The Mediating Effect of Learners' Study Habits in the Relationship between Time Management and Student Engagement

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ABSTRACT

Student engagement is the active participation, focus, and dedication of learners in their academic tasks and learning experiences. This study determined the mediating effect of the learners' study habits in the relationship between time management and student engagement. This study employed a quantitative, non-experimental, descriptive, and correlational research design incorporating mediation analysis. It utilized a stratified random sampling technique to collect data from 353 college students. The statistical tools used in this study included mean, Pearson r, and path analysis. The study's findings demonstrated that learners' study habits, time management and student engagement have a descriptive level of high. Furthermore, there was a significant interrelationship between time management, student engagement and learners' study habits. Also, a significant partial mediating effect of learners' study habits was observed in the relationship between time management and student engagement. This means that well-organized study habits help learners manage their workload and time efficiently, reduce stress, and enhance their engagement in learning.

Keywords - time management, student engagement, learners' study habits, mediation analysis, Philippines.

INTRODUCTION

Student engagement is multifaceted, encompassing students' emotional, behavioral, and cognitive connections to their education (Kahu, 2023). However, engagement often declines due to factors such as low motivation, lack of meaningful interactions, and misalignment between student needs and instructional design, particularly in online or hybrid learning environments, where maintaining focus and participation can be more challenging (Johar et al., 2023; Boulton et al., 2019). Additionally, study of Childs et al., (2021), that students often feel less motivated, and reduced student engagement when learning from home compared to being in a regular classroom.

In Saudi Arabia, low student engagement, particularly in higher education and virtual learning environments, is primarily attributed to traditional teaching methods that rely on rote memorization and passive listening, limiting student autonomy and initiative, despite the introduction of more interactive techniques (Bakar et al., 2023). Similarly, in India, Singh & Ningtlehoujam (2020), stated that student engagement is hindered by a combination of factors, including inadequate infrastructure, a shortage of teachers, and a heavy reliance on rote learning, which limits opportunities for active learning and critical thinking.

In the Philippines, particularly in Davao City, many students struggle to stay engaged in their studies because of low motivation, insufficient feedback, and an unsupportive learning environment contribute to this disengagement (Bendejo & Gempes, 2019). Additionally, low student interaction and inadequate instructor assistance have been identified as significant reasons for poor engagement (Palarisan & Domag, 2023). In the study of Mohamad (2024), stated that the issue is further exacerbated by the absence of efficient teaching strategies that encourage involvement and active learning.

Numerous studies worldwide have investigated the interconnectedness of students' study habits, time management skills, and student engagement, particularly among diverse student populations. Students with

strong study habits tend to be more involved in their coursework, while efficient time management is linked to better academic performance and higher engagement (Castillo et al., 2023; Fu et al., 2024). Moreover, effective time management and self-regulated study habits are interconnected and essential for academic success (Kanwal et al., 2024). Effective study habits promote active class participation, which leads to increased student engagement (Cullantes et al., 2024).

Although there are many studies about these three variables in international and national settings, the researchers were unable to find any studies that establish a connection between time management and student engagement through the use of study habits as a mediating variable in the local setting. This study bridges the gap in existing research by examining the relationship between these variables within a specific regional context. The significant differences in focus and context across previous studies highlight the importance and urgency of conducting this research.

Statement Of The Problem

This study aimed to examine whether learners' study habits mediated the relationship between time management and student engagement.

Specifically, this study sought to answer the following questions:

1. What is the level of time management in terms of:

1.1. time planning;
1.2. time attitudes; and
1.3. time wasters?

2. What is the level of student engagement in terms of:

2.1. affective engagement;
2.2. behavioral engagement; and
2.3. cognitive engagement?

3. What is the level of learners' study habits in terms of:

3.1. budgeting time;
3.2. physical condition;
3.3. reading ability;
3.4. note taking;
3.5. learning motivation;
3.6. memory;
3.7. taking examinations; and
3.8. health?

4. Is there a significant relationship between:

4.1. time management and student engagement;
4.2. time management and learners' study habits; and
4.3. learners' study habits and student engagement?

5. Is there a mediating effect of learners' study habits in the relationship between time management and student engagement?

Hypotheses

The following hypotheses were tested at a 0.05 level of significance.

