

## Investigating pre-service teachers' perceptions on readability tools: a case study in Indonesia

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### Article Info

#### Article history:

Received Dec 19, 2022

Revised Nov 28, 2023

Accepted Dec 7, 2023

#### Keywords:

Acceptance

Pre-service teachers

Readability Analyzer

Readability tools

Web-FX

### ABSTRACT

The readability tools allow us to measure the readability of a text. The previous studies have elaborated the use of readability tools to analyze reading materials, but it is relatively sparse regarding the teaching of readability tools especially involving the second language teaching education (SLTE) program as a context. Therefore, this study aimed to explore the acceptance of pre-service English as a foreign language (EFL) teacher upon readability text tools. It covers their acceptance towards the tools, the extent to how the pre-service teachers accept the Web-FX and Readability Analyzer as readability tools and seeks for participants' concerns using the tools. The study was conducted at one English Language Education Study Program at in East Java, Indonesia, involving 33 third-year undergraduate students taking pre-teaching program. Having incorporated a qualitative data analysis approach on the students' text analysis reports and interviews, the study revealed that the participants have positive acceptance of the tools for several reasons. Some final concerns from pre-service teachers after readability tools teachings are presented, including suggestions for future research related to readability tools.

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## 1. INTRODUCTION

A readable text selected for teaching is pivotal to maintain students' interest in reading and assist comprehension [1]–[3]. Consequently, teachers have to possess and adequate themselves with materials development competence as pedagogical knowledge base aims for successful teaching [4]. The previous studies have investigated the importance of text selection for learning [5], [6]. Those studies revealed that failing to select appropriate text in accordance to students' language level hindered the students to reach their full potential. Students experience disagreement and unmotivated in reading that can hampered their literacy and reading skills [7], [8]. Teachers should to be able to select or adjust text accordingly to meet their students' need [9]. Therefore, the teaching materials' selection or development shall become one of the topics included in second language teacher education (SLTE) curriculum.

The ubiquitous technology tools offer assistance for teachers in their teaching purposes including materials development; among them are Readability Analyzer tools. Despite their controversy for their

usage [10], the technology tools are still popular among teachers as the tools help them to analyze a text to determine the level of difficulty. Teachers can then select appropriate texts to make sure the text suits their students' language level. However, many teachers are still unfamiliar with the readability tools so that they still could not select appropriate readings for the students [11]. Hence, these teachers have not seemed ready to apply technology into teaching [12]–[14]. Furthermore, previous studies have investigated topics of technology use for teaching purposes. An example is on teachers' readiness to use them for their own teaching [15]. The studies cover not only in-service teachers, but they have also considered pre-service teachers (PSTs) as the subjects of investigation. Several other studies have shown that teachers are ready to incorporate technology into their teaching [16] while others showed contradictory outcomes [12].

One popular area of investigation on the technology use for teaching-learning purposes is the use of readability tools, which are often widely available for free [17]–[19]. For instance, Web-FX and Readability Analyzer are two tools among many that assist people to assess the content of a text. Web-FX allows users to measure the readability of a text in an 'easy' way. The text is assessed on the analysis of six readability measures, i.e., Flesch Reading Ease, Flesh-Kincaid Grade Level, Gunning Fog, Simple Measure of Gobbledygook (SMOG) Index, Coleman-Liau Index, and the Automated Readability Index scores. Detailed information on what each of these measures assesses can be found in previous study [20]. In addition, Web-FX provides the text's statistics which include the number of sentences, words, complex words, the percentage of complex words, the average word per sentence, and the average syllables per word. The test result also gives an indication of which grade level the text would fit for and a detailed explanation of the meaning of each readability score. Similarly, Readability Analyzer also provides some measures of a text's readability [10], [21], [22], but provides no indication of the target grade level. The text measures include Flesch-Kincaid Reading Ease, Kincaid Grade Level, Gunning Fog Score, SMOG Index, Dale-Chall Score, and Fry Reading Graph. The tool also gives the statistics of the analyzed text and other functionalities such as readability at the paragraph level, spelling checks, and detection of the numbers of passive sentences.

