

Readability Indices and Students' Achievement in Comprehension: A Content Analysis of Passages in English Textbook for Study of Oyo State Public Senior Secondary Schools

Rachel Oluwafisayo ALUKO¹

¹*Department of Languages and literature,
Lead City University, Ibadan
+2348166460002
aluko.rachel@lcu.edu.ng*

Olusola Fidelis OLATAYO²

²*Department of Arts and Social Science Education,
Lead City University, Ibadan.
+2347042026084
onaholatayo@gmail.com*

Abstract

In this study, the researcher found out the relationship between readability indices and students achievement in test. Readability and comprehension test on selected passages from the English Language for Senior Secondary School Book 2 were conducted among students; content analyses of the same passages were equally carried out. The outcome of the content analysis showed that the degree of lexical density and synthetic complexity of the passages are very high while the result of the readability and comprehension test showed the correlation coefficient(r) of 0.890 which indicates a strong positive relationship between readability indices and students' achievement in comprehension test. Base on this, it was recommended that English language textbook for public schools should be guided by a comprehensive readability test and that government should consider whether or not the recommended textbooks are appropriate for the target students before recommending them, instead of using political or social influence of the authors and the publishers.

Introduction

Reading is very important to man as a social and political animal. It is a pivotal to development, education and socialisation in the modern world. Infact, reading is second to none in educational success especially in the western educational programs. This is because scholars have established that the level of students' academic achievement is closely related to how effectively and efficiently they can read. Although, reading is attached to academic achievement, it is unfortunate that many students in Oyo state secondary school can hardly read and understand what they have read. Many reasons have been advanced for this, one of them is the nature of the text that the teachers are using to teach comprehension lesson in schools. Thus, the matter of readability of text has become an educational issue to be considered if the problem of poor reading among these students is to be resolved. Therefore, the problem that spurred this research centers round how to match the content and the linguistic context of the passages in English Language textbooks recommended for public senior secondary school students in Oyo State with their target readers.

Literature Review

Reading is a vital aspect of education because it is a key element in literacy that anchors all round and functional education. In fact, a good reading ability is second to none in living a meaningful and productive life in modern world. It is an essential instrument for navigating global ideas and realities. This is one of the reasons why reading is held in high esteem especially in the western education system. This being so, reading is one of the core subjects in Nigerian educational curriculum. Because knowing how to read is indispensable in the life of modern man, a serious attention has been paid to it in any educational system in the world. A few definitions of reading will be apposite here

Reading is explained as a process of gazing through symbols that are graphically represented and translating them into appropriate and meaningful sounds. It is the literacy skill that a man requires to get both the implicit and explicit messages and overall information from the written text (Brevik, 2019). Reading from another angle is viewed as a choice taking process which partially involves the use of available minimum linguistic clues that are selected from the perceptual input based on the readers' expectation. It is further stated that when this partial information is processed, temporary decisions are taken which are to be confirmed, rejected or modified as the act of reading progresses (Brevik, 2019). This definition is said to be a description of the general mechanism which shows that reading, in its simple form, is basically a specific comprehension of written discourse strategy. The impression here is that reading basically is reaction to meaning that translated explicitly from the text (Brevik, 2019). Reading is a complex activity that entails different kinds of factors which usually emanated from within the reader and the environmental factors (Brevik, 2019).

Reading is equally described as one of the skills that are acquired through pedagogical processes. It is regarded as a very complex skill that involves vital perceptual components at beginning of formal learning process with a particular reference to the learners' comprehension and composition ability. Reading is more than mere ability to pronounce the words or symbols represented in the text. This is because deriving appropriate meaning from what is written demands that the reader comprehend the nature and the structure of the sentence and ability to correctly assign correct functions to individual words within such sentential structure. Reading is also said to involve interpreting the meaning of what is written since the purpose of reading is meaning. It is evident from this explanation that in the process of reading, information obtained from visual, conceptual, semantics and other linguistic sources usually interact in order to make meaning out of phrases and sentences. Reading is the act of using text to create meaning (Pearson & Cervetti, 2020).

It is equally important to states the functions of reading at this junction: Reading provides a strong link across ages and spaces. It is a means through which the modern generations have the opportunity of retrospective attempts into the past generations. All the documented historical knowledge, wisdom, technologies, concepts, inventions and industrial revolution of the early age, middle age are made known to the present generation through reading and it is because of this that those things have not gone into extinction. Reading is equally an indispensable tool in the success and existence of formal education. If formal education is regarded as the mother of modernization, then reading is the back bone of civilisation. It is an unparalleled instrument of retrieving information. Reading is regarded as the nerve of human development since it affords an individual the opportunity of growing and

developing intellectual insights into viewing and adjusting into life phenomena accordingly. Through it, an individual is able to make personal and appropriate decisions that will lead to his wellbeing and happiness. Reading is equally a vital instrument for developing human mind, imagination and creative potentials (Kafusha *et al.*, 2021). The development of all these are very essential for the formation of good and acceptable personality on the part of individuals.

