research-based discoveries. Therefore, the importance and findings of this study will be understood by a wider community. This will lead to taking actions and finding solutions for the problems discussed, as well as putting the suggested recommendations into practice.

Research Objectives

The purpose of this study to determine the significant relationship between the relationship of time management skills and homework load on mathematics achievement among students enrolled in Mathematics course in Kapalong College of Agriculture, Sciences and Technology. To be specific, this study sought to answer the following objectives:

1. To determine the level of homework load in terms of:
 - 1.1. students’ perception towards homework;
 - 1.2. perceived parental involvement in homework;
 - 1.3. students’ attitudes towards the way of teachers giving homework; and
 - 1.4. effect of homework on students learning achievement.
2. To determine the level of mathematics achievement in terms of:
 - 2.1. learners perceive motivation and support;
 - 2.2. Anxiety in learning mathematics; and
 - 2.3. Self-efficacy in learning mathematics.
3. To assess the level of time management skills possessed by college students in mathematics achievement:
 - 3.1. time planning;
 - 3.2. time attitudes;
 - 3.3. planning and implementing; and
 - 3.4. Self-monitoring
4. To determine the significant relationship between:
 - 4.1. homework load and mathematics achievement;
 - 4.2. homework load and time management skills; and
 - 4.3. time management skills and mathematics achievement.
5. To determine the mediating effect of time management skills on the relationship between homework load and mathematics achievement.

Methodology

Research Design

This study used quantitative non-experimental research design utilizing a descriptive-correlational technique and mediation analysis. Mediating variables, defined as behavioral, biological, psychological, or social constructs that transmit the effect of one variable to another variable, were examined to understand the mechanisms through which one variable influence another. Non-experimental research, by definition, does not involve controlling or manipulating an independent variable and does not randomly assign individuals to different conditions or sequences of conditions. It is acknowledged that categorizing these methods solely based on what they are not might be unfair (Price et al., 2014).

In this study, non-experimental method was used to examine the relationship between homework load, time management skills, and mathematics achievement among mathematics major students, providing insights for educational strategies, the study can offer valuable insights into how individual differences and learning preferences affect mathematical performance, which can inform educational strategies and curriculum development in teacher education programs.

Furthermore, descriptive studies were crucial in the research design as they provided tools to summarize, analyze, and comprehend data. They offered insights into central tendencies, variability, and distribution of data. Measures like mean, median, and mode provided average values, while measures like range, variance, and standard deviation revealed data dispersion. Tools like histograms, box plots, and frequency tables visualized data distribution. They aided in data-driven decisions,

identifying trends, and communicating findings effectively (Price et al., 2014).

In this study, descriptive statistics were used to efficiently summarize and analyze collected data, providing insights into the central tendencies, variability, and distribution of homework load, time management skills, and mathematics achievement within the participant group. These statistics served as a foundation for understanding complex dynamics and identifying patterns, contributing to meaningful conclusions in the study.

Then, on the other hand, correlational research was defined as a sort of non-experimental study in which the researcher analyzed two variables and evaluated their statistical connection (i.e., the correlation) with little or no attempt to control extraneous factors. There are two primary reasons why researchers interested in the statistical correlations between variables may choose to conduct a correlational study instead of an experimental study (Price et al., 2014).

In the context, correlational research proved valuable in examining statistical relationships between variables like homework load, time management skills, and mathematics achievement without manipulating them in a controlled environment. This approach acknowledged the complexity of real-world educational settings, providing insights crucial for tailoring effective teaching strategies to support students' success in mathematics within the constraints of a non-experimental approach.

Mediation analysis, in its simplest form, represented the addition of a third variable to the $X \rightarrow Y$ relation, whereby X caused the mediator, M , and caused Y , so $X \rightarrow M \rightarrow Y$. This analytical approach provided a deeper understanding of the mechanisms through which the independent variable affected the dependent variable. By identifying and exploring the role of the mediator, researchers gained insights into the underlying processes and pathways that contributed to the observed relationship between X and Y . Mediation analysis was particularly valuable in uncovering the intervening variables that explained how and why changes in X led to changes in Y .

In this context, I explored the intricate connections between homework load (X), time management skills (M), and mathematics achievement (Y). My analysis revealed a relationship ($X \rightarrow M \rightarrow Y$), illustrating how time management skills mediate the influence of homework load on mathematics achievement. These insights are crucial for customizing teaching strategies and curriculum to optimize mathematical learning in our specific educational context.

The independent variable in this study was homework load, while the dependent variable was mathematics achievement, and the mediating variable was time management skills. In this study, the researcher determined the relationship between homework load and mathematics achievement, and the mediating effect of time management skills on the relationship towards homework load and mathematics achievement of teacher education program students.

Respondents

The respondents of this study were students from first year to fourth education students of Kapalong College of Agriculture, Sciences and Technology located at the Municipality of Kapalong, Province of Davao del Norte. Particularly, these include first-year education Students from the BSEd- Mathematics. In addition, the total respondents of the study were taken mainly from math major students of first year to fourth year students in education programs. Among the 245 total population of first year to fourth year education students of the institution.

Further, Table 1 showed the distribution of the respondents of this study. Hence, to ensure an accurate distribution of samples, the researcher employed stratified random sampling, utilizing proportional allocation, through Slovin's formula with a margin of error of 0.05. In stratified random sampling, the population is partitioned into subgroups called "strata". From within each stratum, uniform random sampling is used to select a per-stratum sample. All per-stratum samples are combined to derive the stratified random sample (Nguyen et al, 2020). In this case, the strata where the mathematics program of the education department in Kapalong College of Agriculture, Sciences and Technology (KCAST).

