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INFLUENCE OF SCHOOL TIMETABLE ON STUDENTS' ATTITUDE TO LEARNING MATHEMATICS

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Abstract

This study investigates the influence of school timetable on students' attitudes towards learning mathematics. The research aims to determine whether the scheduling of mathematics classes within the school day affects students' motivation, engagement, and overall perception of the subject. A total of 100 respondents were selected for the study using simple random techniques. A descriptive survey design of the research was employed during the investigation. A self-developed questionnaire validated by the supervisor and an external expert in the fieldwith 6 items was used to elicit data from the selected respondents. Quantitative data was analyzed using descriptive statistical tools such as frequency distribution tables and percentages. These data were analyzed by synthesizing the information from the respondents and arranging the responses systematically in line with the purpose of the study. The study revealed that 95% of students preferred mathematics classes in the morning, while 98% reported better focus during earlier class times. Additionally, 81% of students found it challenging to concentrate during afternoon mathematics classes, indicating a significant drop in attentiveness later in the day. Conversely, 19% of students did not experience concentration difficulties in the afternoon. These findings imply that scheduling mathematics classes earlier in the day can significantly enhance students' focus and positive attitude toward the subject. The study suggests that educational institutions should consider optimizing class schedules to allocate mathematics classes in the morning to improve student engagement and academic performance.

Keywords: *School Time-Table, academic, institution, performance, and attitude*

Introduction

A school timetable is a reference document created by professionals that clearly shows how school resources, such as teachers and classrooms, fit together with student schedules and school schedules, as well as with days of the week. The scheduling of subjects in a school timetable plays a crucial role in shaping students' attitudes and performance in various academic disciplines (Goldstein, et al, 2007). The article focuses on understanding the context and significance of investigating the relationship between school timetables and students' attitudes toward learning mathematics.

The school timetable is a crucial organizational tool that structures the allocation of time for various subjects and activities throughout the academic day and week. It serves as a framework to ensure a balanced and comprehensive curriculum delivery. The school timetables help with subject allocation, it helps to delineate specific time slots for different subjects, ensuring that each subject receives adequate attention (NPE, 2004). Subjects such as mathematics, language arts, science, social studies, and others are

distributed across the school week. The school timetable also helps to determine class periods and varies based on grade level and school policies. Class periods are typically standardized to facilitate a smooth transition between subjects and activities (Sousa, 2011). The timetable outlines how often each subject is taught during the week. Some subjects may have multiple sessions per week, while others may be less frequent. The duration of each class period can influence the depth of coverage and instructional methods employed by teachers. Apart from core subjects, the timetable may include slots for specialized classes like physical education, arts, music, and elective courses.

These classes contribute to a well-rounded education and allow students to explore various interests. The timetable may incorporate slots for extracurricular activities, such as clubs, sports, or academic competitions. This encourages a holistic approach to education and personal development. The timetable assigns specific teachers to classes and delegates classrooms for each subject. This ensures that teachers and students know where to be at any given time and minimizes disruptions. Breaks between classes, lunch periods, and transition times are essential components of the timetable. These breaks provide students with opportunities for rest, social interaction, and physical activity. Timetables are designed to be adaptable, accommodating changes in the academic calendar, unexpected events, or adjustments to the curriculum.

In some parts of the rural areas of Nigeria, some schools designed their timetable in such a way that interesting and engaging subjects like mathematics, English, or Accounting which are supposed to come in the first or second period now come in 5th or 6th period, and by the time the 6th period which is the mathematics class, they are already tired and not in the right mindset to learn. The teacher tries to keep the students engaged, but they are often unfocused. Students of such schools begin to perform poorly in math class, and this begins to affect their overall academic performance (Smith, Ward & Sanchez 2013). As a result of this unfavorable timetable in some schools, students associate math class with boredom and frustration, rather than learning and achieving. They start to see mathematics as a subject that is too difficult and not worth the effort. This leads to a reoccurring situation where the students' negative attitude toward math leads to further disengagement and poorer performance. With this pattern of disengagement and poor performance, those students begin to drop out of math class entirely. The school itself starts to see an overall decline in the academic performance of its students, and it becomes clear that something must be done to address the timetable issue (Edwards, 2012).

The timing of classes within the timetable can influence students' alertness and concentration levels. Some students may perform better during morning classes, while others may excel in the afternoon. Scheduling the timetable to align with optimal learning times can enhance students' engagement and academic performance. The duration of class periods, as determined by the timetable, can impact the intensity and depth of learning experiences. Longer class periods may allow for in-depth discussions and hands-on activities, while shorter periods may necessitate focused, concise instruction. A balanced distribution of classes on the timetable allows for comprehensive coverage of the curriculum and ensures that no subject is neglected (Sousa, 2011).

