

# Readability Index Analysis on the Level at Which Students Write: A Case Study of Bolgatanga Polytechnic

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**Abstract:** This piece investigated into the academic age level at which Bolgatanga Polytechnic students write using the Gunning Fog Analysis formula. Purposive sampling was used to sample 232 essays collected from eight out of eleven departments in the Polytechnic. These essays were carefully analysed using the Gunning Fog Readability Index to determine the level at which these students write in their various departments. Independent sample t-test was deployed to compare the writing level across the categories of essays. The results show that students write way below their academic age and also, one needs to attain 11 years of the school system of Ghana before one can write such essays that is Senior High School form two. The findings also indicated that, on the average, students score low grades due to the level at which they write their academic essays and this adversely affects their academic performance.

**Keywords:** writing level, polytechnic, academic age, Gunning fog and readability, low grades.

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## Introduction

Writing is an integral activity in the school system of Ghana right from pre-school to the tertiary level. Students write to justify their understanding of a course concept. Students also write academic essays, articles, magazines and other genres in the academic realm as a requirement of acquiring their degrees which prepare them for the job market.

The role of polytechnic education in Ghana cannot be over emphasized. This is because Polytechnics in Ghana are responsible for training students to acquire skills needed to meet the job market requirements (Naana Amakie, 2006). Within the job market, there are so many sub-genres that employees use as a tool to communicate and to run their day to day activities at their work places when they gain appointment in a firm, a company or an organization. Some of these sub-genres include the following; memos, letters, waybills, reports, minutes and other writings. This means that students are required to display evidence of critical

thinking in their academic essays in a form of arguments and also demonstrate related skills such as evaluation and analysis. It is generally considered that evidence of critical thinking, as expressed through argumentation is central to successful academic writing Vyncke (2012). Students will have to do constructive writing to improve upon their grades and to equip themselves for the job market.

Of late, the level at which Polytechnic students write in Ghana is of concern to lecturers and employers and Students of Bolgatanga Polytechnic are not an exception. These students are expected to be able to communicate their ideas in writing. Whatever the reasons may be, the bottom line is that majority of students do not possess the commanding skills necessary to effectively communicate in a writing that will enable them to become successful upon graduation (Joseph Defazio *et al.*, (2010). Also, students ought to develop the quest for good writing skills and be able to critically review the writing of others especially at the polytechnic level.

Bolgatanga Polytechnic is among the ten Polytechnics in Ghana established in 1999 to provide Polytechnic Education for the people of the Upper East Region and interested Ghanaians who are willing to pursue their education at the Polytechnic. The mandate of the Polytechnic is to provide tertiary education and award certificates ranging from certificates, diplomas and top-up degrees in the fields of Manufacturing, Commerce, Science and Technology, Applied Social Sciences and Applied Arts. Bolgatanga Polytechnic also provides opportunities for skills development, applied research and the publication of research findings, Polytechnic Law (Act 745). The Polytechnic is made up of eleven departments, namely; Statistics, Ecological Agriculture, Agricultural Engineering, Hotel Catering and Institutional Management (HCIM), Industrial Art, Accountancy, Secretariship and Management, Marketing, Procurement and Logistics Management (PLM), Building Technology (BT) and Civil Engineering.

The Researcher teach Communicative Skills as one of the general courses in the Liberal Studies department of the Polytechnic and has gone through series of students essays. One major concern identified among the essays perused was the standard of these essays. This prompted the researcher to investigate the Academic Age level at which these students write their essays in their various courses using the Gunning Fog Readability Index Analysis.

In view of this the objectives of this piece are;

- To determine the age level at which Bolgatanga Polytechnic Students write using the Gunning Fog Readability Index Analysis formula.
  - To determine whether there are differences in students writing level across the various departments of the polytechnic using the Gunning Fog Readability Index Analysis.
  - To determine whether students' writing level affects their academic grades.
- It is hypothesized that;
- ✓ Students write below their academic age using the Gunning Fog Readability Index Analysis formula.
  - ✓ Students' academic grades are affected due to the level at which they write.

This paper focuses on students' academic scripts as a bench mark to give the true picture of the problem identified by the researcher, that is, scripts of students from eight out of eleven departments numbering 232 from the Polytechnic were analysed using the Gunning Fog Readability Index; this is because it was easy to have access to students scripts since the researcher teaches Communicative Skills in these eight departments in the Polytechnic.

## Review of Related Literature

Pivotal to the research problem, the main objective was to investigate the academic age level that students in Bolgatanga Polytechnic write using the Gunning Fog Readability Index Analysis.