The research was conducted at Kapalong College of Agriculture, Sciences and Technology (KCAST). When recruiting participants, the researcher used stratified random sampling method. The data was collected in the academic year of 2023-2024 1st semester and the study's respondents were 150 samples drawn from a population of 245 across all year level of mathematics students enrolled in BSED Math Course.

Table 1. Distribution of Respondents

<i>BSEd Mathematics</i>	<i>Population</i>	<i>Sample</i>	<i>Percentage</i>
First Year	119	73	30%
Second Year	50	31	13%
Third Year	43	26	11%
Fourth Year	33	20	8%
Total	245	150	62%

Instrument

Likert scale, a five-point measurement tool, enables individuals to convey their degree of agreement or disagreement with a specific statement. Typically, it offers five response options, allowing respondents to express the strength of their agreement or feelings towards the statement (McLeod, 2023). In this study, the 5-point Likert scale was utilized to assess the levels of homework load, mathematics

achievement, and time management skills.

The Likert scale is employed to assess the level of agreement or disagreement regarding statements related to the effectiveness and advantages of homework load, as well as participants' mathematics achievement. This scale enables the study to collect data that can be easily analyzed and interpreted to determine participants' time management skills, a critical aspect of mathematics education. In this scale, respondents were instructed to indicate their responses by ticking the box corresponding a number. The participants were asked to use a Five-point Likert scale, ranging from 'always' to 'rarely.' Subsequently, these values were aggregated across the items to provide respondents with an overall score.

The study adopted three questionnaires from web sources to measure the variables. The instrument for time management skills is from the study of Sainz et al. (2019) entitled, Time management: Skills to Learn and Put into Practice lesson observation instrument was used by the observers to rate the students time management. Time management skills questionnaire has four components: time planning with five items, time attitudes with five items, planning and implementing with five items and self-monitoring with five items. For the entire survey questionnaire, Cronbach's coefficient alpha of .70, for the instrument's internal validity and .81 for reliability which measured the internal consistency, was considered very good. Therefore, it is highly reliable in terms of its internal consistency.

Furthermore, the instrument for homework load is from the study of Impact of Homework Assignments on Students Learning (Songsirisak, 2019). The homework load questionnaire have four domains: perceive parent involvement in homework with six items; students' perception towards homework with ten items; attitudes towards the way of teachers giving homework with six items; and effect of homework on students learning achievement with five items. The measure has been developed and carefully tested to enhance the reliability and validity of the instrument; the authors report a coefficient of .83 for the instrument's internal validity and .89 for reliability. This concludes that the impact of homework assignments on students learning is reliable and valid in assessing the homework load based on student's perceptions.

Lastly, the instrument for mathematics achievement is from the study of Mathematics Interest, Anxiety, Self-Efficacy, and Achievement: Examining Reciprocal Relations (Du et al., 2021). The mathematics achievement questionnaire has three domains: learners perceived motivation and support with twelve items; anxiety in learning mathematics with ten items and self-efficacy in learning mathematics with six items. The reliability value as a whole was 0.81. The six items in each of the three subscales showed adequate internal consistency reliability, with Cronbach's alpha coefficients above the cut-off points of 0.75. This concludes that the questionnaire is reliable and valid in assessing the mathematics achievement.

To ensure content validity, the survey research questionnaire underwent a validation process. The research committee received the first draft of the research instrument and provided feedback, recommendations, and suggestions on how to enhance its presentation. Corrections were then incorporated to comply recommendations. After that, the research panel received the final draft for review and revision. Errors, suggestions, and comments from the expert validators were included before data collection. To assess the questionnaire's status, the validators' evaluations were finally consolidated. Furthermore, before the study began, the multiple-choice test for mathematical proficiency was subjected to item analysis to identify which items will be preserved and which will be rejected.

Procedure

In collecting, the researcher took the following steps:

Questionnaire Development. The researcher searched for questionnaires in journal articles that were relevant to the three variables under investigation. These variables were specifically related to the study's focus and aimed to gather data and insights from participants through the use of these questionnaires.

Revision and Validation of Questionnaires. After it is formed, the questionnaires were submitted to a panel of experts to evaluate and contextualize. The researcher followed the advice of those revision experts until it is approved for use.

Requesting Approval to Carry out the Study. The researcher asked permission to conduct this study from the Vice President of the Academic Affairs of the research locale through a formal letter which is signed by the researcher himself and noted by his research adviser and the Director for Research and Development.

Distribution and Retrieval of the Questionnaire. Survey questionnaires in printed forms were distributed individually to the respondents, who were mathematics students roaming around the campus.

Collection and Tabulation of Data. After the survey, the researcher took and analyzed the research instrument to record the collected data from the respondents. The statistical data were analyzed, and the findings were subsequently interpreted. Based on the final data set, conclusions were drawn, and recommendations were formulated in accordance with the results of the learning assessment.

Data Analysis

The data collected from the questionnaires were processed and analyzed using various statistical tools. These tools were applied to the data to help identify patterns and relationships that could shed light on the study's objectives. The results of this analysis were then used to draw conclusions and make recommendations based on the findings.

Mean. In this study, it assessed various characteristics, such as homework load, time management skills and mathematics achievement, by providing a representative value that summarized the central tendency of the data.

Pearson-r. This was used to determine the relationship between homework load and mathematics achievement, time management skills and mathematics achievement, and homework load and time management skills, which were the variables of this study.

Structural Equation Modeling using Mediation Analysis. This was carried out to figure out whether the mediating variable had any impact on the relationship between an independent variable and a dependent variable using the indirect effect. It was utilized in this research to find out whether time management skills mediated the relationship between homework load and mathematics achievement by answering the main statement of the problem.

Ethical Considerations

The respondents of this study were first to fourth-year mathematics major students from the research locale. In this instance, the researcher ensured that the respondents' safety, rights, and reliance on the researcher, as well as the study's goals, would be treated with fairness and righteous action.