Based on the existing literature, there are major topics of interest that investigate the use of readability tools. The first is the analysis of reading materials used for English teaching. Many studies have been directed to explore the applications of readability tools across different educational levels such as in high schools [23], [24] and higher education institutions [25]. Both of the examples focus using the tools to analyze readability of texts for teaching and learning purposes to find out the suitability of the texts. Further, Crossley *et al.* [26] asserted that the readability tool they used, the Coh-Metrix, was able to analyze English text better. Oyzon *et al.* [27] focused on the tool's development. They developed a software, the Waray Text Readability Instrument, functions as a readability tool. However, the tool does not aim for measuring English texts. In Indonesian context, studies of readability tools are still rare. The recent study focuses only analyzing a commercial text book for high school students using a certain type of tool that differs from this study [28].

Although previous studies have explored readability tools, minimal attention has been given to the area of teaching the readability tools in the SLTE program. During their career as PSTs, students of SLTE program would need to learn technological knowledge for teaching. More research needs to be conducted on how and to what extent PSTs can be ready to apply technology for teaching purposes. Without technological competence embedded in the SLTE program curriculum, the PSTs may find it difficult in meeting the technological standards of competency for language educators [29]–[31]. This incompetency on technology use can hinder them from attaining the maximum outcome of language teaching and learning [32], which in turn can affect their students to achieve the defined learning outcomes. Due to lack of research in the investigation of PSTs' view on technology use for teaching, the current study seeks to explore PSTs' acceptance after being taught readability tools during their undergraduate study of SLTE. To be more specific, this study goals to answer the following research problems: i) How is the PSTs' perspectives on the two readability tools (Web-FX and Readability Analyzer)?; ii) To what extent did the PSTs accept the readability tools?; and iii) What are the PSTs concerns about using the readability tools?

The current study aims at providing a thorough understanding of these PSTs' acceptance of the use of technology, especially on the readability tools. The study's outcome is expected to bring benefits to institutions offering SLTE programs when developing a curriculum that integrates technology in it. Such curriculum would allow the PSTs to plan teaching activities that utilize hands-on technology tools to meet their students' needs. By evaluating how PSTs accept the readability tools they had been learning during their pre-teaching program, the program's administrator can better prepare the curriculum development.

## 2. RESEARCH METHOD

The study explored pre-service teachers' acceptance of the teaching of readability tools during their SLTE program, specifically on the two readability tools: Web-FX and Readability Analyzer. To do so, a qualitative method was employed [33] to get a detailed understanding of the participants' experience when

using the readability tools. The study participants were undergraduate students of English Education Program under Faculty of Education and Teacher Training from one of the public universities in Indonesia. Due to ethical concerns, the researchers do not give the name of the university. The total students served as participants of the study were 33 students who aged range 20-22 years old. They were 11 male and 22 female. During the study, they were in their 3rd-year of study to be trained as an English teacher taking a course in Information Technology in English Language Teaching (ITFELT). They can be considered as PSTs as once graduated, the majority of them seek teaching positions at schools throughout the country.

For the purposes of the current study, 33 reflection papers of the participants were collected and used. For the course assessment, the PSTs were asked to analyze some texts by using Web-FX and the Readability Analyzer, and then write a reflection paper about their experience in using the tools and their perspectives about them by end of the semester. The reflection paper is an effective tool to know the PSTs' thinking reflection [34], [35].

Data triangulation was also performed since not only analyzing the students' reflection papers, but the researchers also conducted semi-structured in-depth interviews with five participating students, who showed their willingness to be involved further in the study. Each interview lasted about 30–60 minutes and asked how the students used what they had learned from the readability tools to improve their teaching skills in the future and their perceptions on how English teachers could incorporate the tools for their teaching purposes. Along with the reflection papers, the interviews' transcripts became the main data source as well.

For the reflection paper and the semi-structured interview, the researchers employed an inductive analysis [33]. The results of the interviews were transcribed verbatim. The researchers cultivated the data using the recurring theme technique to understand how the PSTs perceived and accepted the two technology tools for assessing the readability of texts. For the reflection paper, the researchers read the reflection paper for several time to comprehend the content and understand the points of participants acceptance upon the technology tools they studied. Then, each researchers removed recucrring data, drew some categories and compared the findings before deciding to final categories. From the result of the analysis, the researchers found three major categories and they are: the participants' attitude towards the technology tools, the extend to which the participants accept/ reject the tools, and concerns in regards to the teaching of the technology tools. Meanwhile, the researchers also applied the same procedure as before to analyze the interview results. The analysis of the data did not result in a new theme but rather strengthened the previous theme.