1.There is no significant relationship between:

1.1 time management and student engagement;
1.2 time management and learner's study habits; and
1.3 learners' study habits and student engagement.

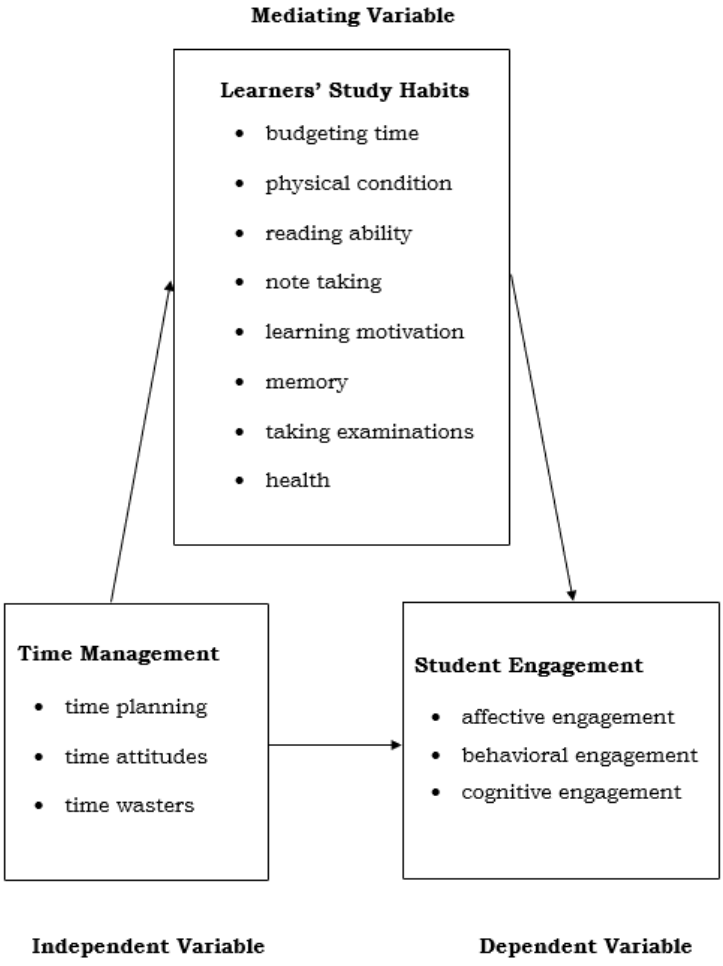
2. There is no significant mediating effect of learners' study habits on the relationship between time management and student engagement.

Theoretical Framework

This study was anchored on Self-Regulated Learning Theory by Zimmerman (2002) which emphasizes the role of students in their own education by setting goals, tracking progress, and reflecting on their learning, thus actively participating in the learning process. This theory was supported by Wolters and Brady (2021), who suggest that effective time management leads to self-regulated study habits and increased student engagement. Additionally, this study draws on the proposition by Lourenço and Paiva (2024), which emphasizes that students who successfully manage their time, both short-term and long-term, are more likely to be active participants in class, perform better academically, and benefit from effective time management and SRL techniques, such as goal setting and self-monitoring, which influence student engagement and achievement.

Conceptual Framework

Figure 1 illustrates the conceptual framework for the study's variables. The independent variable in this study is time management, which includes the following indicators: time planning, attitudes towards time, and time-wasters (Alay & Koçak, 2002). The dependent variable is student engagement, with the indicators of affective engagement, behavioral engagement, and cognitive engagement (Lam et al., 2014). The mediating variable is the learners' study habits with the following indicators: budgeting time, physical condition, reading ability, note-taking, motivation to learn, memory, test-taking strategies, and health (Tus et al., 2020).



METHODOLOGY

Research Design

This research adopted a quantitative, non-experimental, descriptive, and correlational approach with mediation analysis. Non experimental observes and analyzes phenomena in their natural state without manipulating variables or randomly assigning subjects, enabling researchers to investigate real-world complexities (Voleti, 2024). Quantitative research focuses on gathering and analyzing numerical data to identify patterns and connections within social issues (Sciberras & Dingli 2023). Descriptive research was a method that employed surveys, interviews, and observations to gather data and analyze characteristics, connections, and patterns within a group of people, aiming to describe and understand phenomena by exploring who, what, when, where, and how (Deckert & Wilson 2023). Correlational research examines relationships between variables, revealing connections but not proving causation, often inspiring further research (Arumdani & Churiyah 2022). Mediation analysis is a statistical tool that helps us understand how an event or treatment affects a result by dividing the total effect into different parts to determine if an intermediary factor is causing the connection (Lazic, 2024).

