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(RESEARCH ARTICLE)

A comparative study on the impact of time management on Grade 9 Integrated Science students at two secondary schools in Region 6, Guyana

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Abstract

The objective of this study was to investigate the overall time management between the Grade nine students at Secondary School A and Secondary School B, to determine the amount of time spent studying by the Grade nine students at Secondary School A and Secondary School B, and to establish a relationship between the time management of the Grade nine students at Secondary School A and Secondary School B. A pilot study was conducted at Secondary School C to construct a questionnaire and the Alpha Cronbach reliability test was done for each of the two factors for the questionnaire. A final questionnaire consisting of a four-point modified Likert Scale was prepared and circulated to the Grade Nine students at Secondary School A and Secondary School B. The population consists of two hundred and eleven Grade 9 students-one hundred and fifteen from Secondary School A and ninety-six from Secondary School B. Each of the four Grade nine classes at School A consists of twenty-four students and the five Grade nine classes at School B consists of approximately twenty-three students. The sample for the research consists of Grade nine classes from both public secondary schools. School A comprised of four Grade 9 classes and School B comprised of five. Three classes were randomly selected at both schools. The three classes from School A consisted of sixty-nine students and the three classes selected from School B consisted of sixty-five students. The three classes that were randomly selected at School A consisted of sixty-nine students and the three classes that were randomly selected at School B consisted of sixty-five students. At School B, the three Grade 9 classes that were randomly selected were Grade 9B, Grade 9C, and Grade 9D. At School A, the three Grade 9 classes that were randomly selected were Grade 9A, Grade 9C, and Grade 9D. Results indicated that the students at Secondary School A on average reported better time management skills in improving their end-of-term scores in Integrated Science when they manage their time more efficiently and that the students at School A on average reported better time studying skills than the students at Secondary School B. The T-test results further revealed that the difference in time management, time studying and overall time management between the Grade nine students at both secondary schools was statistically significant.

Keywords: Impact; Time management; Integrated Science; Secondary school; Guyana

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1. Introduction

1.1. Time Management and Academic Achievement

Time management is widely recognized as a crucial factor influencing students' academic achievement, particularly at the secondary school level. Effective time management involves planning, organizing, and prioritizing academic tasks to maximize learning outcomes [6]. Studies have shown that students who implement structured time management strategies tend to perform better academically than those who do not [31].

Research by Zimmerman & Schunk (2001) highlights those autonomous learners, who allocate time efficiently for studies, experience improved academic performance. They argue that time management is not just about the number of hours spent studying but also the quality of time spent on academic tasks. This idea is supported by Nonis & Hudson (2006), who found that students who distributed their study time evenly over the semester outperformed those who relied on last-minute cramming.

The relationship between study time and academic success has been a subject of debate. Plant *et al*. (2005) found that while increased study hours correlated with higher grades, the effectiveness of those hours depended on how students managed their time. Students who engaged in strategic learning techniques, such as spaced repetition and self-testing, performed significantly better than those who studied passively.

Another critical factor in time management is procrastination. Steel (2007) conducted a meta-analysis on procrastination and academic performance, revealing that students who frequently delayed studying had lower grades and higher stress levels. Similarly, Ariely & Wertenbroch (2002) found that students who set personal deadlines and adhered to structured study schedules performed better academically.

Demographic factors also influence time management skills among secondary students. Kitsantas *et al*. (2008) found that socioeconomic background played a role in students' ability to manage their study time effectively. Students from higher-income families had better access to study resources, enabling them to allocate time more effectively. Claessens *et al*. (2007) also observed gender-based differences, noting that female students were generally more disciplined in managing their study schedules compared to male students.

Technology has become an integral part of students' lives, affecting how they manage their study time. Junco & Cotten (2012) found that excessive use of social media and digital distractions significantly reduced students' ability to focus on academic tasks. However, Dembo & Seli (2010) argued that students who used digital planners and study apps demonstrated better time management skills and academic performance.

Several interventions have been proposed to help students improve their time management skills. Van Eerde (2003) conducted a study on time management training programs and found that structured interventions led to significant improvements in students' ability to allocate study time effectively. Similarly, Schraw *et al*. (2007) found that students who received training on self-regulated learning strategies exhibited better academic performance and reduced procrastination.

The impact of part-time work on study time is another area of interest. Kalenkoski & Pabilonia (2009) found that students who worked long hours struggled to balance their academic responsibilities. However, students who worked a limited number of hours developed stronger time management skills, which benefited their academic performance in the long run.

In theory, the academic performance of students is linked to their time management as indicated by research conducted by Nadinloyl et al. in 2013. Numerous studies have discovered a link between improved academic performance and efficient time management as students learn coping mechanisms for conflicting demands [34]. Scherer *et al*. (2017) further stated in their research that another useful predictor of academic success is time management. When students struggle with time management, it becomes difficult for them to organize their studies, which makes them nervous and agitated during the assessment period, which usually occurs at the end of the course [43]. It is evident from these two studies that time management is one of the main causes of the decline in the academic performance of students.

In the context of education, time management refers to the methods and abilities that students employ to efficiently schedule, arrange, and divide their time among different assignments and commitments. To maximize productivity and meet academic objectives, this entails setting priorities for assignments, controlling distractions, keeping a good study-life balance, and organizing daily activities [21]. The amount of time students spends participating in learning activities

both inside and outside of the classroom is referred to as "time studying" in the context of education. This covers the time invested in attending classes, taking part in discussions, finishing homework, and studying on your own [29].

Managing one's time effectively involves making deliberate decisions about how much time is spent on various tasks, to maximize productivity and efficiency [50]. Students often experience stress due to their busy schedules, including attending classes, completing assignments, studying for exams, and living their daily lives. Effective time management techniques can help them manage their time effectively and reduce stress [48]. Academic stress overwhelms students frequently due to a lack of organization. Physical and mental well-being can be impacted by comprehending the fundamentals of time management and leisure planning [5]. Effective time management is essential for raising students' academic achievement and performance. Every student should be proficient in time management, which includes prioritizing and setting objectives, using time management tools, and managing their time well [36].

1.2. Completion of homework and assignments on academic performance

The term "homework" refers to assignments that teachers assign to their students to be completed after school [15]. Homework supports the learning of students in the classroom by offering them the chance to practice and apply lessons learned in the class. Students can develop their comprehension and mastery of a variety of subjects by completing their homework [30]. Students get ready for exams with the help of homework. It enables them to show off their knowledge and review content on their own. Through homework and assignments, teachers can assess how well their students are learning [39]. Students can demonstrate their understanding on their own through homework, free from direct teacher guidance. It's an opportunity to put knowledge to use, figure out issues, and show mastery. This independence helps students advance academically overall [45].

Homework and assignments play a critical role in shaping students' academic performance at the secondary school level. They serve as essential tools for reinforcing classroom learning, developing self-discipline, and improving time management skills [10]. Numerous studies have examined the impact of homework completion on academic success, with most findings indicating a positive correlation between consistent assignment completion and higher student achievement [56].

One of the most influential studies on homework and academic achievement was conducted by Cooper *et al*. (2006), who performed a meta-analysis of multiple research studies and found a moderate positive effect of homework on student performance, particularly in secondary school. Their findings suggest that homework assignments contribute significantly to students' academic success when they are meaningful and appropriately structured.

Trautwein & Köller (2003) explored the relationship between homework effort and academic achievement. They concluded that students who spent more time and effort on their homework generally performed better in assessments. However, they also noted that the quality of homework engagement mattered more than the quantity of time spent, reinforcing the need for structured and purposeful assignments.

Furthermore, Zimmerman & Kitsantas (2005) highlighted the role of self-regulated learning in homework completion. Their research indicated that students who set goals, plan their study schedules, and monitor their progress while completing homework tend to achieve higher academic results. This aligns with the work of Pintrich & De Groot (1990), who found that motivation and self-regulated learning strategies significantly impact students' ability to complete homework effectively.

Despite the positive effects of homework, some researchers argue that excessive homework can have detrimental effects on students. Kohn (2006) critically examined the conventional belief that more homework leads to better academic performance and found that excessive workloads can lead to stress, burnout, and a lack of motivation. Similarly, Galloway *et al*. (2013) found that students who spend an excessive amount of time on homework often experience sleep deprivation and reduced engagement in extracurricular activities, which can negatively impact overall academic performance.

Moreover, the impact of homework completion varies based on socioeconomic factors. Eren & Henderson (2011) studied the differences in homework completion rates among students from different socioeconomic backgrounds and found that students from lower-income families often struggle with completing assignments due to limited access to resources such as private tutoring, internet access, and parental support. This highlights the need for equitable educational policies that address disparities in homework effectiveness.

Another important factor influencing the impact of homework is parental involvement. Epstein & Van Voorhis (2012) found that students whose parents provide guidance and support with homework tend to perform better academically. However, their study also warned that excessive parental interference could lead to dependency, preventing students from developing independent study habits.

