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Readability Level of Recommended Physics Textbooks and Students' Academic Performance in Senior Secondary Schools

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Abstract: This study investigated the readability level of recommended Physics text books and students' academic performance in Senior Secondary Schools in South west Nigeria. It was designed to find out how readability of Physics textbooks could enhance better academic performance of students in Senior Secondary Schools. The study made use of survey type of descriptive research design. The sample consisted of 181 Senior Secondary School students who were selected from 15 Senior Secondary Schools in five states of South west Nigeria. Multistage random sampling technique was used in selecting the schools from both urban and rural centres of chosen states. Two research instruments were used – Cloze test and students' achievement test. The reliability coefficient of 0.69 was obtained with the use of Kuder-Richardson formula KR21. The instruments were administered and data collected were analyzed using Pearson Product Moment Correlation and t-test statistics. The results revealed that readability of recommended Physics textbooks had significant influence on students' academic performance. Location (urban or rural) has significant influence on readability of Physics textbooks. No significant difference was found between the academic performance of male and female students who used the recommended Physics textbooks. Based on the findings of the study, it was recommended that teachers should be guided with readability level of students and content coverage in the selection and recommendation of Physics textbooks.

Keywords: Readability, Recommended textbooks, Cloze test, students' academic performance.

1. INTRODUCTION

The objectives of secondary school education are well stated in the National Policy on Education (FGN, 2007) as to prepare students for a useful living in a science and technological oriented society and to equip students with the skills necessary for coping with the demands of higher education. In the pursuit of these two objectives, the policy prescribed science as a core subject in the secondary schools. Since early 1970s, various arms of government (Executive, Judiciary and Legislative), as well as the Science Teachers Association of Nigeria (STAN), the Comparative Education Study and Adaptation Centre (CESAC) now the Nigerian Educational Research and Development Council (NERDC), have embarked on a number of projects and strategies to facilitate and improve the teaching and learning of Science subjects in secondary schools.

Many states in Nigeria have established special science centres or schools in order to popularize science and make its teaching and learning effective. They have made bulk purchase of science equipment and textbooks which they have distributed same to secondary schools to enhance science teaching and learning.

The Science Teachers Association of Nigeria (STAN), some Universities and State Governments have not only developed innovative science curricula but have also mounted conferences, workshops and seminars aimed at facilitating the teaching and learning of science. In spite of all these laudable efforts, there are empirically-based evidences to show that students have difficulty in reading and mastering the concepts and principles outlined in the National Science Core Curricula prescribed for the Senior Secondary Schools (Aghenta, 1992 cited in Afolabi, 2009)

The researcher observed that the difficulty in the readability of science textbooks contribute substantially to many of our educational problems generally encountered by students and particularly their inability to master some of the contents of science syllabus. Difficulties experienced in reading and understanding of science textbooks by students may also be due to abstractness of some concepts in science.

Reading serves a wide range of purposes in the lives of different categories of people who are literate. Reading is the basis for learning different subjects in schools. Whatever, the aspect of life one is considering, one discovers that the ability to read efficiently enhances individual ability to function in an effective manner (Perekeme, 2012). Readability, according to Ziriki (2009) is defined as reading ease, especially as it results from a writing style. It is also said to be the reading difficulty level of a textbook in relation to the class for which it is meant. The readability level of a book therefore, is one of the factors that determine the understanding of a subject by the students. Readability, according to Frank (2006), can be used as a rough estimate for placing written material in appropriate grade level.

Researchers over the years have blamed poor performance of science students in secondary schools on inadequate science facilities, poor methods of teaching and lack of motivation for students (Duyilemi, 2004). The issue of readability of science textbooks as they influence the performance of students in science had received very little attention. The fundamental question on 'what makes a book readable for a particular set of readers' needs to be addressed. This question is very germane when one recognizes the strong relationship between understanding of science materials and the reading level of the material (Fletcher, 1975).