Furthermore, when conducting research with humans as respondents, researchers must adhere to the highest ethical standards. The primary goal of this quantitative investigation is to ensure that the study is ethically sound in order to protect the human respondent's comfort. The researcher discusses how the study adhered to the following Denzin and Lincoln (2011) guidelines, which focused on three key principles: informed consent; risk of harm; anonymity and confidentiality; and conflict of interest.

Informed Consent: Participants must be adequately informed of the obligations, the intended use of the data, and any potential repercussions. To take part in the study, participants must give their explicit, active, and written consent. Additionally, they must state that they understand their right to access their information and that they have the option to change their minds at any moment. The procedure of obtaining informed permission may take into account a contract between the researcher and the respondents (Denzin & Lincoln, 2011).

In this case, the researcher included an informed consent question in the questionnaire asking the respondents of the study if they are still willing to participate despite the risks. When the respondents are unsure about the agreement, they may choose to decline. Making informed decisions and participating in the study voluntarily are strongly encouraged. The researcher ensured that all the respondents in the study are enthusiastic about it and eager to participate. It is critical to base their responses on the available surveys while gathering data.

During the informed consent process, the respondents were also oriented on the following rights that they have. The respondents were informed that they have the right to terminate participant without any need of explanation. They also have the right to refuse to answer sensitive questions. Another right that they have is the entitlement to ask questions about the study. Lastly, they also have the rights to be informed of the study results after this research is accomplished.

Risk of Harm, Anonymity, and Confidentiality: It relates to the protection of a study participant, including the avoidance of disclosing the participant's identity to anybody other than authorized parties and preventing even the researcher from connecting the subject with the data provided (Denzin & Lincoln, 2011).

The researcher is proactively addressing the potential social liabilities associated with data handling by prioritizing privacy and security measures. By assuring participants of the protection of their safety, identity, and personal information, the researcher emphasizes the significance of their involvement in the study. Through the meticulous removal of identifying details like names and addresses before analysis, the researcher ensures that individual respondents remain anonymous, aligning with the Data Privacy Act of 2012. Despite participants not being minors, the consideration of their ages as sensitive personal information underscores the researcher's commitment to safeguarding all data. The planned secure storage and eventual destruction of data after three years post-study are essential steps to uphold confidentiality and ensure participants protection.

Conflict of Interest: It acknowledges that the researcher's current connections or prior activity may present a conflict of interest, which must be openly disclosed in an application for ethics approval so the committee can offer guidance on how to resolve the conflict. Additionally, it happens when someone puts their own interests or obligations over their duties and responsibilities as a researcher, or when they are thought to do so. Conflicts of interest might entail monetary or non-monetary incentives and can be real, imagined, or perceived. Conflicts of interest might make a researcher less objective and judgmental or appear to have an impact, which calls into question the validity of their conclusions (Denzin & Lincoln, 2011).

With this, the researcher stated that the study was conducted without any commercial or financial relationships that could be perceived as a potential conflict of interest. There was no competing interest with the study, as the researcher and participants were students without external affiliations. The study avoided conflict of interest by ensuring that participants were not coerced or subjected to threats in any form. Conflict of interest only arises when the researcher has the power to use coercive methods to force respondents to participate, such as threats of termination of benefits, blackmail, or other forms of punishment, and this was not the case in this study.

Results and Discussion

This section presents the discussions of the data on the mediation analysis of time management skills on the relationship between homework load and mathematics achievement among mathematics college students. This section presents the data results on the level of homework load in terms of perceive parents involvement in homework, students' perception towards homework, effects of homework on students learning achievement, and students' attitudes towards the way teachers' giving homework; the level of time management skills in terms of time planning, time attitudes, planning and implementing, and self-monitoring; and the level of mathematics achievement in terms of learners perceive motivation and support, learners perceive self-efficacy in learning mathematics and learner's perceived anxiety in learning mathematics. This also includes the significant relationship between homework load and time management skills, significant relationship between homework load and mathematics achievement, significant relationship between time management skills and mathematics achievement, and the mediation analysis between homework load and mathematics achievement via time management skills. Analysis and interpretations of the data, which were also done in parallel with the research objectives.

Level of Homework Load in Terms of Perceive Parents Involvement in Homework

The level of homework load was measured through the survey questionnaire with the indicator, perceive parents' involvement in homework. The responses of first year to fourth-year mathematics major students on each indicator were presented and analyzed below.

Presented in Table 2 is the level of homework load in terms of perceived parents involvement in homework. The data revealed that the over all mean level of homework load in terms of perceived parents involvement in homework is 3.73 with a descriptive equivalent of high. This indicated that the level of homework load in terms of perceived parents involvement in homework is oftentimes observed.

Table 2. *Level of Homework Load in Terms of Perceive Parents Involvement in Homework*

<i>Perceived Parents' Involvement in Homework</i>	<i>Mean</i>	<i>Description</i>
1. Asking me about my homework regularly.	3.61	High
2. Encouraging me to work harder in school.	4.13	High
3. Asking about my teachers.	3.43	Moderate
4. Providing me time to study at home.	3.98	High
5. Discussing my school day with me.	3.53	High
Overall Total	3.73	High

The highest mean is 4.13 which means high. This means that the item is always observed by the involved respondents. This is from item no. 2 – Observing that my parents encouraging me to do well at school. In contrast, the lowest mean is 3.43 with a descriptive equivalent of moderate. This means that the item is oftentimes observed by the respondents of the study. This is from item no. 3 – Observing that my parents asking about my teachers.

Level of Homework Load in Terms of Students Perception Towards Homework

The level of homework load was measured through the survey questionnaire with the indicator, students perception towards homework. The responses of first year to fourth-year mathematics major students on each indicator were presented and analyzed below.

