

**Comparative Analysis of the Readability of Scientific Research
Papers Published by Faculty Members in the Basic Sciences
Departments of Physics, Chemistry, and Biology**

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Abstract

This paper aims at comparing the readability of scientific papers by using the Fog Index, specifically focusing on the fields of physics, chemistry, and biology. The Fog Index is a widely accepted tool that is used for measuring the complexity and readability of written text. Through a systematic analysis of a sample of scientific papers from each discipline, this study found

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that physics papers tend to have higher readability compared to chemistry and biology papers. The reasons behind this disparity in readability levels among the fields could be due to various factors, such as differences in writing styles, subject-specific terminology, and the intended audience. This research aims to have broader implications for the scientific community, as it emphasizes on the importance of clear and accessible writing in scientific communication, ensuring that information is effectively disseminated and understood across disciplines. Further studies could help to explore the underlying causes of this disparity in readability and investigate ways to improve the accessibility of scientific literature across all fields. It is worth mentioning that the scientific papers are published by members of the faculty in the Department of Scientific Basic Sciences.

Introduction

Readability is a crucial element in the success of scientific research and academic advancement. Understanding the significance of readability contributes to success in several critical aspects. The following introduction sheds light on this importance:

Readability serves as the foundation for scientific communication and knowledge transfer. In the context of scientific research, researchers generate new and unique content, and it is essential for them to effectively convey this content to others. If scientific texts are not understood correctly, it may lead to misinterpretations or inaccurate understanding of research findings, adversely affecting the application and comprehension of these results.

Readability acts as a bridge between advanced research and the general public. Scientists continually work on advancing their knowledge and updating their research findings. However, they must also simplify results and concepts to make them understandable to audiences without advanced scientific backgrounds. Readability contributes to establishing this connection effectively, making scientific ideas and discoveries accessible and understandable to the general public.

Readability encourages the continuity of research and development. When scientific texts are available and comprehensible, new researchers and individuals interested in a particular field can benefit from this content to achieve further progress and enrich scientific knowledge. If research is

accessible and readable, it stimulates more inquiry and discovery.

In conclusion, readability is not just a linguistic skill; it is a fundamental factor that determines the effectiveness and impact of scientific research. If readability is achieved, science becomes accessible to everyone, accelerating the pace of scientific and technological advancement.

Method of solutions

The FOG Index is a tool primarily used to measure the readability of scientific texts and reports. It is considered a valuable instrument for writers aiming to make their writings clearer and more understandable for the target audience. In this article, we will explore the concept of the FOG Index and how to use it to assess the readability of scientific research.

The Concept of the FOG Index:

The FOG Index was developed by Robert Gunning in the 1950s, based on a simple idea: the more difficult the words and sentences in a text, the harder it is to read and understand. The FOG Index measures various elements, including sentence and word length, and utilizes this data to determine the level of difficulty of the text.

How to Calculate the FOG Index:

To calculate the FOG Index, the following steps should be followed:

1. Calculate the average number of words per sentence: This is done by dividing the total number of words in the text by the total number of sentences.

2. Calculate the percentage of long words: Calculate the percentage of words containing three or more syllables.
3. Combine the results: Add the results of the previous two steps and multiply them by a constant factor (minimum 1.5) to obtain the FOG Index.

Improving Readability of Scientific Research Using the FOG Index:

1. Use simple words: Avoid using complex words and replace them with clearer alternatives.
2. Sentence segmentation: Break down long sentences into shorter ones to facilitate reader comprehension.
3. Avoid complex sentences: Try to simplify sentences and avoid using intricate sentence structures.

4. Use simple language rules: Avoid complex language rules and use straightforward sentence structures.
5. Readability testing: Regularly check the FOG Index during the writing process to ensure improved text readability.

If you aim to make your scientific research more understandable and clear, the FOG Index is a valuable tool to achieve this goal. By using this index and following the guidelines to enhance text readability, you can provide an easier and more understandable experience for your target readers, leading to greater success in conveying scientific knowledge.

Always remember that the goal is to provide balanced and comprehensible texts for a wide audience, enhancing effective scientific communication and fostering knowledge exchange.

Results

Table 1 refers to the average fog index used to calculate the readability of published research papers by faculty members at Al Huson University College in the fields of physics, chemistry, and biology. These research papers were selected randomly from the published papers, and all of them were published in reputable scientific journals, whether they were within the Scopus family or not. Most of these research papers were used for promotion purposes at Al Balqa Applied University, following the promotion laws and regulations in place at the university.

I noticed that the Impact Factor varies in the scientific papers published in the field of biology. Additionally, I observed that the readability of recently published research papers is lower than that of previously published ones

Table 1 below list the value of fog derived from physics, chemistry .biology papers published by faculty members from huson university college-balqaa applied university.

These papers carried out for corresponding number of physics .chemistry, biology papers in philosophical journal

Table 1

discipline	Average fog index
physics	8.2
chemistry	9.5
biology	10.1

Discussion

Seeking to understand the readability of scientific papers across different disciplines, the focus of this study was on physics, chemistry, and biology. The analysis included calculating the Fog Index for each discipline, providing insights into the linguistic complexity and readability of relevant research articles.

1. Physics: Examination of research articles in the field of physics revealed an average fog index of 8.5. This indicates that the language and writing style of physics research articles are relatively clear and understandable to a wide audience.
2. Chemistry: Comparative analyzes of research articles in the field of chemistry showed an average fog index of 9.5. While slightly higher than in physics, the results indicate an acceptable level of readability in chemistry literature.

3. Biology: Investigations into the field of research articles in biology showed an average fog index of 10.1. This indicates a relatively higher level of linguistic complexity, suggesting that research articles in biology may be more challenging for a general audience to understand compared to physics and chemistry.

Conclusion

These results indicate that research articles in physics specifically are the most read based on the fog index, followed by chemistry, and then biology. These observed differences in readability highlight the importance of considering the linguistic accessibility of scientific literature, as it plays a crucial role in effectively communicating research findings to diverse audiences. These findings can be further investigated and

debated by further exploration and study of the specific linguistic features that contribute to the observed differences in readability between different disciplines.

Recommendations:

It is advisable to analyze the structure and writing style of biology research to identify potential readability issues.

Enhancing scientific exchange between different disciplines may be beneficial to improve understanding of research

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