Reading as an act has capacity to stimulate the positive development of an individual and transform his life and the society he lives into a haven (Alex-Nmecha & Millie, 2019). In the same way, it is also asserted that reading is playing major role in the existence of any society in the modern world. In fact, the ability of any modern human society to survive will depend mainly on the extent to which its citizens are involved in functional reading (Alex-Nmecha & Millie, 2019). Similarly, ability to read effectively is second to none in the life of students. For example, it has been established that reading is an instrument to lead students into appropriate intellectual capacity that they need in order to achieve what they have desired (Suson *et al.*, 2020). Effective reading is the powerhouse of academic achievements. The degree of success that a student will attain depends mainly on his ability to read effectively. This is because reading could be regarded as the true foundation of all other learning activities. It inculcates in the students a qualitative imagination and creative potentials as well as developing their intellect for academic excellence (Dawi *et al.*, 2018).

Reading Comprehension

Reading comprehension is an advance stage of reading process. Reading comprehension as a concept goes beyond the stage of learning to read in the reading process. The concept commences at stage of reading to learn and gets matured alongside other reading stages. Some explanations about the concept are discussed below.

Reading comprehension can be described as a gateway to the process of obtaining useful and appropriate information from different written sources (Duke & Kelly, 2021). This definition is too casual to provide detailed information about what reading comprehension should be and what it should entailed. Reading comprehension is equally likened to a process of deliberate reading with the purpose of extracting meaning from a text that is read (Pearson & Cervetti, 2020). However, the submissions of some scholars have taken the meaning of reading comprehension beyond mere extracting of meaning to include the concept of meaning making, meaning negotiation, meaning construction and meaning reconstruction (Pearson & Cervetti, 2020). This explanation of reading comprehension is comprehensive and therefore not too far from the actual meaning of the concept.

Reading comprehension is also considered as an essential aspect of reading which all students must master in order to succeed in their academic and personal life careers (Mesmer & Rose-McCully, 2018). Reading comprehension is also defined as a reading process with the sole intention of obtaining both the explicit and implicit messages as well as general information from what is deliberately read (Jacoby & Fedorenko, 2020). Comprehension of literature may also be defined as the act of engaging with a text with the goal of extracting and building meaning from what has been read (Duke & Kelly, 2021). From another perspective, reading comprehension is seen as reading that is more than just reading of a text and know the meaning but involves a sort of deep reading in which the reader will understand the content of what he has read to extent of getting the required point and information from the written

material (Castles et al., 2018). In a more elaborate way, reading comprehension is described as a multivariate process which involves a variety of mental and linguistic skills. It is the process of deliberately engaging oneself in perusing a text for the purpose of getting and constructing meaning (Duke & Kelly, 2021).

Readability

Readability is explained as the total sum of linguistic elements within a text which make such a text appropriate or otherwise for the target group of readers (Ruohonen, 2021). One good thing about this definition is that it differentiates readability from the issues bordering on the physical structure (layout) of the text but it is not adequate in the sense that it fails to cater for the interest of the readers. The concept of readability is also explained as the quality of a written text or message which makes it easy for a group of people to comprehend its meaning or that compels them to be willing to keep on reading the text (Ruohonen, 2021). There are many issues with this definition. First, there could rarely be a single quality which may make a text compelling. In fact, there may be many things that can provide the willingness to read for the target readers. Second, how does one measure this quality that makes the text compelling? The issues of optional number of concepts become necessary here because willingness to read would come only when a text contains new things to arouse the interest of the readers.

In addition, readability is considered as an attempt to match the reading level of a written text with that of a reader. It is concerned with the problem and process of matching the reader and the text (Maddela & Xu, 2018). This definition is in line with the objective of many scholars on readability. There is enough evidence to show that the major interest of most researchers in readability is concerned with making a text and its reader compatible. Similarly, readability is used to refer to all the factors which can affect the degree of success a reader can achieve in reading in terms of comprehension. The factors may include the motivation and the interest of the reader, the legibility of the print and the logicity and clarity of the illustrations and the complexity of words, phrases, sentences and ideals in line with the reading ability of the reader. Though, this definition appears comprehensive most especially when the interest and motivation of reader are recognized but it did not mention anything about the influence of culture on readability (Morato *et al.*, 2021).