Presented in Table 3 is the level of homework load in terms of students perception towards homework. The data revealed that the over all mean level of homework load in terms of classroom management had a total mean of 4.13 with a descriptive equivalent of high. This indicated that the level of homework load in terms of students perception towards homework is oftentimes observed.

The highest mean is 4.41 which means very high. This means that the item is always observed by the involved respondents. This is from item no. 1- Noticing that homework is very important and necessary. In contrast, the lowest mean is 3.68 with a descriptive equivalent of high. This means that the item is oftentimes observed by the respondents of the study. This is from item no. 4– Seeing that students know the importance of homework.

Table 3. *Level of Homework Load in Terms of Students Perception Towards Homework*

<i>Students Perception Towards Homework</i>	<i>Mean</i>	<i>Description</i>
1. Knowing that homework is very important and necessary.	4.41	Very High
2. Knowing about the purposes of homework.	4.38	Very High
3. Preferring to do my homework individually.	4.25	High
4. Enjoying having a lot of homework.	3.68	High
5. Having enough time to do my homework.	3.94	High
Overall Total	4.13	High

Level of Homework Load in Terms of Effects of Homework on Students' Learning Achievement

The level of homework load was measured through the survey questionnaire with the indicator, effects of homework on students learning achievements. The responses of first year to fourth-year mathematics major students on each indicator were presented and

analyzed below.

Presented in Table 4 is the level of homework load in terms of effects of homework on students learning achievements. The data revealed that the mean level of homework load in terms of effects of homework on students learning achievements had a total mean of 4.19 with a descriptive equivalent of high. This indicated that the level of homework load in terms of effects of homework on students learning achievements is oftentimes observed.

The highest mean is 4.37 which descriptively means very high. This means that the item is always observed by the involved respondents. This is from item no. 4 -Noticing that some students doing homework to improve their learning achievement. In contrast, the lowest mean is 3.79 with a descriptive equivalent of high. This means that the item is oftentimes observed by the respondents of the study. This is from item no. 4- Seeing that students completing their assignments for understanding and success.

Table 4. *Level of Homework Load in Terms of Effects of Homework on Students' Learning Achievement*

<i>Effects of Homework on Students' Learning Achievement</i>	<i>Mean</i>	<i>Description</i>
1. Doing homework to improve my learning achievement.	4.27	Very High
2. Failing to complete my homework, which may result in academic achievements being low.	3.79	High
3. Doing my homework so that I can do the test and get high marks.	4.21	High
4. Completing my homework assignments for better understanding and success in my study.	4.37	Very High
5. Doing my homework positively influences my learning achievement.	4.28	High
Overall Total	4.19	High

Level of Homework Load in Terms of Students' Attitudes Towards the Way of Teachers' Giving Homework

The level of homework load was measured through the survey questionnaire with the indicator, students' attitudes towards the way of teachers' giving homework. The responses of first year to fourth-year mathematics major students on each indicator were presented and analyzed below.

Presented in Table 5 is the level of homework load in terms of students' attitudes towards the way of teachers' giving homework. The data revealed that the level of homework load in terms of effects of students' attitudes towards the way of teachers' giving homework had a total mean of 4.18 with a descriptive equivalent of high. This indicated that the level of homework load in terms of effects of homework on students learning achievements is oftentimes observed.

The highest mean is 4.25 with a descriptive equivalent of high. This means that the item is oftentimes observed by the involved respondents. This is from item no. 3- Noticing that students view homework as a relevant courses on learning achievement.

In contrast, the lowest mean is 4.09 with a descriptive equivalent of high. This means that the item is oftentimes observed by the respondents of the study. This is from item no. 4 - Noticing that some teachers promptly review and return homework to students.

Table 5. *Level of Homework Load in Terms of Students' Attitudes Towards the Way of Teachers' Giving Homework*

<i>Students' Attitudes Towards the Way Teachers Give Homework</i>	<i>Mean</i>	<i>Description</i>
1. Explain the purposes of homework clearly.	4.21	High
2. Provide homework assignments that allow me to explore and apply my knowledge independently.	4.19	High
3. Assign homework that is relevant to their students' courses.	4.25	High
4. Promptly review and return homework to students.	4.09	High
5. Care about students' sentiments regarding homework completion.	4.13	High
Total	4.18	High

Summary on the Level of Homework Load

Presented in Table 6 is the overall level of Homework Load in terms of perceived parent involvement in homework, students' perception towards homework, effects of homework on students learning achievements, and students attitudes towards the ways of teachers giving homework. The data revealed that the level of Homework Load as perceived by first year to fourth year mathematics education students has a total mean of 4.06 with the descriptive equivalent of high. This indicates that the level of homework as perceived by students is oftentimes observed.

Furthermore, perceived parent involvement in homework obtained a mean of 3.73 which means high. This indicates that the level of homework load in terms of perceived parents' involvement in homework is oftentimes observed.

Moreover, students' perception towards homework obtained a mean of 4.13 which means high. This indicates that the level of teaching quality in terms of classroom management is oftentimes observed.

Additionally, effects of attitudes towards the ways of teachers giving homework obtained a mean of 4.18 which means high. This indicates that the level of homework

Table 6. *Summary of the level of homework load*

<i>Homework Load</i>	<i>Mean</i>	<i>Description</i>
Perceived Parent Involvement in Homework	3.73	High
Students' Perception Towards Homework	4.13	High
Effects of Homework Load on Students' Learning Achievement	4.19	High
Students' Attitudes Towards the Ways of Teachers Giving Homework	4.18	High
Overall Total	4.06	High

Lastly, the highest mean is 4.19 with the descriptive equivalent of high. This indicates that the level of homework load as perceived by students in terms of effects of homework load on students learning achievement.

