

An Assessment of the Readability Level of Macmillian New Primary English Book 5 Using Syntactic Complexity; Average Sentence Length Tests and Dale-Chall Formula

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Abstract

This study examined the linguistic problems that might have been inherent in the Macmillian New Primary English book 5 which are capable of hindering effective comprehension of the passages in the text for the 5th grade student for which it was recommended. Three readability tests were conducted – Age grade; Average sentence length and syntactic complexity. The results of the tests established the fact that: the passages could easily be understood by an average 5th grade student of English as a first language; the average sentence length is fourteen (14) words per sentence while the average sentence syntactic complexity is 1.33. The end product of all these tests showed that the text is readable at independent level for an average 5th grade student. But because the formulas used are native speaker biased and the fact that most of the pupils in Nigerian public primary schools have poor background in English Languages, it is suggested that the readability of the text should be put at instruction level for them. The teachers should therefore provide all necessary supports to enhance effective comprehension of the text.

INTRODUCTION

Nigerian educational system is confronted with myriads of problems. It is the aggregate of these problems that culminated in falling standard of education and consequently production of low quality graduates from our various educational levels. This situation is not only exposing Nigerian graduates to ridicule immediately they leave the shore of the country, but also gradually becoming an embarrassment to the country among other nations of the world. This ugly situation should not be allowed to degenerate further. A decisive and concrete step need to be taken to get the situation changed or at least improved.

One of the ways by which this can be done is through total overhauling of the nation's educational system. This can not be carried out en-bloc but by carrying out a systematic disintegration of the problems and distinctly addressing them one by one. Thus, the objective of this paper is to identify, analyse, discuss and proffer solutions to one of such problems confronting our educational system. Poor reading skills and habits among Nigerian students are fundamental to most of the educational problems prevalent in the country today.

As asserted by (Karlin 1964), the relationship of reading ability to scholastic success is not open to dispute. Achievement in reading is necessary to achievement in school and since the achievement in school is the end product of any educational system, sound reading ability and effective reading skills are essential for result oriented and functional education. Unfortunately, it has been observed that ineffective reading and poor reading habits have contributed to the Nigerian students' under achievement and in some cases scholastic disaster (Okwilagwe 1998).

Ineffective reading skills and poor reading habits can be caused by many factors such as pupils' socio linguistic background; psychological and physiological problems; Pedagogical inadequacies and the readability problems inherent in the texts themselves. Out of these lots, the discussion on this paper will be narrowed down to the readability problems embedded in the texts with particular reference to *Macmillan New English book for primary five*. Three tests grade; sentence length and syntactic complexity will be conducted on the text to determine its suitability for the set of pupils currently using it and its readability level.

THE PURPOSE OF THE STUDY

More than half of the 3,389,183 pupils who took the five core subjects necessary for admission in any higher institution in the last three West African School Certificate examination failed. English language in which every prospective employers demand a credit pass, recorded the highest number of failures (The Guardian, Sunday March 10, 1985).

The quotation above is an eye opener to the problem of poor performance of Nigerian students' in both internal and public examinations, most especially in English language which happens to be the core of the educational achievement in the country either in terms of seeking employment or admission into higher institution of learning. One essential aspect of English language that is problematic to the students is reading and reading comprehension. Effective reading with thorough comprehension is not only essential for better

performance in English language but equally crucial in doing well and achieving greatly in other subjects.

One of the ways by which efficient reading and thorough comprehension can be enhanced is by using suitable and appropriate reading materials to teach the act of reading. As pointed out by (Unoh 1995) 'a judicious choice of reading materials can help pupils to develop good taste and permanent interest in reading for pleasure and the expansion of knowledge.' In other words, If reading is not taught with appropriate materials it may render pupils in effective readers for life.

Though numerous researches had been carried out on causes of ineffective reading among Nigerian students, little attention has been paid to the problems inherent in the materials used to teach reading in our schools especially the recommended texts. The purpose of this study therefore, is to examine the passages in the *Macmillan New English book 5* to determine its suitability and appropriateness for the age group and the academic grade for which it has been recommended.

To achieve these objectives, the passages in the text will be subjected to the following analysis.

- (i) Age Grade Test
- (ii) Average Sentence Length Test
- (iii) Syntactic Complexity Test

Research Questions:

The study would provide answers to the following questions.

1. Are the passages in the *Macmillan New primary English book 5* appropriate for the age group for which it was recommended?
2. What is the average sentence length of the sentences in the passage
3. Are the passages in the said text syntactically complex?
4. What is the readability level of the passages in the same text?

