

Cognitive Skills as Predictors of Academic Achievement of Senior Secondary School Students' in Education District II of Lagos -State.

AKANNI, OLUBUKOLA OLUTOSIN (Ph.D)

*Department of Educational Foundations
University of Lagos, Akoka, Nigeria*

Abstract

This research assessed cognitive skills as predictors of academic achievement of senior secondary school students' in education district two of Lagos state.. The population of the study includes all the secondary school students in public schools in educational district II of Lagos state. The sample of the study consisted of two hundred (200) students randomly selected through stratified random sampling techniques. The instruments used for data collection was a self-developed questionnaire (CSPSAASQ) and the English Language Achievement Test (ELAT). Three null hypotheses were tested to guide the study. The results of the analyses revealed that; students abstract thinking, logical reasoning and memory cognitive skills will significantly impact on academic achievement of students in senior secondary school certificate examination (SSCE) in Lagos state. Based on the findings, it was recommended among others that students should be encouraged to cultivate good cognitive skills that can help improve their intelligent quotients, which can significantly improve their academic achievement in the SSCE amongst others.

Key words: Cognitive skills, predictors, academic achievement and senior secondary school students.

Background to the Study

Education, defined by Achimugu (2015), as deliberate efforts directed towards the transmission of accumulated wisdom, knowledge and skills from generation to generation, imparted in the four walls of the school-formally or outside the classroom non-formally or informally, is meant to prepare the learner for coping with and being able to meet the challenges of his society. This is why Ayoade (2012) defines education as the deliberate system of processing a human being for the society and equipping him/her with mental and physical skills to solve life's problem. In a nutshell, education aims at preparing individuals for usefulness to their society. Hence, if properly managed, education has power not to develop individuals only but also, to develop of any nation's social, economic, political, cultural and technological aspect.

Be that as if may, before an individual could be considered fit into the society through education, three basic component of such individual should have been developed these are; the cognitive, the affective and the psychomotive. The cognitive domain deals with students' intellectual, ability to think and reason critically while the affective and psychomotor domains are the non-cognitive. The affective domain is concerned with

changes in values, character, beliefs, attitudes, interests, life style, appreciation, social relations and emotional adjustment of students and the psychomotor domain deals with the change in the student's manipulate, co-ordinate gross and fine muscles

Consequently, to ascertain the individual's mastery of these skills, there is need for assessment. This assessment aims at measuring students' achievement in terms of how much they have learnt, what their weaknesses and strengths are, and how they can be helped to improve their learning (Rehmani, 2016). Kellaghan (2014) added that information derived from such an assessment can be used for a great variety of purposes such as,

- to make educational decision about students (e.g promotion, grade retention, certification of achievements);
- to give feedbacks to students about their progress, strength & weaknesses; to motivate students by providing goals or targets;
- to judge instructional effectiveness and curricular adequacy to describe the achievement of an educational system;
- to assess the effectiveness of schools; to monitor students achievements over time and to guide policy formation and decision-making (Bloom ,1980)

However, the uniformity of assessment of learner's mastery of skills taught may not be thoroughly ascertained using only internal examination and classroom achievement tests. Hence, for the purpose of providing a specification of clear goals and standard for teachers in measuring their students' academic performance and to control the diagnostic elements of the educational system. , The maintenance of same standards is why public examination bodies have been saddled with the responsibility of conducting standardized examination(public/external examination) especially to measure the cognitive ability of the learners. This is what Bakare (1979) considered as the most fundamental of the three aspects of human being. The importance of public examinations especially in secondary education has been summarized by Kellaghan (2014) as dictating what is taught in school, selecting students during the cause of their careers, and providing an evaluation of students when leaving school.

. Cognitive skills are commonly referred to as intelligence. These are situational and intelligent quotients of students'. Over time students' academic achievement in both internal and external examinations had been used to determine excellence in their cognitive skills (Moyosola,2013).