In recent years, technological advancements have also played a role in shaping students' homework completion habits. Kay *et al*. (2010) found that the use of online learning platforms and digital assignments has improved student engagement and completion rates. However, research by Junco (2012) indicated that digital distractions, such as social media, can negatively impact students' ability to complete their homework effectively.

The primary justification for assigning homework is that it will directly impact students' ability to retain and comprehend the content [52]. In addition to beneficial study habits, students also learn time management, problem-solving, and accountability. With the support of homework, students may confidently and effectively apply the knowledge and skills they have gained in the classroom to the real world—including both their professional and postsecondary education [55]. Students' independence, time management skills, and understanding of the value of a strong work ethic are all enhanced by completing homework. Thanks to home-learning support, completing homework at home fosters a stronger tie and interaction between parents and children [46]. It has been discovered that students who consistently finish their homework perform better than those who don't. However, the advantages are not limited to the scholarly domain. A number of research indicate that students can gain in a variety of additional ways [46].

Homework can be administered as either practical activities, extension activities, preparation activities, or a combination of two or all three. In addition to teaching students how to solve problems, homework helps students retain concepts [39] and enables teachers to evaluate how well their students have understood the material [1]. In 2015, research by Matthew *et al*. emphasized that the importance of completing homework assignments is positively correlated with improved academic performance, according to studies [32]. Matthew *et al*. 2015 also further stated that pupils who consistently finish their homework typically exhibit higher test scores and retention rates [32].

Students who used homework as an instructional tool in high school saw an increase in grades compared to those who did not, according to a large study by Cooper *et al*. (2018). As grade level decreased, there was less of a correlation between effort and homework. The age of the student determines the significant impact of homework [9]. Cooper *et al*. further stated that 70 % of students who did not receive homework received lower grades or higher scores on standardized tests [9].

1.3. Time Studying and Academic Performance

The relationship between time spent studying and academic performance is a crucial topic in educational research, particularly in the context of secondary school students. A growing body of research has investigated how different study habits and time management strategies influence students' academic outcomes. Academic performance, often measured through grades or test scores, is a key indicator of student success and is influenced by numerous factors, including cognitive abilities, motivation, and study behaviors [58]. Among these factors, the amount of time devoted to studying is frequently cited as one of the most significant predictors of academic achievement [6]. In particular, the way students manage their study time can affect their learning efficiency and retention of information, which ultimately impacts their academic performance [11].

The concept of time spent studying is multifaceted, encompassing not only the quantity of time but also the quality of study sessions. For instance, while some students may dedicate long hours to studying, others may engage in more focused and efficient study practices in a shorter amount of time. Previous studies have shown that the effectiveness of study time is often influenced by various factors such as study techniques, distractions, and time management skills [3]. Researchers have pointed out that students who are more effective in managing their study time tend to perform better academically because they engage in deeper processing of the material, leading to better retention and understanding [37].

Several studies have focused on the direct relationship between study time and academic performance, suggesting that the amount of time spent studying is positively correlated with better grades and higher levels of achievement. For example, Britton & Tesser (1991) found that students who dedicated more hours to studying had higher GPA scores compared to those who spent less time on academic tasks. Furthermore, a study by Duckworth & Seligman (2005) highlighted the importance of self-discipline and time management in enhancing academic performance, indicating that students with stronger time management skills tend to use their study time more effectively, resulting in improved academic outcomes.

Time studying is the amount of time a student needs to finish the learning and assessment tasks associated with a study program, or just a portion of one [29]. In 2021, Spitzer conducted a study that demonstrated a positive correlation between study time and academic performance, with low-performing students performing better when they increase their study time [47]. Spada *et al*. study in 2010 revealed that academic performance is typically higher for students who use smart study methods and feel good about themselves while studying. However, pupils who approach their studies superficially and feel uncomfortable doing so are more likely to perform worse academically [42]. A study by Zuzanek in 2009 investigated academic obligations, preparing for tests, and hurrying through their assignments, students frequently feel overburdened and under pressure. Stress and dissatisfaction related to schooling are caused by this disarray of time. Furthermore, there is a link between ineffective time management and poor academic achievement.

However, the relationship between study time and academic performance is not always linear, as other variables such as the type of study activity and students' learning styles can mediate the effects of time spent studying. A study by Gierl *et al*. (2009) found that although study time was positively correlated with academic performance, the quality of study time as an active learning strategy was a stronger predictor of academic success. Students who engaged in techniques like self-testing, summarization, and spaced repetition were found to perform better academically, even if they spent less time studying compared to their peers [41].

Moreover, the role of motivation in time spent studying has been widely discussed in the literature. According to Zimmerman (2002), students' motivation to study is a key factor that influences their study habits, including how much time they allocate to their academic work. Motivated students tend to exhibit more consistent and focused study patterns, leading to better academic performance. Conversely, students with low motivation may procrastinate, resulting in inefficient use of study time and lower academic achievement [49]. Therefore, the interplay between motivation, time spent studying, and academic performance is complex and requires further investigation.

Time management skills are another important aspect of this relationship. Effective time management enables students to allocate sufficient time to studying while balancing other responsibilities and activities. Studies have shown that students with better time management skills tend to achieve higher academic performance because they can organize their study time efficiently and avoid last-minute cramming [6] [57]. Conversely, students who struggle with time management may experience stress and anxiety, which can negatively affect their ability to focus and retain information, ultimately leading to poorer academic outcomes [33].

Additionally, the role of external factors, such as socio-economic status, family support, and school environment, can influence how secondary students manage their time and academic responsibilities. Students from lower socio-economic backgrounds may face more challenges in terms of access to resources and support, which can hinder their ability to utilize their study time effectively [18]. Moreover, family involvement and support have been found to play a significant role in encouraging students to allocate more time to their studies and develop effective study habits [22].

While much of the research on time studying and academic performance has been conducted in Western countries, there is a growing interest in how these dynamics apply in different cultural and educational contexts. For example, studies conducted in Asian countries have shown that students in countries such as China and South Korea tend to spend more time studying compared to their counterparts in Western nations. However, these students often report higher stress levels and lower life satisfaction levels [7]. These findings suggest that while study time is important, the pressure to perform academically can have negative consequences on students' well-being, which may, in turn, affect their academic performance.

The researchers along with other science teachers noticed some students perform well in class as it relates to classroom activities and group exercises, and excel in discussion and demonstration but when it comes to quizzes, mid-term tests, and end-of-term examinations, many of these students tend to perform poorly. Additionally, the researchers and other subject teachers firmly believe that students who do not submit their homework, assignments, and projects have issues managing their time. Some students indicate to their teachers that sometimes they feel overwhelmed with the amount of schoolwork they are given, and the researchers observed the frustration in some students when they are given assignments and homework approaching the examination period. Further, the researchers chose this topic to investigate whether the same problem with time management exists in Grade-nine students who are studying Integrated Science at two secondary schools (Secondary Schools A and B). The researchers and many science teachers at secondary schools noticed that students who completed their homework on time tended to perform better or have high academic grades at the end of the term.

In Grade 9, students are notified at least one week in advance when a test or a quiz must be written or when assignments and project submissions are due. Most of the students will utilize the first few days to do other activities of interest and then try to attempt their projects, assignments or even study for their test or quiz the last few days before the deadline which leaves them with incomplete work or in some instances where they have not even finished when it is time for submission.

The academic performance of students at secondary schools in the core subject area of Integrated Science is affected by many factors. The researchers suspect that time management is one of those factors that affects the academic performance of secondary school students. The researchers also suspect that students who complete their assignments, projects, and homework on time in addition to finishing studying for their reading material in Integrated Science perform better in the subject.

This research aims to investigate whether the Grade nine students who complete their assignments, projects, and homework on time in addition to finishing studying for their reading material in Integrated Science will perform better than the Grade nine students who do not submit their assignments, projects, and homework in addition to finish studying for their reading material in Integrated Science. The specific objectives that guide this study are: (i) To compare the overall time management practices of Grade Nine students at Secondary School A and Secondary School B. (ii) To analyze the amount of time spent studying by Grade Nine students at Secondary School A and Secondary School B.

The hypotheses that guide this study are:

1.3.1. Null Hypothesis

H_0: There is no significant difference in the overall time management practices of Grade Nine students at Secondary School A and Secondary School B.

H_0: There is no significant difference in the amount of time spent studying by Grade Nine students at Secondary School A and Secondary School B.

1.3.2 Alternative Hypothesis

H_1: There is a significant difference in the overall time management practices of Grade Nine students at Secondary School A and Secondary School B.

H_1: There is a significant difference in the amount of time spent studying by Grade Nine students at Secondary School A and Secondary School B.

The findings from this research will provide guidance on how to advice and counsel present and future students on the importance of submitting their assignments, homework, and projects in a timely manner and how to effectively manage their time spent studying, and how this is linked to their academic performance in Integrated Science. This study will also provide guidance and inform other teachers teaching Integrated Science ways in which they can positively impact and motivate their students to improve their academic performance and what they need to do to assist students in managing their time more efficiently.