Review of Related Literature

There is no doubt that the degree of easiness with which a text could be read would go a long way to facilitate its thorough comprehension, therefore a writer should strive to write what is simple to comprehend by the target readers. Easy reading, they say, helps learning and enjoyment hence what we write should be easy to understand (Fry 2006). But unfortunately most of the children textbook writers hardly take this into consideration when writing especially in developing nations of the world. And this is partly responsible for the readability problems usually inherent in most of the texts used in their schools.

The need for greater achievement in Language Learning and usage calls for easy comprehension of the course materials employed to teach the language especially in second language situation where language is usually learnt strictly in a formal context. Easy comprehension, on the other hand, presupposes production of readable materials. As asserted by Faliloro (2010:54) 'readable printed materials are sine-qua-non to students English Language achievement' Little wonder that the issue of readability of the texts used in school has been a great concern to language teachers and researchers on a global plan.

The fact that readability as a concept has received a considerable attention is evident in the various definitions proposed by scholars and researchers.

Dale and Chall (1948:23) asserted that 'Readability is the sum total (including the interactions) of all those elements within a given piece of printed material that affects the success a group of readers have with it. The success is the extent to which they understand it, read it at an optimum speed and find it interesting' Bently (1985) believed that "readability is an attempt to match the reading level of reading materials with the understanding level of the readers' (as cited in Fatiloro 2012:54) while Oakland and Lane (2004) referred to readability as the ease with which a reader can read and understand a text'

Determining the level of readability of the texts used in our schools is necessary in the light of the claim by Fatiloro (2010:54) that student failure is on the increase and one of the reasons being that students are finding it difficult to match their level of reading text with comprehension'. To provide succour to students in this regard, only readable materials should be used for the purpose of teaching. In the words of Fatiloro (2010) 'A writer must bear the interest of his readers in mind when writing (because) a writing that has no positive impacts on the readers is an exercise in futility.'

Methodology

The study adopted descriptive survey design. The linguistic structures used to conduct the three tests were chosen from the passages in the text concerned using stratified sampling technique. The text contained twenty six (26) reading comprehension passages. The first paragraph of all the reading comprehension passages were used for the first text (Grade Test). The second test (Average sentence length test) was conducted using the second paragraph of all the comprehension passages while the third paragraph of all the passages were adopted for the third test (syntactic complexity test).

Instrument

Three major readability formulae, each for a test, were adopted to generate data for the study thus:

Grade Test

This test originated from the established fact that each age grade requires suitable text that would match their linguistic experience and background with the entire content of any text that they read for effective comprehension of such reading material.

Therefore, the new Dale-Chall readability formula was used to determine the appropriateness of the text-(*Macmillan New Primary English 5*) for the age group it was recommended. The formula runs thus:

$$0.1579 \left(\frac{\text{difficult words}}{\text{Words}} \times 100 \right) + 0.0496 \left(\frac{\text{Words}}{\text{sentences}} \right) + 3.6365$$

Sentence Length Test

One of the earliest work on readability established that shorter sentences and concrete terms help people to make sense of what is written (Sherman 1880. Wikipedia, the free encyclopedia 2012). Similarly, any concept expressed through the use of long sentences is bound to pose comprehension problem to learners of English as a second language since they may find it difficult to follow such sentence to a logical conclusion (Olatayo 1989). Thus, determining the average sentence length of a text would be necessary to assess its readability level.

To conduct this test, the second paragraph of all the twenty six (26) reading comprehension passages were copied out. The sentences therein were identified and counted. The words that made up all the sentences were counted and the numbers of the words were divided by the number of the sentences to obtain the average number of words per sentence.

Syntactical Complexity Test.

The basis for this test is rooted in the concept of transformational generative grammar theory that rather than the lexical items and number of words, complex sentences are derived from the process of changing and combining underlining structures to achieve our communicative intention. And also the fact that the primary five pupils in Nigerian public schools as learners of English as second language are bound to have comprehension problem with sentences with complex structures.

For this test, a formula for measuring syntactic complexity postulated by Botel Morton and Alvin Granowork (1992) with modification is used to determine the level of the complexity of the sentences in the passages through the selected paragraphs. The structures of the sentences were examined and scored under the following classifications:

(1) Zero (0) Count Structures

These included all the basic sentences with simple structures that would not pose comprehension problems to learners of English language who are averagely intelligent and appropriately exposed to the language. The following categories of sentence patterns were considered so.