The researcher's application of the aforementioned design aid in addressing the main goal and focus of this study. In particular, a quantitative research design was employed to objectively measure and statistically analyze the relationships among learners' study habits, time management, and student engagement. Non-experimental methods were used to avoid manipulating variables, ensuring that observations reflect natural, unbiased occurrences. Descriptive research is used to provide a detailed overview of the current status of these variables, while correlational research examines strength and direction of the associations between them. Finally, mediation analysis was conducted to determine the extent to which learners' study habits mediate the relationship between time management and student engagement, providing insights into the underlying mechanisms.

Research Subject

The respondents in this study consisted of 353 students, selected through the Raosoft sample size calculator, from a total population of 4,325 students studying at a local college in Santo Tomas, Province of Davao del Norte. The respondents were selected using stratified random sampling technique. According to Haron (2022), stratified random sampling technique involves categorizing a group of people based on shared characteristics to get more reliable results than simply choosing people at random.

Table 1: Frequency Distribution of Participant

GROUP	POPULATION	SAMPLE SIZE	PERCENTAGE
A	1,343	110	31.16%
B	1,234	101	28.61%
C	826	67	18.99%
D	539	44	12.46%
E	306	25	7.08%
F	70	6	1.7%
Total Respondents	4,325	353	100%

Research Instrument

The researchers employed three (3) adapted survey questionnaires for independent variable, dependent variable and mediating variable. The questionnaires were validated by the panelists and an external validator to test its validity.

TIME MANAGEMENT QUESTIONNAIRE. This survey questionnaire was used to get the level of time management, it was from the research study titled ‘‘Validity and Reliability of Time Management Questionnaire’’ by Alay & Koçak (2002). The questionnaire consists of 27 items covering the following aspects: Time Planning (16 items), Time Attitudes (7 items), and Time Wasters (4 items). Respondents assessed each item using a 5-point Likert scale, where 5 represented "Very High," 4 "High," 3 "Moderate," 2 "Low," and 1 "Very Low."

Scale	Range of Means	Descriptive Level	Interpretation
5	4.20 - 5.00	Very High	Time Management is always manifested.
4	3.40 - 4.19	High	Time Management is oftentimes manifested.
3	2.60 – 3.39	Moderate	Time Management is sometimes manifested.
2	1.80 - 2.59	Low	Time Management is rarely manifested.
1	1.0 -1.79	Very Low	Time Management is least manifested.

STUDENT ENGAGEMENT QUESTIONNAIRE. This survey questionnaire was used to get the level Student Engagement, it was from the research study titled: Understanding and Measuring Student Engagement in School: The results of an international study from 12 countries by Lam et al., (2014). The questionnaire consists of 33 items covering the following aspects: Affective (9 items), Behavioral (12 items), Cognitive (12 items). Respondents assessed each item using a 5-point Likert scale, where 5 represented "Very High," 4 "High," 3 "Moderate," 2 "Low," and 1 "Very Low."

Scale	Range of Means	Descriptive Level	Interpretation
5	4.20 - 5.00	Very High	Student Engagement is very much observed.
4	3.40 - 4.19	High	Student Engagement is observed.
3	2.60 – 3.39	Moderate	Student Engagement is moderately observed.
2	1.80 - 2.59	Low	Student Engagement is rarely observed.
1	1.0 -1.79	Very Low	Student Engagement is least observed.

LEARNERS’ STUDY HABITS QUESTIONNAIRE. This survey questionnaire was used to get the level of Learners’ Study Habits, it is from the research study titled "The Learners’ Study Habits and its Relation on their Academic Performance by Tus, J., Lubo, R., Rayo, F., & Cruz, M. A. (2020). The questionnaire consists of 45 items, covering the following aspects: Budgeting Time (5 items), Physical Condition (6 items), Reading Ability (8 items), Note Taking (3 items), Learning Motivation (6 items), Memory (4 items), Taking Examinations (10 items), Health (3 items). Respondents assessed each item using a 5-point Likert scale, where 5 represented "Very High," 4 "High," 3 "Moderate," 2 "Low," and 1 "Very Low."