The importance of reading texts in science subjects has been widely acknowledged. For example Tobrise (2005) believed that reading science textbook is an important activity in science academic endeavour. Teachers and parents should be more concerned with the amount of learning a student is able to achieve when reading a science textbook. It could be mentioned therefore that what a reader is able to comprehend while reading a particular science text depends on some variables. These include: reader factors and text factors. Among the text factors are the prints, the familiarity of the subject-matter, and familiarity of the sentence types, vocabularies, diction, and illustrations and so on. Reader factors are language competence, background, and prior knowledge, purpose for reading, interest and meta-cognition.

Students stand the chance of benefiting less from a text, which contains so many unfamiliar sentence structures and concepts thereby resulting in slow pace of reading such a textbook and reading may therefore be meaningless. Textbook is a very important material in the teaching – learning process. It has the attributes of conveying permanent information unlike other learning materials, which could

be transient. It combines durability with portability and can be used where there is no electricity or any other source of power. It serves as a basic source of knowledge and formal learning (Afolabi, 2009)

To stress the importance of textbook to learning, Aggarwal (2001) citing a UNESCO (1973) publication observed that; classroom teaching depends heavily on the textbook. In the situation, in which the teacher is not well qualified, the textbook is a guide and a support to teaching. For the learner, the textbook serves as a basis for systematic learning, for reinforcement, review and further study. He noted further that “nothing has ever replaced the printed word as the key element in educational process and as a result textbooks are central to schooling at all levels”. In spite of its usefulness to teaching-learning process, research had shown inadequate supply of textbook and inadequacies in the area of content of the few available ones.

On the students’ academic performances in Nigeria, differential scholastic achievement of students in Nigeria has been and is still a source of concern and research interest to educators, government and parents. This is so because of the great importance that education has on the National development of the country. All over the country, there is a consensus of opinion about the fallen standard of education in Nigeria (Adebule, 2004). Parents and government are in total agreement that their huge investment on education is not yielding the desired dividend. Teachers also complain of students’ low performance at both internal and external examination. The annual releases of Senior Secondary Certificate Examination results (SSCE) conducted by West African Examination Council (WAEC) justified the problematic nature and generalization of poor secondary school students’ performance in science subjects (Adebule, 2004).

Some researchers like Douville and Pugalee (2003) admitted that reading science materials is associated with difficulties and a complex task in comprehension and assimilation. Such difficulties in reading science textbook and complexity of presentation in textbook may serve as constraints to students while using the textbooks. Science textual materials use in schools must be with clearly stated behavioural objectives with relevant and clear example followed by exercises at graded levels; simplified language that is free from any ambiguity; contents that are relevant and adequate with the demands of the science curriculum and format as well as general presentation should be attractive and patterned to motivate the students.

In view of the fore-going, the central role of texts in science instruction and a broad-based concern for the general quality of texts have led to increased attention towards textbook improvement. The researcher believed that the extent to which a person reads and what he reads, undoubtedly are determined by many factors. Some pertain to the reader (his proficiency in reading, his motives for reading, and his reading interests and tastes), others relate to the reading materials – to their accessibility and to two sets of factors for the purpose of getting the right book into the hands of the right reader should go far towards extending and improving reading habits.

However, not much research has been done on reading of science textbooks as it affects students’ performance in senior secondary schools. Several authors maintain that writing sustains the development of reasoning, communication and connections (Connolly and Vilardi, 1989; Countryman, 1992). Closely related to this is the view of Morgan (1998) that “although there have been considerable descriptions of the use of writing in science, there has been relatively little analysis of the texts themselves”. In agreeing with this, Pugalee (2001) opined that if writing is to become an integral part of the science curriculum, the scarcity of research must be addressed. Ogundele (2003) was of the opinion that research in the areas of readability of science textbook as it affects students’ performances is required in secondary schools.

From the above background information, it was considered necessary to embark on a research that will investigate the readability level of physics textbooks and students’ academic performance in senior secondary schools level of education.