Level of Time Management Skills Terms of Time Planning

The level of time management skills was measured through the survey questionnaire with the indicator, time planning. The responses of first year to fourth-year mathematics major students on each indicator were presented and analyzed below.

Presented in Table 7 is the level of time management skills in terms of time planning. The data revealed that the level of time management skills in terms of time planning had a total mean of 4.06 with a descriptive equivalent of high. This indicated that the level of time management skills in terms of time planning is oftentimes observed. The highest mean is 4.12 which means high. This means that the item is oftentimes observed by the involved respondents. This is from item no. 1&4 - Noticing that some students planning and setting with following priorities.

In contrast, the lowest mean is 3.99 with a descriptive equivalent of high. This means that the item is often observed by the respondents of the students. This is from item no. 5- showing that they plan their priorities that they will do on school.

Table 7. *Level of Time Management Skills Terms of Time Planning*

<i>Time Planning</i>	<i>Mean</i>	<i>Description</i>
1. Planning my day before it starts.	4.12	High
2. Deciding upon some targets for myself every day.	4.08	High
3. Marking important dates for myself on a calendar, such as exam dates and assignment submissions.	4.01	High
4. Determining my priorities and following them.	4.12	High
5. Planning my priorities that I have to do on school days.	3.99	High
Total	4.06	High

Level of Time Management Skills Terms of Time Attitudes

The level of time management skills was measured through the survey questionnaire with the indicator, time attitudes. The responses of first year to fourth-year mathematics major students on each indicator were presented and analyzed below.

Presented in Table 8 is the level of time management skills in terms of time attitudes. The data revealed that the level of time management skills in terms of time attitudes had a total mean of 4.02 with a descriptive equivalent of high. This indicated that the level of time management skills in terms of time attitudes is oftentimes observed.

The highest mean is 4.13 which means high. This means that the item is often observed by the involved respondents. This is from item no. 2 - Noticing that students improving themselves in planning time. In contrast, the lowest mean is 3.93 with a descriptive equivalent of high. This means that the item is oftentimes observed by the respondents of the study. This is from item no. 5- shows that occupied task from completing schoolwork.

Table 8. *Level of Time Management Skills Terms of Time Attitudes*

<i>Time Attitudes</i>	<i>Mean</i>	<i>Description</i>
1. Using my time constructively.	3.99	High
2. Improving myself in planning my time.	4.13	High
3. Feeling to myself that I do actively plan my time.	4.02	High
4. Thinking that I will be able to achieve all my academic assignments in the time given to me.	4.03	High
5. Finding myself occupied with tasks that hinder me from completing schoolwork simply because I cannot say "no" to people.	3.93	High
Total	4.02	High

Level of Time Management Skills Terms of Planning and Implementing

The level of time management skills was measured through the survey questionnaire with the indicator, planning and implementing. The responses of first year to fourth-year mathematics major students on each indicator were presented and analyzed below.

Presented in Table 9 is the level of time management skills in terms of planning and implementing. The data revealed that the level of time management skills in terms of planning and implementing had a total mean of 4.10 with a descriptive equivalent of high. This indicated that the level of time management skills in terms of planning and implementing is oftentimes observed.

The highest mean is 4.14 which means high. This means that the item is often observed by the involved respondents. This is from item no. 1 - Noticing that some students keeping careful record for their test and assignments.

In contrast, the lowest mean is 4.05 with a descriptive equivalent of high. This means that the item is oftentimes observed by the respondents of the study. This is from item no. 3&5 – Showing that needing the practice the problem and planning ahead to put extra hours in doing school tasks.

Table 9. *Level of Time Management Skills in terms of Planning and Implementing*

<i>Planning and Implementing</i>	<i>Mean</i>	<i>Description</i>
1. Keeping careful record of the date of my upcoming major events such as tests and assignments.	4.14	High
2. Setting small goals and working to achieve them (such as reading 5 pages of text and doing three math problems).	4.11	High
3. Needing to practice problems step by step and get help from another student, the teacher, or other helpful resources.	4.05	High
4. Setting up a regular plan for my study activities.	4.09	High
5. Planning ahead so I can be flexible about putting in extra hours if I have a lot of school work to do.	4.05	High
Total	4.08	High

Level of Time Management Skills Terms of Self-monitoring

The level of time management skills was measured through the survey questionnaire with the indicator, self-monitoring. The responses of first year to fourth-year mathematics major students on each indicator were presented and analyzed below.

Presented in Table 10 is the level of time management skills in terms of self-monitoring. The data revealed that the level of time management skills in terms of self-monitoring had a total mean of 4.08 with a descriptive equivalent of high. This indicated that the level of time management skills in terms of self-monitoring is oftentimes observed.

The highest mean is 4.19 which means high. This means that the item is often observed by the involved respondents. This is from item no. 1 - Noticing that some students diverting top priorities.

In contrast, the lowest mean is 4.08 but with a descriptive equivalent of high. This means that the item is oftentimes observed by the respondents of the study. This is from item no.5 – Showing that students taking breaks when feel fatigued on a given tasks.

Table 10. *Level of Time Management Skills in terms of Self-Monitoring*

<i>Self-Monitoring</i>	<i>Mean</i>	<i>Description</i>
1. Recognizing when I am diverting my top priorities.	4.19	High
2. Maintaining a schedule quick time into each workday.	4.09	High
3. Creating due dates for tasks which don't have predetermined deadlines.	4.13	High
4. Knowing what habits I have that keep me from using my time.	4.13	High
5. Using breaks creatively when fatigued on a given task.	4.08	High
Total	4.12	High

Summary on the Level of Time Management Skills

Presented in Table 11 is the overall level of time management skills in terms of time planning, time attitudes, planning and implementing, and self-monitoring. The data revealed that the level of time management skills as perceived by first to fourth-year mathematics education students has a total mean of 4.06 with the descriptive equivalent of high. This indicates that the level of time management skills as perceived by students is oftentimes observed.

