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Assessing Students' Cognition in Mathematics via language reading-skills and Mnemonics

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Abstract

The study was carried out to see the application of rudiment of English as language in teaching mathematics to the secondary school students with the aim of minimizing the dismal academic performance of the students. As an empirical study it made use of 10 mathematics teachers, 10 English teachers and 250 students in ten public secondary schools from Ojo local government area of Lagos State. 4 research questions and hypotheses were raised with an instrument that made up of 40 multiple choice questions in mathematics though translated into English, after validation by senior colleague in English Education and secondary school mathematics teachers. It was subsequently trial tested on 15 selected students to establish the reliability coefficient 0.72. Findings showed that there was a significant relationship between students' readings and mathematical problems via English construct (df = 498, -t cal<-t val; P<0.05), there was a significant relationship between students' genders and reading knowledge (df = 248,-t cal<-t val; P<0.05), there was a significant relationship between students' genders and Mathematical problem via English construct (df = 248,-t cal<-t val; P<0.05) and there was a significant relationship between students' genders and Mathematical Equation (df = 248,-t cal<-t val; P<0.05). The implications of the findings were discussed and recommendation suggested towards ensuring better assessment of students' cognitive acceleration in mathematics education teaching and learning for mathematics teachers and students

Keywords: Assessment, Cognitive, Acceleration, Mathematics, Mnemonics

Introduction

Teaching is best described to have taken place when real learning has been actualized because teachers' effort in transforming the life of the learners via classroom activities is measured as the change in the behaviour of the learners. On the other hand, meaningful learning takes place whenever students are able to explore their immediate environment to acquire new knowledge, and at the same time apply it accordingly. Language plays an important role in the dissemination of knowledge across various species, human being inclusive, and in each discipline, Mathematics inclusive, has its own definite language as mode of passing instruction to the learners. Prominent languages in Mathematics are the symbols to represent information, signs to represent a definite operations within the groups of two or more terms, etc. It is the understanding of these languages that create most problems, though human factors inclusive, for the understanding of basic principle of dissemination of knowledge to the students; and not until this problem is addressed that nation perennial problems of students' dismal performance in the public examination like Mathematics could be nipped in bud.

In the teaching of Morphology of the lexical verb, scholars (Adejare & Adejare, 1998) described lexical verb to have complex morphological shapes via the use of letters to enrich the understanding of the concept in English as display below using '**x**' as the base and '**0**' to be neutral status of the concept especially in the course of developing the idea of regulars and irregularities in the following verbs: **SEE, EAT, HIT** and **PANT.**

	SEE	**EAT**	**HIT**	**PANT**
x+ 0;	see	eat	hit	pant……(1)
x+ s;	sees	eats	hits	pants …….(2)
x+ d;	saw	ate	hit	panted…….(3)
x+ g;	seeing	eating	hitting	panting……(4)
x+ n;	seen	eaten	hit	panted…….(5)

In applying the above stated rules in sentence construction, particularly for the first person singular scholars demonstrated line (2) via the use of '**play**' as example like

x + s; Okocah **plays** football well; He **plays**;

Kikelomo **plays;** She **plays**;

The spinster **runs** fast (though fast might not be tenable as she that runs is assumed to be fast).

Now to idea of learning and teaching from the base as demonstrated below:

x + 0 = play, wipe, eat, run, put.

x + s = plays, wipes, eats, runs, puts.

x + g = playing, wiping, eating, running, putting.

(Using the continuous structure especially in singular term)

x + d = played, wiped, ate, ran, put.

x + n = played, wiped, eaten, run, put.

From here one deduces the followings (according to the scholars)

x + 0 = play, wipe, eat, put.