### The Gunning Fog Index

The Gunning Fog Index was developed by Robert Gunning (1952) in reaction to his observations that high school graduates were unable to read and comprehend text. His opinion was that most newspapers and business documents were full of “fog” and unnecessary complexity. This, according to him, made it difficult for most high school graduates to read. He viewed the problem as emanating from the writing style of writers. The Fog Index level translates the number of years of education a reader needs to understand a written material. He proposed 7 or 8 years as ideal. He considered anything beyond 12 years as too difficult and hard for most people to read. In addition, he proposed that short sentences in plain English achieve better readability scores than long sentences written in complex language. It must be noted that not all complex or long words are difficult since some short words can be difficult and unfamiliar if they are not used very frequently (Galaa *et al.*, 2018).

### Writing

Writing is the process of producing words using a pen and a piece of paper or a computer to convey a message. The writing of words is not just a game for pleasure but it is required to carry meaningful and readable information. Writing is also a very important skill for people of all ages and for daily usage.

### Importance of Writing

On one hand, Colorado (2008:1-2) mentions some reasons why writing is so important such as to complete tasks, which is an important element of a student’s education and where students have to show more sophisticated writing skills; it is often an essential element of an employee’s job and a vital form of communication. Furthermore, Colorado (*ibid*) claims that many students have trouble in writing especially with clarity, coherence, unity and organisation, which discourages them from writing. Therefore, students need to be taught to write competently. Lecturers should guide students on how to write a sentence correctly by showing them the sequence of words, punctuation, spelling and proper vocabulary.

The English for Academic Purposes Course equips students to study effectively in the English medium learning environment and assists students to improve and develop their English language proficiency within a framework of academic contexts in order to communicate accurately, appropriately and effectively in academic speech and writing, Fans (2014). On the other hand, Ahmend (1996:8) stated that teaching strong writing skills reinforces and enhances what students are trying to express because students have to write words down. Ahmend (*ibid*) added that when students speak, they can gesture, use facial expressions, ask questions or fumble their way through their communication, but when they write, they have to communicate their meaning with actual visual words. Ahmend (*ibid*) further concurs with Colorado (*ibid*) that when students are taught writing strategies to communicate, they are taught to dig deeper to find the appropriate words because they are forced to form correct sentences (concord), use suitable words (vocabulary) and accurate spelling.

Peck and Coyle (1999:3) also suggested that while students are expected to be competent writers, it has been their experience that the most common weakness in students’ writing is

the inability to generate sentences that are both readable and understandable, and grammatically correct in a conventional and formal sense. They (Ibid) further argues that this inability to generate appropriate and correct sentences is not something new; many people have difficulty handling the basic mechanics of sentences but that may lie in the sort of technical vocabulary used to explain the mechanics of language. They suggested that once the basics of sentence construction are grasped, everything else will fall into place. (Ibid) further mention that the essential skill in writing is the ability to generate a 'correct' sentence followed by another 'correct' sentence. By 'correct' they mean a sentence that follows the conventions of Standard English in terms of punctuation, spelling and grammar. Peck and Coyle (1999:4) further stated that employers value anyone who can express himself or herself and write grammatically correct sentences and convey information clearly and accurately.

### Methodology

The study used qualitative research approach to collect and analysed data. This approach was employed because the purpose of this paper was to determine the age level at which Bolgatanga Polytechnic students write by analysing the essays. Qualitative approach is a means for testing objective theories by examining the relationships among variables, Creswell (2007). This method helped the researcher to accurately validate the findings of the paper.

Two hundred and thirty two scripts were collated from eight departments of High National Diploma (HND) level 100 year group and analysed using the Gunning Fog Readability Index.

**Sampling Technique:** The sampling technique used for the study was purposive sampling. This is because the subjects have an in-depth knowledge about the study. Two hundred and thirty two scripts of these subjects were collected and examined to establish the academic age level at which these students write. Chandran (2004:88) is of the view that a sample method is a way of selecting a portion of a population that represents the whole population adequately.

### Data collection procedure

HND students from the eight departments namely: PLM, HCIM, Statistics Ecological Agric, Agric Engineering, Civil Engineering, Building Technology and Industrial Art were given the topic "The significance of ICT in higher Education in Ghana" to write essays of between 350-400 words. Students were given a week to submit their assignments through the researcher's mail. The medium of submission (e-mail) was chosen because the Gunning Fog Index Analyses requires that text should be in soft copy form before it can be analysed. Also, once the scripts were in soft copy form, the researcher did not take the pain to convert hard copy scripts into soft copies by scanning the hard copies to meet the requirement of the index formula. Submissions through the mail helped to reduce the error margin of converting from hard copy to soft copy. The researcher downloaded two hundred and thirty two scripts of students from his in-box from the eight departments and analysed them using the Gunning Fog Readability Index analysis formula.