Similarly, the school administration can tackle the issue of the academic performance decline of their students in Integrated Science and the findings from this study can shed some insight in areas that the school administration needs to focus on. The school administration can present these findings at the Parents–Teachers Conference (PTA) where they can enlighten and aid parents in the areas where they can work with their children to further guide them to manage their time more efficiently. The findings of this study aim to target the teachers, school administration, and parents to work collaboratively to assist students in areas where they need to manage their time more efficiently to improve their academic performance in Integrated Science.

2. Methodology

2.1. Research Design

This research employed a quantitative correlational design which utilizes descriptive correlational techniques. The approach to research focuses on gathering data through questionnaires and involves the use of numerical analysis to

examine a phenomenon. The use of the design was appropriate for the research because the purpose of the research was to explore the overall time management and in Grade 9 students at Secondary Schools A and B.

2.2. Description of Population and Sample

The population consists of two hundred and eleven Grade 9 students-one hundred and fifteen from Secondary School A and ninety-six from Secondary School B. Each of the four Grade nine classes at School A consists of twenty-four students and the five Grade nine classes at School B consists of approximately twenty-three students. The sample for the research consists of Grade nine classes from both public secondary schools. School A comprised of four Grade 9 classes and School B comprised of five. Three classes were randomly selected at both schools. The three classes from School A consisted of sixty-nine students and the three classes selected from School B consisted of sixty-five students. At School A, the three Grade 9 classes that were randomly selected were Grade 9A, Grade 9C, and Grade 9D. At School B, the three Grade 9 classes that were randomly selected were Grade 9B, Grade 9C, and Grade 9D. The questionnaires were distributed to the three classes that were randomly selected from both schools.

2.3. Reliability

The validated instrument was piloted at a third public secondary school (Secondary School C) that was located near both Secondary Schools A and B which were under study (Figure 1). A total of fifty questionnaires were printed and distributed in the morning and the researchers received forty completed questionnaires the same day in the afternoon.

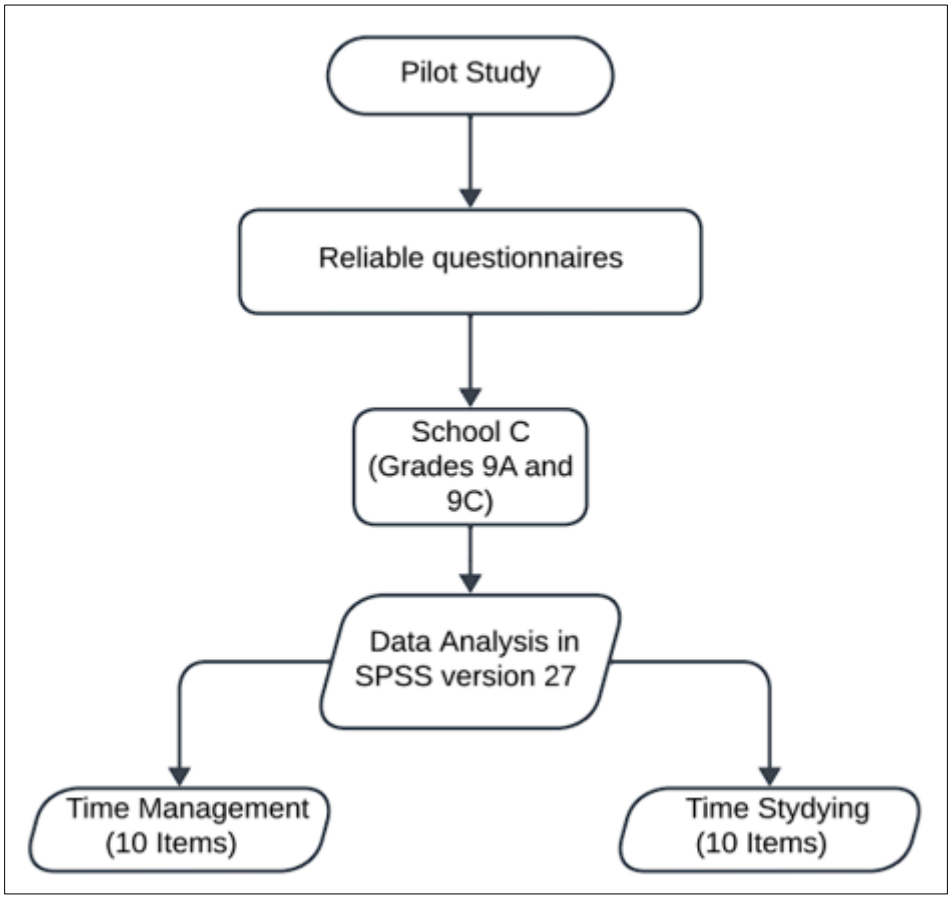

Figure 1 Approach and execution of pilot study in Secondary School C

The Alpha Cronbach reliability test was done for each of the two factors for the questionnaire: Time Management and Time Studying. The reliability analysis was done for all ten items under Time Management and the Alpha Cronbach value for the Time Management scale was 0.581. Based on the Cronbach Alpha value for each item, the four items that had the four lowest Cronbach Alpha values were deleted and the Alpha Cronbach was increased to 0.709. The reliability analysis was also done for the ten items under Time Studying and the Cronbach Alpha value was 0.784. However, three of the items had a low Cronbach Alpha value and the four items with the lowest Cronbach Alpha value were deleted which increased to 0.790. The overall Alpha Cronbach reliability for the entire questionnaire was 0.817.

2.4. Instrumentation

The instrument that was used for the research was a survey questionnaire. The questionnaire consisted of the four-point modified Likert Scale, Strongly Agree, Agree, Disagree, and Strongly Disagree. The questionnaire was adopted from a study conducted using a questionnaire constructed by Britton and Tesser in 1991 that consisted of eighteen items. The researchers modified thirteen of the items (Figure 2) and constructed the other seven items, giving a total of twenty items for the questionnaire.

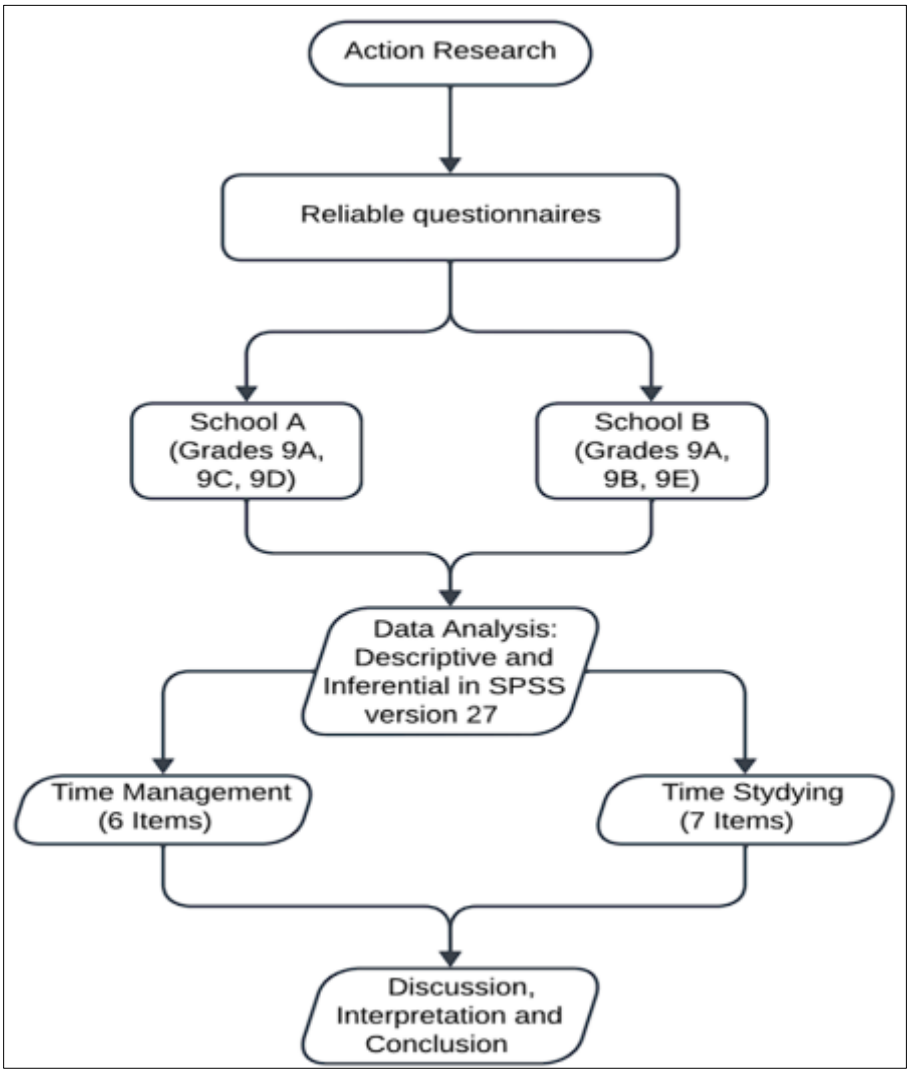

Figure 2 Approach and execution of research in Secondary Schools A and B

The questionnaire consists of two factors: Time Management and Time Studying (Figure 2). A total of ten items were under the scale Time Studying and ten items under the scale Time Studying for the Pilot Questionnaire. After the questionnaires were piloted, two items under the scale Time Management were deleted which resulted in a total of eight items, and three items under the scale Time Studying were deleted which resulted in a total of seven items. A reliable questionnaire was constructed with a total of fifteen items.