1st person singular = I	I play football on Saturday
1st person plural = we	we play football on Saturday
2nd person singular = you	they play football on Saturday
3rd person singular = he/she/it	he/she/it plays football on Saturday
3rd person plural = they	they play football on Saturday

And the future tense structure: x + 0 They will play football on Saturday

The above analysis lies in the nature of regulars and irregularities of languages which the learners use in the daily communication and demonstrate the first person singular as shown in the combination of ('x+ s' where 'x' is play); and since it has been a conventional approach by which learners grasp the rudiments in English then it is imperative to adapt the same procedure for teaching mathematics as exemplified below:

(i)Positive statement: It is ***common*** to see snake in the bush

(ii)Negative statement: It is ***not*** common to see snake in the bush
(iii)Positive x Positive: It is ***common*** to see snake in the bush x It is ***common*** to see snake in the bush leads to tautology and so we have It is ***common*** to see snake in the bush
(iv)Negative x Positive: It is (***not common= uncommon***) to see snake in the bush and (***common***) in the bush leads to *rare* and so we have It is ***not common*** to see snake in the bush
(v)Positive x Negative: It is (***common***) to see snake in the bush and (***not common=uncommon***) in the bush leads to ***rare*** and so we have It is ***not common*** to see snake in the bush
(vii)Negative x Negative: It is (***not common***) to see snake in the bush x It is (***not common***) to see snake in the bush leads to It is (***not*** un***common***) to see snake in the bush and finally to: It is (***common***) to see snake in the bush.
Some concepts considered as waterloo for the students in Mathematics as corroborated by the 2006 WAEC Chief examiner's report, could be explored via a rudimentary language approaches mentioned. Some of the topics include General equation of a circle, Coordinate geometry, Probability laws, e.t.c just to mention a few. As that were not enough in those area mentioned Uwadiae(2009) reported that the results of the examination from 2006 and 2007 have shown significant dismal performances of students as about 42.54% of total 1,368,819 candidates that took the examination had five credit passes and above, and yet the situation is yet to improved considering the 2008 result as shown in table 1 below:

Table: 2008 WAEC Results in three subjects

Subjects	Total	Failure	Passes	Credit	Unavailable	% of Failure
English Language	1,276,025 (100%)	401,948 (31.50%)	407,052 (31.90%)	446,609 (35.00%	20,416 (1.60%)	829,416 (65.00%)
Mathematics	1,276,025 (100%)	220,625 (17.29%)	304,077 (23.83%)	304,077 (23.83%	447,247 (35.05%)	971,949 (76.17%)
Economics	1,215,245 (100%)	204,161 (16.80%)	397,021 (32.67%)	596,685 (49.10%	17,378 (1.43%)	618,560 (50.90%)

Source: Adapted WAEC Result
Table clearly indicated that there was close relationship in the dismal performance of Mathematics and English, and hence the need for closer integration of the two subjects by exploring the principle of teaching one in the other, and facilitate learning.

Conceptual framework on 'Reading Skills' relatively to Mathematics-English

Reading can be described as the translation of symbols or letters into words and sentences that communicate information and mean something to the reader. Objectives of reading include the understanding of the meaning of a written text, evaluate its significance, and use what he or she has read to enhance his or her knowledge, effectiveness, or pleasure. It involves the combination of cognitive and linguistic skills as corroborated by Ulrich Neisser but quoted in *Encarta Encyclopaedia Standard (2005)* as "externally guided thinking". As a reader reads a text, he or she interprets the content while being simultaneously guided and influenced by the author. To read, one needs to follow the conventions of writing used in the text, like English flows from left to right, Japanese from top to bottom, an inverted question mark precedes a question in Spanish which negates the English convention; and English writing which rests upon the line which negates Punjabi script that hangs from it. The difference between literate and non-literate groups as carried out by some scholars lies in the ways in which people conduct themselves, communicate, and think.
In reading, the process depends on how the eye and the brain perceive text. Readers thus bring to a text both their perceptual and conceptual abilities. The part of the eye called the fovea picks up the words being read in a few hundredths of a second, while the brain processes the information with the eye moved on to the next few words. In most cases, the eye is always a phrase or two ahead of what is registered in the brain, and simultaneously, the reader's eyes look backwards to check the meaning. The process is known as regression. An apprentice readers use this tactic but it often slows their fluency. On the other hand, average readers

progress to comprehend over 200 words per minute. In practice, readers who read a page tend to read the centre of the page, depending on context and peripheral vision, to deduce the first and last words on each line. Similarly, if one in five words is deleted, the reader can use the meaning of the text to guess which words might be missing.