Scale	Range of Means	Descriptive Level	Interpretation
5	4.20 - 5.00	Very High	Learners’ Study habits are very much evident.
4	3.40 - 4.19	High	Learners’ Study habits are evident.
3	2.60 – 3.39	Moderate	Learners’ Study habits are moderately evident.
2	1.80 - 2.59	Low	Learners’ Study habits are rarely evident.
1	1.0 -1.79	Very Low	Learners’ Study habits are least evident.

Statistical Treatment Of Data

Mean: It is the average value of a set of data, which is often used to summarize and evaluate quantitative information (Fromantin et al., 2020). This was utilized to determine the level of time management, student engagement, and learners' study habits.

Pearson R: It reflects both the magnitude and the direction of the linear association between two variables (Torres, 2020). This was employed to determine the interrelationship between time management, student engagement, and learners' study habits.

Path Analysis: It is a statistical method that examines the relationships between a group of variables to determine cause-and-effect relationships, extending multiple regression by allowing for the estimation of path coefficients and the decomposition of path correlation coefficients (Awogbemi, 2022). This was used determine the mediating effect of learners' study habits in the relationship between time management and student engagement.

RESULTS AND DISCUSSIONS

Level of Time Management

The results for the time management were, presented, analyzed, and interpreted below. The outcome for time management level was presented in Table 2. The mean scores ranged from 3.76 to 3.90, with an overall mean of 3.81 and a standard deviation of 0.69. This was described as high which means oftentimes manifested. Moreover, the data could be gleaned that time wasters had the highest mean of 3.90 and described as oftentimes manifested. While, the indicator with the lowest mean of 3.76 described also as high, was time planning.

The overall finding suggests that the level of time management of the students was high when it comes to their planning, deadlines, goals, and priorities towards studying. Therefore, students exhibit strong time management abilities, showing a clear understanding of how to use their time wisely. Though their planning strategies could be refined, their overall competence supports both academic success and personal development.

Table 2

Level of Time Management

Indicator	Mean	SD	Descriptive Level
Time Planning	3.76	0.66	High
Time Attitudes	3.78	0.68	High
Time Wasters	3.90	0.74	High
Overall	**3.81**	**0.69**	**High**

This aligns with the findings of Holili et al., (2024) that effective time management, such as scheduling and prioritization, can improve student learning quality by boosting productivity, focus, and organization, thus necessitating their integration into school curricula. Additionally, the result is also supported by the study of Ghafar, (2023) that when students manage their time well, through scheduling and prioritization, they see a marked improvement in their drive and engagement.

Level of Student Engagement

Table 3

Level of Student Engagement

Indicator	Mean	SD	Descriptive Level
Affective Engagement	4.03	0.65	High
Behavioral Engagement	3.92	0.64	High
Cognitive Engagement	3.89	0.61	High
Overall	**3.95**	**0.63**	**High**

The results for the student engagement were presented in Table 3. The mean was ranging from 3.89 to 4.03 with an equivalent overall mean of 3.95 and a standard deviation of 0.63. This was described as high which means observed. Moreover, the data could be gleaned that affective engagement was the indicator with the highest mean of 4.03 and described as observed. While, the indicator with the lowest mean of 3.89 described also as high, was cognitive engagement.

The overall findings implies that the level of student engagement was high when it comes to their learning, expectations, ideas, and experiences towards studying. This means students are deeply invested in their education, showing strong engagement through their feelings, actions, and thinking, which creates a positive and participatory learning atmosphere.

This aligns with the findings of Rautanen et al. (2022), in their study which demonstrated that students with high engagement are more likely to seek and provide study-related social support, driven by their perceived relevance of studies, which fosters positive attitudes and enhances their overall learning experience. In addition, the result is also supported by the study of Upadyaya & Salmera-aro, (2021) high student engagement can improve well-being, seamless career and educational transitions, positive personal growth, enhanced life and career satisfaction, and decreased risk of burnout and depression.

