



Navigating readability assessment: Exploring the dynamics of classical formulas

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Abstract

Writers often simplify texts using various readability formulas to ensure clear communication with the audience. The idea that readability gauges how easily a text is understood and its accessibility to readers is essential in designing educational materials. In effect, readability indices classify texts in levels and align them with learners' linguistic competence. This study compares three classic readability formulas: Flesch Reading Ease (FRE), Flesch-Kincaid Grade (FKG), and the Gunning Fog Index (GFI) to examine their applicability and text complexity. Text-Inspector and Complete Lextutor software online programs assess the readability and vocab-profile of (a) academic (b) non-academic, and (c) entertainment texts. Research outcomes report that the academic text was highly difficult (FRE=37.62), the non-academic text had a standard difficulty (FKG=68.11), and the entertainment text was easy to read (GFI=89.51). These results indicate that the three formulas show significant metric approximations, closely linked to intuitive text processing methods. In conclusion, the functionality of these readability formulas illustrates how readability metrics and vocab-profile indices, to some extent, categorized texts in advance, intermediate or elementary, conditioning readers' comprehension and interpretation of the text. It also provides insights into the type of genre and level of the reader's proficiency to whom the text is focused.

Keywords: audience, language analyser, literacy level, readability formulas, writing compositions

Introduction

In the current information-rich environment with limited attention spans, the use of readability formulas is essential, ensuring clear and concise communication through readable texts (Beier et al., 2022). Readability refers to the ease with which a reader can comprehend writing compositions. It encompasses the arrangement of various linguistic features such as vocabulary selection, sentence structure, and overall coherence (Baker, 2021), influencing how accessible a text is to its audience (Luong et al., 2020; Wang et al., 2022). This concept is crucial in educational contexts, particularly in designing materials for second language (L2) instructions and development (Fitriansyah & Miftah, 2020). Thus, classical readability indices like Flesch Reading Ease (FRE), Flesch-Kincaid Grade (FKG), and Gunning Fog Index (GFI) are commonly used to assess text difficulty across different languages and text types (Kisel'nikov et al., 2021). Within text analysis, classical readability formulas, initially designed for English, have been adapted for other languages with minor modifications (Skvorc et al., 2019). Accordingly, readability indices are classified into “discourse cohesion, lexico-semantic, syntactic, and language model features” (Martinc et al., 2021, p. 143).

In the pursuit of reporting text difficulty, researchers and material developers employ structural and intuitive approaches to effectively create a road map of L2 reading comprehension (Allen, 2009). The structural approach, seen in graded readers, relies on predefined structures and word lists, assessing readability through linguistic features like sentence length, vocabulary sophistication, and grammar (Shen, 2017). Researchers often apply conventional readability measures, such as FKG Level (Kincaid et al., 1975) and FRE (Flesch, 1948), to engage L2 and foreign language learners (EFL) appropriate challenging texts. The intuitive approach is more subjective, relying on an author’s judgment of text clarity and how it flows in discourse (Young, 1999). Both approaches are commonly used, with traditional readability formulas providing more precise metrics to categorize the complexity of texts. Structural readability metrics validate intuition, aiding writers and educators in justifying text difficulty and helping inexperienced writers produce clear, content-rich texts (Crossley et al., 2023).

When assessing the cognitive load for text comprehension, complexity is determined by syntax, vocabulary, and reader background. Sentence structure, word choice, and conceptual complexity shape this relationship. Classic readability formulas estimate lexical and syntactic elements using proxy estimations like sentence length for syntactic complexity and word length for lexical sophistication (Crossley et al., 2023). Additionally, readability encompasses all textual factors affecting comprehension, including educational and social backgrounds, experience levels, and motivation to learn (Ojha et al., 2021). Readability, in turn, determines how clear and accessible a written material is to both scholarly (researchers and professionals) and non-scholarly (students and practitioners) audiences. Despite traditional formulas face criticism for their limited linguistic coverage and overemphasis on basic textual features, neglecting complex linguistic and cognitive factors (Fulcher, 1997; Kisel'nikov et al., 2020; Lee & Lee, 2023), they have significantly influenced text assessment.

Theoretical Lens

Theoretical approaches to readability range from traditional formulas focusing on linguistic metrics to intuitive approaches based on authors' assessments of text comprehension (Allen, 2009). Yogesh et al. (2021, p. 646) highlight that in “today's fast-paced digital environment, readers spend” more time searching for information online but have limited attention spans. Beier et al. (2022) emphasize the growing focus on readability due to changing reading habits and the need for clear, well-structured content. As readability research expands across disciplines, it provides insights into factors affecting comprehension. Hyland (2021) underscores that writers must adopt a reader's perspective, recognizing their responsibility to convey information effectively using readability tools and strategies.