2.5. Data analysis

The data was entered into Statistical Package for the Social Sciences (SPSS) version 27. Independent sample t-tests were used to compare the impact of time management on the students between the two groups, Secondary School A and Secondary School B. The result is considered statistically significant since the p-value < 0.05 (common significance level). This means there is a significant difference between the two groups being compared. The Levene's Test for Equality of Variances was used to assess homogeneity of variance (determine if variances across groups are significantly different). When the p-value > 0.05, equal variance is assumed and when the p-value ≤ 0.05 unequal variance is assumed.

3. Result and Discussion

The researchers observed that the performance of both secondary schools varies, and this is reflected in the CSEC performance data. In the May/ June 2014 Preliminary Results, Secondary School A achieved a total pass rate of 83.59% in grades 1-3, whereas, Secondary School B achieved a total pass rate of 65.58% in grades 1-3. The differences in performance revealed a huge gap by a difference of 18.01%. In the May/June 2015 Preliminary Results, Secondary School A achieved a total pass rate of 70.72% in grades 1-3 while Secondary School B achieved a total pass rate of 70.04% in grades 1-3 in which both results were similar indicating a close performance. In the May/June 2016 Preliminary Results, the same trend in performance continued with both schools with Secondary School A achieving a total pass rate of 74.84% in grades 1-3 while Secondary School B achieved a total pass rate of 73.80% in grades 1-3 which was very close to the results obtained by Secondary School A.

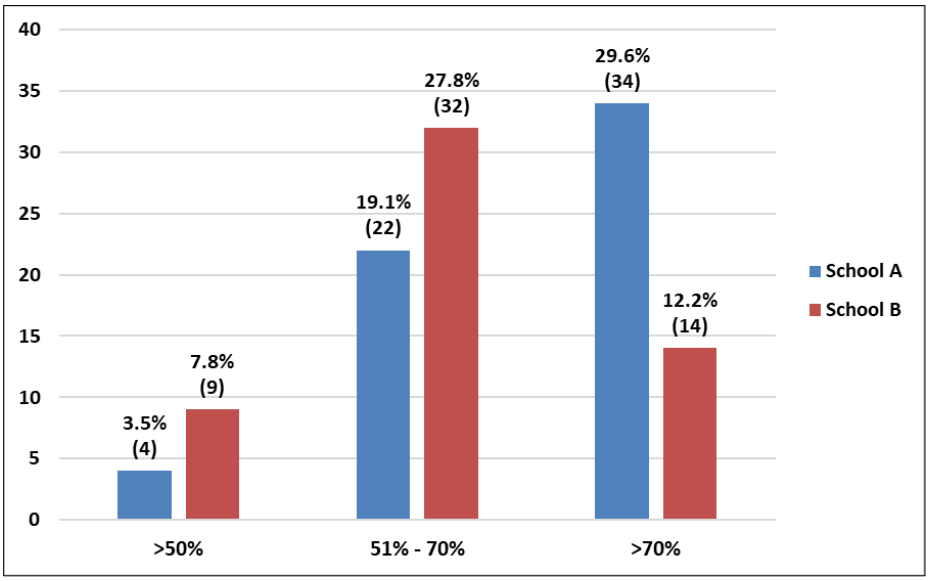

Figure 3 Academic performance of students from Secondary Schools A and B

Figure 3 shows the frequency of the respondents in their academic performance in Integrated Science from both secondary schools. It indicated that four (4) students from Secondary School A achieved less than fifty percent (50%) representing a percentage of 3.5% of the sample population, while nine (9) students from Secondary School B achieved less than fifty percent (50%) in Integrated Science, representing a percentage of 7.8% of the sample population. This indicated that the majority of the students who achieved the low percentage score range were from Secondary School B.

Figure 3 further indicated that twenty-two (22) students from Secondary School A achieved between fifty-one percent (51%) to seventy percent (70%) representing a percentage of 19.1% of the sample population, while thirty-two (32) students from Secondary School A achieved between fifty-one percent (51%) to seventy percent (70%) representing a percentage of 27.8% of the sample population. This indicated that the majority of the students who achieved fifty-one percent (51%) to seventy percent (70%) were from Secondary School B.

Moreover, the bar graph (Figure 3) indicated that thirty-four (34) students from Secondary School A achieved seventy-one percent (71%) and above representing a percentage of 29.57% of the sample population compared to fourteen (14) students from Secondary School B who achieved seventy percent (70%) and above which represented a percentage of 12.17% of the sample population. This indicated that the majority of the students who achieved the high percentage score range in Integrated Science were from Secondary School A.

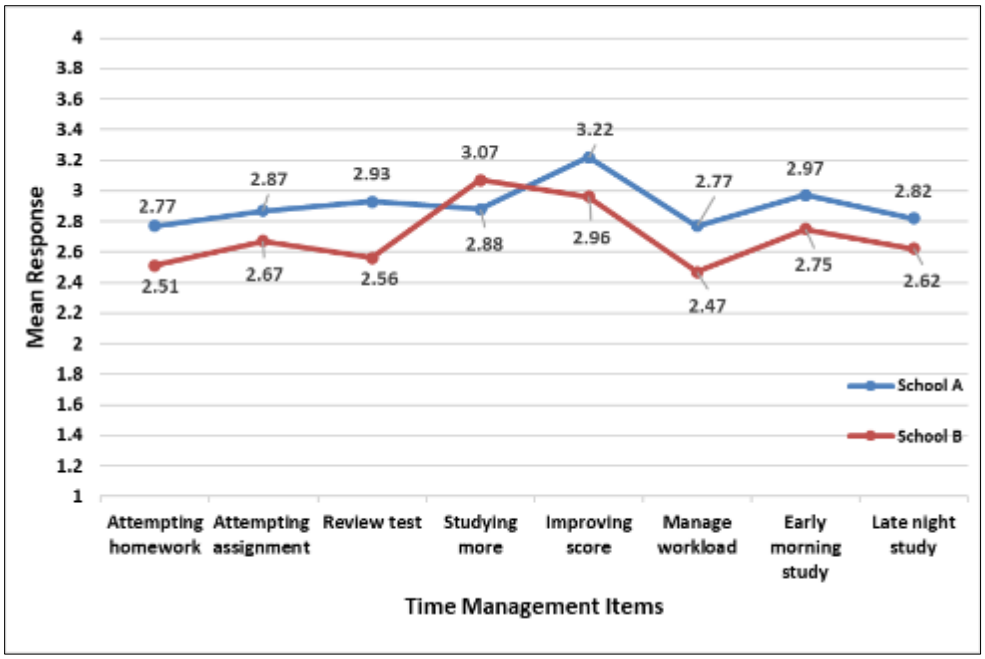

Figure 4 Mean response on time management for Secondary Schools A and B

Table 1 Statistics on the mean, standard deviation, and standard error mean for the eight items under the scale time management

Group Statistics					
	Sample Schools under study	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Attempting homework in Inte Sci (thirty minutes)	School A	60	2.77	0.647	0.084
	School B	55	2.51	0.573	0.077
Attempting assignments on the weekends (one hour)	School A	60	2.87	0.503	0.065
	School B	55	2.67	0.511	0.069
Time to review test questions in Inte Sci	School A	60	2.93	0.607	0.078
	School B	55	2.56	0.918	0.124
Studying more can improve your score in Inte Sci	School A	60	2.88	0.555	0.072
	School B	55	3.07	0.573	0.077
Managing time more efficiently can improve the Inte Sci score	School A	60	3.22	0.555	0.072
	School B	55	2.96	0.693	0.093
Manage study workload for Inte Sci	School A	60	2.77	0.673	0.087
	School B	55	2.47	0.539	0.073
Studying early in the morning before exams	School A	60	2.97	0.551	0.071
	School B	55	2.75	0.517	0.070
Studying after 22:00 in the night for exams	School A	60	2.82	0.537	0.069
	School B	55	2.62	0.527	0.071
Weighted Average	School A		2.90	0.579	0.075
	School B		2.70	0.606	0.136

Figure 4 and Table 1 show the descriptive statistics of the variables for the first research objective on time management for the Grade nine students at both secondary schools. From Table 1 above, it can be inferred that the mean response for the second item at Secondary School A (M = 2.87, SD = 0.503) and Secondary School B (M = 2.67, SD = 0.511) indicates that the students at both schools generally agree that they spend one hour attempting to complete their homework on the weekends. Since the mean response at Secondary School A is higher than the mean response at Secondary School B, this further indicates that the students at Secondary School A on average reported better time management skills than the students at School B on the second item.

