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Assessment of Cognitive Learning Indices and Mathematics Achievement among Junior Secondary III Students in Ondo State

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Abstract
As important as the knowledge of Mathematics is, some students at secondary school level do not take the topic seriously. Previous researches had been investigating the challenges that students face in the learning of mathematics. Limited research effort has been directed to the way instructional issues correlated with students' mathematics achievement, and the relative contribution of each of the variables to student's achievement in mathematics. A descriptive survey design was adopted. A total of 200 students were selected from 20 schools across the five LGA of Ondo State using a multistage sampling procedure. Mathematics Cognitive Learning Indices and Achievement Records (MCLIAR) (r = 0.62), Junior School Mathematics Achievement Test (r = 0.75) were used for data collection while Descriptive (percentages, mean and standard deviation) and Inferential statistics (Regression analysis) were used for data analyses at α = 0.05 significance level. From the study, the number of exercises and assignments given to students per week is low. Only the number of periods (β = 0.23) and the number of times assignments were given (β = 0.48) were found to have a significant contribution towards student's achievement in mathematics. Thus, it was recommended that Mathematics teachers should endeavour to maximize the number of periods by giving student more exercises and assignments to enhance students' achievement in the subject.

Keywords: Mathematics achievement, Cognitive Learning Indices, Number of Mathematics Assignment

Introduction
Mathematics can be found in every activity people engage in; it is the foundation for everything in their lives, including art, architecture (ancient and modern), mobile devices, engineering, money and even sports. When solving mathematical problems, data is collected, broken down, and relations that keep or systematically yield rational solutions to their parts are observed. When people have a solid comprehension of mathematics and can obtain logical answers, they are better prepared to solve real-life problems. Mathematics fosters analytical thinking - analytical thinking fosters individuals' ability to investigate and discover the truth about the world around them. These are the truths that researchers seek, and they are founded on evidence rather than emotions. It is a way of thinking that allows people to be aware of their own and other people's mistakes, as well as deception and manipulation. This is only possible because mathematics gives people the ability to reason logically and reasonably while taking into account real, verifiable data.

According to Hom (2013), mathematics is the science that is concerned with the logic of numbers, order, shapes and so on. Mathematics also develops individuals' ability to think and solve problems because when trying to solve a problem, it is necessary to consider all possible solutions and processes. Mathematics fosters wisdom by enabling people to express themselves with coherence, clarity, and precision. Learning to use numbers correctly allows people to think critically and creatively daily. The importance of mathematics applies to all career fields, regardless of industry or field: it creates and promotes analytical thinking, helps to understand how to budget and spend money, and also improves thinking.

Mathematics is a major subject in Nigeria's junior and senior secondary school curricula. Such inclusion justifies the recognition of mathematics as essential, even though progress in mathematics has not been encouraging (Iji & Omenka, 2015). A variety of factors, ranging from the learners themselves to the teachers, textbooks, curricula, and the school environment, have been identified as contributing to low student achievement in school mathematics.

According to (Ali, et al., 2010), mathematics ranks as one of the most ineffectively explained,

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broadly despised, and poorly comprehended subjects in our schools. This is evident in students' persistent poor performance in some external examinations, such as the Senior Secondary School Certificate Examinations and the Junior Secondary School Certificate Examination (JSCE), which is now renamed as the Basic Education Certificate Examination (BECE). Zalmon & Wonu, (2017) analysis of student achievement in mathematics reveals abysmal performance over the last 26 years, with only 27.31 percent of students obtaining credit and above while 72.69 percent passed and below in the may June West African Examination Council examination.

Brodley (2016) outlined some strategies that students can use to improve success in mathematics and they include: completing all class work and assignments, not missing mathematics classes, finding a friendly study partner, establishing a good relationship with the teacher, analyzing and comprehending every mistake, receiving help on time, asking questions as needed, and so on. It is critical that teachers collaborate with students and that students take their learning seriously by making an effort to learn mathematics.