The concept is also defined as the difficulty level of a written text meant for reading. The definition though appears very simple but depicts the core of the concept. The main concern of any academic work on readability is to ascertain if a written text is easy or difficult to read for the target readers (Morato *et al.*, 2021). However the definition fails to define the term "difficult" in relation to the target readers. A reading text may be difficult for a set of readers and may be appropriate for another set because of the differences in their academic age and chronological age. Still on the definition of readability- it is being referred to as the legibility of words, that is, ability to see clearly what is written by hand, typed or printed (Duke & Kelly, 2021). This definition is too casual and simple to be appropriately adequate. What makes a written text readable goes beyond the surface layout. A written material may be legibly written or neatly printed but still not readable for the target readers. In addition to the surface layout, the readability of a text equally has to do with the linguistic content and structure of a text.

Readability is also referred to as the interest that a text being read induced from its readers or the interest that the readers have in reading a text as a result of the style employed

by the writer (Ruohonen, 2021). This definition is weak in the sense that the passion that readers have for a text and the interest the text aroused from the readers are not enough to make a text readable. Readability of text is a matter of understanding and comprehension than any other thing. Being fascinated by the style of a writer does not mean a reader will understand the content of such texts. The definitions of readability as a concept are many and can hardly be exhausted. However, the basic issues in readability are that of reading and comprehension. For this reason, I will like to define the concept as the extent to which a target reader can read a text and comprehend its content with or without assistance. From whatever perspective the concept readability is viewed, this seems an appropriate convergent point for all agitations on readability. On the final note, though there is no consensus among scholars and researchers as regards the acceptable definition of the concept but their efforts so far have successfully brought the issue of readability into lime light as a factor to be reckoned with when talking about effective reading and comprehension.

Readability Indices

Readability indices refer to all the standardized yardsticks that can be used to access the readability of a text. They are the acceptable devices to measure how readable a text is to its target readers. There are several indices of assessing a text for readability. These include: lexical diversity which refers to the degree of varied vocabulary that a text contains. It is sometimes refer to as lexical richness. To make a book lexically diverse, the writer must employ a wide range of terms with little repetition of previously used lexemes. Another metric for determining readability is lexical density. The percentage of content words (nouns, verbs, adjectives, and adverbs) to the total number of words used in that text is referred to as lexical density. It is the proportion of content words in a given text to grammatical terms (prepositions, interjections, pronouns, conjunctions, and count words). It can alternatively be expressed as the total number of lexical terms divided by the total number of orthographic words. Syntactic complexity is also used to assess a text's readability. The term is used to describe the level and the sophistication of syntactic elements demonstrated in language production and usage. The term is used to capture the intricacies involved in the grammatical resources exhibited in a written or oral language. It is the level of variation in the linguistic properties used to carry out a communicative task with the extent of its elaboration (Castles et al., 2018).

Culture load, as an index for measuring readability of a text refers to the extent to which cultural background of the writer reflects in his writing. It is the frequency of cultural materials, concepts, and events (especially that of the writer) in a given text. The influence or impact of a writer's culture on what he/she has written is regarded as the culture load.

Levels of Readability

Scholars have agreed on three levels of readability (Ruohonen, 2021). The three levels identified are as follows:

Independent: This is otherwise known as unassisted level of reading. It is the level of reading at which the target readers are able to effectively read fluently and comprehend the content of a reading material meaningfully without any form of aid or assistance. It is a level of reading in which advanced readers need to attain at least 92 percent of comprehension on the text he has

read. Scholars described this level of readability as the reading level in which readers can correctly answer at least 80 percent of the questions set on the material read. It is also asserted that text meant for independent reading require higher score. They require that readers should be able to score at least 50 percent in the cloze deletion test and at least 70 percent in the multiple choice test. It is also described as the level of reading where the target readers are able to score 60 percent and above in cloze deletion. Simply put, independent level of readability is a reading level at which the target readers are able to read material fluently, comprehend the content and answer almost all the questions set on the text he has read correctly. A text that will be appropriate for use at this level of reading must have at least 96% of its words recognized by the readers and at least 90% of its content well comprehended by the readers. When a text is at this level of readability, the target readers will be able to read it effectively on their own (Ruohonen, 2021).

Instructional: This level of reading is also referred to as assisted level of reading. It is a level of reading at which the target reader will require appropriate and adequate guidance from a teacher before he/she can effectively read the text and answer the questions set on the text he has read correctly. Readers operating at this level of reading are able to comprehend the content of the text involved effectively with the appropriate and adequate assistance from their teacher. As established by researches a performance of between 40 and 59 percent in close deletion test would place readers within the level of assisted reading. However, some scholars believed that the best level of classroom assisted reading is a slightly difficult text that causes a sort of setback to learning and for which readers can correctly answer between 35 and 50 percent in close deletion test especially if every fifth word is deleted and between 50 and 60 percent in multiple choice test. Reading at instructional level implies reading and comprehending effectively under the appropriate and adequate guidance of teachers. The readability level of a text that can be used for this level of reading must indicate the fact that 90-95% of the words in such text are recognised by the readers and the readers can understand 70-89% of the contents of the text very well (Ruohonen, 2021).