Another factor is the nature and maturity of the reader's affective or emotional response, with reading success as influenced by his or her attitude, confidence, and motivation to read, as well as the desire to make sense of the text. Familiarity with genres or types of text and their forms and conventions affects the ability to understand text easily. Other crucial factor includes reader's knowledge of readings to appreciate the work of an author.

Meanwhile, text makes particular demands on the reader, who has to decode it using four main reading strategies namely syntactic, semantic, visual, and phonic or graph-phonic. Syntactic strategies depend on the reader's knowledge and familiarity of language structures and grammar. Semantic strategies involve the reader trying to make sense of a text, using a definite desire to understand and powers of prediction to guess what unfamiliar-looking words may be. When reader guesses wrongly, the sense of the sentence may be lost, but semantic strategies could be try out for possible words. Visual strategies are used by readers when visually perceived information such as layout features, still or moving images, illustrations, diagrams, particular typefaces, or the use of colour is used to suggest or support meaning. Finally, Phonic or graph-phonic strategies are used when readers understand the relationship between the sounds of a language and the symbols or letters that represent speech. Some graph-phonic relationships are consistent and straightforward, but many, such as "ough", in English, are unreliable. Dependence on graph-phonic strategies alone would be insufficient, and thus reader needs to use semantic and syntactic strategies as well to decide whether "bough" refers to the branch of a tree, the sound made by a ghost ("boo!"), something used to tie the hair ("bow"), or a sandy colour ("buff").

Successful reading involves combining these different types of knowledge, skills, and strategies at a pace fast enough to maintain fluency and accurately enough in relation to the author's ideas and intentions. This is one the reason why teachers have to take the bull by the horn as the understanding of Mathematics depends on students reading skill on one hand, and that Mathematics itself is written in English in general. History had it that teaching of reading among children started with the use of a small wooden paddle, called a Horn Book. In a bid to make reading less strenuous in the 20th century educators have attempted to refine the ways in which children are taught to read. One of the devising and comprehensive approaches was to identify words by putting letters together, called one-letter-one-sound method (OLOSM), whereby children read words letter-sound by letter-sound, often producing a word that bore no phonic relation to the word read aloud. Another way was Look and Say, which attempted to widen the young reader's sight of vocabulary with flashcards used to help children to recognize whole words. Other recently introduced approach included Initial Teaching Alphabet (ITA), which makes the early stages of reading more logically phonetic. Though the approach enjoyed a brief popularity with some teachers, and in most cases it has since been abandoned. In the 70s close links that exist between reading and writing, where teachers used word cards to help children to build up and read their own sentences, in sentence-maker holders was developed as breakthrough to the previous one abandoned.

The emerging new approach to reading was based upon psycholinguistic theories, which has the premise that reading is essentially a process of making sense, with readers bringing to texts their knowledge of the world, language, and texts.

All these made education stakeholders including teachers to look for texts that would be more meaningful to children than graded readers. In some cases, teachers used commercially produced or "trade books" instead of reading primers, which were considered as real Books Approach, which has been alleged of falling literacy standards. With these shortcomings, recent happenings in education have shown that many children prefer to watch television or

play computer games instead of reading. This invariably has necessitated the market for children's books supports in the publication of thousands of new titles each year and the development of tape, video, and CD-ROM versions of books. The effect of the development has led to integration of 'learning to read' at home and school in recent times. Children's reading skills and proper literacy demonstrates the influence of the home culture and this why increasing awareness of the value of pre-school literacy events should be emphasised by parents to point out text in the home and community environment, and encouraged to model reading behaviours, to develop their children's awareness of written language by reading books to them from an early age, to play word games, and to sing songs and rhymes.