Cognitive learning is a constructive, long-term and active type of learning. It involves learners in the learning process by making them understand how to utilize their brains very effectively by constantly engaging their minds through regular input and practice of mathematics problems, allowing them to make connections to learning new things (Herrity, 2019). Memory, attention, and reasoning are examples of cognitive functions. In cognitive learning, students are motivated to learn in a participatory manner. It allows students to develop transferable problem-solving skills while also encouraging long-term learning.

Repetition and memorization are not elements of the cognitive learning process. It is all about possessing in-depth understanding and learning how concepts can be learnt. By constantly practicing mathematics problems, students can learn how to learn. Mathematics is best learnt by students when they approach when they have an enthusiastic perspective of the subject. Blind memorization and speed pressure timed testing are significant obstacles to the study of mathematics (Boaler, 2015). Truly, research shows that for students to learn math facts is to utilize them frequently and develop an understanding of numerical relationships. Memorization, speed, and test pressure can all be detrimental.

Requesting students to think through on their experiences, assisting students in discovering new approaches to solving problems, instigating the sharing of ideas on the subject of discussion, assisting students in exploring and understanding how concepts are interconnected, asking students to tender explanations and justifications to their thoughts, recalling and utilizing visualizations for the improvement of the level of understanding are all cognitive learning strategies. It assists students in learning more efficiently and ascertains that concepts learned in class are fully comprehended rather than just memorizing. Cognitive learning can help you improve your ability to reason abstractly, utilize logical thinking, and make meaningful decisions.

The process of learning the skills that will help you learn is referred to as cognitive learning. There is an adage that “practice makes perfect,” and the amount of time students devote to a task determines their effectiveness in carrying out that task. Teachers must cultivate the habit of guiding their students through the classroom and avoid rote learning as much as possible. As a result, the cognitive learning indices reflect the number of effort teachers put into their teaching for students to be carried along in the process of learning. It is the degree or extent to which students are permitted to participate in their learning process, as well as the frequency with which teachers allow them to take in by constant practice and assessment.

Mathematics is a subject that necessitates constant and consistent practice, and teachers may never know how much their students have learned if they do not allow them to practice what they have learned. Furthermore, students may believe they know or understand a concept

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until they practice it on their own and see how much they can do independently. The most significant impediment to learning mathematics is a lack of practice (TOI, 2015). Due to students' poor performance in BECE mathematics in 2018, Wendy Addy-Lamptey, head of WAEC's National office, suggested that teachers provide adequate exercises in the various topics as students are taught in the classroom.

The cognitive learning indices used in this study are based on the number of periods, exercises, and assignments that students complete in class. Because no skill can be learned and perfected without regular practice, consistent practice of mathematics sum aids learning. Teachers must pay close attention to and take this aspect of students' learning seriously. Class exercises and assignments help to improve memory and thinking skills. It instils in students the ability to think critically and logically, which is critical for academic success. It also instils in students positive habits and study skills, aids in exam preparation, and fosters students' inquisitiveness.

It is imperative that teachers engage in various assessment practices in the classroom because certain assessment practices must be implemented to truly know if students have learned or are learning. For this study, exercises and assignments are considered. This is done to ensure that students are properly learning.

The educational process must be accompanied by school activities that will help to enhance the process of teaching, presenting, and learning both within and outside the walls of the classroom. Students learn by being actively involved in the process of acquiring knowledge by collecting information, processing it through problem-solving, and articulating their discoveries. Each of the activities listed below allow students solidify their learning by the application of concepts and articulation of new knowledge, and most of these activities also supply feedback to the teacher on the progress of the students.

Classroom exercises are those activities students carry out within the classroom with the aim of applying or carrying out the practical portion of the concepts discussed in a lesson after the teacher's instruction. Activities outside of class allow students to expand their knowledge. All classroom exercises aim to improve the level of understanding in students, effectiveness or skill in a specific area by harnessing a variety of learning styles. School activities also help to a sense of fun in learning while also boosting student confidence and critical thinking skills.