Understanding how the school timetable influences students' learning can guide educators and policymakers in designing schedules that cater to diverse learning styles, optimize engagement, and contribute to positive academic outcomes. The ability to make these adjustments ensures that disruptions do not compromise the overall learning experience.

Statement of the Problem

Upon commencing the teaching assignment, the assigned class for mathematics instruction was SS2. Reviewing the school timetable revealed that mathematics classes were scheduled for Mondays and Tuesdays. On Mondays, classes were slotted for the 4th and 5th periods, immediately following the short break, while on Tuesdays, it was scheduled for the 7th period, after the long break. However, the initial observations within the classroom were less than satisfactory. A noticeable lack of enthusiasm among students towards mathematics was evident. Many students

appeared disinterested and unengaged, often finding reasons to leave the classroom, often citing restroom visits. Despite efforts to make the subject matter engaging and interesting, their attitude remained unchanged in subsequent classes.

Further observations indicated a potential factor contributing to their lack of engagement: fatigue. The timing of mathematics classes, directly following the break, seemed to leave students feeling too fatigued to fully participate in the lesson. This observation prompted reflection on the influence of the school timetable on students' attitudes towards learning mathematics, becoming the focal point of research.

Purpose of the Study

The study examined the influence of school timetables on students' attitudes to learning mathematics. Specifically, the study assessed;

a. Student attitude to Learning mathematics in senior secondary schools

b. Whether timetable schedule for math influences students' attitude toward learning mathematics

Research Question

The following research questions guided this study:

a. What is students' attitude towards learning mathematics in senior secondary school?
b. Does timetable schedule influence students' attitude towards learning mathematics in senior secondary school?

Methodology

This study employs a descriptive type of survey of investigation on school timetables as a determinant of students' attitudes towards learning mathematics in senior secondary school in the Ilorin metropolis. According to Jackson (2009), the descriptive survey method is based on information gathered through a proforma, self-report, and observation, and the result obtained through this method can be statically analyzed

The population for this research was based on Senior Secondary School Students in Ilorin metropolis, while the target population was SS2 students. The sample procedure employed for this study is multi-stage. There are 78 Senior Secondary Schools in Ilorin Metropolis out of which 4 schools were purposively sampled. A simple random sampling was used to select 25 SS2 Students from each school making a total of 100 respondents. The instrument for this study was a researcher's designed questionnaire. The questionnaire is a 2-point Likert scale (Agree and Disagree). It has sections A, B, and C. Section A caters to respondents' biodata, while sections B and C deal with items that can measure student attitude to Learning mathematics in senior secondary schools and how timetable schedule for math influences students' attitudes toward learning mathematics respectively.

The content validity of this instrument was ascertained through the correction and suggestion of the supervisor and an external expert in the field. Corrections were made to the draft of the questionnaire. All corrections were effected before the final copy of the instrument was produced and eventually administered. The reliability of this instrument was addressed using the split-half method that is the instrument was administered to a sample population of students who were not part of the population for the study. The data obtained were divided into two and the correlation coefficient was determined and 0.641 was obtained. The result showed that the instrument was reliable.

The researchers sought the permission of the school's principals of the selected schools through a letter procedure. The researchers then set aside two weeks, visited the sample schools, and administered the questionnaires to the respondents. The questionnaire was collected on the same day. The data for the research work was collected by the researchers after an introductory letter was presented to the sample schools from the Head of Department. To ensure the ethical confidentiality of all participants, several measures were implemented. All personal information and data collected during the study were kept strictly confidential. Descriptive statistics was used to analyse the data.

Resukt

Presentation of data, analysis, and results; the results were presented by the purpose of the

study. The analyzed data were collected through a researcher-designed questionnaire, which was analyzed with the use of descriptive statistics.