Level of Learners' Study Habits

The results for the academic commitment were presented in Table 4. The mean was ranging from 3.69 to 3.93 with an equivalent overall mean of 3.82 and a standard deviation of 0.78. This was described as high which means evident. Moreover, the data could be gleaned that learning motivation was the indicator with the highest mean of 3.93 and described as evident. While, the indicator with the lowest mean of 3.69 described also as high, was reading ability.

The overall findings implies that the learners' study habits are evident when it comes to their homework, environment, subject matter, materials, and examinations toward studying. Therefore, students exhibit strong study habits across various aspects of their learning, including completing assignments, creating effective study environments, engaging with course materials, utilizing resources, and preparing for exams.

Table 4

Level of Learners' Study Habits

Indicator	Mean	SD	Descriptive Level
Budgeting Time	3.88	1.26	High
Physical Condition	3.80	0.67	High
Reading Ability	3.69	0.66	High
Note Taking	3.78	0.87	High
Learning Motivation	3.93	0.68	High
Memory	3.87	0.69	High
Taking Examinations	3.81	0.66	High
Health	3.84	0.80	High
Overall	**3.82**	**0.78**	**High**

This aligns with the findings of Ramesh and Murthy, (2020) that students who exhibit effective study habits, encompassing note-taking, summarizing, and outlining, are essential for learning as they boost productivity, and drive students towards their learning goals. Furthermore, the result is also supported by the study of Putri, et al (2022) exhibit high student habits includes organizing materials and setting clear objectives, both of which research shows significantly improve higher engagement.

Correlation between Time Management and Student Engagement

Showed in Table 5.1 were the results about the significance of the association between time management and student engagement, indicated by an overall calculated r-value of of 0.781 and a p-value of <0.001, lower than the .05 which was the set level of significance of the study. Thus, the null hypothesis was rejected. Also, this showed that time management was strongly correlated with their student engagement. This implied that the association of the variables had a positive, strong and significant correlation. Therefore, students who effectively managed their time experienced less stress, improved focus, and greater engagement in learning.

Table 5.1

Significance on the Relationship between Time Management and Student Engagement

Variables Correlated	r	p-value	Decision on H_o	Decision on Relationship
Time Management and Student Engagement	0.781**	<0.001	Rejected	Significant

This aligns with the findings of Fu et al., (2024) that effective time management correlates positively with study engagement, indicating that students who manage their time well tend to be more involved in their academic pursuits. Additionally, the result is also supported by the study of Wolters & Brady, (2021) that time management helps students control themselves, leading to better study engagement because they can plan learning, stay motivated, and think strategically to reach their school goals.

Correlation between Time Management and Learners' Study Habits

Showed in Table 5.2 were the results about the significance of the association between time management and learners' study habits indicated by an overall calculated r-value of 0.786 and a p-value of <0.001, lower than the .05 which was the set level of significance of the study. Thus, the null hypothesis was rejected. Also, this showed that time management was strongly correlated with their learners' study habits. This implied that the association of the variables had a positive, strong and significant correlation. Therefore, students who effectively managed their time tended to develop strong study habits, like organization, meeting deadlines, and prioritizing tasks, which ultimately led to better academic success.

Table 5.2

Significance on the Relationship between Time Management and Learners' Study Habits

Variables Correlated	r	p-value	Decision on H_o	Decision on Relationship
Time Management and Study Habits	0.786**	<0.001	Rejected	Significant

This aligns with the findings of Kanwal et al., (2024) that a strong link exists between learners' study habits and time management, demonstrating that effective time management cultivates self-regulated study habits, ultimately enhancing academic success. In addition, Freo, (2022) highlights that this enhanced time management specifically contributes to improved learners' study habits like note-taking and reading comprehension, which are vital for academic success.

Correlation between Learners' Study Habits and Student Engagement

Showed in Table 5.3 were the results about the significance of the association between Learners' Study Habits and Student Engagement with an overall calculated r-value of 0.777 and a p-value of <0.001, lower than the .05 which was the set level of significance of the study. Thus, the null hypothesis was rejected. Also, this showed that learners' study habits were strongly correlated with their student engagement. This implied that the association of the variables had a positive, strong and significant correlation. Therefore, strong study habits boosted student engagement by improving time management, understanding, and memory, which in turn fueled participation and motivation.