Likewise, the mean response for the third item at Secondary School A (M = 2.93, SD = 0.607) and Secondary School B (M = 2.56, SD = 0.918) indicates that the students at both schools generally agree that they always have time to review back their test questions in Integrated Science. Since the mean response at Secondary School A is higher than the mean response at Secondary School B, this also indicates that the students at Secondary School A on average reported better time management skills than the students at Secondary School B on the third item. This is similar to a study conducted by Subramanian (2016), where his findings emphasized that regular review and study habits contribute significantly to better academic performance. Similarly, the mean response for the fourth item at Secondary School A (M = 2.88, SD = 0.555) and Secondary School B (M = 3.07, SD = 0.573) indicates that the students at both schools generally agree that if they study more, they can improve their end of term score in Integrated Science.

However, the mean response is higher at Secondary School B than the mean response at Secondary School A indicating that the students at School B on average reported better time management skills than the students at Secondary School A on the fourth item. Research by Subramanian (2016), where his results revealed that the importance of self-regulation and disciplined study habits correlates with achieving higher academic performance. Furthermore, the mean response for the fifth item at Secondary School A (M = 3.22, SD = 0.555) and Secondary School B (M = 2.96, SD = 0.693) indicates that the students at both schools generally agree that their score in Integrated Science can be improved if they manage their time more efficiently.

Since the mean response at Secondary School A is higher than the mean response at Secondary School B, this indicates that the students at Secondary School A on average reported better time management skills than the students at Secondary School B on the fifth item. This correlates with the study of David in 2022, in which his findings revealed that academic success is directly linked with effective time management. In the same manner, the mean response for the seventh item at Secondary School A (M = 2.97, SD = 0.551) and Secondary School B (M = 2.75, SD = 0.517) and the eighth item at Secondary School A (M = 2.82, SD = 0.537) A and Secondary School B (M = 2.62, SD = 0.527) indicates that the students at both schools generally agree that they study early in the morning before going to school when they have examinations in Integrated Science and that they study after 22:00 hrs. when they have examinations in Integrated Science. Since the mean response at Secondary School A is greater than the mean response at Secondary School B for both statements, this also indicates that the students at Secondary School A on average reported better time management skills than the students at Secondary School B on the seventh and eighth items.

Table 1 further indicated that the mean response for the first item at Secondary School A (M = 2.77, SD = 0.647) and Secondary School B (M = 2.51, SD = 0.573) indicates that the students at both Secondary Schools A and B generally agree that they spend thirty minutes attempting to complete their homework. Since the mean response at School A is smaller than the mean response at Secondary School B, this further indicates that the students at Secondary School A on average reported lower time management skills than the students at Secondary School B on the first item. Similarly, the mean response for the sixth item at Secondary School A (M = 2.77, SD = 0.673) and School B (M = 2.47, SD = 0.539) indicates that the students at Secondary School A generally agree that they can manage the workload of studying for their tests in Integrated Science before they can write the test while the students at Secondary School B generally disagree with this statement. Since the mean response at Secondary School A is higher than the mean response at Secondary School B, this further indicates that the students at Secondary School A on average reported better time management skills than the students at Secondary School A on the sixth item.

Further, from Table 1, it can be inferred that the highest mean response for Secondary School A (M = 3.22, SD = 0.555) is observed on the fifth item. Since the highest mean response for School A is higher than its average mean response (M = 2.90, SD = 0.579), this indicates that the students at Secondary School A on average reported better time management skills in improving their end-of-term scores in Integrated Science when they manage their time more efficiently. This is similar to a quantitative study conducted by Rashid in 2020, who conducted a study between Time Management Behavior and Academic Performance of University Students in Pakistan. He studied a population of 1200 students from three public sector universities of Malakand division. Rashid (2020) analyzed the data on time management using Pearson's Product-Moment co-efficient correlation at a 0.05 level of significance. The results revealed that students who excel in their academic performance tend to have outstanding time management skills. Contrastingly, the lowest mean

response for Secondary School A is observed on the first item (M = 2.77, SD = 0.647) and the sixth item (M = 2.77, SD = 0.647). Since the lowest mean response for Secondary School A is lower than its average mean response (M = 2.90, SD = 0.579), this indicates that the students on average reported poor time management skills spending thirty minutes attempting their homework and managing the study workload for Integrated Science. This is also similar to the study by Rashid (2020) where he further stated that students who have low academic achievement tend to have poor time management skills. The highest mean response for School B (M = 3.07, SD = 0.573) is observed on the fourth item and it is higher than its average mean response (M = 2.70, SD = 0.606), this indicates that the students on average reported better time management skill on improving their end of term score when they study more.

However, the lowest mean response for Secondary School B (M = 2.47, SD = 0.539) is observed on the sixth item. Since the lowest mean response for Secondary School B is lower than its average mean response (M = 2.70, SD = 0.606), this indicates that the students on average reported poor time management skills when it comes to managing the workload of studying for their tests before it is written in Integrated Science. Generally, the mean responses across several categories show a consistent pattern of improved time management abilities among School A students, which is consistent with the larger research: [4] [12] [50] highlighting the crucial significance of time management in academic accomplishment.

An independent-sample T-test was conducted to compare time management among the Grade 9 students at Secondary Schools A and B in Integrated Science. According to the results from Table 1, it can be inferred that there is a significant difference for seven items under time management with the Grade nine students in Integrated Science. The seven items include the first item t (113) = 2.250, p = 0.026, the second item t (113) = 2.049, p = 0.043, the third item t (113) = 2.567, p = 0.012, the fifth item t (113) = 2.169, p = .032, the sixth item t (113) = 2.569, p = 0.011, the seventh item t (113) = 2.214, p = 0.029 and the eighth item t (113) = 1.999, p = 0.048. Contrastingly, there was no significant difference in one item under time management with the Grade nine students in Integrated Science which was the fourth item t (113) = -1.800, p = 0.075. Additionally, the results revealed that the difference in time management between the Grade nine students at both schools in Integrated Science is statistically significant t (113) = 1.752, p = 0.035.

Matthew *et al*. (2015) investigated the relationship between homework, motivation, and academic achievement among college students. The study found that students who effectively managed their study schedules performed better in genetics courses. Similarly, Nadinloyi *et al*. (2016) assessed the efficacy of time management training and found a significant improvement in students' ability to plan and allocate time efficiently, resulting in better academic performance. Subramanian (2016) analyzed how digital distractions impact students' time management skills. The study found that excessive screen time and social media engagement led to poor academic performance due to inefficient time allocation.

Pitler (2017) discussed the purpose of homework and its role in preparing students for professional responsibilities. The study indicated that students who mastered time management early in their education adapted better to workplace expectations. Scherer *et al.* in 2017 focused on African American STEM students, concluding that personal time management habits directly influenced their GPA. They emphasized the role of self-discipline and goal-setting in enhancing time management skills. Likewise, in 2017 Srinivasan explored time management practices among student teachers and found that structured daily schedules contributed to reduced stress levels and higher engagement in academic activities. Similarly, Spencer (2017) addressed the broader purpose of homework, arguing that time management skills acquired through structured assignments helped students in their professional and personal lives.

Cooper *et al*. (2018) further confirmed that attitudes toward homework and its completion were influenced by students' ability to manage time effectively. Olusegun (2019) examined the effectiveness of time management training programs in secondary school students, concluding that structured training significantly enhanced students' ability to prioritize tasks and maintain academic schedules. In 2018, Rogaten *et al*. examined how different study approaches impact time management. Their study revealed that students who adopted strategic study techniques and maintained positive emotions toward learning exhibited better time management and performed well academically. Lohmann (2019) addressed the balance between school and home life, asserting that students who managed time efficiently reported lower stress levels and better mental well-being.

In 2020, Treadwell supported these findings, emphasizing that students who set digital boundaries and followed structured study routines exhibited better academic outcomes. Spitzer (2021) conducted a large-scale longitudinal study and established that increased study time led to higher mathematical achievement scores. The research highlighted that consistency and discipline in time management positively correlated with long-term academic success. Van (2022) examined how structured learning environments impact students' ability to manage their time, highlighting that those who received guidance from educators were more likely to develop effective time management strategies.

Shaun (2023) explored homework benefits, concluding that students who developed structured study schedules demonstrated improved cognitive retention and reduced procrastination. The Global Indian International School in 2024 explored the broader implications of time management, noting that students who practiced time management consistently in academic settings developed strong organizational skills that benefited them in their careers.