Frustration: This is the level of reading at which the target reader cannot comprehend the content of a reading material to a significant degree even with the best assistance from the teachers. In this case, the content of the text involved is simply above the comprehension level of the target readers. It is a reading level at which the target readers score below 35 percent in a cloze deletion test and below 50 percent in multiple choice test. Likewise, it is described as a level of reading at which the target readers could not recognize more than 89 percent of the words used in the text and therefore having less than 70 percent comprehension of the text. This is when readers cannot recognize more than 89% of the total words in a text and they cannot understand more than 69% of the contents of the text. A text displaying these qualities is manifesting the features of frustration level of readability (Ruohonen, 2021).

Research Question

What are the mean sentence length, the degree of lexical density and the syntactic complexity level of the comprehension passages in the text analysed?

Hypothesis

H₀1: There will be no significant relationship between readability indices (lexical density, syntactic complexity and average sentence length) and students' achievement in comprehension test among senior secondary school students in Oyo state.

Research Design

In this research, a descriptive research design was adopted. This is because the intention of the researcher is to find out the impact of readability indices on the students achievement in comprehension test. The population for this study is made up of all the students in the public senior secondary schools in Ido Local Government Council. Ditto all the comprehension passages in *English Language for Senior Secondary School, Book 2*, which is the recommended textbook for them. For this study, 19 out of the 26 schools in Ido Local Government Council were used. Twenty students from each of the selected schools, totally 380 students were randomly chosen for the test conducted. In the same way, 15 out of the 25 comprehension passages in the textbook used for the analysis were examined. The instruments used in this research were cloze deletion test, comprehension test, and readability consensus calculator. In order to make sure that the instrument measure what they were supposed to measured, they were given to expert in the field of language education and applied linguistic for scrutiny, appropriate correction and guidance. To ensure that the instruments were reliable, the researcher adopted test retest method. The instruments were personally taken to the students in their respective schools. The results of the test were collected immediately after the students have finished answering the questions. The data collected were analysed using simple percentage and statistical package for social sciences (SPSS) and correlation analysis.

Findings

Through the content analyses that were carried out, the answers to the research questions are as follows: (1) that the mean average length of the passages was twenty word per sentence which is under fairly long difficult sentences (2) that the degree of lexical density is 55% which is an indication of high density (3) that the degree of syntactic complexity is 81%. These results taken together are an indication that the students would find the passages difficult to read and comprehend.

Likewise the result from the hypothesis goes thus:

Table 1a

Descriptive Statistics			
	Mean	Std. Deviation	N
Readability indices	1.06	.298	1500
Comprehension test result	1.10	.380	1500

Table 1b

Correlations			
		Readability indices	Comprehension test result
Readability indices	Pearson Correlation	1	.890**
	Sig. (2-tailed)		.000
	N	1500	1500
Comprehension test result	Pearson Correlation	.890**	1
	Sig. (2-tailed)	.000	
	N	1500	1500

** . Correlation is significant at the 0.01 level (2-tailed).

In the above table it was revealed that the correlation coefficient(r) is 0.890 which indicates a strong positive relationship between readability indices (lexical density, syntactic complexity and average sentence length) and students' achievement in comprehension test. The table also shows that the P value is 0.00 which is less than 0.05. (A statistically significant test result $P \leq 0.05$ means that the test hypothesis is false or should be rejected). Therefore, H_0 : hypothesis was rejected. This is an indication that there is strong positive relationship between readability indices and students achievement in comprehension test.

Conclusion

In this paper, attempt have been made towards determining the impact of readability indices on the reading comprehension of students in Oyo State public senior secondary schools, readability and comprehension test were conducted for the concern students. Content analyses of passages from the English Language textbook recommended for these students were equally undertaken. The outcome of this content analyses revealed that the passages are syntactically and lexically dense. When the result of the readability and comprehension test were correlated, it was discovered that there is a strong significant relationship between the two tests and that most of the students were reading the passages at frustration level. Hence, the passages were rated as inappropriate for the target students.

Recommendations

Base on the findings of this study, it was recommended that English Language textbook for public schools should be guided by a comprehensive readability test and that government should consider whether or not the recommended textbooks are appropriateness for the target students before recommending them, instead of using political or social influence of the authors and the publishers.

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