Demographic Information

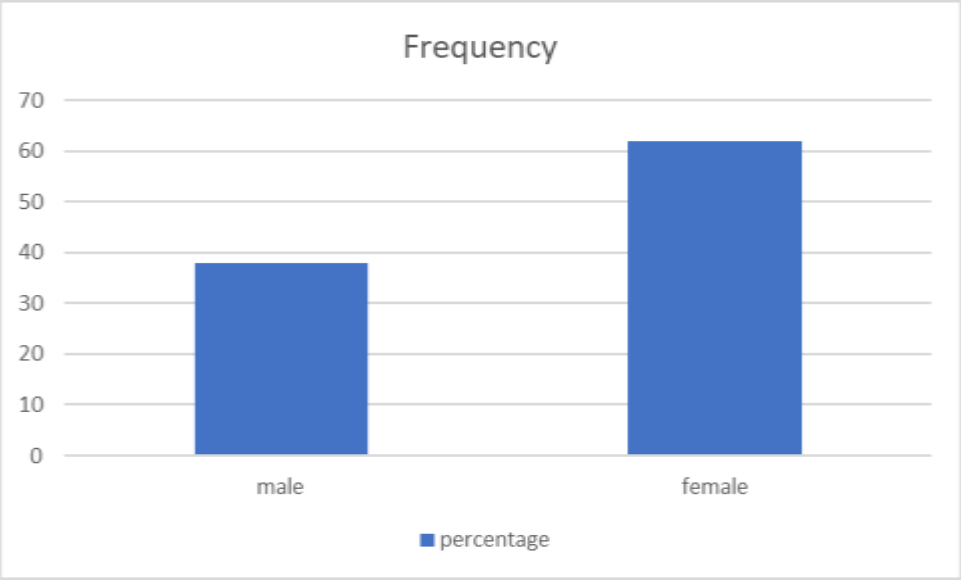

Figure 1; from this table, out ofthehundred respondents that were sampled, 38 respondents (38%) were males while 62 respondents (62%) were females**.** This shows that more females participated in this study than males.

Answering Research Questions

Research Question One: What is students' attitude towards learning mathematics in senior secondary school?

Table 1: Percentage of student's attitude towards learning mathematics in senior secondary school

S/No	Statement	Agree	Disagree
1.	I prefer having Mathematics classes in the morning.	95.0	5.0
2.	Mathematics classes scheduled earlier in the day help me focus better.	98.0	2.0
3.	I find it difficult to concentrate during afternoon Mathematics classes.	81.0	19.0

Table 1 revealed that 95% of students agreed that they prefer having Mathematics classes in the morning, 98% agreed that mathematics classes scheduled earlier in the day help them focus better, and 81% also agreed that they find it difficult to concentrate during the afternoon mathematics classes. However, 19% disagreed that they find it difficult to concentrate during afternoon classes. This therefore implies that mathematics classes scheduled earlier in the day help students focus better, respondents prefer having Mathematics classes in the morning, and they also find it difficult to concentrate during afternoon mathematics classes.

Research Question Two: Does the Timetable schedule influence students' attitudes towards learning mathematics in senior secondary school?

Table Two: Percentage of howtimetable schedule determines students' attitude towards learning mathematics in senior secondary school.

S/No	Statement	Agree	Disagree
4.	Longer Mathematics classes with breaks are more effective for my learning.	78.0	22.0
5.	Having Mathematics classes on certain days of the week like Mondays and Fridays influences my attitude towards learning Mathematics.	73.0	27.0
6.	Most students in my school prefer to attend Mathematics class than any other subject.	35.0	65.0

Table two shows the percentage on how timetable schedule determines students' attitudes towards learning mathematics in senior secondary school. It revealed that 78% of students agreed that longer mathematics classes with breaks are more effective for their learning, and 73% agreed that having mathematics classes on certain days of the week like Mondays and Fridays influences their attitude toward learning Mathematics. However, 65% disagree that most students prefer to attend Mathematics class over any other subject which influences their attitudes towards learning mathematics. Thus, students agreed that longer mathematics classes with breaks are more effective and influence their attitude towards learning mathematics than preferring to attend Mathematics class over any other subject.

Summary of Findings

From the analysis of the collected data, it can be summarized that;

a. Respondents prefer having Mathematics classes in the morning, mathematics classes scheduled earlier in the day help students focus better and students find it difficult to concentrate during afternoon mathematics classes.
b. Longer mathematics classes with breaks are more effective for their learning rather than preferring to attend Mathematics classes in any other subjects.

Discussion

The analysis of the collected data reveals several key insights regarding students' preferences and the effectiveness of scheduling for mathematics classes, A significant majority of respondents prefer having mathematics classes in the morning. This preference is strongly associated with better focus and concentration.

This observation is consistent with the literature on the effects of time of day on cognitive functioning and academic performance. Research has shown that cognitive functioning, including attention and focus, tends to peak in the late morning and early afternoon, making earlier mathematics classes more conducive to focus and learning, afternoon classes, especially those scheduled after lunch, can be challenging for students due to a natural post-lunch dip in alertness and energy, this aligns with the concept of the "circadian rhythm" and the natural fluctuations in our bodily rhythms throughout the day, influencing our energy, focus, and productivity levels. This is in line with the study of the National Sleep Foundation's (2023) findings on the body's natural circadian rhythms and their impact on cognitive functioning.

The results published in the Journal of Educational Psychology and Experimental Psychology: Learning, Memory, and Cognition have investigated the relationship between time of day, attention, and academic performance. Research on the effect of time of day on cognitive functioning and academic performance include among others, Time-of-day effects on cognition in preadolescents: A trails study" (2010), Time of day and phenotype in the assessment of cognitive functions" (2023), Time-of-day effects on prospective memory" (2022).