Cognition mainly refers to things like memory, typically in early childhood, and of developing personal thoughts and beliefs about the world. Student's cognitive skills play an important role in their academic achievement and crucial parts in their educational attainment. This is because cognitive skills facilitates students learning process (Adepoju, 2010) Research shows that an intelligent student possess a current, thorough knowledge of the subject matter, show interest in learning, and has enthusiasm for the subject (Liu, 2013). Cognitive skills can also be referred to as cognitive functions or abilities or capacities .These are the mental processes of gathering and processing information in

order to perform a task. It helps us to incorporate new knowledge and make decisions based on previously acquired knowledge. Simply put, it involves everything that happens within your brain when you perform a task. It is a term referring to a human's ability to process thoughts that should not deplete on a large scale in healthy individuals. These are brain-based skills which are needed in the acquisition of knowledge, manipulation of information and reasoning. These are the core skills that the brain use to think, read, learn, remember, reason, and pay attention. They comprise a set of core skills that empower young people to take positive steps to promote health, social relationships, and positive contributions to society. Cognitive skills are important in helping adolescents' shape their world, in order to cope with it. The 8 core cognitive skills are: sustained attention, response inhibition, speeds of information processing, cognitive flexibility & control, multiple simultaneous attention, working memory, category formation and pattern recognition. The main cognitive skills commonly being utilized by students' in the Nigeria secondary schools are :

- i. *Memory*: This plays a role in all cognitive processes. It makes it possible for learners' to remember all kinds of information, such as memories, common knowledge, etc.
- ii. *Attention*: This is the ability to choose and focus on relevant stimuli. It is a selection process for both external stimuli such as sound, smell, feeling etc. and internal stimuli such as your thoughts. Focusing helps you to ignore irrelevant stimuli when performing everyday tasks.
- iii. *Perception* : This is the process of capturing, processing and making sense of the stimuli the sensory organs receive. This includes seeing, hearing, feeling, smelling and tasting. How you perceive this information depends on how you interpret the different stimuli.
- iv. *Logical thinking*: This is the process of consistent reasoning to come to a conclusion. During this process, you use a rational and systematic series of steps to come to a conclusion
- v. *. Thinking speed or processing speed*: You can absorb new information, assess the information and formulate a response to that information at this rate. Simply put, it is the time between receiving and responding to a stimulus.

According to Liu, (2013), cognitive skills are skills that require the working of human mind. They are mental skills and broadly ranged from memory skills to procedural skills, from language skills to thinking skills. "Bloom's Taxonomy of Educational Objectives (published in 1956 and revised in 1990 and 2001) helps to express learning outcomes in a way that reflects cognitive skills. "The taxonomy states that there are six levels (lowest to highest levels of cognitive skills): comprehension/understanding; application/applying; analysis/analyzing evaluation/evaluating and synthesis/creating, In general, cognitive skills can be categorized into lower order cognitive skills such as recalling and listing; and higher order cognitive skills such as problem solving, hypothesis testing, decision making, evaluating and self-reflecting

Cognitive skills are considered to be abilities that help promote well-being, positive health outcomes, and productive development. Thus, the concept of cognitive skills transcends previous concepts such as coping and adaptation to circumstances; it presupposes an active, autonomous, and responsible stance towards the self in the social world (Rychen & Salganik, 2013). The World Health Organization (2014) has defined cognitive skills as, the abilities for adaptive and positive behaviour that enable individuals to deal effectively with the demands and challenges of everyday life". UNICEF defines cognitive skills as “a behaviour change or behaviour development approach designed to address a balance of three areas: knowledge, attitude and skills”. The UNICEF definition is based on research evidence that suggests that shifts in risk behaviour are unlikely if knowledge, attitudinal and skills based competency are not addressed. Hence, cognitive skills are essentially those abilities that help promote mental well-being and competence in young people as they face the realities of cognitive.

Core set of cognitive skills areas identified by WHO (2014) for promotion of health and well-being of children and adolescents are: problem solving, decision making (Including goal setting), critical thinking, creative thinking (Including value clarification) communication skills , interpersonal relationship skills (Including assertiveness), self-awareness ,empathy coping with stress, and coping with emotions.

The World Health Organization categorizes cognitive skills into the following components:

- Critical thinking / Decision-making skills - is the process of determining the authenticity, accuracy, or value of something; characterized by the ability to seek reasons and alternatives, perceive the total situation, and change one's views based on evidence. It is also called "logical" thinking and "analytical" thinking. Which include decision making/problem solving skills and information gathering skills.
- Interpersonal/ communication skills – functioning cooperatively with individual co-workers and as a team member/ giving clear oral instructions and explanations of activities and ideas; reporting accurately on what others have said; staying on the topic in job-related conversations; using appropriate vocabulary and grammar; and following the intent of oral directions and instructions. Examples include verbal and non-verbal communication, active listening, and the ability to express feelings and give feedback.