Scholars like Fry, Ash, and Edgell played a key role in the advancement of various readability indices to distinguish between the feasibility and readability of written texts (see Crossley et al., 2014). These formulas primarily classify texts by complexity, especially in language teaching, using lexical diversity indexes from corpora (Cortés, 2021). Corpora, categorized by genre, structure, purpose, and style, help researchers analyse readability differences between native and non-native texts. In fact, readability tools assessing these features have a greater impact on text comprehension, supporting language acquisition and production (Crossley et al., 2023; Kisel'nikov et al., 2021; Ramadhani et al., 2023). Currently, research by Nkhobo and Chaka (2023) highlights that traditional readability formulas (such as FRE, FKG) provide reliable linguistic measures for classifying a text as easy or complex. Kremzer (2021) found that FRE scores varied from low to high, indicating texts ranged from moderately difficult to easy. Adhariani and Du Toit (2020) using linguistic techniques and formulas like FRE, FKG, and GFI, observed that Indonesian Financial Services Authority reports have low readability, making them difficult for the target audience to understand. Similarly, Shah et al. (2023) noted that the FRE, FKG, and GFI produced reliable readability scores, aligning with the judgments of independent reviewers when assessing the quality of medical information.

In the same research interest, some studies have implied the extensive use of readability formulas to evaluate the complexity of written texts (Kolahi, 2012; Kisel'nikov et al., 2021; Rahmawati, 2014; Ramadhani et al., 2023; Yu, 2014). For example, Kolahi (2012) comparing the readability of English translation and Persian translation textbooks, found that these reading texts reported a range of difficulties for comprehension. Such a result was in line with those of Yu (2014), who according to the FRE scale (70-80) discovered similar textual difficulty. The authors (Kolahi, 2012; Yu, 2014) conclude that readability formulas are persuasive and reliable, suggesting reading texts should be chosen based on learners' grade level. Additionally, Rahmawati (2014) suggests that teachers can adapt readability indices to select appropriate reading materials, by considering students' proficiency. As stated briefly above, such a claim is quite valid, as readability indices offer quantitative measures to assess text comprehension by evaluating grammatical complexity, lexical density, and variability. While text readability can be adapted and simplified to readers' linguistic backgrounds, progress is not linear; instead, continuous exposure to authentic materials is essential for development (Kisel'nikov et al., 2021; Ramadhani et al., 2023). Certainly, simplifying texts for language learners is a common and effective practice to facilitate language acquisition. Nonetheless, writers and language instructors should use readability sources to check whether the content is or is not comprehensible for learners of

the target language (Shah et al., 2022). For example, in the FRE index, higher scores (0 to 100) suggest the text is more readable. In contrast, at the FKG level, higher grade levels signify the more difficult the content is to process (Cárcamo, 2019).

Research on readability found in Ecuador has established that it is connected to extensive reading programs and the evaluation of reading comprehension. For instance, Romero (2021) investigating learners' vocabulary knowledge and reading comprehension, observed that pre-service English teachers and learners in general need to increase their lexical repertoire. Indeed, an extensive vocabulary not only enhances text comprehension but also improves writing quality. Building on this claim, Salvador (2010) highlights that teaching and learning programs aimed at strengthening Ecuadorian linguistic and communicative competencies are essential since according to INEC statistics, these competencies remain low in Ecuador. In the same vein, Morales et al. (2020) support the view that reading comprehension, text readability, and learners' linguistic background could be taught and improved through readability sources. These sources help learners engage with various types of texts (genres), enhancing their exposure and comprehension. However, research findings from the readability analysis may be applicable only to a particular type of text, as the scales vary from one text to another due to their authenticity designs for a particular audience (Ramadhani et al., 2023).

Although the literature review highlights numerous international studies, there is limited research that investigates the synergy and validity of structural readability formulas in written texts, particularly in an Ecuadorian context. Based on this research gap, this study compares three classic readability formulas such as FRE, FKG, and GFI to navigate their functionality in assessing text difficulty, emphasizing their role in educational settings. The study is directed by these research questions: How do readability formulas classify academic, non-academic, and entertainment texts? Are there any differences or similarities in readability indices among traditional readability formulas?

Methodology

This study involves the application of quantitative and descriptive methods. Quantitative research was based on quantifiable numerical data that facilitate statistical analysis, involving data collection through systematized methods (Han et al., 2022). This approach allows for statistical analysis without subjective influence (Rana et al., 2021). It aligns with the paradigm by using numerical data obtained through systematized readability metric formulas. On the other hand, the descriptive research method was used to describe hidden readability features as they occur in texts. Here, following Siedlecki (2020), the role of the researchers was to employ an observational approach focusing on describing the samples or variables without manipulating them. In this case, each numerical index obtained from the readability formulas provides researchers with specific descriptive analysis.

Building on these methods, the written corpus for the analysis constitutes of three different sample texts taken from an academic textbook (*English Phonetic and Phonology* – Peter Roach), a non-academic textbook (*Harry Potter and the Sorcerer's Stone* – J.K. Rowling), and an entertainment text (*Gotta Move!* – Public Health Agency of Canada). The

texts were first selected from publications by Cambridge University Press, Scholastic Inc., and the Canadian Society, aimed at a diverse international readership. Unlike journal articles, textbooks offer a standardized language framework, making linguistic and literary books ideal for corpus analysis due to their content, educational value, and thematic depth. That is, they were selected based on their relevance, contemporary significance, and engagement with both scholarly and non-scholarly content in nature. The sample corpora were taken from texts designed for second language (L2) readers, ensuring the integrity of the original texts without alteration, and evaluating them using conventional readability metrics.