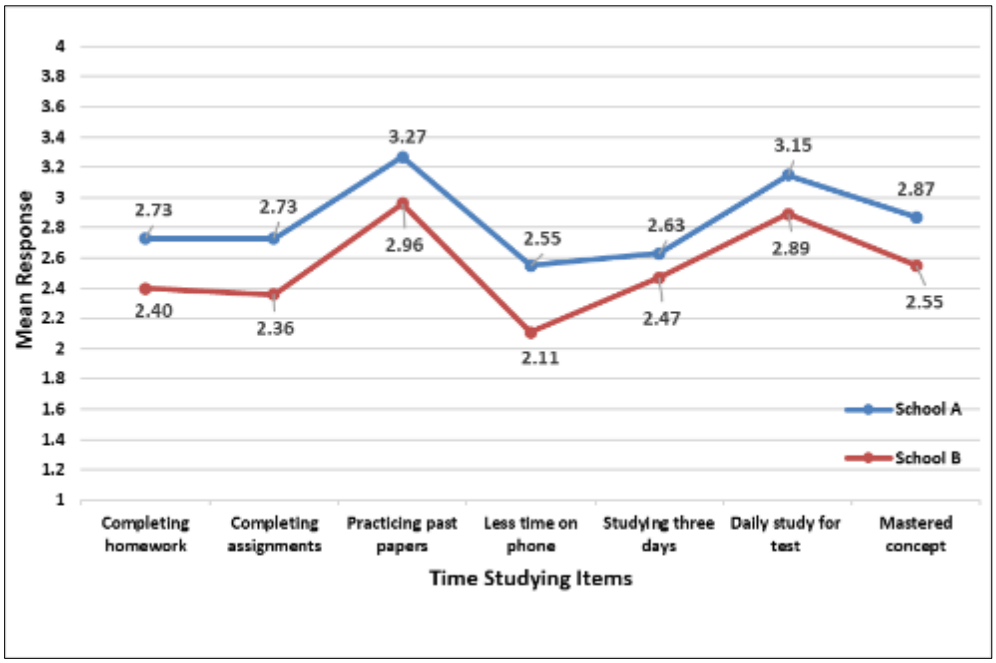

Figure 5 Mean response on time studying for Secondary Schools A and B

Table 2 Statistics on the mean, standard deviation, and standard error mean for the seven items under the scale time studying

Group Statistics					
	Sample Schools under study	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Complete homework on the weekend before going out	School A	60	2.73	0.880	0.114
	School B	55	2.40	0.683	0.092
Complete assignments on the weekend before going out	School A	60	2.73	0.880	0.114
	School B	55	2.36	0.677	0.091
Practicing past exam papers in Inte Sci	School A	60	3.27	0.578	0.075
	School B	55	2.96	0.793	0.107
More time studying Inte Sci and less time on Netflix/Tele/Phone	School A	60	2.55	0.565	0.073
	School B	55	2.11	0.896	0.121
Three days studying for Inte Sci (thirty minutes)	School A	60	2.63	0.581	0.075
	School B	55	2.47	0.539	0.073
Studying for Inte Sci every day for quiz or test (one hour)	School A	60	3.15	0.547	0.071
	School B	55	2.89	0.712	0.096
I have mastered concepts in Inte Sci	School A	60	2.87	0.700	0.090
	School B	55	2.55	0.899	0.121

Weighted Average	School A		2.85	0.676	0.087
	School B		2.53	0.743	0.100

Figure 5 and Table 2 show the descriptive statistics of the variables for the second research objective on time studying for the Grade nine students at both secondary schools. From Table 2 above, it can be inferred that the mean response for the third item at Secondary School A (M = 3.27, SD = 0.578) and Secondary School B (M = 2.96, SD = .793). This indicates that the majority of the students at Secondary School A generally strongly agree that they spend one hour practicing past papers in Integrated Science during the exam period, while the majority of students at Secondary School B generally agree with the aforementioned statement. Since the mean response for School A is greater than the mean response at Secondary School B, this indicates that the students at Secondary School A on average reported better time studying skills than the students at Secondary School B on the third item.

Similarly, the mean response for the sixth item at Secondary School A (M = 3.15, SD = 0.547) and Secondary School B (M = 2.89, SD = 0.712) indicates that the students at both schools generally agree that they spend at least one hour every day studying for Integrated Science when they have a test or quiz. Since the mean response of Secondary School A is greater than the mean response of Secondary School B, this further indicates that the students at Secondary School A on average reported better time studying skills than the students at Secondary School B on the sixth item. The trend continues for the mean response at Secondary School A (M = 2.87, SD = 0.700) and Secondary School B (M = 2.55, SD = 0.899) on the seventh item indicating that the students from both schools generally agree that they don't stop studying until they have mastered the concept in Integrated Science. Since the mean response at Secondary School A is greater than the mean response at Secondary School B, this further indicates that the students at School A on average reported better time studying skills than the students at Secondary School B on the seventh item.

On the other hand, the mean response for the first item at Secondary School A (M = 2.73, SD = 0.880) and Secondary School B (M = 2.40, SD = 0.683). The mean response at Secondary School A indicates that the students generally agree that they complete their homework on the weekends before going out, while the mean response at Secondary School B indicates that the students generally disagree with the aforementioned statement. Since the mean response for Secondary School A is greater than the mean response at Secondary School B, this further indicates that the students at Secondary School A on average reported better time studying skills than the students at Secondary School B on the first item. The mean response for the second item at School A (M = 2.73, SD = .880) and School B (M = 2.36, SD = .677). The mean response for Secondary School A indicates that the students generally agree that they complete their assignments on the weekends before going out, while the mean response at Secondary School B indicates that the students generally disagree with the aforementioned statement.

Since the mean response at Secondary School A is greater than the mean response at Secondary School B, this further indicates that the students at Secondary School A on average reported better time studying skills than the students at Secondary School B on the second item. The mean response for the fourth item at Secondary School A (M = 2.55, SD = 0.565) and Secondary School B (M = 2.11, SD = 0.896) are 2.55 and 2.11 respectively. The mean response for Secondary School A indicates that the students generally agree that they spend more time studying Integrated Science and less time watching their favorite Netflix/ television shows/ using their phones. Whereas the mean response for Secondary School B indicates that the students generally disagree with the aforementioned statement. Since the mean response at Secondary School A is greater than the mean response at Secondary School B, this further indicates that the students at Secondary School A on average reported better time studying skills than the students at Secondary School B on the fourth item.

The mean response for the fifth item at Secondary School A (M = 2.63, SD = 0.581) and Secondary School B (M = 2.47, SD = 0.539). The mean response for Secondary School A indicates that the students generally agree to spend thirty minutes every three days studying for Integrated Science. However, the mean response for Secondary School B indicates that the students generally disagree with the aforementioned statement. Since the mean response at Secondary School A is higher than the mean response at Secondary School B. This indicates that the students at School A on average reported better time studying skills than the students at Secondary School B on the fifth item.

From Table 2, it can be inferred that the highest mean response is observed at both Secondary School A (M = 3.27, SD = 0.578) and Secondary School B (M = 2.96, SD = 0.793) on the third item. Since the highest mean response for Secondary School A is higher than its average mean response (M = 2.85, SD = 0.676), and the highest mean response for Secondary School B is higher than its average mean response (M = 2.53, SD = 0.743) this indicates that the students at both schools

reported better time studying skill when they spend one hour every night practicing past exam papers in Integrated Science during the exam period.

Contrastingly, the lowest mean response is observed at both Secondary School A (M = 2.63, SD = 0.581) and Secondary School B (M = 2.47, SD = 0.539) on the fifth item phone which indicated that the students at both schools reported poor time studying skill. Since the lowest mean response for Secondary School A is lower than its average mean response (M = 2.85, SD = 0.676), and the lowest mean response for Secondary School B is lower than its average mean response (M = 2.53, SD = 0.743) this indicates that the students at both schools reported poor time studying skill when spending one hour every night practicing past exam papers in Integrated Science during the exam period.

An independent-sample T-test was conducted to compare time studying between the Grade nine students at Schools A and B in Integrated Science. From Table 2, it can be inferred that there is a significant difference for six items under time studying with the Grade nine students in Integrated Science. The six items include the first item t (113) = 2.254, p = 0.026, the second item t (113) = 2.508, p = 0.014, the third item t (113) = 2.356, p = 0.020, the fourth item t (113) = 3.184, p = 0.002, the sixth item t (113) = 2.199, p = 0.030 and the seventh item t (113) = 2.147, p = 0.034. Contrastingly, there was no significant difference for one under time management with the Grade nine students in Integrated Science which was the fifth item t (113) = 1.532, p = 0.128. The results of the test further inferred that the difference in time studying between the Grade nine students at both schools in Integrated Science is statistically significant t (113) = 2.31, p = 0.036.

Spitzer (2021) conducted a large-scale longitudinal study and found a positive correlation between increased study time and higher mathematical achievement scores among students in grades 4-10. The study emphasized that consistency in study habits over time significantly impacts academic success. Similarly, Rogaten *et al*. (2018) examined how students' approach to studying affects their performance, concluding that those who spent structured study time with a positive attitude achieved higher academic outcomes.

Nadinloyi *et al*. (2016) analyzed the efficacy of structured study sessions and found that students who adhered to scheduled study times performed better than those who engaged in unstructured studying. Their research indicated that time management training improved students' ability to prioritize academic tasks. Cooper *et al*. (2018) explored the relationships between homework, study time, and academic achievement. Their findings revealed that while excessive study time led to diminishing returns, moderate, well-planned study schedules significantly improved test scores.