Assignments are tasks given to the students by their teachers and tutors to complete within a specified frame of time. They can also be referred to as the work delegated to a set of people as part of the learning process. Assignments can be given out in different formats which could be written, practical, art or fieldwork-based, or even online. The goal of the teacher is to ensure that students have a valid comprehension of the subject being discussed. Assignments are a qualitative method to assess the knowledge and understanding of an individual on a subject. The art of assigning tasks starts in kindergarten in various forms. Little children are required to read and write on the things they had learnt in class.

Mathematics is a very important subject in schools and society at large. Mathematics is a base on which all other science subjects stand and it is a major prerequisite for students' career development especially those in the sciences to gain admission into any of the tertiary institutions in Nigeria. Several studies have been conducted to discover some of the challenges students face in the course of learning mathematics and the reason behind the poor achievement of students in mathematics. A few studies looked at the effect of student's perception of mathematics has on their achievement, others looked at topics that are perceived to be difficult by students and their frequency of practice, some looked at the attitude of students, teachers, parents, and how it affects student's achievement in mathematics.

However, the researcher intends to investigate students' cognitive learning indices (the number of periods per week, quantity of exercises given and practiced per week, number of times exercises and assignments are given per week and the number of exercises and assignments

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done correctly per week) and student's achievement in mathematics.

The researcher intends to find out the proportion of the different assessment practices that students are usually engaged with by teachers during the mathematics class. They include exercises, assignments and corrections made by teachers to the exercises and assignments. This study is to find out if teachers are following up with students based on class work and assignments given and correcting their mistakes where necessary. The research is meant to establish the general trend of mathematics learning in junior secondary schools within Ondo State.

Research Questions

1. What are the estimated cognitive learning indices (number of periods per week, number of exercises given per week, number of exercises practiced per week, number of times exercises were given per week, number of assignments given per week, number of assignments practiced per week, number of times assignments were given per week) of students in mathematics?
2. What is the relative contribution of cognitive learning indices (number of periods per week, number of exercises given per week, number of exercises practiced per week, number of times exercises were given per week, number of assignments given per week, number of assignments practiced per week, number of times assignments were given per week) to mathematics achievement?
3. What is the composite contribution of cognitive learning indices to mathematics achievement?

Methodology

The study employed the design of descriptive survey. The population of the study consisted of Junior Secondary School III Students in Ondo State. A multi-Stage sampling procedure was used in the selection of the sample for this study. Ondo State is already grouped into three senatorial districts (Ondo Central, Ondo North, and Ondo South Central respectively). Two out of the three senatorial districts were randomly selected for the study; five Local Government Areas were then randomly selected from each of the strata. Four secondary schools were randomly selected from each LGA and ten (10) Junior Secondary School III students were also randomly selected from each of the secondary schools. A total number of 20 schools were put into consideration totalling 200 students. Two instruments were used in this study. One of the instruments was constructed by the researcher and one was adapted- Mathematics Cognitive Learning Indices and Achievement Records (MCLIAR) and Junior School Mathematics Achievement Test (JSMAT). The Mathematics Cognitive Learning Indices Records (MCLIR) was adapted from the Students' Frequency Practice of Mathematics Problems Records (SFPMPR) developed by Ayodele Ishola Wakeel in 2018. It was adapted to include the number of periods per week, number of exercises given and practiced per week, number of times exercises and assignments are given per week and the number of exercises and assignment done corrected per week. The instrument was validated through experts' judgment before it was used to collect data on the field. The internal consistency was established using Cronbach Alpha and the reliability coefficient was established to be 0.62. The item consists of a multiple-choice test item with four options. The test was constructed using the junior secondary school curriculum whose items were developed using a test blueprint. To ensure its validity and reliability, it was given to some JSS3 Students for trial testing, to mathematics teachers for scrutiny, and experts in measurement and evaluation. Ninety items were initially constructed for the trial testing before thirty were eventually selected after their difficulty and discrimination index was established. The range of the difficulty and discrimination index of the items selected was established to be between (0.3, 0.8) and (0.3, 0.6) respectively. The reliability coefficient of the achievement test was established to be 0.75 using KR20. The data collection took about 5weeks.