This in turn lay foundation to 'learning to read' at School that aim at encouraging pupils to see reading as a valued activity, capable of enhancing the reader's pleasure, widening knowledge, and enabling child to function successfully in society, productively, and as an informed and responsible citizen. Schools aim to teach children to move from being inexperienced readers who require considerable support to readers who are able to read a wide variety of texts for different purposes. In this reading potentials depend on the texts available to readers. These are grouped under four categories of genre such as literary (stories, poems, plays), expository (guidebooks, newspapers), procedural (instruction manuals, recipe books), and reference (Encyclopaedias, Dictionaries). Contemporary readings have been widened by the existence of film and video, cartoons, comics, and advertisements, as well as access texts stored on and presented by computers, hypermedia packages, and the World Wide Web.

Though reading skill is anticipated in children especially at tender age yet many factors influence the proximity to readability level and **s**uch factors include legibility, syntactic structures, and the author's style. The length of sentence and vocabulary are other factors that are commonly used to measure a text's readability, but in most case they could be easily quantified than other, but they are equally important features. A simple rule of thumb explored by many teachers is that a text is too difficult when a reader cannot read three tenths or more of the words in an average sentence. It is generally accepted that a quarter of all reading in English comprises only 12 words: "a", "and", "but", "he", "I", "in", "it", "of", "that", "the", "to", and "was". The reader develops a sight vocabulary, using the visual memory, so that eventually many frequently used words are read automatically. A strong sight vocabulary greatly enhances reading flow that enhances reading development. Children's reading development is generally charted through four distinct stages—emergent literacy (inexperienced), apprenticeship (less experienced), independent (moderately experienced), and experienced. Children seem to achieve reading competence through participating in regular patterns of behaviour, which involve the essential skills, competencies, and strategies that are inherent in the four stages. Any attempts to define a series of steps, however, must be over-simplified, as learning to read does not always follow distinct stages. Successful teachers of reading generally employ a variety of approaches.

Independent readers are those who have acquired the technical mastery to decode text and who are able to develop strategies for cue-finding, selecting, using, and self-correcting. They are aware of their skills and be able to comprehend what is meant inferentially as well as literally, and may have started to cultivate personal taste in authors and to compare one book with another. Experienced readers possess what are known sometimes as higher-order reading skills. These include the ability to analyse and summarize essential meaning and information from texts; to detect inferred meaning; to assess and contrast evidence; to interrogate the text and the author's intention; to understand subtle nuances of meaning; and to begin to respond to style and metaphor. They begin to distinguish why the author has chosen a particular style or register, and can identify features associated with specific genres. Sophisticated information-retrieval strategies are used to discriminate between viewpoints and detect bias, irony, and pathos.

Skilled readers are considered to use four kinds of comprehension namely literal (reading and understanding exactly what is written down), inferential (reading between the lines), critical or appreciative (appreciating and understanding an author's use of parody, irony, humour and satire, metaphor, allusion and imagery); re-organizational (piecing together their understandings in order to make sense of a text and perhaps present the text in a different way). Meanwhile, proper assessment of reading skill of children enhances the adaptability in other subject like Mathematics. Teachers need to monitor children's reading development, but that effective assessment calls for more than standardized testing. The national curriculum requires teachers to assess and report their pupils' progress at ages 7 and 11. Children are assigned a level of reading ability according to their performance in national Standard Assessment Tasks and against attainment-level descriptions. Assessment in the long run shows the reading difficulty and failure, which in the long run affect the children's success in other subject. A case study was the 2008 West Africa School Certificate Examination as presented by Uwadiae(2009).

Statement of the problem

The study was carried out to see the application of rudiment of English as language in teaching mathematics to the secondary school students with the aim of minimizing the dismal academic performance of the students. The study specifically sought answers to the under-listed research questions and hypotheses in order to nip in the bud the perennial academic syndrome in mathematics**.**

Research Questions

RQ_1**:** What is the relationship that exists between students' readings and the mathematical problems via English construct?