Text-Inspector (<https://textinspector.com/>), and Complete Lextutor (<https://www.lex Tutor.ca/vp/eng/>), both automatic text analysers freely available online and created by Stephen Bax (2011) and Tom Cobb (2006) respectively, were employed to gauge the readability and vocab-profile of English written compositions. The indices used in the analysis were the Flesch Reading Ease (the higher the score, the easier the text), the Flesch-Kincaid Grade (the higher the score, the harder the text), and the Gunning Fog Index (the higher the score, the more complex). The vocab-profile indices and FRE, FKG, and GFI readability metrics of each sub-corpus were processed and analysed using Excel and SPSS statistical programs to determine the complexity of reading and understanding a given text. The outputs of the readability formulas were then used for describing the texts' difficulty or ease in terms of content and superficial structure. In practical terms, these formulas generated language-related metrics of the property of the texts, offering a clear vision of the overall readability level of the written compositions. The formulas employed in this research study are linked to the work of Gómez and Sánchez (2019, p. 33), below:

Flesch Reading Ease,

$$FRE = 206.835 - 1.015 * \left(\frac{total_words}{total_sentences} \right) - 84.6 * \left(\frac{total_syllables}{total_words} \right)$$

Flesch-Kincaid Grade

$$F_KGL = 0.39 * \left(\frac{total_words}{total_sentences} \right) + 11.8 * \left(\frac{total_syllables}{total_words} \right) - 15.59$$

Gunning Fog Index,

$$GFI = 0.4 * \left(\frac{words}{sentence} \right) + 100 * \left(\frac{complex_words}{words} \right)$$

The main reason for comparing academic and non-academic texts is based on Biber and Gray's (2016) observation that the language used in writing scientific research differs significantly from the language found in humanities prose. Such a claim supports the idea that linguistic registers shape the characteristics of texts, differing between academic and non-academic contexts (Goulart et al., 2020). As a result, texts from different fields of knowledge exhibit varying degrees of complexity, often displaying elaborate and detailed lexico-grammatical structures. So, to analyse the readability of the text previously mentioned, it selected a sample text of 250 words, from their prologues, and reading passages. The number of words was constrained by an open-access online device, leading to a collection of 750 tokens (words). The process of getting readability scores involved transferring the English corpora to the written language analyser. Therefore, the English corpora "underwent software-based text analysis" (Tovar, 2022, p. 4). Aside from the statistical assessment of the output texts, the linguistic indices provide valuable insights not

only for evaluating writing compositions but for preparing teaching materials and tests before their implementation in learning environments.

Accordingly, the automatic text analyser generates language-related features such as sentence count, token count (distinct word count), a sentence length average, syllable count and density per 100 words, syllable-to-word ratio and sentence. Then, the output texts produced by the text tool classified the distribution of these linguistic features (e.g., sentence length average, standard syllables) as either easy or difficult to deal with. Once the readability metrics for each text sample were gathered, these were independently compared and interpreted. Table 1 below presents the scale tied to each formula for analysing readability.

Table 1. Readability indices and their scale

Flesch Reading Ease index	Flesch-Kinkaid grade level	Gunning Fog Index	School level	Level of difficulty
90-100	5.0-5.9	5	5th grade	Very easy
80-89	6.0-6.9	6	6th grade	Easy
70-79	7.0-7.9	7	7th grade	Fairly easy
60-69	8.0-9.9	9	8th & 9th grade	Standard English
50-59	10.0-12.9	12	(10th-12th grade) Some high school	Fairly difficult
30-49	13.0-15.9	14-16	High school to college	Difficult
0-29	16.0-17.9 +	>16	Graduate & up	Very difficult

Note. Adapted from Chapman et al. (2000)

Research Findings

Table 2 (below) shows that the readability indices across text categories uncovered significant differences in language use throughout academic, non-academic, and entertainment texts ($p = 0.006$). Independent Sample *T-tests* reported differences between FRE and FKG (0.05), and FRE and GFI at the level of significance $\alpha = .05$, but not among FKG and GFI (0.08). The academic text has the fewest sentences (7 in total) and the highest number of syllables (338), indicating more complex sentence structures and likely more technical language, referred to Highschool or College students. By contrast, the entertainment text has the highest number of sentences (21 in total) and the lowest number of syllables (291), suggesting simpler sentences and language more suited for broader audiences, which is appropriate to kids from the fifth-grade level.