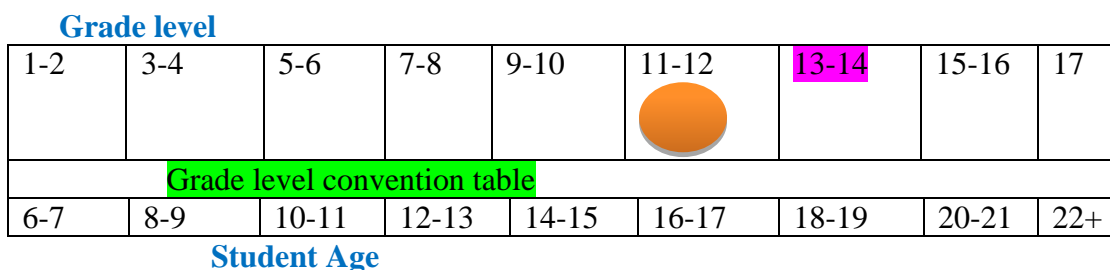
### Data analysis

Two readability calculators were used to analyse the 232 scripts to determine the age level at which Bolgatanga Polytechnic Students write. The two calculators used were the Gunning Fog and the MS word calculator to validate the accuracy of the findings. After each test carried out on the essays, the results were collated systematically, that is, essay by essay till the two hundred and thirty second essay. After the analysis, the findings were put in the graph

statistics of Gunning Fog to determine the academic age level at which these student write. Below is the graph counting the statistics;


### Graph Statistics of Gunning Fog

The chart below represents the Gunning Fog statistics graph. This enabled the researcher to analyse the text and determine the readability level and equate it to the academic age that each student wrote.



(green colour) = Name of Graph

(pink colour) = Grade Level

 = Texts of the various scripts (In analysing the 232 scripts almost all the results fall under the range of 11-12 grade level and 16-17 academic age respectively, indicating the standards of the scripts and the age level).

The grade level of the 232 script analysed is between 11 and 12. This grade level in the school system of Ghana is Senior High School form two which corresponds with the academic age level 16 and 17 years. Considering the conversions, the ideal grade level and academic age level for polytechnic students to produce acceptable pieces of writing should be 13 and 18+ respectively. In view of the findings, it is absolutely clear that the students write way below their academic age. This had a negative impact on the grades awarded students any time they wrote academic essays for the award of grades.

### Discussions and analyses of data

**Table 1**, represents descriptive statistics of scripts of students from the various departments under review. There were scripts of students from eight departments whose writing level was reviewed. These were PLM students constitute the majority of 28.9% out of the 232 scripts due to their numbers and Statistics constitute the lowest with 2.6%.

**Table 1. Descriptive statistics from the various departments**

Agric Engineering	15	6.5
BT	28	12.0
Civil Engineering	07	3.0
Ecological Agric	11	4.7
HCIM	51	22.0
IND.ART	47	20.3
PLM	67	28.9
Statistics	06	2.6
Total	232	100

Source: survey

Table 2 represents Gunning Fog Readability scores of the scripts analysed from eight departments; it has shown that on the average, one needs 12 years of academic age to write such scripts. Notwithstanding there were unpardonable errors committed in all the essays analysed but much emphasis was on the age level. Building Technology (BT) and HCIM student scored a least mean academic age of ( $\bar{X} = 11.34$ ) students from the rest of the departments scored 12 years of academic age to be able to produce such scripts. But ideally base on gunning a polytechnic student needs 13-15years of academic age to write such script that is level 100 to 300 of High National Diploma (HND). This finding agreed with the first hypothesis that Students write below their academic age in Bolgatanga Polytechnic.

**Table 2. Descriptive Statistics for gunning fog readability indices**

Departments	Gunning Fog mean
Agricultural Engineering	12.10
Building Technology	11.34
Civil Engineering	12.17
Ecological Agriculture	12.13
Hotel Management and Industrial Management	11.34
Industrial Arts	12.00
Procurement and Logistics Management	12.03
Statistics	11.68

The findings of the above table show that there is slight differences in the level that students write across the eight departments. These differences cannot meet the required academic age for writing in the Polytechnic.