2. STATEMENT OF THE PROBLEM

Educators over the years are concerned about the need to improve students’ academic performance generally and particularly in physics. A lot of researches have been carried out on inadequate science facilities, poor methods of teaching and poor students’ motivation as factors affecting their academic performance. Little attention has been paid to the issue of the physics

textbooks as they influence the performance of students. The researcher is of the view that the poor performance of students in physics may be due to the influence of outdated physics textbooks that do not cover all aspects of syllabus, books written in difficult languages, books that are directed to the native speakers of English language and not non-native speakers but used by non-native speakers; books that have foreign illustrations and examples. This study therefore, shall examine the readability of physics textbooks and students' performance in Senior Secondary Schools in Nigeria and in the process examine the following general questions:

1. What are the readability levels of physics textbooks in use in the schools of study using the Fry readability formula?
2. What will be the general performance of physics students from rural and urban areas that use the selected textbooks?
3. Would gender have effects on the readability of physics textbooks
4. What is the readability level of students on their academic performance in Physics using cloze procedure?

3. PURPOSE OF THE STUDY

The study investigated the readability level of physics textbooks and students' performance in Senior Secondary Schools. The study therefore, was specifically designed to find out the mean performance of students using the selected physics textbooks in the schools of study. The study also compared the performance of the students using the recommended physics textbooks in the various schools and found out the difficulty or understanding levels of each book.

4. RESEARCH QUESTIONS

The following research questions were raised to guide and direct the study: Is there any difference between the readability levels of students who use physics textbooks and their academic performance in Senior Secondary Schools? Is there any difference between the readability levels of students in Rural and Urban areas who use the recommended physics textbooks? Is there any difference between male and female student' performance in the selected physics textbooks? Is there any difference between the academic performance of students who use Physics textbook A and those who use Physics textbook B?

5. RESEARCH HYPOTHESES

The following null hypotheses were generated on the basis of the above research questions.

- H₀₁: Readability of Physics textbooks has no significant influence on students' performance in Physics.
- H₀₂: Location has no significant influence on readability of Physics textbooks
- H₀₃: There is no significant difference between the performance of male and female students who use the selected physics textbooks.
- H₀₄: There is no significant difference between the performance of students who use Physics textbook A and those who use Physics textbook B.

6. SIGNIFICANCE OF THE STUDY

The study would serve as a reliable assessment on which the senior secondary school physics curriculum improvement could be made in the areas of objectives, content, learners' activities and evaluation. It is also hoped that the findings of this study would pose challenges to authors and publishers on the need to re-assess their publications and make readable texts available to students in their subsequent editions.

The findings of the study could also steer up new authors and publishers of new textbooks in physics, having pointed out the weaknesses and strengths of the already existing ones.

It would serve as a guide to the curriculum planners and the Ministry of Education in the recommendation and selection of appropriate physics textbooks for the use of senior secondary school students.

Finally, the findings of the study would serve as a diagnostic measure to the Science Teachers' Association of Nigeria (STAN) in selecting readable physics textbooks that would meet the needs of students and boost their performance in physics.

7. RESEARCH METHOD

The design was a descriptive research design of the survey type. This design was used because of the largeness of the population. The researcher chose the sample to be representative of the entire population. The researcher described the situation and occurrences just as it occurred in the population. The variables were found in their natural phenomena.

The population consisted of all Senior Secondary School three students within south western States of Nigeria. This includes schools that have been graduating students for at least five years and they are using the selected physics textbooks. Most of the schools used were co-educational schools in both urban and rural locations.

The sample of this study consisted of 181 Senior Secondary Class three students selected from 15 selected senior secondary schools in five states from the South western zone of Nigeria. Multistage random sampling technique was used in this research.

8. RESEARCH INSTRUMENTS

Two instruments were used for the study. These are: Cloze tests and Achievement Test which were used to determine the readability level of the students.

The Cloze Test is a standardized test adopted from Taylor (1953) and it was made up of a passage where a missing word was indicated by a blank space. The deleted word was designed from the passages of the selected science textbooks to determine the readability of the textbooks. The deleted words were every fifth word which intended to measure simplicity and suitability of the text material difficulty.