Table 2. Metrics of readability indices

Texts	# of sentences	# of syllables	FRE	FKG	GFI	FRE-FKG <i>P-value</i>	FKG-GFI <i>P-value</i>	FRE-GFI <i>P-value</i>	GROUPS <i>P-value</i>
Academic	7	338	37.62	15.29	18.335				
Non-academic	10	306	68.11	9.30	11.07	0.05	0.08	0.05	0.006
Entertainment	21	291	89.51	3.52	6.66				

Flesch Reading Ease Index Analysis

As stated above, the FRE scale measures text readability based on linguistic properties (Gómez & Sánchez, 2019), with scores ranging from 0–100. Texts scoring between 90 and 100 are classified as very easy to read and those from 0 to 30 as very complex. Figure 1 below presents that the academic text *English phonetics and phonology* is the most difficult. This is evidenced by its low readability scores (37.62) when comparing the indices in Table 1 with the readability metrics in Table 2, reporting high complexity in both content and structure. The non-academic text *Harry Potter and the Sorcerer’s Stone*, meanwhile, had a score of 68.11, reflecting a more accessible reading level due to the balanced use of basic and moderately complex vocabulary characteristic of standard English. Lastly, the entertainment text *Gotta Move!* showed a score of 89.51, indicating an easy reading level.

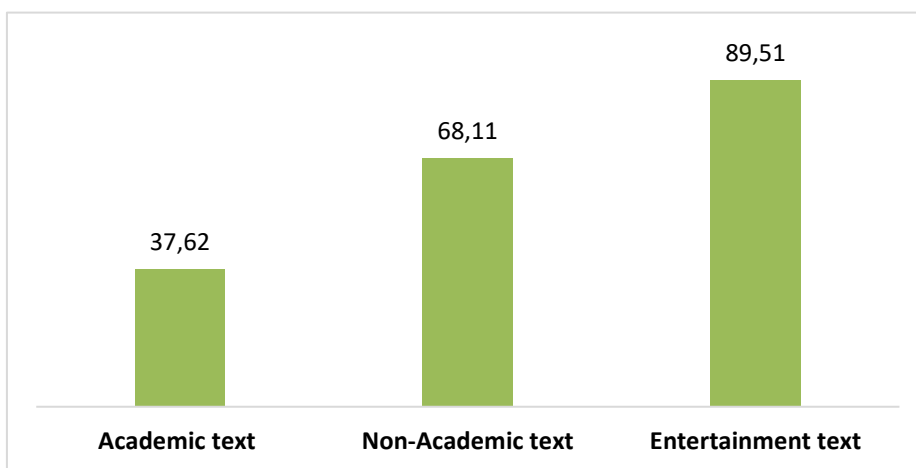


Figure 1. Flesch Reading Ease scores

Flesch-Kincaid Grade Analysis

The FKG level is a readability metric that gauges the grade-level of a text, providing an overall classification of passages as simple or difficult to understand. As shown in Figure 2 and supported by FKG scores in Table 1 above, the entertainment text *Gotta Move!* is the easiest to understand, making it especially accessible and useful for beginners and novice readers. This text received an FKG scale of 3.52, indicating a readability level appropriate for fifth-grade students. Its simple sentence structures and frequent words usage provide readers with a clear organizational framework, facilitating comprehension of the passages. In contrast, the non-academic textbook *Harry Potter and the Philosopher's Stone* was ranked at an average level of difficulty. Although it included more complex words and sentences structures, the overall context remains quite comprehensible. This text had an FKG scale of 9.3, suggesting to be designed for eighth- and ninth-grade students. Since this contains some frequent everyday words, this level is considered standard for readers. Finally, the academic text *English Phonetics and Phonology* is the most complex composition due to its extensive use of technical words, which may pose comprehension difficulties for readers unfamiliar with the field. The academic text reported an FKG scale of 15.29, indicating suitability for university-level readers, with its considerable degree of difficulty attributed to the use of specialized terminology, words, and phrases.

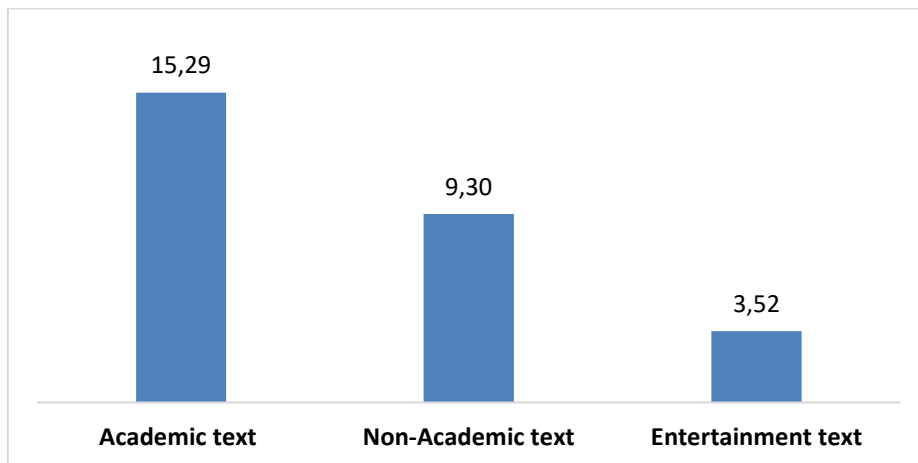


Figure 2. Flesch-Kincaid scores

Gunning Fog Index Analysis

The GFI Level gives researchers, material developers, and potential readers the degree of reading difficulty or the intended schooling level for a text, with higher values reflecting greater complexity. Figure 3 shows that the entertainment text *Gotta Move!* reported the lowest GFI readability value (6.66), indicating that the content is basic and, consequently, easy to understand and process. By contrast, the non-academic text *Harry Potter and the Philosopher's Stone* was at an intermediate level (11.07), informing to have a moderate