Table 5.3

Significance on the Relationship between Learners' Study Habits and Student Engagement

Variables Correlated	r	p-value	Decision on H_o	Decision on Relationship
Learners' Study Habits and Student Engagement	0.777**	<0.001	Rejected	Significant

This aligns with the findings of Grande & Edig, (2024) that effective study practices positively influence student involvement and are vital for enhancing learning experiences and academic success. Furthermore, the result is also supported by the study of Cullantes et al., (2024) that effective study practices positively influence students' involvement in a learning environment.

Mediation Analysis of the Three Variables using Path Analysis

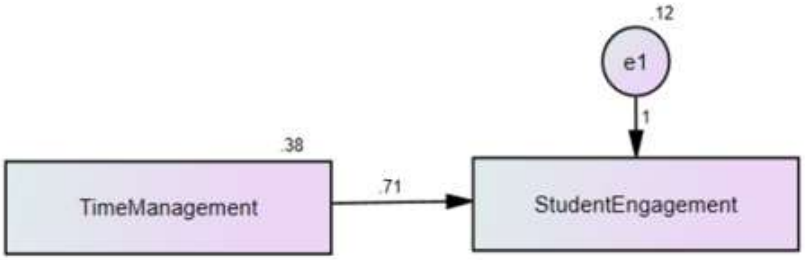
Shown in Figure 2 were the various steps involved in the path. The independent variable (IV) is Time Management, the dependent variable (DV) is Student Engagement, and the mediating variable (MV) is Learners' Study Habits.

In Step 1, path C (IV and DV), the result yielded an estimate of .715 with a standard error (SE) of .030 and a p<value of 0.000, which is lower than the 0.05 significance level. This indicates a significant impact between time management and student engagement since the probability value is p<0.000. Thus, the null hypothesis, suggesting no significant relationship, is rejected.

In Step 2, path A (IV and MV), with the presence of mediating variable, the result yielded an estimate of .792 with a standard error (SE) of .033 and a p<value of 0.000, which is lower than the 0.05 significance level. This indicates a significant impact between time management and learners' study habits since the probability value is p<0.000. Thus, the null hypothesis, suggesting no significant relationship, is rejected.

In Step 3, which is path B (MV and DV), with the presence of mediating variable, the result yielded an estimate of .388 with a standard error (SE) of .044 and a p<value of 0.000, which is lower than the 0.05 level. This indicates a significant impact between learners' study habits and student engagement since the probability value is p<0.000. Thus, the null hypothesis, suggesting no significant relationship, is rejected.

In Step 4, the path C' represents the combined effect of the IV and MV on the DV. The analysis showed that Student Engagement (DV) is influenced by both Learners' Study Habits (MV) and Time Management (IV), with the result yielding an estimate of .407 and a standard error (SE) of .045 with a p<value of 0.000, which is a lower than the 0.05 significance level. This indicates a significant influence exists between the three variables since the probability value is p<0.000. Thus, the null hypothesis, suggesting no significant relationship, is rejected.



Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P
Student Engagement	<-- -	Time Management	.715	.030	23.431	***

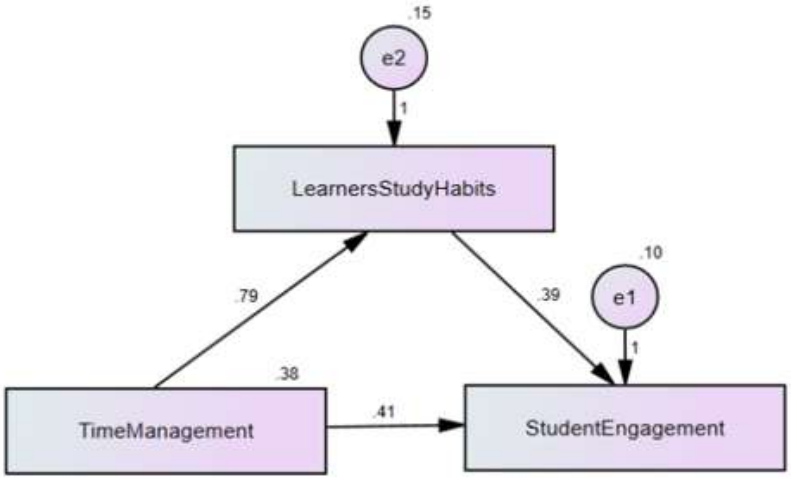


Figure 2: Path Diagram for the Regression Mode

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P
Learners Study Habits	<-- -	Time Management	.792	.033	23.834	***
Student Engagement	<-- -	Time Management	.407	.045	9.115	***
Student Engagement	<-- -	Learners Study Habits	.388	.044	8.752	***