Table 3 Represents students' academic scores in the Communicative Skills course of the first semester. Out of 232 students, only 1 student scored a grade A+ representing 0.45 percent, 3 students scored grade A representing 1.29, 15 students scored grade B+ representing 6.46, 33 students scored B representing 14.22.

The pass rate from A+ to B is 22.40% 164 students scored between C+ and D representing 70.7%. This shows that fewer students were able to make between A+ and B and the majority of them scored below average.

**Table 3. Communicative Skills Score Analysis**

Summary		
Grade	Frequency	Percentages
A+	1	0.43
A	3	1.29
B+	15	6.46
B	33	14.22
C+	30	12.93
C	45	19.41
D+	31	13.36
D	58	25.00
F	16	6.90
<b>Total</b>	<b>232</b>	<b>100</b>

**Source: Liberal Studies Department (B.Poly)**

The above findings agreed with the second hypothesis that Students' academic grades are affected due to the level at which they write. 164 out of the 221 scored grades between C+ and D representing 72.23 %. This constitutes weaker grades in the polytechnic grading system.

**Table 4. Grading Chart of Bolgatanga Polytechnic**

Scores	Grade
85+	A+
80 - 84	A
75 - 79	B+
70 - 74	B
65 - 69	C+
60 - 64	C
55 - 59	D+
50 - 54	D
40 - 49	F

**Source: Liberal Studies Department**

### Major Findings

The findings of the study reveal that students in Bolgatanga Polytechnic write way below their academic age. These findings were not expected because these students have passed through the educational system in Ghana right from class one to their current level and the medium of communication (oral and written) is English. For that matter, these students should not write way below their academic age. Probably, the writing deficiency started right from the basic school through to the senior high school which was not detected by their language tutors.

Also, it was revealed that students could not construct simple sentences without concord error which affected the quality of academic scripts that they wrote. Some lecturers also pointed out that despite the fact that their courses are not Communicative Skills related, when these students write essays for marking, they find it difficult to read and understand their persuasion.

Again, it has reveal that it will be very difficult for students in Bolgatanga Polytechnic to make their own notes during and after lectures and they always rely on handouts or teaching notes from lecturers. This makes it difficult for them to express their ideas constructively in writing since they have only one source of information (lecture notes).

### Contribution of the Study

This piece will help lecturers to further explain their topics to the minimum level for students to get the concepts of the subject matter to improve upon their writing, their grades and their critical thinking ability as a result of their writing deficiency. The paper also creates the awareness for lecturers to concentrate more on students writing skills by giving them more writing activities during their engagements.

Also, the findings of this piece can be adopted by the Polytechnic Education Council of Ghana and other countries that run the polytechnic system to implement activities that will encourage students to constantly write at the polytechnic level to improve upon their writing ability. This will equip students with the necessary skills needed to write fantastic academic

scripts for their lecturers. Also, students will be well equipped for the job market to increase efficiency.

In another development, to improve upon students writing skills, the Polytechnic Council could also create a writing unit in the Liberal Studies Departments in each of the ten Polytechnics across the country, purposely for guiding students to improve upon their writing skills.

### **Conclusion and Recommendation**

Bolgatanga Polytechnic students write way below their academic age level, for that matter the following recommendations should be adopted to improve upon students' writing standards.

The Polytechnic has no writing unit or a unit of that sort for students and lecturers to do editing and proof reading of their work. The Polytechnic should deem it necessary to create a writing unit within the Liberal Studies Department and appoint a coordinator supported by other Communicative Skills lecturers to be in charge of students' writing. One major responsibility of the unit will be to guide students to write, including guiding students to write their essays, thesis and other academic work. The unit should also edit and proof read students' works for just a token.

The unit should introduce other writing programs such as writing clubs on campus to engage students to write and write better pieces. By so doing, will go a long way to improve upon their standards of writing and at the end it will produce graduates that can compete with their counterparts from other Polytechnics in the job market. The Polytechnic should equip the department with human resource and the necessary equipment to help improve the situation. Upon creating the unit, it will also be beneficial to the general public to proof read and edit their work for a fee and will be a source of income for the school as Internal Generated Fund (IGF).

Also, Communication Skills should be taught in three semesters instead of the two semesters. This will give the incoming fresh students the opportunity to brush up their study skills since most of them completed school way back before gaining admission to study at the Polytechnic. The two semesters is a shorter period which is not enough for them to brush up their writing skills. In view of the findings, it is recommended that there is a vacuum which needs to be filled by other researchers to investigate the readability of lecture notes given to students by lectures, to ascertain whether students do understand the lecture notes given to them during lectures since their writing level is way below the ideal academic age of a Polytechnic student.

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