Lohmann (2019) examined the effects of study duration on students' stress and well-being. The study found that students who overstudied without adequate breaks exhibited higher anxiety levels and decreased retention rates. This aligns with the findings of Olusegun (2019), who suggested that study duration should be balanced with relaxation to prevent burnout. Scherer *et al.* (2017) investigated how study time influences GPA among African American STEM students, concluding that while study time is crucial, self-discipline and study strategies also significantly impact academic performance.

Subramanian (2016) analyzed how digital distractions affect study time among secondary students. The study found that students who frequently used digital devices during study sessions had lower retention rates and struggled with focus. Treadwell (2020) supported these findings, emphasizing that students who minimized digital distractions through structured study schedules demonstrated better comprehension and academic performance.

Shaun (2023) explored how structured study schedules improved time management skills and academic outcomes. The study found that students who followed structured study plans were more likely to achieve high grades and retain information effectively. Matthew *et al*. (2015) investigated motivation and study time allocation in secondary school students. They concluded that students who developed intrinsic motivation for studying were more likely to adhere to effective study routines, leading to better academic performance. Pitler (2017) studied how homework impacts study time, finding that well-designed homework assignments significantly contributed to overall study time effectiveness. However, excessive homework led to reduced efficiency and increased student fatigue.

Van (2022) examined how study time in secondary school affects future academic pursuits. The study concluded that students who developed consistent study habits during secondary school were better prepared for higher education and professional careers. Global Indian International School (2024) explored the broader impact of study time on students' personal development. Their findings indicated that time spent studying not only enhances academic performance but also improves discipline and organizational skills. Spencer (2017) analyzed the relationship between

study time and independent learning skills, concluding that students who effectively managed their study time were more likely to succeed in self-directed learning environments.

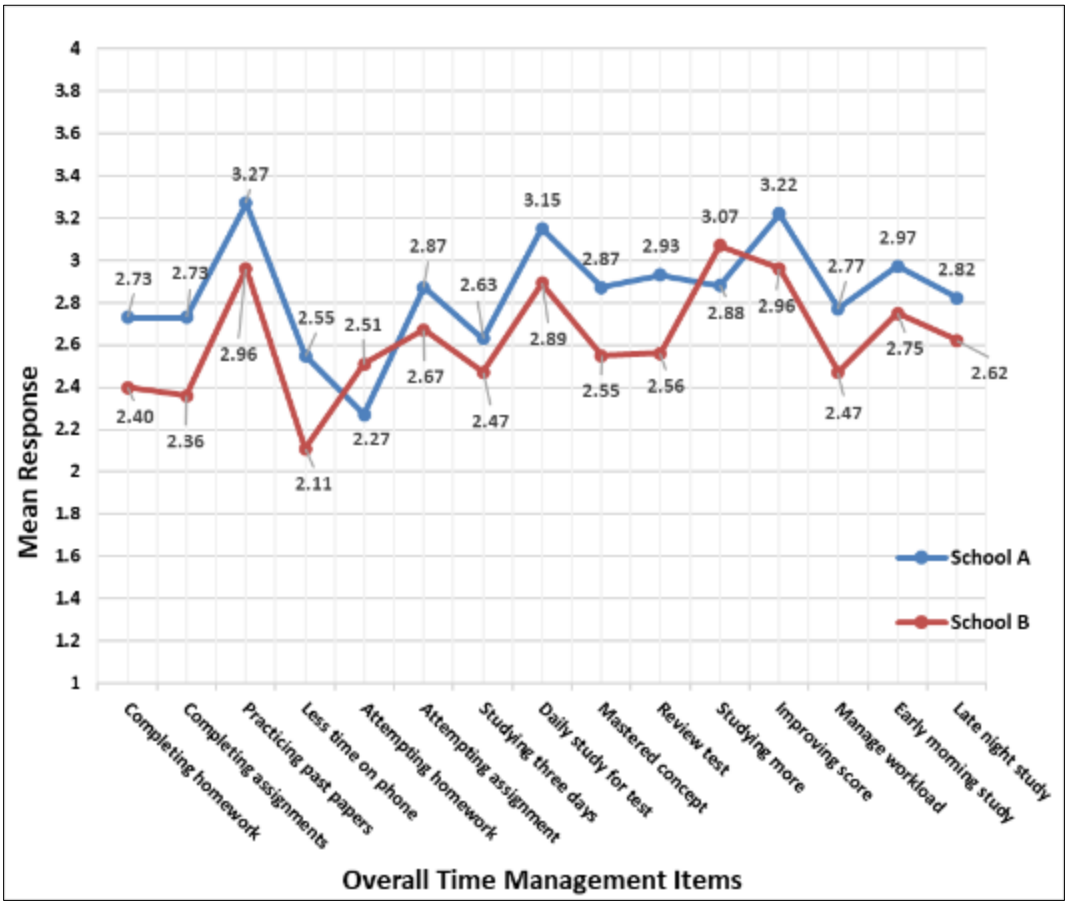

Figure 6 Mean response on overall time management for Secondary Schools A and B

Table 3 Statistics on the mean, standard deviation, and standard error mean for the fifteen items under the scale of overall time management**.**

Group Statistics					
	Sample Schools under study	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Complete homework on the weekend before going out	School A	60	2.73	0.880	0.114
	School B	55	2.40	0.683	0.092
Complete assignments on the weekend before going out	School A	60	2.73	0.880	0.114
	School B	55	2.36	0.677	0.091
Practicing past exam papers in Inte Sci	School A	60	3.27	0.578	0.075
	School B	55	2.96	0.793	0.107
More time studying Inte Sci and less time on Netflix/Tele/Phone	School A	60	2.55	0.565	0.073
	School B	55	2.11	0.896	0.121
Attempting homework in Inte Sci (thirty minutes)	School A	60	2.77	0.647	0.084
	School B	55	2.51	0.573	0.077
	School A	60	2.87	0.503	0.065

Attempting assignments on the weekends (one hour)	School B	55	2.67	0.511	0.069
Three days studying for Inte Sci (thirty minutes)	School A	60	2.63	0.581	0.075
	School B	55	2.47	0.539	0.073
Studying for Inte Sci every day for quiz or test (one hour)	School A	60	3.15	0.547	0.071
	School B	55	2.89	0.712	0.096
I have mastered concepts in Inte Sci	School A	60	2.87	0.700	0.090
	School B	55	2.55	0.899	0.121
Time to review test questions in Inte Sci	School A	60	2.93	0.607	0.078
	School B	55	2.56	0.918	0.124
Studying more can improve scores in Inte Sci	School A	60	2.88	0.555	0.072
	School B	55	3.07	0.573	0.077
Managing time more efficiently can improve the Inte Sci score	School A	60	3.22	0.555	0.072
	School B	55	2.96	0.693	0.093
Manage study workload for Inte Sci	School A	60	2.77	0.673	0.087
	School B	55	2.47	0.539	0.073
Studying early in the morning before exams	School A	60	2.97	0.551	0.071
	School B	55	2.75	0.517	0.070
Studying after 22:00 in the night for exams	School A	60	2.82	0.537	0.069
	School B	55	2.62	0.527	0.071
Weighted average	School A		2.88	0.624	0.081
	School B		2.62	0.670	0.090

Figure 6 and Table 3 show the descriptive statistics of the variables for the third research objective on overall time management for the Grade-nine students at both secondary schools. From the table above, it can be inferred that the highest mean response is observed on the third item at Secondary School A (M = 3.27, SD = 0.578). A similar observation of the mean response is reported on the twelfth item at Secondary School A (M = 3.22, SD = 0.555) followed by the mean response for the eighth item at Secondary School A (M = 3.15, SD = 0.547). The average mean response for the three items mentioned are the three highest reported mean response values which are observed at Secondary School A. Contrastingly, the lowest mean response is reported on the fourth item at Secondary School B (M = 2.11, SD = 0.896).

The mean response at Secondary School A on the third item (M = 3.27, SD = 0.578), the sixth item (M = 2.87, SD = 0.503), the eighth item (M = 3.15, SD = 0.547), the tenth item (M = 2.93, SD = 0.607), the twelfth item (M = 3.22, SD = 0.555) and the fourteenth item (M = 2.77, SD = 0.551) are all higher than its weighted average mean (M = 2.88, SD = 0.624). This indicated that the Grade nine students at Secondary School A on average reported better overall time management skills when they spend one hour every night practicing past exam papers for Integrated Science during the exam period, when they spend one hour on the weekends attempting their assignments in Integrated Science, when they spend one hour studying for a test or quiz in Integrated Science, when they have time to review back test questions in Integrated Science, when they perceive that they can improve their end of term score if they manage their time more efficiently and when they study early in the morning before their Integrated Science examinations. On the other hand, the mean response at Secondary School A on the other nine items is lower than the weighted average mean response which indicated that the Grade nine students at Secondary School A reported poor overall time management for those nine items.