Data analyses were performed to determine the cognitive learning indices of junior secondary school students in mathematics. The reliability of the cognitive learning indices scale was

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determined using Cronbach alpha, while KR20 was used to establish the reliability of the junior secondary school mathematics. The cognitive learning indices of students were determined using percentages, mean and standard deviation while regression analysis was used to establish contribution of each index to student's achievement in mathematics.

Findings/ Results

Research Question 1: What are the estimated cognitive learning indices (number of periods per week, number of exercises given per week, number of exercises practiced per week, number of times exercises were given per week, number of assignments given per week, number of assignments practiced per week, number of times assignments were given per week) of students in mathematics?

Table 1: The Estimated Cognitive Learning Indices Record

	Minimum	Maximum	Mean	Standard Deviation
Number of periods	3	6	4.35	0.855
Average number of exercises given	0	8	1.94	2.018
Average nu mber of exercises practiced	0	8	1.79	1.864
Average number of exercises corrected	0	7	1.10	1.288
Average Number of times exercises were given	0	2	0.63	0.558
Average number of assignments given	1	9	3.77	2.552
Average number of assignments practiced	0	9	3.20	2.268
Average number of assignments corrected	0	7	1.78	1.629
Number of times assignments were given	0	4	1.17	0.841

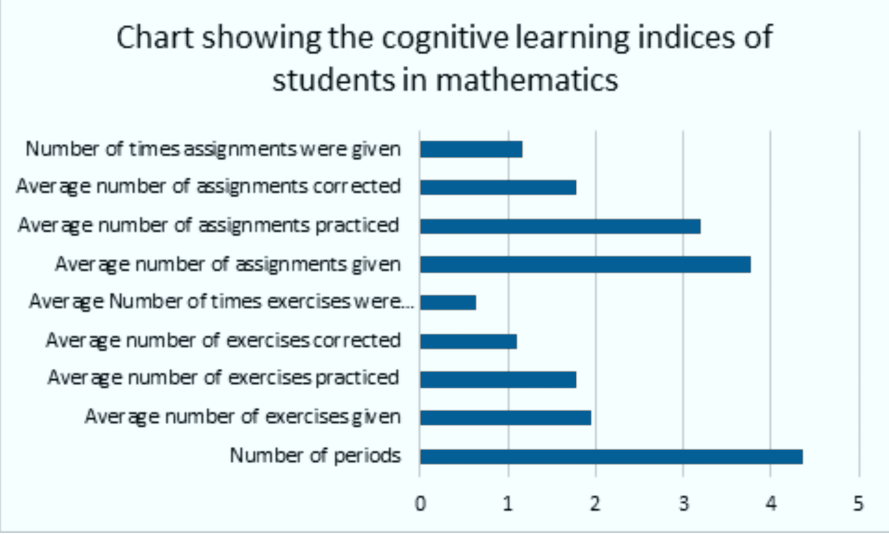

Figure 1: A chart showing the mean of the cognitive learning indices of students in mathematics

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Table 1 above shows the minimum, maximum, mean and standard deviation of 200 students selected randomly across six local government areas in Ondo State. It shows that in a term, the minimum number of mathematics periods is 3 while the maximum number is 6. This implies that some schools within the state usually have mathematics classes 3 times within a week while some have 6 periods within the week. The average number of periods however is 4.35 approximately 4 times while the standard deviation is 0.85 which implies that the average number of periods is 0.85 away from the mean score.

The minimum number of exercises given in a term is zero while the maximum number of exercises given within a term is 8. This means that students can go through a whole term without teachers giving students exercises in the classroom. The average number of exercises given within a term is 1.94 which is approximately 2. This implies that within a term, students are exposed to as low as 2 exercises which is relatively low. The standard deviation of the average number of exercises given is 2.018 which implies that the average number of exercises given deviates from the mean score by 2.018.