The cloze test contained problems on the senior secondary school physics syllabus which were treated by the recommended science textbooks. The items included concepts and other relevant topics treated in the selected textbooks. The cloze tests required the students to fill in the gaps with appropriate words which were taken from the textbooks they have read. From each textbook, 50 items or words were supplied.

9. ACHIEVEMENT TEST

The researcher adopted Physics Achievement Test (PAT), adapted from previously standardized WAEC physics questions. This Physics Achievement Test (PAT) consisted of 25 items based on both cognitive and verbal domains of the learning materials. The PAT was made up of two sections. Section A contained the student's personal data while section B contained 25 multiple choice objective items; students were to circle the appropriate options of their choices.

The reliability coefficient of 0.69 was obtained with the use of Kuder-Richardson formula KR21. The instruments were administered and data collected were analyzed using Pearson Product Moment Correlation and t-test statistics.

10. DATA ANALYSIS

The instruments were administered by the researcher personally and data collected were analyzed using Pearson Moment Correlation and t-test statistics. The four hypotheses were tested at 0.05 level of significance.

11. RESULTS AND DISCUSSION

General Question number four was considered first before testing the four hypotheses

What is the readability level of students on their academic performance in Physics using cloze procedure?

To answer this question, the results of the cloze test given to students in Physics were converted to percentage and grouped into categories according to Rye (1983) to know their comprehension or understanding levels.

This is shown in Table 1.

Table 1: Categorization of Physics Students into Levels according to their scores in cloze test.

| Physics Textbook A | | | |
|--------------------|----|------|---------------------|
| Cloze Test Score | N | % | Reading Level |
| 0- 40 | 43 | 50.6 | Frustration level |
| 41 – 60 | 35 | 41.2 | Instructional level |
| 61 – 100 | 07 | 8.2 | Independent level |

| Physics Textbook B | | | |
|--------------------|----|------|---------------------|
| Cloze Test Score | N | % | Reading Level |
| 0- 40 | 47 | 49.7 | Frustration level |
| 41 – 60 | 37 | 38.5 | Instructional level |
| 61 – 100 | 12 | 12.5 | Independent level |

| Combined the Two Physics Textbooks - Total | | | |
|--|-----------------|------------|---------------------|
| Cloze Test Score | No. of Students | Percentage | Reading Level |
| 0 – 40 | 90 | 49.7 | Frustration Level |
| 41 – 60 | 72 | 39.8 | Instructional Level |
| 61 – 100 | 19 | 10.5 | Independent level |
| Total | 181 | 100 | |

Table 1: shows that out of 181 students that used the two physics textbooks, 90 students read at Frustration level, 72 students at instructional level while 19 students read at independent level.

11.1 Texting of the Hypotheses

The null hypotheses were tested using Pearson Product Moment Correlation analysis and t-test statistics at 0.05 level of significance.

11.2 Hypothesis 1

H₀₁: Readability of Physics textbooks have no significant influence on students’ academic performance in Physics.

In order to test the hypothesis, students’ scores on readability in Physics and academic achievement in Physics were obtained and subjected to analysis using Pearson Product Moment Correlation

Statistics at 0.05 level of significance. The result is presented in Table 2.

Table 2: Pearson Product Moment Correlation Analysis of Students’ Readability and Academic Performance in Physics.

Table 2 shows that r_{cal} (0.49) is greater than r_{tab} . (0.20) at 0.05 level of significance. The null hypothesis is rejected. Therefore readability of Physics textbooks has significant influence on students’ academic performance in Physics.

11.3 Hypothesis 2

H₀₂: Location has no significant influence on readability of Physics textbooks

Students’ scores on readability of Physics textbooks in rural and urban locations were compared and subjected to statistical analysis involving t-test statistics at 0.05 level of significance. The result is shown in Table 3.