Cognitive skills have also been categorized as thinking, social and negotiation skills.

- *Thinking skills*: these are the set of basic and advanced skills and sub skills that govern a person's mental processes. These skills consist of knowledge, dispositions & cognitive and metacognitive operations. Metacognition is the process of planning, assessing, and monitoring one's own thinking and is the pinnacle of mental functioning. Teaching children to become effective thinkers is increasingly being recognized as an immediate goal of education The skills to

think critically can be developed by providing opportunities and making them to realize the consequences of hasty and unplanned decisions involving them in situations that demands critical thinking, which can enable them to develop their thinking skills.

- *Social Skills:* are skills that enable adolescents to be accepted in society and to accept social norms that provide the foundation for adult social behaviour. The skills includes: building positive relationships with friends and family; listening/communicating effectively; taking responsibility; and coping with stress.
- *Negotiating Skills:* are the outcomes of thinking and social skills. We need the skills to negotiate with self and others. Negotiating with self is a pre-requisite for negotiating with others. Three approaches can be used for operationalizing negotiating cognitive skills. These are content, thematic, and activity approach.
 - *Content Approach* - it focuses on information to be imparted for increasing knowledge related to select subject areas. Contents may be decided on the basis of need assessment of specific groups, organizational priorities, or mandate of funding agencies
 - Thematic approach - thematic are the appropriate and relevant to the target group that are selected. Information and experiences related to the theme are built into the sessions. One theme with sub-themes or several themes may be selected. Example, understanding self, being a woman etc.
 - Activity approach - In this approach, the focus is on selected activities that have scope for providing experimental learning for building cognitive skills. Example, role-play, debate, quiz and other activities through which thinking, social and negotiation skills can be enhanced. In the activity approach, there is the need to be cautious that the participants do not turn the activities into entertainment losing sight of the hidden educational agenda.

Academic achievement of a student can be seen as the level of attainment of a person in an examination. Student's success is generally judged by examination achievement hence the best criterion of achievement is the sum of the student's academic achievement in all the subjects taken. Stiggins (2013), sees academic achievement as something a learner does or achieves at school, college or university, in class, in a laboratory or field work It is the level of proficiency attained in academic work or as formally acquired knowledge in school subjects which is often represented by percentage of marks obtained by students in examinations (Kohli,2015) . Olaleye (2011) sees academic achievement as excellence in all academic disciplines, in class, as well as extracurricular activities. It includes excellence in sporting, behaviour, confidence, communication skills, punctuality, assertiveness, arts, culture and the like. Adeyemi (2011) is of the opinion that academic achievement is the scholastic standing of a student at a given moment. This scholastic standing consist of the grades obtained in a course or groups of courses. It is argued that academic achievement is a measure of output and that the main outputs in education are

expressed in terms of learning, that is, changes in knowledge, skills and attitudes of individuals as a result of their experiences within the school's system. Prediction of students' ability is very important in education, in order to estimate their performance on a given task and to use it, in judging their future achievement or how well a child will perform on similar tasks or completely different tasks in the future.

Students' cognitive skills need to be fully tapped in attaining greater height in their academic pursuits. This means that, there is the need to help students in reshaping their cognitive skills at the senior secondary school level.. As this would help to arrest social menace and vices that may leads to poor academic achievement in the SSCE, because an idle hand is the devil's workshop. It is against this backdrop that the study was carried out to investigate the impact of cognitive skills as a predictors of academic achievement of senior secondary school students' in 'Education district two of Lagos state

Statement of the Problem

The issue of poor academic achievement of students in Nigeria has been of much concern to all and sundry. The problem is so much that it has led to the widely acclaimed fallen standard of education in Nigeria at large. The quality of education depends on the scholastic and cognitive skills of students as determinants of students' academic achievement (Akinsolu, 2010). Consequently, upon the observed deterioration in the academic achievement, attitude and values of secondary school students in public examination, one wonders if the high failure rates and the poor quality of the students is not a reflection of the instructional quality and ineffectiveness of teachers in classroom interaction