The minimum number of exercises practiced within a week is zero while the maximum number of exercises practiced is 8. This implies that some students can go through a week without practicing any mathematics exercises while others go to the extent of attempting all mathematics exercises given to them by their teachers in the class. The mean score 1.79 which is approximately 2 implies that an average of 2 mathematics exercises is practiced by students within a week. The standard deviation of 1.864 shows that the average number of exercises practiced deviates from the mean score by 1.864.

The minimum number of exercises that students got correctly is zero while the maximum is seven. It then implies that within a week, some students do not get any mathematics exercise correctly while some got about seven correctly out of their mathematics exercises weekly. The mean score of the exercises gotten correctly by students within a week is 1.10 which is approximately 1. This implies that an average of 1 exercise is gotten correctly by students in a week. The standard deviation of 1.288 implies that the number of exercises gotten correctly per week deviates from the mean score by 1.288.

The minimum number of times exercises were given to students is zero while the maximum number is 2. This means that within one week, some students were not given exercises at all while others were given exercise two times. The mean score is 0.63 approximately one, this implies that in a week, students were given exercises just once. The standard deviation of 0.558 implies that the average number of times exercises were given deviates from the mean score by 0.558.

The minimum number of assignments given is 1 while the maximum is 9. It implies that within one week, students were given a minimum of 1 assignment and a maximum of 9 within a week. The mean score of 3.77 approximately 4 implies that students were given an average of 4 assignments within a week. The standard deviation of 2.552 implies that the average number of assignments deviates from the mean score by 2.552.

The minimum number of assignments practiced within a week is zero while the maximum number is 9. This implies that even though some students practiced no mathematics assignment within the week, some practiced all the mathematics assignment they were given during the week. The mean score of 3.20 approximately 3 implies that an average of 3 assignments were practiced by the students within a week is 3. The standard deviation of 2.268 implies that the average number of assignments practiced per week deviates from the mean score by 2.268.

The minimum and the maximum number of assignments gotten correctly within a week are 0 and 7 respectively. The mean score is 1.78 which is approximately 2 and this simply implies that the average number of assignments gotten correctly within a week is 2 out of the average number of 3 that was practiced within the week. The standard deviation of 1.629 implies shows the degree of deviation of the average number of

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exercises from the mean score.

The minimum and the maximum number of times assignments were given weekly are 0 and 4 respectively. This implies that assignments are given at most 4 times within the week. Also, the mean score of 1.17 approximately 1 shows that the average number of times assignments were given is just one. The standard deviation of 0.841 shows that the degree of deviation of the average number of times exercises from the mean score is also one.

Table 2: Table of the Percentage of the exercises and assignments given, practiced and gotten correctly per week

NP	4	NP	4
NE	1.94	NA	3.77
N_{EP}	1.79	N_{AP}	3.20
N_{EC}	1.10	N_{AC}	1.78
N_{TEG}	0.63	N_{TAG}	1.17
% practiced $= \frac{N_{EP}}{N_E} \times 100 = 92.27\%$		% practiced $= \frac{N_{AP}}{N_A} \times 100 = 84.88\%$	
% corrected $= \frac{N_{EC}}{N_E} \times 100 = 56.70\%$		% corrected $= \frac{N_{AC}}{N_A} \times 100 = 47.21\%$	
% corrected $= \frac{N_{EC}}{N_E} \times 100 = 14.48\%$		% of time assignment were given $= \frac{N_{TAG}}{N_P} \times 100 = 26.90\%$	

NP- Number of period, NE- Number of Exercises, NEP- Number of Exercises Practiced
NEC- Number of Exercises Corrected, NTEG- Number of Times Exercises were Given
NA- Number of Assignments Given, NAP- Number of Assignments Practiced
NAC- Number of Assignments Corrected, NTAG- Number of Times Assignments were Given

In conclusion, from table 2 above, it can be deduced from the table that the number of assignments that were given, practiced and gotten correctly is more than the number of exercises that were given to the students weekly. This implies that teachers give students more of assignments than class exercises.