RQ_2**:** What is the relationship that exists between students' knowledge of mathematical problems via English construct and Mathematical Equation?

RQ_3**:** What is the relationship that exists between students' readings and the mathematical problems via Equation?

RQ_4**:** What relationship exists between students' genders and (i) reading knowledge, (ii) Mathematical problem via English construct, (iii) Mathematical Equation?

Meanwhile the under-listed hypotheses were raised to establish the extent of generalization of the findings in the study

Hypotheses

Ho_1**:** There is no significant relationship between students' readings and mathematical problems via English construct

Ho_2**:** There is no significant relationship between students' knowledge of mathematical problems via English construct and Mathematical Equation

Ho_3**:** There is no significant relationship between students' readings and mathematical problems via Equation

Ho_4**:** There is no significant relationship between students' genders and (i) reading knowledge, (ii) Mathematical problem via English construct, (iii) Mathematical Equation.

Methods

Research Design

As an empirical study which tried to find out the possibility of enhancement of teaching and learning mathematics through the rule of readings in the subject and as obtained in the construct of English sentence, the knowledge and academic performance of students were used to authenticate the close relationship of the two subjects as they are interrelated.

Population
As a practical study in approach, the population involved the mathematics teachers and the students of the senior secondary school in Ojo Local Government Area of Lagos State. These students were mainly the SS II students that have been taught and understand the use of English Language on one hand, and that they understand why they should pass the subject on the other hand.

Sample and Sampling procedures
The sample to the study included 20 mathematics and English teachers with 250 students in ten public secondary schools from Ojo local government area of Lagos State. In each school where one mathematics and English teachers were selected a sample of twenty five students were selected via the use of the even positioned students in the class register as provided by the cooperating teachers and principals of the affected schools.

Instrument
Though the instrument contained 40 multiple choice questions in mathematics that were translated into English so that the extent of understanding the English could not be ruled out for the proper understanding of the questions, yet the instrument features ample opportunity for the students to relate the involved concept to a real life situation and language use. For instance one of the question reads' I am thinking of a number and if 4 is added to the original number the answer is the same as two times of the square of the original number, then the number is'. From the question one could see implicitly the use of additive operation as 'I + am thinking of a number + if 4 is + to the original the number……' The analysis of the test items in relation to English language demonstrated the level of demystifies the problem of solving mathematical words problem, and it could be accomplished via the practicum guide of the teachers concerned.

Validation of Instrument
As result of the relationship of the study to the use of English language the 40 multiple choice questions constructed were mainly in words problems that were expected of the students' translation to mathematical equation. This was achieved through the assistance of senior colleague in English Education and secondary school mathematics teachers. The constructed instrument was given to another teacher in language to see that the level of grammar were not too high or low for the set of students meant to be used. The corrected version was later administered to some students who were of the same features to the ones in the main study to allow for further removal of any ambiguities. The exercises took two weeks interval of administration, and the score obtained at the first and second administration noted.

Reliability of Instrument
The developed instrument was trial tested on 15 selected students outside the main study over a period of one fortnight and their scores were computed by the use of Kuder-Richardson 21 formula to establish the reliability coefficient, which was 0.72.

Procedures for the administration of instrument
Before the administration of the instrument the students' knowledge in English was sought-for through their performance in the last term examination conducted in the affected school. This was to ensure that the students used were not selected based on the fact that they were too good or poor in English as basis of selection, but to ensure that their English knowledge could be transferred in solving mathematical problems. The instrument was administered to the students by the school mathematics teacher, who at the same time did the collection after completion.

Procedure for data collection

Data collection was strictly based on the manner of the administration as reported by the mathematics teacher employed in the study, but the scoring was carried out by some postgraduate students whom the researcher had provided with the solution to the questions. The score of each student in the mathematics achievement test was juxtaposition with score obtained in the English examination score of their school and was standardized for easy comparability.