In recent times, students have derailed in their academic pursuit as they are easily carried away with social media, internets and luxuries life, which resulted in mass failures in examination. Majority of the students do not have the ability of knowing the limits of their own learning and memory capabilities. They also lack the knowledge of what learning tasks, they can realistically accomplish within a given period (Ormrod, 2010). Research findings revealed that there have been consistent poor performance and high failure rate by our Senior Secondary School Students in core subjects, English-Language and Mathematics (WAEC Chief Examiners', 2010-2018; Adedayo, 2016; Abakporo, 2015.). Aburime (2017) stated that English –Language and Mathematics are very important subject in Nigeria. Yet, for more than twenty years, education in Nigeria has been in a sorry state and achievement in this core subjects has been very low and frustrating. So far, every effort made to save Nigerian education from the devastating effect of persistent poor achievement has failed. It sounds unbelievable that more than 80 per cent of the candidates who sat for the examination failed to obtain at least a credit in these core subjects despite that they are one of the minimum requirements for admission into Universities and other Tertiary institutions. This situation is saddening.

Most students in Nigerian secondary schools consistently performed poorly in both internal and external examinations. . These has been a great challenge to the educational

sector and affects the adolescents future adversely. Research findings revealed that students may perform poorly because they lack the cognitive skills or because they do not have required skills, lack the perceived personal efficacy to make optimal use of them, faulty home environment and low economic status of their parents which militate against their quest for academic excellence

Statistics of performance in senior school certificate examination revealed that most students do not pass well in external examinations such as West African School Certificate (Certificate) and National Examination Council (NECO) due to some factors such as low parental socio-economic status, poor study habits, governments improper funding of education. Also, parents, teachers and students blame one another for students' poor performance in schools. Parents blame teachers for lack of dedication to duties; the teachers blame government for poor salaries because they are poorly remunerated. Parents also blame government for not equipping the schools with learning materials, government blamed parents for not helping their child/wards in doing homework, and students are also blamed by parents and government for poor study habits and dedication to their studies. The table 1 below shows the results of senior secondary school students' in the West Africa Senior School Certificate Examination (Nigeria), (WASSCE).2010-2018.

Table 1: Statistics of Performance in Senior School Certificate Examination (Nigeria)

YEAR	Total No. Who sat	No. of Students that Obtained Credit & Above (A1-C6)	% of Students with Credit & Above (A1-C6)	No of Students with (D7-F9)	% of Students with (D7-F9)
2010	1,351,557	453,447	33.55	898,110	66.45
2011	1,540,250	819,390	38.93	952,620	61.07
2012	1,675,224	819,390	49.00	852,834	51.00
2013	1,543,683	555,726	36.00	987,957	64.00
2014	1,692,435	529,732	31.30	1,162,703	68.70
2015	1,593,442	544,638	34.18	1,048,804	65.82
2016	1,544,234	597,310	38.68	946,924	61.32
2017	1,559,162	923,486	59.22	630,676	40.78
2018	1,572,396	786,016	49.98	786,380	50.02
		MEAN	41.20%	MEAN	58.20%

Source: WAEC Chief Examiner Report, 2018

Commenting on the above statistics, Oruwari (2018) blame poor performance in English language and Mathematics on teachers' insensitivity to the nature of the subjects when

planning instructional activities in the classroom). Some reasons why students fail include: poor study habits, lack of cognitive skills, lack of textbooks, lack of vision, lack of passion, lack of personal work, school, family balance: lack of maturity and discipline. However, very limited attention has been given to home environment of students, parental level of education, parental occupation, family size and type of family as it affects their academic performance. Hassan (2013) similarly examined and listed the causes of poor academic performance among secondary school students to include low intellectual ability and cognitive skills,, poor study habits, low achievement motivation, lack of vocational goals, low self-confidence, low socio-economic status of the family, poor family structure and anxiety.