Table 11. *Level of Time Management Skills*

<i>Indicators</i>	<i>Mean</i>	<i>Description</i>
Time Planning	4.06	High
Time Attitudes	4.02	High
Planning and Implementing	4.10	High
Self-Monitoring	4.12	High
Total	4.06	High

Further, the highest mean is 4.08 with the descriptive equivalent of high. This indicates that the level of time management skills as perceived by students in terms of self-monitoring is always observed. In contrast, the lowest indicator is time attitudes which obtained

a mean of 4.02 with a descriptive equivalent of high. This indicates that the level of time management skills in terms of time attitudes is oftentimes observed.

Additionally, planning and implementing obtained a mean of 4.10 which means high. This indicates that the level of time management skills in terms of planning and implementing is oftentimes observed. Lastly, time planning obtained a mean of 4.06 which means high. This indicates that the level of time management skills in terms of time planning is oftentimes observed.

Level of Mathematics Achievement in Terms of Learners' Perceive Motivation and Support

The level of mathematics achievement was measured through the survey questionnaire with the indicator, learners' perceive motivation and support. The responses of first to fourth year mathematics major students on each indicator were presented and analyzed below.

Presented in Table 12 is the level of mathematics achievement of first to fourth-year mathematics education students in terms of learners' perceive motivation and support. The data revealed that the level of mathematics achievement in terms of learners' perceive motivation and support has a total mean of 4.21 with a descriptive equivalent of high. This indicates that the level of mathematics achievement first to fourth-year mathematics education students in terms of learners' perceive motivation and support is oftentimes manifested.

The highest mean is 4.29 which means very high. This means that the item is always manifested by the involved respondents. This is from item no. 1 – Seeking the help of others if they find difficulty in learning mathematics. In contrast, the lowest mean is 4.17 with a descriptive equivalent of high. This means that the item is oftentimes manifested by the respondents of the study. This is from item no. 3 – Showing that achieving high grades in mathematics which is important and valuable to students.

Table 12. *Level of Mathematics Achievement in terms of Learner's Perceive Motivation and Support*

<i>Learner's Perceived Motivation and Support</i>	<i>Mean</i>	<i>Description</i>
1. Seeking the help of others if I find difficulty in learning mathematics.	4.29	Very High
2. Learning math with my approachable teacher is something I enjoy.	4.19	High
3. Achieving high grades in mathematics that is important and valuable to me.	4.17	High
4. Finding an excellent career in the future assisted by my choice.	4.19	High
5. Developing it as a critical thinker.	4.23	High
Total	4.21	High

Level of Mathematics Achievement in Terms of Learners' Perceive Self-efficacy in Learning Math

The level of mathematics achievement was measured through the survey questionnaire with the indicator, learners' perceive self-efficacy in learning math. The responses of first to fourth year mathematics major students on each indicator were presented and analyzed below.

Presented in Table 13 is the level of mathematics achievement of first to fourth-year mathematics education students in terms of learners' perceive self-efficacy in learning math. The data revealed that the level of mathematics achievement in terms of learners' perceive self-efficacy in learning math has a total mean of 4.07 with a descriptive equivalent of high. This indicates that the level of mathematics achievement first to fourth-year mathematics education students in terms of learners' perceive self-efficacy in learning math is oftentimes manifested.

The highest mean is 4.15 which means very high. This means that the item is always manifested by the involved respondents. This is from item no. 5 – Believing that some students understand mathematical concept. In contrast, the lowest mean is 3.96 with a descriptive equivalent of high. This means that the item is oftentimes manifested by the respondents of the study. This is from item no. 4 – Showing that some students actively participates in math activities.

Table 13. *Level of Mathematics Achievement in terms of Learners Perceive Self-Efficacy in Learning Math*

<i>Learners' Perceived Self-Efficacy in Learning Math</i>	<i>Mean</i>	<i>Description</i>
1. Believing that I can do good in mathematics.	4.09	High
2. Thinking that I am the type of student who actively participates in math activities.	3.96	High
3. Believing that I can get a good grade in a mathematics subject.	4.05	High
4. Working hard in my mathematics classes.	4.13	High
5. Believing that I can understand mathematical concepts.	4.15	High
Total	4.07	High

Level of Mathematics Achievement in Terms of Learners' Perceived Anxiety in Learning Math

Presented in Table 14 is the level of mathematics achievement of first to fourth-year mathematics education students in terms of learners' perceived anxiety in learning math. The data revealed that the level of mathematics achievement in terms of learners'



perceived anxiety in learning math has a total mean of 4.17 with a descriptive equivalent of high. This indicates that the level of mathematics achievement first to fourth-year mathematics education students in terms of learners' perceive self-efficacy in learning math is oftentimes manifested.

The highest mean is 4.23 which means high. This means that the item is always manifested by the involved respondents. This is from item no. 1– Showing that students typically challenged in math class.

In contrast, the lowest mean is 4.13 but with a descriptive equivalent of high. This means that the item is oftentimes manifested by the respondents of the study. This is from item no. 3 – Showing that students striving to enhance clarity of thought while working on math.

Table 14. *Level of Mathematics Achievement in terms of Learners' Perceived Anxiety in Learning Mathematics*

<i>Learners' Perceived Anxiety in Learning Mathematics</i>	<i>Mean</i>	<i>Description</i>
1. Typically feeling challenged yet engaging in my math classes.	4.23	High
2. Working on improving my skills in mathematics.	4.18	High
3. Striving to enhance my clarity of thought while working on mathematics.	4.13	High
4. Working on building my confidence to tackle tests in mathematics.	4.18	High
5. Developing my skills to solve challenging math problems is a process I'm undergoing.	4.14	High
Total	4.17	High

Summary on the Level of Mathematics Achievement

Presented in Table 15 is the overall level of mathematics achievement in terms of learners perceive motivation and support, learners perceive self-efficacy in learning math and learners perceived anxiety in learning mathematics. The data revealed that the level of mathematics achievement as perceived by first to fourth-year mathematics education students has a total mean of 4.15 with the descriptive equivalent of high. This indicates that the level of mathematics achievement as perceived by students is oftentimes observed.