Data scoring and analyses

The score of each student in the administered achievement test and their English examination score was descriptively scored via the use of mean and standard deviation, correlation and t-test at 0.05 significant levels.

Findings

RQ_1**:** What is the relationship that exists between students' readings and Mathematical problems via English construct?

RQ_2**:** What is the relationship that exists between students' readings and Mathematics-Equation?

RQ_3**:** What is the relationship that exists between students' Mathematical problems via English construct and Mathematics-equation?

Table 1: Relationship between students' knowledge of readings mathematical problems via English construct

Pair of variables	Count	Mean	Standard-Deviatio	Correlation	Remarks
Readings	250	37.98	18.98	-	-
Mathematics-English (ME_1)	250	45.18	13.95	-	-
Mathematics-Equation (ME_2)	250	42.32	78.13	-	-
Readings & Mathematics-Englis	-	-	-	0.966	Strong
Readings & Mathematics-Equation	-	-	-	0.436	Weak
Mathematics-English & -Equatio	-	-	-	0.419	Weak

With 250 students used for the study table 1 showed the level of attainable of research questions (1-3) where it is discovered that the reading mean and deviation scores of students were 37.98 and 18.98 respectively, based on assessment score of an expert in the field when comprehension passage with questions was administered. Using this as test blue print set of questions in Mathematics was written in English for students to solve, and the attained mean and deviation scores were 45.18 and 13.95 respectively. The scores that indicate an improvement of understanding the passage in relation to their reading's scores; but when the same Mathematics-English (Words problem) were transformed to Equation throughout it was found that their mean and deviation scores were 42.32 and 78.13 respectively. What this translates to is that students might have the ability to understand sentence and get their answer appropriately but when these are given in an equation forms then there seem to be less understanding thereby affect their dexterity in their performance. This is however shown in the relationship between the students' reading scores and Mathematics-English which was found to be strong at value 0.966. By implication the better the students are good in their reading skills the more they are able to transfer the knowledge to solving Mathematics-English, or otherwise. Secondly, the finding revealed a weak relationship between students' reading skills and Mathematics-Equation at value of 0.436, which showed that students found no relationship between what they had read and the Mathematics cum its symbolic equations, and hence the relationship not found to be strong. Similarly, the study showed a weak relationship between students' scores in Mathematics-English and –Equation with value of 0.419. What seemed to be interesting here is that the set of questions in an equations form were those translated into

English for these students to solve, only for them not to see the relationship that exist distinctively and be able to excel.

RQ_4**:** What relationship exists between students' genders and (i) Reading knowledge, (ii) Mathematical problem via English construct, (iii) Mathematical Equation?

Table 2: Relationship between students' genders and other Variables

Variables	Gender	Count	Mean	Deviation	Correlation	Remarks
Readings	Male	150	39.56	19.07	-0.126	Negative
	Female	100	36.99	18.24		
Mathematics-English (ME_1)	Male	150	46.45	13.89	-0.136	Negative
	Female	100	44.35	13.51		
Mathematics-Equation (ME_2)	Male	150	40.27	29.49	-0.007	Negative
	Female	100	51.73	135.33		

Table 2 described the effect of gender across the variables in the study where it was found that there was negative correlation of male' s knowledge of readings compared to their female counterpart with value of -0.126. Also, the study confirmed a negative value relationship of knowledge acquaintance between the male and female in the Mathematics-Equation with value of -0.136. Furthermore, the same trend of relationship was found in the knowledge dexterity of male and female when considering their performances in the Mathematics-Equation with value of -0.007. Although the correlations were close when considering the genders of Readings and Mathematics-English but wit varying correlation in the Mathematics-Equations that seemed to have slight edge over the preceding ones, and by interpretation there might be relationship between genders' knowledge in the Mathematics-Equation as female seemed to be better in their mean score than their female counterpart.