Aremu and Sokan (2016) also made efforts to categorize factors militating against good academic achievement into four principal areas which are:

- i. Causation resident in the child such as basic cognitive skills, physical and health factors, psycho-emotional factors, lack of interest in school programme.
- ii. Causations resident in the family such as: cognitive stimulation/basic nutrition during the first two years; type of discipline at home; lack of role model and Finance.
- iii. Causation resident in the school such as school location and physical building; interpersonal relationship among the school personnel
- iv. Causations resident in the society such as instability of educational policy; under-funding of educational sector, leadership and job losses

Onipede (2013) found that there was a decline in students' achievement in SSC examinations. He reported that in topics that teachers found difficult to teach, students tend to perform below expectation. Supporting this point, he reported that students performed below expectation in Senior Secondary Certificate (SSC) examinations in many subject areas especially in English Language and Mathematics. He identified different factors that could cause students' failure; for instance, he reported that academic failure seemed to be associated with the lack of personal confidence, emotional instability and temperamental tendency towards extraversion.

They stated that academic failure of students is due to the lack of confidence in the knowledge they possess which in turn could affect their level of activity in the classroom. They argued that students' academic problems arise from personal inadequacies such as low ability; negative self-concept, anxiety, maladjustment, environmental influences such as poor classroom conditions, curricular inadequacies, peer groups and the lack of home support. They remark that many young people do not learn much in developing countries. Some often leave school before the school leaving age while others are in the habit of attending school irregularly.

Adeyemi (2011), has given other reasons why most candidates find it difficult to pass their examinations. These reasons include: lack of adequate knowledge in their various

subjects, inadequacy of professionally qualified teachers in schools and insufficient facilities.

Students can be helped to be successful learners, when taught specific academic content such as (reading comprehension), and are made to learn how to develop, use effective learning strategies and appropriate cognitive skills. However, the precise ways to improve the level of metacognition and cognitive skills on academic achievement in order to obtain optimal success is far from being achieved; as researchers have not carried out enough study on the effectiveness of explicit instruction and cognitive skills on acquisition of metacognitive skills and achievement.

However, considering the key roles of the youths in nation building and the fact that a change in behaviour positively is easily imbibed and faster at the formative age of every child; there is the need to equip our adolescents with necessary techniques and skills or intellectual ability that can foster high level scholastic excellence.

Purpose of the Study

The main purpose of this study is to determine cognitive skills as predictors of academic achievement of senior secondary school students in Lagos state. Other specific purposes includes to:

- 1) Determine abstract thinking cognitive skills impact on 'academic achievement of senior secondary school students.
- 2) Determine logical reasoning cognitive skills impact on academic achievement of senior secondary school students.
- 3) Determine memory cognitive skills impact on the academic achievement of senior secondary school students.

Research Hypotheses

The following null hypotheses (Ho) were tested to guide the study:

- 1) There will be no significant impact of abstract thinking cognitive skills on 'academic achievement of senior secondary school students
- 2) There will be no significant impact of logical reasoning cognitive skills on academic achievement of senior secondary school students..
- 3) There will be no significant impact of students' memory on the academic achievement of senior secondary school students.

Research Design

The study adopted a descriptive survey design. This design was considered appropriate because, it enables the researcher to generate data through the standardized collection procedures based on the research instrument and well defined study concepts and related variables. Descriptive research design gives a picture of a situation or a population and therefore provides the basis for eliciting possible solutions for alleviating the problems under study (Madumere, 2012).

Population of the Study

The target population for this study are the Senior Secondary Two (S.S II) students from government schools in Education District II of Lagos State. The estimated senior secondary students' population for the entire Education District II is 33,118 of which 11,827 are Senior Secondary Two (II) students (Education District II, 2019).

Sample and Sampling Technique

Lagos State has six Education District. Education District II was chosen by purposive sampling. The district is made up of three educational zones namely Somolu, Kosofe and Ikorodu. Multistage simple random sampling technique was used to select participants for the study. Firstly, simple random sampling technique was employed in the selection of four schools used for the study. This involves the use of balloting method to select the schools. Secondly, stratified random sampling techniques was used in selecting fifty students from each of the four school used for the study in Educational District II of Lagos State giving a total of two hundred (200) students as the sample size.

Research Instruments

The instruments used for data collection were a self-constructed instrument titled: Cognitive skills as predictors of academic achievement of senior secondary school students (ICSPAAQ) and the English Language Achievement Test (ELAT). The ELAT was a 20-item multiple-choice compiled from (SSCE) WAEC/NECO Past Questions Paper (2012-2018). The research instrument was validated by giving to experts in the field of measurement and evaluation, who ensures the face and content validity, The instruments have a reliability of 0.82 for the questionnaires and 0.785 for the English-Language Achievement Test.