degree of difficulty. That is, the vocabulary and content are relatively simple, making the text accessible to readers with an intermediate level of lexical and grammatical proficiency in the target language. What is interesting about this data is that the academic text *English Phonetics and Phonology*, consistent with previous readability analyses using different formulas, was ranked as the most complex text, receiving a GFI score of 18.35.

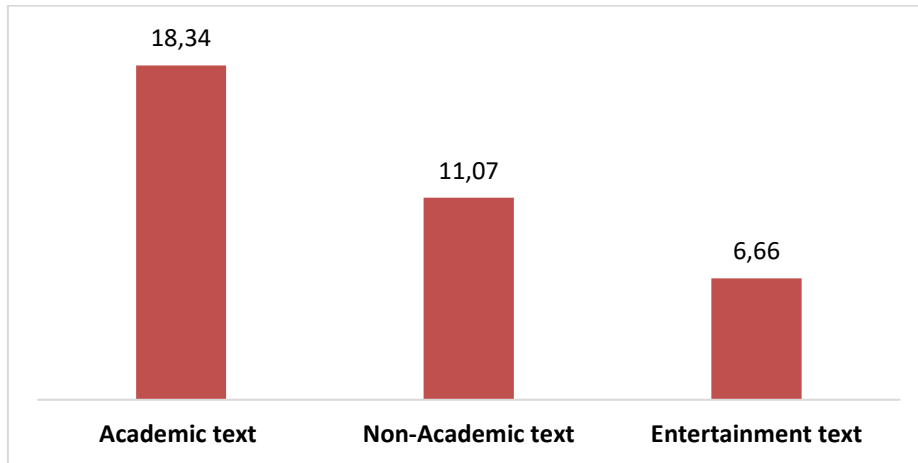


Figure 3. Gunning Fog Index scores

When comparing and contrasting the indices of the readability formulas in Figure 4, the results further reinforce the notion that academic texts are complex. This is evident in the current study, where the academic text revealed a high level of difficulty with an FRE score of 37.62, an FKG level of 15.29, and a GFI index of 18.35. In contrast, the non-academic text, with an FRE score of 68.11, an FKG level of 9.30, and a GFI index of 11.07 is placed to be appropriate for seventh- and eighth-grade students, indicating a standard level of English difficulty. Finally, the entertainment text, which scored 89.51 on the FRE, 3.52 on FKG, and 6.66 on GFI, reported a low level of complexity and was suggested for fifth-grade students.