Partial Mediation

Since the three steps (paths A, B, and C) are all significant, conducting a mediation analysis through path analysis is appropriate to evaluate the mediation effect's significance. Additionally, as shown in Step 4, the relationship between time management and student engagement was observed to reduce after being mediated by learners' study habits. Therefore, since the regression coefficient is substantially reduced at step 4 but remained significant, partial mediation is evident, with the effect still being significant at a p-value of 0.000.

The results of the effect size calculation in the mediation analysis between the three variables are displayed in Figure 2. The effect size reflects the proportion of the indirect path's impact on student engagement that can be attributed to time management. The beta of time management on student engagement is .715, representing the total effect value. When learners' study habits are included in the regression, the direct effect of time management on student engagement is 0.407. The indirect effect value of 0.307 is derived by multiplying the original correlation between time management to learners' study habits, which is .792, and learners' study habits to student engagement, which is .388.

The ratio index is calculated by dividing the indirect effect by the total effect; in this instance, 0.307 by 0.715 equals 0.429. About 42.9 percent of the total effect of time management towards student engagement is mediated through learners' study habits. The remaining 57.1 percent of the total effect is either direct or mediated by other variables not included in the model.

The result on the mediation analysis of learners' study habits in the relationship between time management and student engagement conforms on Self-Regulated Learning Theory by Zimmerman (2001), which state that students actively participate in their education by setting goals, tracking progress, and reflecting on their learning, thereby demonstrating the interconnectedness of time management, learners' study habits, and student engagement. The findings are supported by the idea of Wolters and Brady (2021), that when students manage their time well, they develop better study habits and become more engaged in their learning.

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Summary Of Findings

The study yielded the following key results:

1. The level of time management was described as "high" with an overall mean of 3.81 with a standard deviation of 0.69. The indicator that got the highest mean of 3.90 was "time waster", and the indicator that got the lowest mean of 3.76 was "time planning."

2. The level of student engagement was described as " high," with an overall mean of 3.95 with a standard deviation of 0.63. The indicator that got the highest mean of 4.03 was affective engagement, and the indicator that got the lowest mean of 3.89 was "cognitive engagement.".

3. The level of learners' study habits was described as " high," with an overall mean of 3.82 with a standard deviation of 0.78. The indicator that got the highest mean of 3.93 was "learning motivation", and the indicator that got the lowest mean of 3.69 was "reading ability".

4. The relationship between time management and student engagement proved to have a strong positive correlation, with an r-value of 0.781 and a p-value of <0.001, which was lower than the significance level of 0.05. This means that there is a significant relationship between time management and student engagement.

5. The relationship between time management and learners' study habits revealed a strong positive correlation, with an r-value of 0.786 and a p-value of <0.001, which was lower than 0.05 level of significance. This result led to the rejection of the null hypothesis, confirming a significant relationship between time management and learners' study habits.

6. The relationship between learners' study habits and student engagement exhibited a strong positive correlation, with an r-value of 0.777 and a p-value of <0.001, which was lower than the significance level of 0.05. This result indicated that the null hypothesis was rejected, confirming a significant relationship between learners' study habits and consumer engagement.

7. The mediation analysis confirmed that learners' study habits partially mediated the relationship between time management and student engagement. Path analysis revealed that 42.9% of the effect of time management on student engagement was mediated by learners' study habits, while the remaining 57.1% was either direct or influenced by other factors not considered in the study.

Conclusions

The following conclusions were drawn from the study's results:

1. The level of time management was revealed to be high, indicating that it was oftentimes manifested. Therefore, students who manage their time well by planning, meeting deadlines, and focusing on goals demonstrate their ability to use time wisely, which helps them succeed in school and in life.

2. The level of student engagement was high, determined as observed. Therefore, students were deeply invested in their education, showing strong engagement through their feelings, actions, and thinking, which creates a positive and participatory learning atmosphere.