Results

Hypothesis One: There will be no significant impact of abstract thinking on' the academic achievement of senior secondary school students .

Pearson Product Moment Correlation Coefficient (PPMC) was used to test the hypothesis. The result of the analysis is shown in table 2

Table 2: Impact of Abstract Thinking on the Academic Achievement of Senior Secondary School students

Variables	N	\bar{X}	S.D	r-cal	r-critic	DF	Remark
Abstract Thinking	200	3.105	0.8168	0.766	0.139	198	H₀ Rejected
Academic Achievement	200	3.270	0.9412				

Table 2 illustrates that the Pearson’s Correlation ‘r’ = 0.766 computed for abstract thinking on and academic achievement was positive with significance which is less than Alpha=0.01 or even alpha=0.05. The null hypothesis was therefore rejected and the alternative hypothesis was accepted. The implication is that there will be a significant impact of abstract thinking on ‘academic achievement of senior secondary school students

Hypothesis Two: There will be no significant impact of logical reasoning on academic achievement of senior secondary school students.

To determine the significance, (PPMC) was used to test the hypothesis. The result of the analysis is shown in table 3.

Table 3: Impact of Logical Reasoning on Academic Achievement of Senior Secondary School Students’

Variables	N	\bar{X}	S.D	r-cal	r-critic	DF	Remark
Logical Reasoning	200	3.124	0.7341	0.880	0.139	198	H ₀ Rejected
Academic Achievement	200	3.073	0.8678				

Table 3, illustrates that (PPMC) index obtained is positive at ‘r’ = 0.880. The significance which is less than predetermined alpha=0.01 or even alpha = 0.05. The null hypothesis was therefore rejected and the alternative hypothesis was accepted. This result indicated that there is a positive significant impact of logical reasoning on academic achievement of senior secondary school students’

Hypothesis Three: *There will be no significant impact of students’ memory on the academic achievement of senior secondary school students.*

To determine the significance, (PPMC) was used to test the hypothesis. The result of the analysis is shown in table 4

Table 4: Impact of Memory on the Academic Achievement of Senior Secondary School Students.

Variables	N	\bar{X}	S.D	r-cal	r-critic	DF	Remark
Memory	200	3.156	0.7345				
Students' Academic Achievements.	200	3.129	0.7841	0.878	0.139	198	H₀ Rejected

Table 4, illustrates that the (PPMC) index obtained is positive at 'r' = 0.878. The significance which is less than predetermined $\alpha=0.01$ or even $\alpha = 0.05$. The null hypothesis was therefore rejected and the alternative hypothesis was accepted. This result indicated that there is a positive significant relationship between memory and academic achievement of senior secondary school students.

Discussion of Findings

Findings from hypothesis one shows that there is a significant impact of abstract thinking on the academic achievement of senior secondary school students. The results revealed that there is a positive significant impact of abstract thinking on academic achievement of senior secondary school students Adepoju, (2010) was in supports of the assertion that adolescence ages which falls between 13 and 19 years show rapid abstract thinking expansion in terms of cognitive skills and academic achievement in their studies. Nnodim (2011) also support that adolescent cognitive skills is a major determinants of their academic performance in school. Hence, the period of adolescence specific age must be learned, abstract thinking skills developed and developmental tasks accomplished. It is the period when young individuals experiment with new ideas, questions, existing rules and regulation and demand for freedom. Adrian (2013) noted that students become increasingly skilled at problem solving, intangible, definite, exact, and unidirectional terms-based on real and concrete experiences rather than on abstractions.

Findings in hypothesis two which revealed that there is a significant impact of logical reasoning on the academic achievement of senior secondary school students, . The results revealed that there is a positive significant impact of logical reasoning on the academic achievement of senior secondary school students, The findings is in support of Ramaswamy (2010) that the gave assertion that logical reasoning are intended to elicit and guide one's cognitive processes during learning. According to Patel (2016,) logical reasoning include critical thinking, intuition, deductive, inductive and additive

reasoning.. logical reasoning can be influenced by emotions, attitudes, personality traits, levels of aspirations, teaching methods adopted and material they are to learn. So, it is the effort of teachers to develop good logical reasoning skills among students. Such habits are the best equipment's with which they can live and lead their lives with confidence. If the habits are developed in the young age they will definitely cherish the joy of its fruits in the rest of their lives, because grown up children are already habituated to certain things. So they find it difficult it modify their habits and behavior Adetunji and Oladeji (2017) stated that logical reasoning are intended to elicit and guide students' cognitive processes during learning.