Table 3: t-test Comparison of Influence of Location on Readability of Physics Textbooks

| Group | N | Mean | S.D. | df | t_{cal} | t_{tab} |
|-------|----|-------|-------|----|-----------|-----------|
| Urban | 89 | 37.69 | 14.57 | | | |
| Rural | 92 | 15.90 | 7.43 | | | |

Table 3 shows that t_{cal} (2.95) is greater than t_{table} (1.96) at 0.05 level of significance. The null

hypothesis is therefore rejected. It implies that location has significant influence on readability of Physics textbooks.

11.4 Hypothesis 3

H₀₃: There is no significant difference between the performance of male and female students who use the recommended physics textbooks.

To test the hypothesis, the mean scores of male and female students' academic performance in physics were compared using t –test statistics at 0.05 level of significance. The result is presented in Table 4.

Table 4: t-test Comparison of the Influence of Gender on Students Academic Performance in Physics.

| Science Subject | Gender Group | N | Mean | S.D | df | t _{cal.} | t _{tab.} |
|-----------------|--------------|----|-------|------|-----|-------------------|-------------------|
| Physics | Male | 96 | 16.56 | 7.21 | 179 | 1.33 | 1.96 |
| | Female | 85 | 15.12 | 7.65 | | | |

Table 4 shows that t cal 1.33 is lesser than t tab 1.96 at 0.05 level of significance. The null hypothesis is accepted. It implies that gender will not significantly influence the performance of students in Physics. Therefore, there is no significant difference between the performance of male and female students who used the recommended physics textbooks

H₀₄: There is no significant difference between the performance of students who use Physics textbook A and those who Physics textbookB .

To test the hypothesis, the mean performance scores of students who used Physics textbook A and Physics textbook B were compared using t-test statistics at 0.05 level of significance. The result is presented in table 5.

Table 5: t-test Comparison of Students Performance in Physics textbook A and Physics textbook B

| Variable | N | Mean | S.D | Df | t _{cal.} | t _{tab.} |
|--------------------|-----|-------|-------|-----|-------------------|-------------------|
| Physics Textbook A | 104 | 24.49 | 18.39 | 198 | 3.75 | 1.96 |
| Physics Textbook B | 96 | 16.55 | 9.98 | | | |

From table 5, the result showed that the mean performance scores of students who used Physics textbook A (24.49) is greater than the mean performance scores of students who used Physics textbooks B (16.55) . At p<0.05 level of significance, t-calculated is 3.75, df is 198 and t-table is 1.96. The result shows that there is a significant difference between the performance of students who use Physics textbook A and Physics textbook B . Hence, hypothesis 5 is rejected.

Results of this study, categorized students into Frustration, Instructional and Independent readers based on their percentage scores in the cloze texts. Majority of the students were found to be reading at the frustration level (49.7%). This indicated that the selected physics textbooks used in some secondary schools are too difficult. The students may not be able to read and understand the text materials without assistance of teachers.

Some of the students were also found at the Instructional level (.40%). The indication of this is that the recommended physics textbooks were appropriate for the few students but teachers support and guidance are needed.

Minority of the students were at the independent level (10.5%). This minority may not need the assistance of teachers because the textbooks are too easy for them to read and understand on their own.

Hypothesis 1, sought to find out the significant influence of readability of physics textbooks on

students' academic performance. The findings showed that readability of physics textbooks have significant influence on students' academic performance. The findings were in agreement with those of Fatoba (2014), Seweje and Idiga (2003) who reported that achievement of students in physics depended greatly on the readability of the textbooks. This could be attributed to the simple language, dictions, illustrations, diagrams, local examples used in the writing of such textbooks by the authors. Students' academic performance may be enhanced by reading a textbook with simple language short sentences and illustrations.

Hypothesis 2, sought to find out the influence of location on readability of physics textbooks. The findings showed that location (i.e. urban or rural) has significant influence on readability. This was in agreement with the findings of Ayodele (2002) and MC Clafferty; Torras and Mitchell (2000), in which significant differences were found between the readability of students from rural and urban schools.

The result also revealed that, there was no significant difference between the performance of male and female students who used the recommended physics textbooks. This finding agreed with the view of Barrigton and Hendricks (1988); and Ayodele (2009) who found no gender differences with respect to students' performance in science (physics). This was at variance with many researches that found significant difference between the male and female performance in physics Inyang and Hannal (2000) and Omoniyi (2003) who found that boys in Secondary Schools surpass their female counterparts in Physics and Mathematics.