3. The level of learners' study habits was high, determined as evident. Therefore, students demonstrate strong study habits across various aspects of their learning, including completing assignments, creating effective study environments, engaging with course materials, utilizing resources, and preparing for exams.

4. A strong positive correlation exists between time management and student engagement. Based on the findings, students who effectively manage their time experience less stress, improved focus, and greater engagement in learning. In contrast, poor time management leads to missed deadlines, frustration, and decreased motivation.

5. A strong positive correlation exists between time management and learners' study habits. The study's findings suggest that effective time management fosters structured study habits and improves engagement, while poor time management creates inconsistent routines, reduces efficiency, and hinders information retention.

6. A strong positive correlation exists between learners' study habits and student engagement. The study's findings suggest that strong study habits boost student engagement by improving time management, understanding, and memory, which in turn fuels participation and motivation. Meanwhile, weak study habits can lead to disengagement as students struggle to grasp concepts, resulting in decreased interest and involvement.

7. The mediation analysis confirmed that learners' study habits partially mediate the relationship between time management and student engagement. The study's findings suggest that time management directly impacts student engagement, and developing good study habits further increases this effect. However, because the influence of study habits is only partial, it's clear that other factors, such as student motivation and the learning environment, are also important contributors to student engagement.

Recommendations

The following recommendations are derived from the study's results, analysis, and conclusions:

1. College students may create a detailed weekly schedule using digital tools like calendars and task managers, for prioritizing tasks. Teachers can foster effective time planning skills among their students by teaching strategies like for example, provide students with templates for examples of effective schedules and task management systems, and also provide reminders for upcoming deadlines through announcements, emails, or learning management system notifications and lastly foster a supportive learning environment that help students to discuss their time planning strategies and share tips with their peers.

2. College students may actively participate in class discussions, ask questions, and apply critical thinking to their studies. Using interactive learning methods like group study, real-world applications, and self-reflection can enhance understanding and retention. Additionally, teachers may incorporate interactive teaching strategies like problem-solving activities, case studies, and discussions to enhance students' cognitive engagement. Encouraging critical thinking through real-world applications and thought-provoking questions can help students actively process and retain information. Furthermore, Administrators may prioritize the implementation of faculty development programs focused on active learning strategies to boost student cognitive engagement. Teachers may also invest in resources and technologies that facilitate interactive learning environments and promote critical thinking within the classroom. Teachers may also establish clear metrics for monitoring and evaluating the effectiveness of these interventions to ensure sustained improvement in student cognitive engagement.

3. To improve reading ability for learners' study habits among college students, teachers can include specific reading activities in their lessons. Things like guided reading and summarizing what they've read are really

helpful. Also, encouraging students to highlight and make notes, have discussions, and use online reading tools can boost their reading skills and help them remember more.

4. Students were encouraged to build study habits like setting regular study times, using active learning strategies, and cutting out distractions. When they do this, they become more organized, meet deadlines, and balance their lives better. Teachers should help students develop good study habits by weaving time management techniques into their lessons. Teachers can show students how to prioritize, use digital calendars, and set academic goals. To make studying more engaging, include interactive activities like group discussions and problem-solving. By focusing on strengthening study habits, teachers empower students to manage their time better, leading to increased student engagement and achievement.

5. School Administrators may implement programs, teaching effective study techniques like active learning, note-taking, and self-discipline. Providing workshops, tutoring, and digital tools will help students build habits that maximize their time management effort. To support this, they may offer resources such as study skills workshops, peer tutoring, and digital learning tools, helping students maximize the impact of their time management. Integrating study habit development into academic policies and encouraging faculty to build these skills into their teaching will further solidify this connection. By prioritizing both time management and study habits, administrators can create a learning environment where students are more engaged, self-sufficient, and successful.

6. Future Researchers may investigate further determinants of student engagement, encompassing motivation, learning environments, and the effects of digital learning resources. Broadening research to encompass students across varying educational levels and institutions will provide a more comprehensive understanding of the correlation between time management, learners' study habits, and student engagement. Moreover, employing experimental or longitudinal study designs may provide more profound insights into the sustained impact of time management and study habits on students' educational achievements.

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