Findings from hypothesis three revealed that that there is a significant impact of students' memory on the academic achievement of senior secondary school students. This is support of Azeez, (2018), that opines that memorization is necessary School-age children also begin to evince **metamemory**, or the ability to comprehend the nature of memory and predict how well one will remember something. Memory helps children sense how much study time is needed for next week's math test. Learning is a complex process that develops through stages. It builds on innate abilities that are inherited and genetically coded at birth. Very few of us learn anywhere near our maximum capacity as established by our innate skills. This is why both study and practice rewards most people with growth in learning and achievement. The flow of our learning development progresses through the stages of sensory and motor skills, cognitive abilities, and finally results in the ability to assimilate formal instruction. A deficiency in any one stage can result in problems in the following dependent stages. A good memory can help develop the intelligent quotient of a child.

Conclusions

The study has shown that abstract thinking, logical reasoning and memory have Significant predicts academic achievement of *senior secondary school students' in 'Education District two of Lagos state*. Therefore, it is very important that cognitive skills of adolescents should be monitored in order for the society to produce adults that are responsible and can keep the flag flying in the nearest future. This is because with cognitive skills, adolescents will be able to explore alternatives, weigh pros and cons and make rational decisions in solving each problem or issue as it arises, which entails being able to establish productive interpersonal relationships with others.

Recommendations

Based on the findings of this study the following recommendations are made:

- 1) Parents needs to be educated on their attitudes towards their children, which have negative effect on the cognitive ability of the children right from conception to school age .They should be equally enlightened on what to do to help their children achieve maximally in academics.

- 2) The need to encourage students to develop a positive attitude and good study habits as this tends to improve their cognitive skills and academic achievement in school.
- 3) Teachers are to assist students to foster their abstract &critical thinking', logical reasoning and memory level in order to build a formidable cognitive skills and academic achievement in school.
- 4) Government should employ experts in the field of learning disabilities, who will be able to use their skills to rehabilitate students 'with learning disability in order to develop their cognitive skills
- 5) Students should prepare to improve their intelligence quotients through cognitive skills, as this will influence positive academic achievement in senior secondary school certificate examination (SSCE).
- 6) There is the need for teachers to have good understanding and empathy towards the students who are under achieving or have learning difficulty in order to cultivate in them good cognitive skills.
- 7) Government should provide in-service training and capacity building training to teachers on how to teach students who are having learning difficulties in our classroom in order to develop their cognitive skills.
- 8) The teacher/ facilitators should promote cognitive development in their students by confronting learners with alternatives and thought-provoking questions; asking open-ended questions; requiring learners to be accountable for class discussion
- 9) Teachers' should set questions that will tasks the cognitive skills of the leaners'. Questions items should go beyond testing abilities to recall only, emphasis should be on other aspects of cognitive skills of the learners' This will aid in the development of students 'cognition and in preparing them for challenges ahead of them.

References

- Abakporo, J.E (2015): Problem-solving in mathematics and the challenges for teachers (A case of some secondary school teachers in Lagos State). *A paper presented at the WAEC monthly seminar.*
- Aburime, F. E (2017): How manipulative affect the mathematics achievement of students in Nigeria schools. *Grambling: Grambling State University, Louisiana. Behavioral research press.*
- Achimugu, L.(2015). *The agonies of Nigerian teachers.* Ibadan. Heinemann Educational BooksPlc.
- Adedayo, O.A. (2016): Problems of teaching and learning mathematics in secondary school. *Paper presented at workshop on effective teaching of mathematics. LSPSSDC. Magodo. April 2016*