Further, the highest mean is 4.21 with the descriptive equivalent of high. This indicates that the level of mathematics achievement as perceived by students in terms of learners perceive motivation and support is oftentimes observed.

In contrast, the lowest indicator is learners perceive self-efficacy in learning math which obtained a mean of 4.07 with a descriptive equivalent of high. This indicates that the level of mathematics achievement in terms of learners perceive self-efficacy in learning math is oftentimes observed.

Lastly, learners perceived anxiety in learning math obtained a mean of 4.17 which means high. This indicates that the level of mathematics achievement in terms of learners perceived anxiety in learning math is oftentimes observed.

Table 15. *Level of Mathematics Achievement*

<i>Indicators</i>	<i>Mean</i>	<i>Description</i>
Learner's Perceived Motivation and Support	4.21	High
Learners' Perceived Self-Efficacy in Learning Math	4.07	High
Learners' Perceived Anxiety in Learning Mathematics	4.17	High
Total	4.15	High

Significant Relationship between Homework Load and Time Management Skills

Presented in Table 16 was the result of the significant relationship between homework load and time management skills $r=.335$, ($p<.001$). Since the probability value ($p<.001$) is less than the 0.05 level of significance, In this study, 33% of time management skills is attributed to the influence of homework load, while the remaining 67% is due to unexplored variables. Consequently, the null hypothesis is rejected. This impose that there is a significant relationship between homework load and time management skills.

Table 16. *Significant Relationship between Homework Load and Time Management Skills*

<i>Variable</i>	<i>Mean</i>	<i>R-Value</i>	<i>P-Value</i>	<i>Decision @=0.05</i>
Homework Load	4.06	.335	<.001	Ho Rejected
Time Management Skills	4.08			

Significant Relationship between Mathematics Achievement and Homework Load

Presented in Table 17 was the result of the significant relationship between mathematics achievement and homework load $r=.225$, ($p<.001$). Since the probability value ($p<.001$) is less than the 0.05 level of significance.

In this study, 25.5% of mathematics achievement is attributed to the influence of homework load, while the remaining 74.5% is due to unexplored variables. Consequently, the null hypothesis is rejected. This impose that there is a significant relationship between



mathematics achievement and homework load.

Table 17. *Significant Relationship between Homework Load and Mathematics Achievement*

Variable	Mean	R-Value	P-Value	Decision @=0.05
Homework Load	4.06	.255	.001	Ho Rejected
Mathematics Achievement	4.15			

Significant Relationship between Time Management Skills and Mathematics Achievement

Presented in Table 18 was the result of the significant relationship between time management skills and mathematics achievement $r=.778$, ($p<.001$). Since the probability value ($p<.001$) is less than the 0.05 level of significance, In this study, 78.8% of time management skills is attributed to the influence of mathematics achievement, while the remaining 21.2% is due to unexplored variables. Consequently, the null hypothesis is rejected. This impose that there is a significant relationship between time management skills and mathematics achievement.

Table 18. *Significant Relationship between Time Management Skills and Mathematics Achievement*

Variable	Mean	R-Value	P-Value	Decision @=0.05
Time Management Skills	4.08	.778	<.001	Ho Rejected
Mathematics Achievement	4.15			

The Mediation Analysis of Teaching Management Skills on the Relationship between Homework Load and Mathematics Achievement among Mathematics College Students

Preacher and Hayes mediation analysis approach was utilized in this study to determine if the teaching management skills mediates the relationship between homework load and mathematics achievement among mathematics college students.

It is a regression-based bootstrap approach similar to SEM (Structural Equation Modeling) that is used for analyzing mediation. It consists of two steps that reflect the recommendation for mediation analysis. In step 1, the direct and indirect effect are tested for significance. Step 2 involves defining the type of effect and mediation, which is classified into partial and full mediation.

Full mediation is achieved if the direct effect is not significant and the indirect effect is significant. It means that only the indirect effect via the mediator exists. On the other hand, partial mediation happens when both the direct and indirect effect is significant.

Mediation Analysis

Table 19. *Direct Effect*

IV	→ DV	Estimate	Std. Error	z-value	p	95% Confidence Interval	
						Lower	Upper
IV	→ DV	.003	0.032	0.102	0.919	0.067	0.060

Direct Effect

Table 19 shows the direct effect of homework load towards mathematics achievement. Based on the result, the direct effect of homework load (IV) on mathematics achievement (DV) is not significant [$\beta=.003$, $SE=.032$, 95% CI (-.067,.060)].

Since the confidence interval in the direct effect does not include zero, it indicates that the direct effect of homework load is not significant. It also revealed that homework load is not significantly influenced mathematics achievement, ($\beta=.030$, $p 0.919$). As well, based on the result, homework load is not significantly influences mathematics achievement without the presence of the time management skills.

Table 20. *Indirect Effects*

IV → MV → DV	Estimate	Std. Error	z-value	p	95% Confidence Interval	
					Lower	Upper
IV → MV → DV	0.155	0.037	4.162	<.001	0.082	0.228

Indirect Effect

Table 20 shows the direct effect of homework load (IV) on time management skills (MV) and on mathematics achievement (DV) showed [$\beta=.003$, $SE=.037$, 95% CI (.082, .228)], and it indicates that the confidence interval does not include zero.