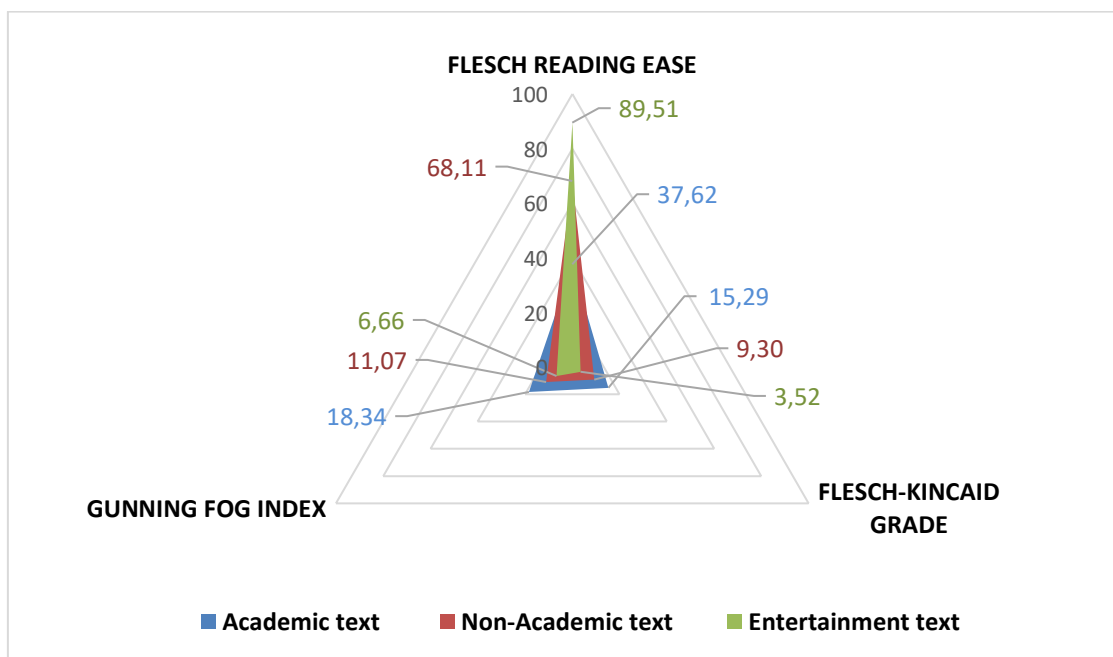


Figure 4. Distribution of readability indices in texts

Table 4 presents the distribution of vocabulary levels and cumulative word diversity across the three sample texts. The p-value of 0.008 indicates a statistically significant difference in vocabulary use and structural complexity among texts, confirming that variations in sentence length, lexical diversity, and academic word usage are not random. As can be seen in the table below, the academic text shows the greatest prevalence of technical language, a hallmark of this kind of genre. This text often uses exclusive and refined language associated with its respective fields of study. In contrast, non-academic texts, particularly entertainment-oriented ones, display a greater prevalence of general vocabulary. However, non-academic texts demonstrate superior vocabulary diversity compared to both academic and entertainment compositions.

Table 4. Vocab-profile of the texts

Texts	Average sentence length	Type token ratio	Cumulative lexical diversity	Lexical density	Academic words	GROUPS <i>P-value</i>
Academic	29.14	0.56	70.97 (medium vocab.)	0.49	6.44 (very high)	
Non-academic	19.82	0.57	92.37 (high vocabulary)	0.47	0.45 (very low)	0.008
Entertainment	11.05	0.43	53.63 (low vocabulary)	0.47	2.15 (high)	

Moreover, figure 5 illustrates that the academic text notably incorporates more content words (0.49) throughout their discourse than both non-academic and entertainment works. The academic text also features the longest average sentence length (29.14) and the highest proportion of academic words used across the text (6.44). This informs that academic texts are informative and rich, with more complex sentence structures and specialized vocabulary. The non-academic text exhibits greater word diversity (0.57) and cumulative lexical diversity (92.37), with lower lexical density (0.47), similar to the entertainment text, and moderate sentence length (19.82). It implies that this type of texts suggests a broader range of vocabulary, a more conversational or accessible writing style, and a balance between readability and complexity. The entertainment text informs simpler and more directed writing style (11.05), lowest TTR (0.43), and lowest cumulative lexical diversity (53.63), indicating repetitive vocabulary and limited variation. Academic word usage (2.15, high) is notable but still much lower than academic texts. Despite the substantial proportion of content words in the academic text, driven by extensive use of academic terminology and moderate vocabulary variation, this text presents a challenging readability level. That is, due to long sentences, high academic vocabulary, and dense information, academic texts are likely to be the most difficult to read.

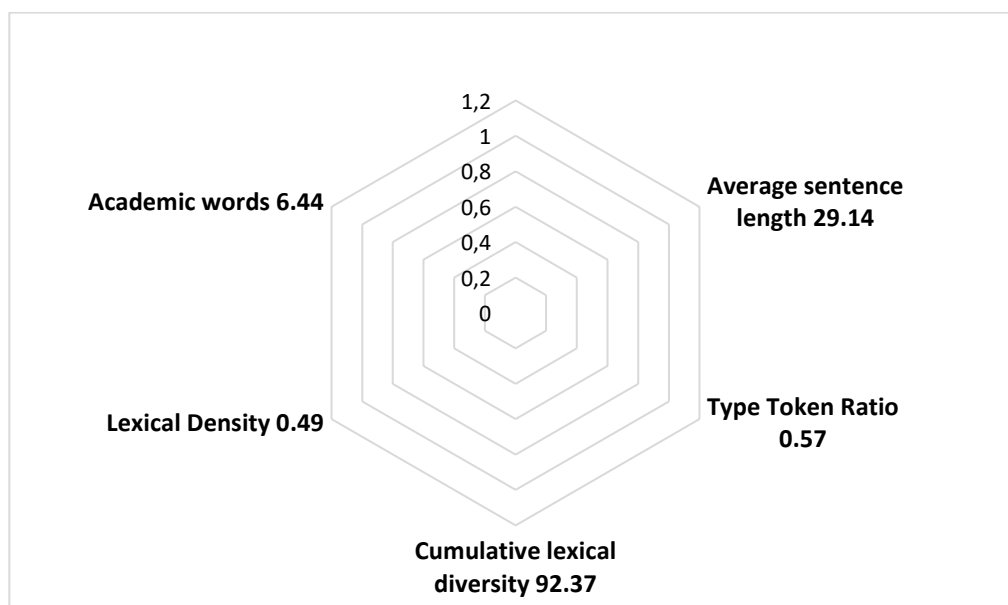


Figure 5. Distribution of vocab-profile indices in academic and non-academic text

Discussion

The results from traditional readability indices showed that language use varies by writing level and genre, with academic, non-academic, and entertainment texts displaying unique features that shape their complexity and ease of comprehension. Consistent with these findings, earlier studies have shown that academic writing often exhibits distinct language features that increase its level of difficulty (Wang et al., 2013). Collectively, these features contribute to the sophistication and complexity of academic discourse, requiring advanced comprehension skills, which may pose challenges for novice readers who are unfamiliar with its syntactic and lexical conventions (Kiselnikov et al., 2021; Wang et al., 2020). In this context, Rahmawati (2014), Kolahi (2012), and Yu (2014) argue that readability indices can serve as pedagogical tools to guide teachers in selecting texts aligned with students' proficiency levels. This approach gradually supports language development, as constant exposure to authentic materials (Ramadhani et al., 2023) strengthens reading and writing skills, text readability, and learners' linguistic background (Morales et al., 2020).