Several studies support that morning classes are more effective for learning, particularly for

subjects requiring high cognitive engagement, such as Mathematics. Research by Goldstein et al. (2007) indicates that cognitive functions such as attention and memory peak in the morning. This aligns with our finding that students prefer and perform better in mathematics classes scheduled earlier in the day. This phenomenon can be attributed to a combination of factors, including:

1. Circadian Rhythms (Body's natural clock): Cognitive functioning, attention, and alertness tend to peak in the late morning and early afternoon, making earlier mathematics classes more conducive to focus and learning.

2. Sleep Patterns and Sleepiness: Students may experience a natural dip in alertness and energy levels after lunch, making it harder to concentrate in afternoon classes.

3. Hormonal Changes: Hormones like cortisol (responsible for alertness) and melatonin (regulates sleep-wake cycles) have natural fluctuations throughout the day, impacting cognitive performance.

4. Digestion and Blood Sugar Levels: Afternoon classes may coincide with digestion and a natural drop in blood sugar levels, potentially affecting energy and focus.

5. Attention Span and Fatigue: Students' attention spans may decrease as the day progresses, leading to difficulty concentrating in afternoon classes.

6. Scheduling and Routine: Students may have more energy and focus in the morning due to a consistent daily routine, while afternoon classes may be affected by disruptions or changes in routine.

7. Environmental Factors: Classroom temperature, lighting, and noise levels may vary throughout the day, impacting student comfort and focus.

8. Teacher and Student Dynamics: Teacher energy and enthusiasm, as well as student-teacher interactions, may vary across morning and afternoon classes, influencing student engagement.

These factors combined contribute to the observed difference in student focus and concentration between morning and afternoon mathematics classes.

The analysis of the collected data reveals several key insights regarding students' preferences and the effectiveness of scheduling mathematics classes in senior secondary schools, a significant majority of respondents prefer having mathematics classes in the morning. This preference is strongly associated with better focus and concentration. Specifically, students reported that mathematics classes scheduled earlier in the day significantly help them concentrate better. Conversely, there is a notable difficulty in maintaining concentration during afternoon mathematics classes. These findings highlight the critical role of scheduling in enhancing students' engagement and performance in mathematics. The difficulties students face in afternoon classes are well-documented. Research by Smith, Ward, and Sanchez (2013) shows that cognitive fatigue sets in as the day progresses, leading to decreased attention and retention rates in afternoon classes. This fatigue likely contributes to the 81% of students in our study who reported difficulties concentrating during afternoon mathematics sessions. The phenomenon of the "afternoon slump," characterized by reduced alertness and cognitive performance, underscores the importance of scheduling challenging subjects like mathematics in the morning (Monk, 2005).

The preference for longer Mathematics classes with breaks aligns with educational theories on cognitive load and attention spans. According to a study by Sousa (2011), the brain's ability to maintain focused attention typically lasts about 20 minutes, after which performance declines unless a break is introduced. This supports our finding that students favor longer classes interspersed with breaks, as these breaks can help mitigate cognitive fatigue and sustain engagement.

Additionally, research by Kaplan (2008) suggests that longer class periods, when structured effectively with breaks, allow for deeper exploration of complex subjects and better consolidation of learning. This approach contrasts with shorter, more fragmented class schedules, which may not provide sufficient time for in-depth understanding and practice, particularly in mathematics.

Conclusion

These findings and the supporting literature suggest that optimizing the schedule to place mathematics classes in the morning and incorporating breaks within longer sessions could significantly improve student focus and learning outcomes. The preference for specific days and class structures aligns with cognitive research suggesting that these factors play a crucial role in enhancing student engagement and academic performance. While students may not inherently prefer mathematics over other subjects, strategically scheduling mathematics classes can help maximize their effectiveness and improve overall student attitudes toward learning the subject.

Recommendation

Based on the findings of this study, several recommendations can be made to optimize the scheduling of mathematics classes and improve student attitudes and performance in senior secondary schools. To optimize student attitudes and performance in mathematics, it is recommended that schools schedule mathematics classes in the morning, implement longer class periods with intermittent breaks, strategically choose days of the week for these classes, address afternoon fatigue with engaging activities, and provide professional development for teachers to effectively manage these schedules. Additionally, schools should continuously monitor and evaluate the effectiveness of these scheduling practices while fostering a positive attitude towards mathematics through engaging programs and real-world applications.

By implementing these recommendations, schools can create an environment that supports better learning outcomes for mathematics, enhances student focus and engagement, and ultimately fosters a more positive attitude toward the subject.

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