Also, if the number of exercises and assignments given are 1.94 and 3.77 respectively and the average number of exercises and assignments practiced weekly is 1.79 and 3.20 respectively, it implies that the percentage of exercises and assignments practiced per week is 92.27% and 84.88%. This shows that the students to a large extent usually practice the exercises and assignments they are given by their teachers.

The average number of exercises gotten correctly per week and the average number of assignments gotten correctly per week are 1.10 and 1.78 respectively. It implies that the percentage of the average number of exercises gotten correctly per week is 56.70% and 47.21 respectively showing that even though students usually practice the mathematics exercises and assignments given to them by their teachers, they do not often get it correctly.

The result also shows that compared to the number of periods that we have weekly, the number of times exercises and assignments are given weekly is relatively low. If the average number of periods is 4.35, the number of times exercises were given is 0.63 and the number of times assignments were given is 1.17, it implies that teachers give students exercises only 14.48% and assignments 26.90% totalling 41.73% every week.

Research Question 2: What is the relative contribution of cognitive learning indices (number of periods per week, number of exercises given per week, number of exercises practiced per week, number of times exercises were given per week, number of assignments given per week, number of assignments practiced per week, number of times assignments were given per week) to mathematics achievement?

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Table 3: Relative Contribution of Cognitive Learning Indices to Mathematics Achievement

Variables	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	T	Sig.
Constant	7.861	1.898		4.141	0.000
Number of periods	1.146	0.497	0.225	2.307	0.022
Average number of exercises given	-0.086	0.828	-0.040	-0.104	0.917
Average number of exercises practiced	-0.166	0.472	-0.087	-0.352	-0.725
The average number of exercises gotten correctly	1.207	0.625	0.357	1.933	0.055
Average number of times assignments were given	-0.985	1.753	-0.126	-0.562	0.575
Average number of assignments given	-0.361	0.453	-0.212	-0.796	-0.427
Average number of assignments practiced	-0.166	0.472	-0.087	-0.352	0.725
Average number of assignments gotten correctly	-0.501	0.434	-0.188	-1.155	0.250
Average number of times assignments were given	2.493	0.846	0.482	2.948	0.004

Table 3 shows that among the predictor variables, only the number of periods (β = 0.225, t(200) = 2.309, p<0.05), and the average number of times assignments were given (β = -0.482, t(200) = 2.948, p<0.05) were found to have significant contribution towards student's achievement in mathematics.

However, the average number of exercises given (β = -0.040, t = -0.140, p>0.05), average number of exercises practiced (β = -0.232, t = -0. 520, p>0.05), average number of exercises gotten correctly (β = 0.357, t = 1.933, p>0.05), average number of times assignment were given (β = -0.126, t = -0.526, p>0.05), average number of assignments given (β = -0.212, t(200) = -0.796, p>0.05), average number of assignments practiced (β = -0.0087, t(200) = -0.352, p>0.05), average number of exercises gotten correctly, (β = -0.188, t(200) = -1.155, p>0.05) and the average number of times assignments were given, (β = -0.482, t(200) = 2.948, p>0.05) did not contribute significantly to students achievement in mathematics.

Research Question 3: What is the composite contribution of cognitive learning indices to mathematics achievement?

Table 4: Regression summary and ANOVA of Cognitive Learning Indices and Student's Achievement in Mathematics

Multiple R= 0.361
R Square= 0.130
Adjusted R Square= 0.089
Standard Error= 4.154

Analysis of Variance

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	490.619	9	54.513	3.159	.001
Residual	3278.976	190	17.258		
Total	3769.595	199			

Significant at p<0.05

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The regression ANOVA was produced ($F=3.159$, $P<0.05$). It could be deduced from the result that the independent variables considered in this study together contributed significantly to the prediction.