At 0.05 level of significance, the null hypothesis is rejected, ($p<.001$). This announces that the mediating variable, which is the time management skills, mediates the relationship between the independent variable, homework load, and the dependent variable, which is mathematics achievement.

Table 21. *Total Effects*

					95% Confidence Interval	
	Estimate	Std. Error	z-value	p	Lower	Upper
IV → DV	0.152	0.047	3.234	< .001	0.060	0.244

Total Effect

Moreover, Table 21 shows that homework load is significantly influences mathematics achievement among mathematics college students. It means that without the presence of the mediating variable, time management skills, homework load did not affect mathematics achievement among mathematics college students. Since the direct effect is not significant, it can be concluded that the relationship between homework load and mathematics achievement is a full mediated by time management skills.

In addition to the result of the study, Figure 3 shows the path estimates between Homework Load and Mathematics Achievement (Path c), Homework Load and Time Management Skills (Path a), and Time Management Skills and Mathematics Achievement (Path b). It revealed that homework load is not significantly influenced mathematics achievement, $\beta=0.13$, $p=.072$. Also, homework load significantly affected time management skills, $\beta=0.76$, $p<.001$. Lastly, time management skills is found to be a significant predictor of mathematics achievement, $\beta=0.64$, $p<.001$.

Apparently, it explained that because of direct effect is significant while the indirect effect is significant, then the time management skills (MV) does not mediate the relationship homework load (IV) and mathematics achievement (DV) of first year to fourth year mathematics education students. Hence, these results stipulate the relationship between homework load and mathematics achievement was fully mediated by the indirect pathway through time management skills, a claim that was also supported in Table 20 by the estimation of a significant indirect effect.

Table 22. *Path Coefficients*

					95% Confidence Interval	
	Estimate	Std. Error	z-value	p	Lower	Upper
MV → DV	0.736	0.051	14.311	< .001	0.635	0.836
IV→ DV	-0.003	0.032	-0.102	0.919	-0.067	0.060
IV→MV	0.211	0.048	4.350	< .001	0.116	0.306

Conclusions

Based on the findings of this study, the following conclusions were drawn in answer to the objectives:

The level of homework load as perceived by the first to fourth-year mathematics education students who demonstrated homework is high. Thus, fostering positive homework, as perceived by students, empowers them to actively engage in the learning process and enhances their ability to comprehend and apply knowledge effectively.

On the other hand, the level of mathematics achievement among first to fourth-year mathematics education students who demonstrated mathematics achievement is high. As a result, encouraging pupils to feel fulfilled by mathematics helps them to have a good attitude and be motivated to explore and grasp the subject material.

Moreover, the level of time management skills among first to fourth-year mathematics education students who demonstrated time management skills is high. Thus, developing effective time management empowers students to take control of their time journey, fostering a proactive approach to acquiring, retaining, and applying knowledge across mathematics.

Based on the findings, there is a significant relationship between homework load and mathematics achievement, as it is affirmed that mathematics achievement in a general context is more likely to be affected by time management skills in learning. Therefore, as perceived by students, homework load immensely influences their mathematics achievement, which stipulates a significant relationship between the two variables.

Based on the study's findings, there is also a significant relationship between homework load and time management skills. Therefore, students' homework load and time management skills, as perceived by students, are mutually reinforcing throughout their mathematics learning process. Therefore, as perceived by students, time quality is immensely influenced by their homework load, which stipulates a significant relationship between the two variables.

Furthermore, the mediation analysis revealed that time management skills has fully mediated the relationship between homework load and mathematics achievement. Therefore, the effectiveness of learning experiences in mathematics is intricately intertwined with the interplay of homework load, mathematics achievement, and the adoption of effective time management strategies, collectively shaping the educational landscape and influencing students' academic achievements and overall mathematical proficiency. However, from the context of the results, these stipulate that the relationship between homework load and mathematics achievement is fully mediated by the direct pathway through time management skills, a claim that is also supported by the estimation of a significant indirect effect.

The suggestions of the researcher are established based on the results and the wholeness of the paper. In light of the aforementioned findings of the study, the following recommendations were made:

The result of the level of homework load as perceived by first to fourth-year mathematics education students is high. However, among the items of each indicator of homework load, it was found that perceive parents involvement in homework was the item with the lowest mean result. It is therefore recommended that the institution, teachers and parents encourage students to create their homework and give positive feedback on it. Providing guidance on selecting relevant information about homework can increased students persistence in learning their homework and achieving their math skills. Also, teachers and parents must be patient and supportive when students struggle with their homework and math problems. This can help students stay interested and keep trying, even when having load works is hard.

Further, since the result of time management skills in terms of time attitudes is high, despite of having the lowest mean, it is hereby recommended that the institution and teachers encourage students to have a balance attitude in managing their time. By guiding students in their approach to time management, it fosters curiosity, empowers them to take charge of their learning, and enables them to reach their maximum potential in managing their time effectively.

Additionally, since the result of mathematics achievement in terms of learners perceive self-efficacy in learning math is high, despite of having lowest mean, it is hereby recommended that educators focus on enhancing students confidence and belief in their ability to succeed in math. This can be achieved through various strategies such as providing positive feedback, offering support and encouragement, creating a supportive learning environment, and incorporating engaging and interactive teaching methods. Additionally, personalized attention and targeted interventions can help address any underlying issues that may be affecting students self-efficacy in math. By nurturing students confidence in their mathematical abilities, they are more likely to strive for success and excel in the subject.

Finally, as the time management skills fully mediates the relationship between homework load and mathematics achievement, it is recommended that future researchers investigate more, the variables about homework load as it is a recent happenings nowadays in every student as well as the mathematics achievement that students facing difficulties especially on mathematics college students. They are also encouraged to utilize other methodologies like mixed method and multiple case study and other factors, or variables that the study was not able to cover. Also, they might conduct it in other locales and/or with larger scale participants.

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