Hypotheses

Ho_1**:** There is no significant relationship between students' readings and mathematical problems via English construct

Ho_2**:** There is no significant relationship between students' knowledge of mathematical problems via English construct and Mathematical Equation

Ho_3**:** There is no significant relationship between students' readings and mathematical problems via Equation

Table 3: t-test of relationship between students' knowledge of readings and other constructs

Pair of variabl	Count	Mean	Deviation	df	t-calculated	t-value	Significant
Readings (R)	250	37.98	18.98	249	-17.274	±1.960	P<0.05*
Mathematics-English(ME_1)	250	45.18	13.95	249			
(R) & (ME_1)	500	-	-	498			
Mathematics-English(ME_1)	250	45.18	13.95	249	0.616		P>0.05
Mathematics-Equation(ME_2)	250	42.32	78.13	249			
(ME_1) &(ME_2)	500	-	-	498			
Readings(R)	250	37.98	18.98	249	-0.954		P>0.05
Mathematics-Equation(ME_2)	250	42.32	78.13	249			
(R) &(ME_2)	500	-	-	498			

* Significant

On the level of significance of students' performances in the readings and other variables of the study as contained in table 3 and the three hypotheses raised it was found that there was a significant relationship between students' readings and mathematical problems via English

construct (df = 498, -t cal<-t val; P<0.05), no significant relationship between students' knowledge of mathematical problems via English construct and Mathematical Equation (df = 498, t cal<t val; P>0.05); and no significant relationship between students' readings and mathematical problems via Equation (df = 498, -t cal>-t val; P>0.05). The interpretation of this finding lays in the fact that knowledge of readings play a prominent position in the understanding of any concept which any subject, mathematics inclusive, may want to pass across to the learners. Other transformation of information depends largely to the level at which students assimilate, digest and be able to transfer to other learning situation.

Ho_4**:** There is no significant relationship between students' genders and (i) reading knowledge, (ii) Mathematical problem via English construct, (iii) Mathematical Equation

Table 4: t-test of students' genders and other Variables

Variables	Gender	Count	Mean	Deviation	df	t-calculated	t-value	Significant
Readings	Male	150	39.56	19.07	149	-30.243	±1.960	P<0.05*
	Female	100	36.99	18.24	99			
Mathematic	Male	150	46.45	13.89	149	-49.142		P<0.05*
English	Female	100	44.35	13.51	99			
Mathematic	Male	150	40.27	29.49	149	-8.260		P<0.05*
Equation	Female	100	51.73	135.33	99			

* Significant

Table 4 described the effect of genders across the variables of interest in the study where it was found that there was a significant relationship between students' genders and reading knowledge (df = 248,-t cal<-t val; P<0.05), there was a significant relationship between students' genders and Mathematical problem via English construct (df = 248,-t cal<-t val; P<0.05), there was a significant relationship between students' genders and Mathematical Equation (df = 248,-t cal<-t val; P<0.05). These findings demonstrated clear pictures of effect of genders on the reading skills, Mathematics-English and Mathematics-Equation which mere correlation could not clarify the extent of disparity or otherwise in table 2 save the negative reports that were indicated. This implies that though the academic performances of the two (male and female) seemed to be close to each other except in Mathematics Equation that was quite explicit, yet performance of male were remarkable than their female counterpart in readings and Mathematics-English but reverse was that of Mathematics-Equation.

Discussions

Study has demonstrated that the issue in Mathematics is no longer the teaching methods to the students instead the strategies to employ that could demystify the problem for the students, and comprehend. It has demonstrated that knowing different methods of teaching the subject is not the only panacea to the lingering dismal performance of students especially in an heterogeneous situation where a definite language could be used as substitute to the teaching of the subject other than English Language, but it called for the use of basic principle by which English itself was learnt by the students to be used in the learning of Mathematics. A situation where a student found it exciting to read voluminous pages of pacesetter and she could narrate the whole story read at the end means something is wrong when given such student to solve two lines equation to reach a stumbling block. One could observed that different symbols introduced in the two lines equations could be responsible for non-understanding of the given equation but if such equation was translated to words then a sigh of relieve is achieved. Apart from the above it was also acknowledged that many students that had one phobia or the other could be minimized when these equations and symbols that were bound in Mathematics, were translated into English in which the students had been properly taught. What this translates to was that students might have the ability to understand sentence and get their answer appropriately but when these were given in an equation forms then there seemed to be less understanding thereby affected their dexterity in their performance.