Data from FRE and GFI scores showed the academic text reported a high level of complexity in understanding due to its structure, lexicon, and content. This finding aligns with Gopal et al. (2021) who found that academic texts typically have lower FRE scores because of their specialized language, complex sentence structure, and technical vocabulary. In fact, the use of such linguistic features increases textual complexity and limits accessibility, making academic texts the most challenging written materials (c.f., Biber & Gray, 2016; Crossley et al., 2014; Tovar, 2022). Because of academic texts rely on more sophisticated vocabulary and complex structures, they are more demanding to process. A possible explanation for this result might be the nature of the texts, which are written by academics who are experts in the disciplinary field (e.g., Ortega, 2015; Tovar, 2022).

Therefore, writers and language instructors can use readability metrics to examine textual complexity (Shah et al., 2022), as higher FRE scores suggest greater readability, whereas higher FKG levels reflect processing difficulty (Cárcamo, 2019). From this context, Hyland (2021) emphasizes the importance of following intercultural communication and linguistic conventions displayed in academic or professional contexts that underline the need to master the language and be aware of the cultural nuances. Indeed, understanding the technical or professional content is essential for effective comprehension (Baker, 2021), particularly in texts characterized by specialized language and complex structures (Lee & Lee, 2023).

On the other hand, non-academic and entertainment texts showed more accessible comprehension conditioned for basic linguistic structures and vocabulary, and content that involved prose more familiar and common to low-level readers. This suggests, as noted by Srisunakrua and Chumworatayee (2019) that non-academic texts, such as those found in this study, often employ basic linguistic structures and familiar vocabulary, enhancing accessibility to readers with lower proficiency levels. Mainly because storytelling and reading storybooks frequently use simple language characterized by shorter sentences and core vocabulary; however, they can be simpler or more complex depending on their narrative style (Nevo et al., 2024). Indeed, the level of complexity varies based on the text's structure and writers' linguistic backgrounds (Ortega, 2015). This claim is connected with the notion that linguistic choices made by the author play a crucial role in determining the complexity and accessibility of a text (Kremzer, 2021). That is, the effective selection of linguist structures in genre-based writing instructions (Hyland, 2021), combined with readable texts (Morales et al., 2020), persuades audience to interact with the text.

In the same way, the FKG index indicates that entertainment and non-academic texts are suitable for students from 5th to 9th grades, as they require clear and explicit grammatical structures, moderately basic vocabulary, and eye-catching contents. This suggests that educational materials should focus on readability and engagement to improve comprehension, as studies confirm that factors such as word frequency and discourse parameters influence reading in young learners (Dmitrieva et al., 2021). The academic texts, by contrast, have complex structures with a large set of technical vocabulary, which, due to its nature, is targeted to readers with, at least, a college-level proficiency. Nonetheless, corpus-based research reveals that EFL writers use fewer and less varied formulaic sequences (de Oliverira et al., 2021). Therefore, readability measures in EFL contexts require careful interpretation, since comprehension difficulties may stem from formulaic unfamiliarity rather than solely sentence length or lexical complexity. Yet, Dmitrieva et al. (2021) stress that simplifying texts for different audiences can be restrictive, as comprehension relies not only on content and structure but also on the reader's language proficiency. This research finding suggests consistency with those of Srisunakrua and Chumworatayee (2019) who found differences between the readability levels and metrics across texts, as non-academic writings proved to be simpler compared to academic works. Thus, entertainment texts are the simplest and most reader-friendly, non-academic texts are more accessible and engaging, while academic texts are the most difficult due to their complexity and dense vocabulary. These observations align with Wang et al. (2013) who highlighted that academic writing complexity is influenced by vague sentence structures, high lexical density, and specialized vocabulary. In fact, Romero (2021) underscores the role of vocabulary development in producing readable and accessible texts, since a limited lexical repertoire hinders both reading comprehension and text production.