12. CONCLUSION AND RECOMMENDATIONS

The main focus of this study was to determine the readability level of recommended physics textbooks in the five states used for the study and to examine the influence of readability of physics textbooks on students' academic performance. It is concluded that, the level of understanding and academic performance of students are determined, to a large extent by the readability of the physics textbooks in use.

The researcher wishes to make appropriate recommendations to the students, teachers, textbook writers or authors, school administrators, curriculum planners, Ministry of Education and the government as follows;

- Schools should not choose textbooks that are written at frustration level of the students but choose textbooks that are written in simple language with illustrations, diagrams, local examples and exercises or activities at the end of each chapter.
- Teachers should be guided with readability level of the students and content coverage in the selection and recommendation of science textbooks for student use.
- Teachers should explain the difficult words and vocabularies found in the textbooks to the students before the lesson so that students can understand the texts when reading on their own.
- Most of the science textbooks should be written at independent level of the readers. Students struggle to grasp the English or language with which the books are written because English is our Second language.
- Since most of the selected science textbooks seem to be difficult, the writers should revise them and come to the level of the readers by bearing in mind the word difficulty, diction and sentence complexity.
- Teachers should provide feedbacks on the readability of physics textbooks to the publishers and authors who in turn should revise the recommended science textbooks in the light of comment raised.
- Authors of physics textbooks should select the appropriate language, dictions, diagrams, pictures, examples etc that will make their published materials (textbooks) highly readable to the target class of readers.
- Students using any of the recommended physics textbooks should intensify efforts at reading them to enhance their academic performance.
- Students should be encouraged to read available textbooks that are written at their independent or instructional levels of comprehension.
- The evaluation unit of the Ministry of Education should invite the researchers or experts who will

help them to determine the readability levels of physics textbooks to be used in our Senior Secondary Schools so that both teachers and students can choose appropriate science textbooks for teaching and learning.

- Government should make it a point of duty to equip every school library with appropriate physics textbooks that are at the readability level of the students.
- Some of the adjudged readable physics textbooks can be made available freely on the internet.