The mean response for Secondary School B on the third item (M = 2.96, SD = 0.793), the eighth item (M = 2.89, SD = 0.712), the eleventh item (M = 3.07, SD = 0.573) and the twelfth item (M = 2.96, SD = 0.693) are all higher than its weighted average mean (M = 2.62, SD = 0.670). This indicated that the Grade nine students on average reported better overall time management skills when they spend one hour every night practicing past exam papers for Integrated

Science during exam periods when they spend one hour studying for a test or quiz in Integrated Science when they perceive they can improve their end of term score if they study more and when they perceive that they can improve their end of term score if they manage their time more efficiently. On the other hand, the mean response at Secondary School B on the other eleven items is lower than the weighted average mean response which indicated that the Grade nine students at Secondary School B reported poor overall time management for those eleven items.

An independent-sample T-test was conducted to compare the overall time management between the Grade Nine students at Secondary Schools A and B in Integrated Science. From Table 3, it can be inferred that there is a significant difference for thirteen items under overall time management with the Grade nine students in Integrated Science. The thirteen items include the first item $t(113) = 2.254$, $p = 0.026$, the second item $t(113) = 2.508$, $p = 0.014$, the third item $t(113) = 2.356$, $p = 0.020$, the fourth item $t(113) = 3.184$, $p = 0.002$, the fifth item $t(113) = 2.250$, $p = 0.026$, the sixth item $t(113) = 2.049$, $p = 0.043$, the eight-item $t(113) = 2.199$, $p = 0.030$, the ninth item $t(113) = 2.147$, $p = 0.034$, the tenth item $t(113) = 2.567$, $p = 0.012$, the twelfth item $t(113) = 2.169$, $p = 0.032$, the thirteenth item $t(113) = 2.569$, $p = 0.011$, the fourteenth item $t(113) = 2.214$, $p = 0.029$ and the fifteenth item $t(113) = 1.999$, $p = 0.048$.

Contrastingly, there was no significant difference for the two remaining items under time management with the Grade nine students in Integrated Science. The two items include the seventh item $t(113) = 1.532$, $p = 0.128$, and the eleventh item $t(113) = -1.800$, $p = 0.075$. Table 3 further inferred that the difference in overall time between the Grade nine students at both schools in Integrated Science is statistically significant $t(113) = 2.013$, $p = 0.035$.

Britton & Tesser (2001) analyzed time-management practices among students and found a strong correlation between effective scheduling and academic success. Students who prioritized study sessions and minimized distractions achieved higher grades. Similarly, Trueman & Hartley (2002) emphasized that self-discipline in managing time positively influenced secondary students' performance across subjects.

Nonis & Hudson (2006) studied the relationship between study time and academic success. Their research found that while total hours spent studying were important, the quality of study time (e.g., active learning techniques) played a more significant role in determining student performance. Similarly, Plant *et al*. (2005) concluded that students who engaged in spaced repetition and strategic review sessions performed better than those who crammed before exams.

Macan *et al*. (2000) examined time management techniques employed by high-achieving secondary students and found that effective goal setting, prioritization, and routine adherence were key factors contributing to their academic success. Zimmerman & Schunk (2001) supported this finding by highlighting those self-regulated learners who managed their study schedules effectively achieved better results than their peers.

Steel (2007) explored the impact of procrastination on students' academic performance, concluding that students who frequently delayed studying experienced lower grades. Similarly, Ariely & Wertenbroch (2002) suggested that setting deadlines and maintaining structured study habits helped mitigate procrastination.

Kitsantas *et al*. (2008) analyzed time management practices among students from different socioeconomic backgrounds and found disparities in access to study resources, which affected students' ability to manage their time effectively. Similarly, Claessens *et al*. (2007) identified gender-based differences in time management, with female students exhibiting more structured study habits than male students.

Junco & Cotten (2012) examined the effects of social media on students' study time and concluded that excessive engagement with digital distractions negatively impacted students' ability to manage their time. Conversely, Dembo & Seli (2010) found that students who used digital planners and educational applications improved their study efficiency.

Van Eerde (2003) conducted a meta-analysis of time management training programs and found that structured interventions significantly improved students' ability to allocate time effectively. Similarly, Schraw *et al*. (2007) reported that teaching time management strategies led to measurable improvements in students' study efficiency and academic outcomes.

Kalenkoski & Pabilonia (2009) studied the effects of part-time employment on students' study time and found that excessive work hours negatively impacted their ability to allocate sufficient time for studying. However, students who maintained a balance between work and study demonstrated resilience and effective time management skills.

4. Conclusion

In conclusion, past studies indicate that time management plays a vital role in students' academic achievement. Effective scheduling, minimizing procrastination, and utilizing digital tools can enhance students' ability to allocate study time efficiently. However, external factors such as socioeconomic status, technology use, and part-time employment also influence students' ability to manage their time effectively. Future research should focus on personalized interventions that cater to student's individual needs to optimize their academic performance.

Overall, research suggests that homework and assignments positively impact secondary students' academic performance when they are structured, meaningful, and completed with adequate support. However, factors such as excessive workload, socioeconomic disparities, and digital distractions can influence students' ability to complete their assignments effectively. Future studies should focus on optimizing homework policies to enhance student learning without causing undue stress.

The relationship between time spent studying and academic performance is influenced by multiple factors, including study habits, motivation, time management skills, and socio-cultural context. Although numerous studies have demonstrated a positive correlation between study time and academic performance, the quality of study time, the type of study activities, and the student's motivation play equally important roles in shaping academic outcomes. As such, future research should explore these variables in greater detail, particularly in diverse cultural and educational contexts, to develop a more comprehensive understanding of how time spent studying influences academic success.

This research aimed to investigate the factors that affect the academic performance of Grade nine students in Integrated Science at the secondary level. Time management was suspected to be one of the factors that affected the academic performance of the Grade nine students and the results revealed that time management does affect the academic performance of the Grade nine students. The bio-data that was used to obtain the academic performance revealed that the Grade nine students at Secondary School A performed better academically than the Grade nine students at Secondary School B as indicated by the greater numbers for Secondary School A in the high percentage score range. The T-test results further revealed that the difference in time management, time studying and overall time management between the Grade nine students at both secondary schools was statistically significant.

4.1. Limitations

The findings and the conclusions that are presented in this research are limited to the following:

- The scope of this research only focuses on the Grade nine students within Secondary School A and Secondary School B for the three grades that were randomly selected. Hence the findings of this research can only speak for the Grade nine students that participated in this research and not for the entire Grade nine level for both of these schools.

- Since the research only focuses on three of the classes for both Secondary Schools A and B, these findings cannot reflect the same for the other grades within both Schools.

- Further, the pilot study that was conducted at Secondary School C in Region 6 and the findings of the research only speaks for the Grades in those two schools (Secondary Schools A and B) and does not reflect any findings for the other secondary schools within the region.

4.2. Recommendations

The findings from this research revealed that time management is one of the contributing factors that affect the academic performance of the Grade nine students at both Secondary Schools A and B in Integrated Science. Thus, it is recommended that both secondary schools implement a training session for their present Grade nine students during the recess and lunch breaks once a week to enlighten these students on how effective time management affects their academic performance positively. Furthermore, both secondary schools should invite parents of the present Grade Nine students to PTA sessions to discuss the importance of time management and how it can benefit them in their academic performance. Additionally, future research should be conducted across more secondary schools within the region to examine whether the same issue with time management exists.

Also, future research should be conducted with a larger sample of students from other grades in more secondary schools to investigate other factors that affect time management. Likewise, future research should be conducted across various

secondary schools within the country for the other subject areas and for other factors to examine the extent to which they affect time management.

The government can provide students with access to educational resources (online courses, workshops, and seminars) that teach them effective time management techniques. Teachers can receive training from the government on how to assist students in developing time management skills. By identifying students who struggle with time management and giving them the support they require, teachers may be able to help students. Schools can provide extra help to students who are having trouble managing their time. This might entail setting up a peer mentorship program, giving study skills seminars, or delivering one-on-one coaching.

Compliance with ethical standards

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Statement of ethical approval

Prior to piloting the questionnaires, a permission letter of request to conduct research was sent to the Deputy Dean of the Faculty of the Faculty of Education and Humanities at the University of Guyana. Permission was then granted by the Chief Education Officer (CEO) of the Ministry of Education (MOE) in a formal letter of permission which was taken to the Regional Educational Officer (REO) of Region 6 to be endorsed. The letter was then taken to the schools selected for this study before the research process was conducted.

Student participants were not required to state any identifying information such as their names, signatures, contact numbers, or any information that can be used to trace back to the student who answered the questionnaires. The three schools that were used to conduct this research were not identified but were designated as Secondary Schools A, B, and C throughout this research.

Disclosure of conflict of interest

The authors hereby declare that this manuscript does not have any conflict of interest.

Statement of informed consent

All authors declare that informed consent was obtained from all individual participants included in the study.

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