- A i. SV(A) i.e she danced (b) she danced yesterday
- ii SV(O) i.e Olu broke the bottle
- iii SVC i.e They are my friends
- iv SV infinite i.e He promised to come

B Simple Transformation

- i. Simple questions i.e Will you come?
- ii Question tag i.e She did it well, didn't she?
- iii Exclamatory statement i.e What a nonse!
- iv Simple imperative i.e (You) stand up

C Coordinated clauses joined by AND i.e

Mary greeted the teacher and Yemi greeted him too

D Non-sentence expressions i.e Hi, Oh! Haba etc

2. One (1) count structures

This category included sentence patterns that are not frequently used such as

A i SVOO i.e He gave her a knife

- ii SVOC i.e We made him our captain

B Any prepositional phrase added to any zero (0) count patterns.

- i SVAA i.e She went home in the morning
- ii SVOO i.e He gave the money to his friend
- iii Scqualifier + be + c i.e The man in the room is my friend
- iv SV infinitive A i.e They wanted to eat before leaving

C Adverbial additions to the zero (0) count patterns

- D We greeted our teacher warmly yesterday
- D Gerund as a subject
- Reading is tedious
- E Coordinated clauses joined by coordinating conjunctions other than AND (for but, so, yet or etc)
- She prepared well yet she failed.
- F The paired conjunctions (both – and; either... or neither... nor)
- 3 Two (2) Count structures
- The structures under this category included the following
- A Passive Transformations i.e
- The bottle was broken (by the boy)
- B Comparatives as... as; same... as; more... than i.e
- He is as intelligent as his friend
- C Dependent clauses as subject: object, complement, apposition or complement to prepositional group i.e
- The money that I needed was not available.
- D Participle as adjuncts i.e Roaring, the lion scared away the travellers
- E Infinitive as subjects i.e To lose is painful
- F Conjunctions as adverbs i.e yet, they supported him
- 4 Three (3) count structures
- A Super ordinate clauses as subjects, objects, complement or appositions i.e
- (i) What I will tell him remains a misery
- (ii) The point is he came late to the meeting
- B Absolutes i.e
- The lion roared, the hunter ran away

Data Collection and Analysis

Sentences in the first , second and the third paragraphs of the reading comprehension passages in the text formed the sources of data for the study. The sentences were copied out and subjected to appropriate linguistic tests. The results of the tests were analyzed and interpreted using simple percentage. This statistical tool was adopted for simplicity and easy comprehension of the result of the study.

ANALYSIS AND INTERPRETATION OF DATA

The results of the study are presented in three Main Parts in line with the readability tests conducted on the text and the research questions as shown below:

- (i) Age Grade Test
- (ii) Average Sentence Length Test
- (iii) Syntactic Complexity Test

Research question 1: Passages in The Macmillan New Primary English Book 5 is appropriate for the age group for which it was recommended in Nigerian Public Primary Schools.

To provide answer to this question, Age Grade Test was conducted on the passages on the text using Dale-Chall new readability formula. The formula stands thus

$$0.1579 \left(\frac{\text{difficult words}}{\text{Words}} \times 100 \right) + 0.0496 \left(\frac{\text{Words}}{\text{sentence}} + 3.6365 \right)$$

Using a stratified sampling technique as stated in the methodology, one thousand and ninety six (1,096) words made of ninety four (94) sentences were arrived at. Out of these, only ninety seven (97) words were found to be difficult i.e words that are outside the list of three thousand (3000) words identified by Dale and Chall as the most common words that could be easily understood by a child of school age (5 years)

The result was used to generate the following data.

$$0.1579 \left(\frac{97}{1096} \times \frac{100}{1} \right) + 0.0496 \left(\frac{1096}{94} \right) + 3.6365$$

$$\begin{aligned} & 0.1579 \left(\frac{9700}{1096} \right) + 0.0476 \left(\frac{1096}{94} \right) + 3.6365 \\ & = 0.1579 (8.8503) + 0.0496 (11.6595) \\ & = 0.1579 \times 8.8503 + 0.0496 \times 11.595 \\ & = 1.3974 + 0.5783 \\ & = 1.9757 + 3.6365 = 5.6122 \end{aligned}$$

When the basic five years school age is added to this result the end product reads thus $5.6122 + 5 = 11$ approximately. This result shows that the book could easily be understood by children of age eleven or below. Which means the text is suitable for an average 5th or 6th grade student. And in Nigerian Public Primary Schools, the ages of the 5th or 6th grade students using the text ranges between 10 and 12 years. This is so because most of them usually start schooling much earlier than the mandatory 6 years in the National Policy on Education.

The implication of this result is that the readability level of the text would have been at the independent level for an average 5th grade student whose first language is English and it would have been simpler for their age group. But in Nigeria situation, where English is formally learnt as a second language, the readability should be at instructional level. That is, the students reading the text alone may not attain effective comprehension. The text is suitable for the group under the guardian of the teachers.