13. REFERENCES

1. Adebule, S.O (2004). Gender differences in a locally standardized anxiety rating scale in mathematics for Nigerian secondary schools in Nigeria, *Journal of Counselling and Applied Psychology* vol.1, 22-24
2. Afolabi, S.S. (2002), A Comparative effectiveness of the problem solving strategy and advanced organizer strategy in teaching mathematics word problems, M.Ed Dissertation, University of Ibadan.
3. Afolabi, S.S (2009). Teaching method and textbook material variables as predictor of student learning outcomes in senior secondary school mathematics, Ph.D. Dissertation, University of Ibadan.
4. Aggarwal, J.C. (2001), Principles, methods and techniques of teaching 2nd Ed. New Delhi, VIKAS Publishing House Ltd.
5. Ayodele, A.E. (2002): Obstacle to the effective teaching and learning of Chemistry at the secondary school level. curriculum implications for sustainable educational development proceedings of the 43rd Annual Conference and Inaugural Conference of CASTME Africa, Science Teacher Association of Nigeria; Heinemann Educational Books Plc pp 539 – 542.
6. Ayodele, M.O. (2009): The effects of vocabulary instruction on academic achievement among the integrated science students in Ekiti State, Nigeria. Paper presented at the first international conference on learning and teaching and EDUCA at the Bangkok International Trade Exhibition Centre, Bangna, Thailand, 15th – 17th October, 2009.
7. Barrington, B.L& Henricks, B. (1988): Attitudes toward science and science knowledge of intellectually gifted and average students in third, seventh and eleventh grades, *Journal of Research in Science Teaching*, 25, 679-687.
8. Connolly, P. & Vilardi, T. (1989), *Writing to learn Mathematics and Science*, New York, Teachers college press.
9. Countryman, T. (1992): *Writing to learn Mathematics*, Portsmouth, N.H., Heinemann publishers Ltd.
10. Douville, P. & Pugalee, D.K., (2003): Investigating the Relationship Between Mental Imaging and Mathematical problem solving, Proceedings of the International Conference of Mathematics Education into 21st Century Project, September 2003 Brun Czech. Republic 62 – 67.
11. Duyilemi, B.O. (2004): One solution to examination malpractices employing mnemonics in teaching and learning; *Educational Thought Journal* 4(1) 8-16.
12. Fatoba, J.O. (2014): Readability of science textbooks and students academic performance in senior secondary schools in south west Nigeria, Unpublished Ph D. Thesis, Ekiti State University, Ado-Ekiti.
13. Federal Republic of Nigeria (2004), National policy on education (Revised), Lagos: NRDC Press.
14. Fletcher, R. (1975): An Application of money's involvement index and standard readability formula to representative 'modern' and 'traditional' science for Grades 7 – 10, ERIC ed, 103 -276.
15. Frank, S. (2006): The role of bilingualism in reading difficulties, *Journal of research and Development in Education*, Ibadan, U.I. press Vol. (2)
16. Fry, E.B. (2002), Readability versus Levelling, *Reading Teachers*, 56 (3):286 -292.
17. Inyang, N.E.U. & Hannal, E.E. (2000): Influence of ability and gender grouping in senior secondary school chemistry students' achievement in redox reactions, *Journal of Science Teachers' Association of Nigeria*. Vol 35 (1&2) 36-42.
18. McClafferty, K.A.; Torres, C.A. and Mitchell, T.R. (ed) (2000). *Challenges of urban education: Sociological perspective for the next century*. Albany: State University of New York Press.

19. Morgan, C. (1998): Writing mathematically: the discourse of investigation, London, Falmer Press.
20. Ogundele, L.O. (2003), Teachers' view on selected mathematics textbooks in secondary schools in Kwara State, Lafiagi Journal of Science Education 5(1) p 108.
21. Omoniyi, A.O. (2003). The effect constructivism based teaching strategy gender – related differences in solving student's misconceptions in chemistry Proceedings of Gasat conferences, Mauritius.
22. Opera, P, (2004) Readability of Physic textbooks used in secondary schools in Oyo State of Nigeria. Journal of Science and Teachers Association of Nigeria, 21(1), 102-110.
23. Perekeme, B, A.D & Agbor, C. A. (2012) Readability of language textbooks prescribed for junior secondary schools and students' performance in reading comprehension in Bayelsa State, Nigeria. British Journal of Arts and Social Sciences Vol. 9 No 1. pp 89-96.
24. Pugalee, D.K. (2001): Writing Mathematics, and metacognition, Schools Science and Mathematics 101(5)236-245.
25. Seweje, R.O. & Idiga, D. (2003): An investigation into the readability of the Integrated Science Textbooks at the Junior Secondary School Level in Ekiti State. Journal of the Research in Curriculum Studies. Volume 2 No.1. pp 205-211.
26. Taylor, W.(1953), Cloze procedure: A new tool for measuring readability, Journal Quarterly 33 No 30 Fall pp 415-433.
27. Seweje, R.O. & Idiga, D. (2003): An investigation into the readability of the Integrated Science Textbooks at the Junior secondary School Level in Ekiti State. Journal of the Research in Curriculum Studies. Volume 2 No.1. pp 205-211.
28. Taylor, W. (1953), Cloze procedure: A new tool for measuring readability, Journal Quarterly 33 No 30 Fall pp 415-433.
29. Tobrise, M.I. (2005): The readability indices of Social Studies Books I-III, Journal of Nigerian Education Research, 5(2).
30. UNESCO (1973): New UNESCO Source Book for science teaching, Heinemann publishers Ltd.
31. Ziriki, L. J. (2009): Readability levels in selected Novels and plays in Bayelsa state secondary schools, Unpublished Ph.D Dissertation, University of Port Harcourt.

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