- Adepoju, S. E. (2010). Dynamising the Instructional System: An inquiry for effective childhood education in Nigeria. *Nigerian Journal Curriculum Studies*, 11(2), 239–245.
- Adetunji, A. & Oladeji, W. (2007). Making schools effective in Nigeria. *Journal of Education Research*, 5(1), 65–78.
- Adeyemi, T. O. (2011). A Comparative Study of Students' Academic Achievement in Public Examinations in Secondary Schools in Ondo and Ekiti States, Nigeria. *Ado-Ekiti: Current Research Journal of Economic Theory* 3(2): 36-42.
- Aremu, O. A. & Sokan, B. O. (2015). *A multi-causal evaluation of academic achievement of Nigerian learners: issues and implications for national development*. Department of Guidance and Counselling, University of Ibadan, Ibadan.
- Ayoade, J.A. A.(2012).). *Education for National redemption* .A paper presented at seventh annual endowment fund lecture organized by W.A.E.C. March 11.
- Azeez, J. (2008). *School Health Education to Equip Students Skills: A Resource Package for Curriculum Planners*. World Health Organization/Global Programme on Cognitive skills.
- Bakare,C.G.M.(1979).*Cumulative cognitive deficit syndrome in African Children*. An inaugural lecture delivered at the University of Ibadan on 17th April.
- Beyer, B. (2011). Issues Problems and Prospects of Science Curriculum Development in Developing country. *A Journal of the International Curriculum for Senior Secondary School Mathematics*. 2 (2) 145-151.
- Franzis, P. and Sandra, S. (2012). Chronotype, cognitive abilities and academic achievement: a metal-analytic investigation. *Journal of learning and individual differences*. 2 (1) 40-89.
- Kellaghan. (2014).*Public examination national and international assessments, and educational policy* <http://worldbank.org/afri/seia/conf1004/paperkellaghan.pdf>.
- Kohli, S.A. (2015). Parent-school involvement and school performance: Mediated pathways among socioeconomically comparable African American and Euro-American families. *Journal of Educational Psychology*. 96(2),74–83.
- Liu, M. (2013). Enhancing Learners Cognitive skills through Multimedia Design. *International Journal of Cognitive Skills Training*. 11 (1), 23-39.
- Madumere, S. (2012). *A guide to research methodology*. Lagos: Vitaman Educational Books and Publishers.
- Mcclelland, S. (2011). Implementation of school based continuous assessment (CA) in Tanzania ordinary secondary schools and its implications on the quality of education. *Developing Country Studies*, 4(6), 55-62.

- McCroskey, J. C. (2018). "Oral Communication Apprehension: A summary of Recent Theory and Research" *Human Communication Research* 4, 1977: 78-96.
- Moyosola, B. (2013). *Influence of Cognitive Achievement on Mathematics Student's Level of Achievement*. Ilorin: University of Ilorin,
- Nnodim, D. (2001). *Revamping Public Secondary Education*. Paper presented on the need for capacity building of school managers and teachers in Nigeria. Micom Ada, Osun State.
- Olaleye, O. A. (2011). *Gender difference in academic performance among secondary school student*. London: Institute of Education.
- Onipede, D. (2013). Human resource development and utilization in Nigerian private enterprises. In A.D. Yahaya,. & A. Akinyele, (Eds.). Human resource development and utilization, policies and issues. Badagry: Administration Staff College of Nigeria.
- Ormrod, G. (2010). New neurons in the dentate gyrus are involved in the expression of enhanced long-term memory following environmental enrichment. *European Journal of Neuroscience* 21:513–21.
- Oruwari, J.N. (2018). Effects of scaffolding and direct instruction on students' achievement and effective response to English language grammar. *Educational Research and Review*,1(1): 1-7
- Patel, C.E. (2016). *The quality of education in developing countries* New York: Harvard University Press.
- Ramaswamy, D. (2010). Innovation in teacher education. *Journal of Visual Impairment and Blindness Health Psychology*. 75 (3), 96-100.
- Rehmani,A.(2016).*Impact of public examination system on teaching and learning in Pakistan*. Retrieved on 26th 2014 January from <http://www:akuedu/akueb/pubexam.pdf>.
- Rychen, G. & Salganik, Y. (2003). "Strategies for teaching Critical thinking" . *British Journal of Psychology*. 5(1), 15-22.]
- Stiggins, R. (2013). Assessment for learning defined. Paper presented at assessment training institute, in consultation with the team representing the United State at the ETS/Assessment Training Institute's International Conference: Promoting Sound Assessment in Every Classroom, Portland.