Research question 2: What is the average sentence length of the passages in the text?

To answer this question, average sentence length test was conducted. All the 26 paragraphs used for this test consisted of eight seven (87) sentences and one thousand, one hundred and seventy nine words (1,179). The average word per sentence was obtained by dividing the number of words with the number of the sentences thus: $(1.179 \div 87)$ words. The table below presents the information simpler and clearer.

Table A showing the Number of words per sentence

No of sentences	No of words	Average word per sentence
87	1,179	$13.5517 = 14$ appr

The table above indicates that the average word per sentence is fourteen (14). From this result, it is evident that the text does not contain sentences that are too long for 5th grade students. An average student within the age bracket and academic level should be able to follow such sentences to a logical end without losing the grip of their contents.

However, Nigerian students as learners of English as a second language would still require effective instructional supports for maximum benefits from the text. They may need to be exposed to the structures of English sentence such as S.V.O; S.V.A; S.V.C etc, and the functions of each part.

Research questions 3: Are the passages in the text syntactically complex?

In order to provide appropriate answer to this question, syntactic complexity test was conducted on text using selected paragraphs from the book. The extracts used for the test contained ninety (90) sentences. The structures of the sentences were analyzed and rated as shown in the following tables.

Table B showing the basic structures of the sentences and their rating

Structures	Number	Rating	Scores
SVA	16	0	0
SVC	14	0	0
SVO	22	0	0
Simple questions	05	0	0
SVAA	15	1	15
SVCA	03	1	03
SVOC	03	1	03
SVOA	12	1	12
TOTAL SCORE	90		33

In addition to the above structures analyzed in table B, some underlining structure that combined with the basic forms were identified and they were rated as shown in the table below.

Table C showing the underline in a structures that combined with the basic forms

Structures	Number	Rating	Scores
Prepositional phrases added to zero count forms	20	1	20
Non Sentence expressions	3	0	0
Adverbial addition to zero count	5	1	05
Prepositional as subject qualifiers	4	1	04
Coordinating Clauses joined by Coordinating other than AND	7	1	07
Clauses as qualifiers	3	2	06
Dependent Clauses as adjuncts	11	2	22
Dependent Clauses as Complements	01	2	02
Dependent Clauses as Objects	05	2	10
Passive Constructions	07	02	14
Super ordinate clauses as subjects	01	03	03
Super ordinate clauses as objects	05	03	15
TOTAL SCORE		19	88

The total score of the sentence is 33 points which is the score of the basic forms of the sentences plus 88 points which is the score of the underlining structures which is equal to 121. That is $33 + 88 = 121$. The average syntactic complexity per sentence in the text was decided by dividing the total counts by the number of the sentences. That is $121 - 90$ which is equal to 1.33. This implies that the average sentence syntactic complexity of the text is 1.33.

With this method of rating the most syntactically complex ought to have scored 12 points per sentence on the average. Therefore with this result, the text could not be judged to be complex. In fact, for students of English as a first language, the readability of the text ought to be at independent level. But for students of English as a second language the readability of the text should be safely put at instructional level.

Research question 4: What is the readability level of the comprehension passages in the text?

The answer to this question is provided by the results of the three readability tests earlier conducted on the comprehension passages in the text. The result of the first test showed that the text could be easily understood by the age group and academic grade for which it was recommended. The second test revealed that the text does not contain long sentences while the third test indicated that the sentences in the passages are not syntactically complex.

Based on those results, the readability of the text could be put at the independent level for students of English as a first language and at the instructional level for students of English as second language.

CONCLUSION

This study has tried to determine the suitability of the comprehension passages in the New Macmillian English Primary English Book 5 Three different readability tests were conducted using selected paragraphs from the text. The results of the tests showed that the comprehension passages are appropriate. The lexical content is suitable for the age group it was recommended; the average sentence length is fourteen (14) words per sentence which is not too long for the 5th grade students while the average sentence syntactic complexity is 1.33 all over 12 which is equally not abnormal for the 5th grade.

The implication of the overall result is that the text could be independently read by an average 5th grade student of English as a first language while a Nigerian student in the same grade would require an effective instructional support for meaningful comprehension. Teachers in Nigerian public primary schools need to sharpen their method of teaching and update themselves with sound knowledge of the language for greater achievement in the teaching and learning of English language in Nigerian Public Primary Schools using the text.

RECOMMENDATION

In the light of the above findings it is recommended that similar readability tests be conducted on the texts produced for lower grades and age groups by the same publisher. This is to determine the level of consistency inherent in the production of the series and to ensure a smooth transit from one grade to another.

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