Furthermore, it should be pointed out most teaching in mathematics that patterned towards traditional process of 'Do what you see the teacher write without questioning' might not achieve the laudable goal of Mathematics for all in the 21st century, as those knowledge gained via equation without corresponding language acquaintance would have been meaningless and not more than the four wall of classroom; when in real sense of it they should be the knowledge gained to solve the problems in a larger society. What this means is that instead of the school to serve as avenue of providing solution to the problems in the society in terms of knowledge dispensation yet it compound and multiply such problems. Hence the essence of its establishment is defeated. Moreover, study has served as pointer to the public examination bodies on the need to care for less mathematical inclined students on the need to set considerable number of questions via the English construct so that total alienation of interest of these groups could be well taken care. A situation whereby all the set questions are symbols and equations dominated in many cases spell a doom of success for those students of liberal arts inclination. Since Mathematics is universal which every student must register for and at the same time pass it at the secondary school level, then there is a need for concerted efforts on all and sundry to take the weakness of others especially when language could be used to alleviate some of these problems in Mathematics.

Implications

Language plays a prominent role in knowledge dissemination, and where teaching takes place at the detriment of students' understanding is synonymous squandering of scarce and limited resources as the case of Mathematics is concerned relatively to the nation curriculum**.** This means that mathematics could be students' friendly if all the stakeholders entrusted with its teaching blend their strategies via the rudiment of the language of understanding of the students to disseminate knowledge in it. Supporting this claim was the study conducted by Olaoye (2005) in the use of Bilingual language to the teaching of mathematics to the students, and that was feasible when all the students understand the same language otherwise it might not be feasible in an heterogeneous classrooms in which nation like Nigeria found herself. Hence the need to develop to optimal levels the reading skills and adaptation of equation-like subject to fit into.

Conclusions

Nation might witness unprecedented ghost class if the current domination of mathematics with symbols and equation are not juxtaposition with language exploration, and by extension the mathematics teachers should not be surprised into wider market to look for sets of clients to disseminate knowledge to when majority of students that would have patronized the subject willingly, have been forced out to develop hatred towards the subject. This is to say that if mathematics is not that compulsory for the students to learn due to its role in the ages of science and technology then means of livelihood of the teachers in a state of threat. This is why an urgent needs to diversify the strategies in the teaching of the subject towards the realization of the goal of the nation in terms of education manpower.

Recommendations

At this juncture it should be documented that mathematics should be taken as a tool and not weapon of mass destruction for the coming generations especially when teaching takes place. This could be achieved when those who actually studied both the content and pedagogy of the subject are given preference to teach the students in our classrooms. Apart from that an intra-seminar activities could be organized among the teachers handling the subject on the need to relate the concept being taught to the real live situation and meaningful activities of the students via careful selected languages to bring out meaning to the used symbols and equations.

Until every stakeholder realizes that Mathematics itself is life then the lingering and associated problems of dismal performance could be solved**.**

References

Adejare, R.A. & Adejare, O. (1998) *Tertiary English Grammar* Second Impression, Difamo Books, Lagos

Chief Examiner's Report (2006), West African Examination Council, Yaba, Lagos

Olaoye, A.A. (2005) 'Relative effect of Bilingual Instructional modes (Yoruba-English) on the perceived difficult topics in Mathematics at the SSS level
Journal of Research in Educational Management, Lagos State University, Ojo, Vol 1, No. 2, 144

Uwadiae, Iyi (2009) '77% of WAEC candidates failed to get credit passes in Mathematics-FG sets up panel to debate report' National News in *The Punch Newspaper* of Monday,March2, pg 10

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