Table 4 above shows that the multiple correlation coefficients (R) of all the combined predictor variables with students' achievement in mathematics is 0.361. This implies that there is the positively low relationship among student's cognitive learning indices (number of periods, number of exercises given, number of exercises practiced, number of exercises gotten correctly, number of assignments given, number of assignments practiced, and number of assignments gotten correctly) and student's mathematics achievement in mathematics. R Square= 0.130, the adjusted R^2 which estimates the variance on the dependent variable that can be accounted for by the combination of the independent variables is 0.089. This implies that all the cognitive learning indices (number of periods, number of exercises given, number of exercises practiced, number of exercises gotten correctly, number of assignments given, number of assignments practiced, and number of assignments gotten correctly) made 8.9% contribution of the variance in student's achievement in mathematics.

Discussions

The study revealed the overall trend of JSS three student cognitive learning indices. However, the results show that these secondary school students' cognitive learning indices are quite low when compared to the mean scores of some of the indices used. Even though mathematics is a compulsory subject in the mathematics curriculum in Nigerian secondary schools, as evidenced by the average number of periods taught in a week in secondary schools, students do not usually practice their mathematics sums regularly. When compared to the number of periods in a week, the cognitive learning indices are relatively low. This is consistent with the findings of Ali, Hukamdad, Akhtem, and Khan (2010), which discovered that mathematics is one of the major subjects being poorly taught in secondary schools.

The study revealed the overall trend of JSS three students' cognitive learning indices. However, the results show that these secondary school students' cognitive learning indices are quite low when compared to the mean scores of some of the indices used. Even though mathematics is a compulsory subject in the mathematics curriculum in Nigerian secondary schools, as evidenced by the average number of periods taught in a week in secondary schools, students do not usually practice their mathematics sums regularly. When compared to the number of periods in a week, the cognitive learning indices are relatively low. This is consistent with the findings of Ali, Hukamdad, Akhtem, and Khan (2010), who discovered that mathematics is one of the most poorly taught subjects in secondary schools.

The study showed that the average number of times assignments were given had a significant contribution to students' achievement in mathematics, but the number of assignments given, practiced, and gotten correctly did not contribute to students' achievement in mathematics, which agreed with the findings of Sasser (1981) in his study, which argues that there is a slight predominance of evidences highlighting that students who are given assignments attain a little bit more improved results academically than those who are not given any assignments. These findings are also consistent with Esan (1996) who found out that a number of studies have found a close relationship that connects the home and the school in terms of academic achievement and the findings of Sasser (1981), and McMulen (1981) Oluwayemi (2010) and Iverson and Walberg (1982) who discovered in their study that student achievement is positively related to the intellectual stimulation and socio-psychological environment at home.

The findings of the study also aligned with that of McMulen (2010) whose study discovered that assignments have tangible effects on students' achievement academically and thus suggested supplementary assignments as it might be effective in closing the achievement gap between high and low achieving students and the study of (Kohn, 2006) who questioned and debated the motion that assignment will upgrade an achieving top-level student. Also,

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the findings were in line with that of (Adebule, 2014) who discovered a notable difference between the mean achievements of students who were given assignments and those not given the homework assignments. This implies that assignments have a positive role to play in the achievement of students.

However, it negates that of Friesen (1979), whose findings did not infer an obvious stand-point for either the assignment or non-assignment groups. Also, in line with the findings of (Kohn, 2006), (Friesen, 1979), (Begley, 1998), their study revealed that assignment does not improve achievement at the middle-class level. In his study the effect on mathematics achievement of secondary school students in South-West Nigeria.

Conclusion

From the study and its findings, it is concluded that the cognitive learning indices of students are low. This means that students are not practicing mathematics sum as they ought to especially in relation to the number of periods they have in a week.

Even though the number of periods is relatively high but the number of times exercises and assignments given are relatively low. Also, teachers gave students more assignments than class work.

Recommendation

It can be recommended that teachers should try as much as possible to expose students to more mathematics exercises and assignments to expose them to constantly practice the subject. This can be done by maximizing the number of mathematics periods.

Teachers should ensure that students are given more mathematics sums with correction done to ensure improvement on students' part.

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