A common critique of conventional readability parameters is that they are often

considered linguistically superficial. Yet, Hidayatillah and Zainil (2020) underline that readability indices focus on language learning and bookmaking to generate accurate scores or grade levels. In fact, data regarding the complexity of these formulas suggest that FRE, FKG, and GFI measure readability differently, though some differences are only marginally significant (see p-values in Table 2). Although the results discussed above differ from those of Lendo et al. (2021), these authors reported text complexity using several readability metrics. For instance, a 78.0 score is considered *fairly easy*, optimal for seventh-grade; 81.0 grade is *easy* for sixth-grade; and 66.3 is *standard* for eighth- and ninth-grade students. In the same analysis, 82.4 is categorized as *standard* in terms of complexity and ideal for sixth-grade readers; 92.2 is *very easy* for fifth-grade; 88.9 and 86.3 are measured as *easy* for sixth-grade; and 59.8 is fairly difficult for tenth-grade readers. The differences are noticed in the adjustment of specific values to classify the reading grade level, but the numerical change is minimal. This variation may be attributed to texts' authentic design for particular audiences (Ramadhani et al., 2023) and the selection of a different interpretation reference table than the one used in this study. As stated earlier, while the current results suggest some potential variability in how difficult the texts are perceived, previous findings, as those of Hidayatillah and Zainil (2020) indicate that traditional readability formulas are generally consistent and practical for evaluating large, extensive written corpora.

Because readability formulas quantify word length, sentence length and structural features, Romero (2021), Morales et al. (2020), Salvador (2010), and Ramadhani et al. (2023) collectively reinforce the role of lexical and syntactic choices in language development within educational contexts. A rich vocabulary may increase perceived difficulty unless instruction explicitly develops students' lexical knowledge, highlighting the importance of teaching less frequent and academic words to enhance readability and writing quality (Romero, 2021). Since readability measures are sensitive to sentence length and word complexity, Ramadhani et al. (2023) argue that lexical and syntactic choices shape intelligibility and instructional suitability. Accordingly, educators should examine lexicogrammatical features when selecting materials to ensure alignment with learners' proficiency levels and instructional goals. Indeed, readability indices can inform instructional design by identifying text complexity and supporting activities that strengthen students' lexical repertoire and syntactic competence (Morales et al., 2020). However, teachers must consider the underlying vocabulary and grammatical patterns along with numerical scores (Salvador, 2010), as lexically and syntactically adapted texts better match learners' abilities and promote language development and accessibility. That is, teaching instructions should explicitly focus on developing students' knowledge of academic language by guiding the analysis of both shared and discipline-specific features (de Oliverira et al., 2021) through task-centered learning activities that bridge research and pedagogy (Ibrahun, 2021), to create environments that prepare students to face future academic challenges (Asiatidou, 2021).

The readability score measured in the three chosen texts closely conformed to the analysis illustrated in Table 1 above, showing a (non-) substantial deviation within the ranges of the FR E (± 15.058), FKG (± 3.399), and the GFI (± 3.400). The margin of error found in the three classical formulas suggests that there is a degree of variability in the readability and difficulty of academic and non-academic texts. It indicates that the estimated grade level needed to understand those texts could vary by approximately 15 points or 3.4 grades. Although this trend implies a moderate degree of potential variability in the perceived difficulty of the texts, prior results informed that traditional readability formulas show more

similarities than differences (see Gopal et al., 2021; Lee & Lee, 2023; Wang et al., 2013). These formulas are considered quite reliable, valid, and feasible for measuring the ease or difficulty of texts (Gómez & Sánchez, 2019; Hidayatillah & Zainil, 2020). That is, the applicability of these traditional readability formulas is quite compelling since their metrics reported conciseness when categorizing texts as easy or difficult, allowing them to be statistically different at the level of significance ($p=0.006$). It suggests that FRE, FKG, and GFI are more suitable for assessing the readability of different types of texts.

Conclusion

Measuring text difficulty using traditional readability formulas is crucial for ensuring that written materials are accessible to their intended audience. Formulas such as the FRE, FKG, and GFI provide a standardized method for evaluating and comparing text readability, enabling educators, authors, and publishers to tailor texts to students' grade levels and proficiency. These formulas are widely regarded as reliable, valid, and practical tools for analysing L2 or EFL writing compositions. Nonetheless, it is essential to consider the potential variability when comparing texts, especially between different genres. For instance, academic and non-academic texts highlight greater variability, indicating a relatively high and moderate level of linguistic competence for reading comprehension. Entertainment texts, by contrast, are generally accessible and engaging, making them suitable for a broader audience with different educational backgrounds.

The results provide readers and material designers with insights into the linguistic elements that determine suitability for specific audience. Although readability formulas generally classify the content of the texts according to difficulty using surface-level indicators such as sentence length and syllable complexity, they may not capture all dimensions of readability, including syntactic complexity, cultural context, or the reader's linguistic background. Nevertheless, readability assessment functions as a pedagogical tool that supports informed text selection and guides the creation of educationally meaningful and appropriate writing materials. Integrating readability formulas into writing instructions enhances students' academic writing skills by combining text complexity feedback with explicit vocabulary and grammar development. That is, fostering lexical development promotes clear and more legible writing, while guided practice with readability feedback reinforces syntactic control and communicative effectiveness.

This study represents an initial step in research on readability within the Ecuadorian contexts, and contributes to the broader literature by confirming the usefulness of traditional readability formulas in educational scenarios. As a pilot study, it establishes a foundation for further research incorporates larger, genre-specific corpora, and additional readability dimensions such as cultural context and the reader's prior knowledge. Expanding this research line can lead to more compelling interpretations and better development of educational and academic resources.

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