### 3. RESULTS AND DISCUSSION

#### 3.1. Results

From the recurring themes/sub-themes, the answers to the research questions can be described. To support the findings, quotes are presented, which are taken from a particular participating student labelled as P.X where X is the participant code. Since the data were taken from two different sources, the reflection paper and interview, each of them is also labeled differently ('R' means reflection paper and 'I' means interview). For example, IP13 means the data is taken from interview of the participants number 13. The PSTs' perceptions on readability tools for SLTE program were analyzed and categorized into three themes.

##### 3.1.1. The pre-service teacher's acceptance of the Web-FX and the Readability Analyzer

The majority (97%) of the participants had a positive attitude towards the use of the readability tools for English as a Foreign Language EFL teaching and learning purposes. Their positive attitude was reflected by their perspectives that the tools were easy to use and beneficial for their future career as an English teacher. The tools could measure readability of texts being used in their teaching and help them in providing suitable materials for their students' needs. A testimony from the participants through interview and reflection paper repeated this regard.

*With the readability tools, we can better know whether the text is appropriate for the students. (IP.1)*  
*I believe that by using these two tools, I can always check the level of readability of the text. (RP.1)*

The study also revealed that there was somewhat doubt towards the tools. One participant gave negative feedback. The participant agreed that the tools would bring advantages towards his/her future career as a teacher, but s/he argued that the tools might not be suitable for analyzing text used for teaching English in Indonesia as English was not the first or even second language in the country. Many Indonesians speak in their mother tongue language, then use Indonesian for the main formal language. S/he believed that the tools only suited to analyze texts aimed at teaching English as the first or second language, not for other purposes.

*People who use English as their primary language can better understand the intent of using the tools. It is more difficult for foreign learners like us to use them. (IP. 18)*

*I feel that these two tools are more suitable for those who use English as their primary language. (RP. 18)*

### **3.1.2. The extend of pre-service teachers' acceptance upon the teaching of readability tools**

The data taken show that most of the participants had positive acceptance after the teaching of readability tools since the tools have seemingly brought apparent impacts for the pre-service teachers' future career as an educator. The pre-service teachers admitted that they did not know if such tools were available. Therefore, they seemed very eager to use the tools although they had no previous knowledge of them.

*Previously I did not understand and did not know about these tools; after I understood and found out that I think this is very effective for teachers in analyzing a reading. (RP. 15)*

The participating students confessed that upon the completion of using the Web-FX and the Readability, they were confidence that the tools could boost students' confidence.

*With these tools, I can match the readings with my students' English level. And I believe my students will not complain about the task or the assignment I give to them. (RP. 17)*

Upon using the tools, the PST students believed that the tools would assist them in the lesson planning stage. In designing a lesson plan, teachers would need to set teaching and learning goals that are in line with the curriculum and the students' needs.

*It can be my first step before designing lesson plans and choosing materials for reading activities. (IP. 10)*

The data taken from the reflections showed that the teaching of the Web-FX and the Readability Analyzer had changed the participants' attitude towards the use of technology for teaching and learning. Knowing that the tools would bring advantages towards their future career as an English teacher, they started to realize that technology did matter for teaching and learning.

*I will design innovative learning by combining learning technology with traditional teaching. In conclusion, using reading tools makes me more innovative in teaching. (RP. 7)*

### **3.1.3. Some final concerns from pre-service teachers after readability tools teaching**

Despite the user-friendliness of the evaluated tools, the participants argued that there should be mandatory training to teach these tools for pre- and in-service teachers. This study showed that the participants were willing to share what they had gained from the class by teaching others about the tools. By teaching them, the 'prospective teachers' would be able to incorporate the tools for teaching and learning purposes.

*This tool must be disseminated so that teachers can use it, especially prospective teachers who will teach in the future. (RP.22)*

PSTs believed that students could also benefit from the use of the tools. When teachers taught students to use the tools, the students could select reading materials that were in line with their level and interest. By that, students could develop their reading skills 'outside the classroom'. A good example of this notion is expressed by participant 2 from the result of the interview as:

*I can also teach these two tools to my students so that they can find readings that suit their abilities, and hopefully, they can develop their reading skills outside the classroom. (IP.6)*

## **3.2. Discussion**

This study findings agreed with the notion of incorporating technology into teaching is pivotal for the pre-service teachers' preparation program as using technology for teaching media improves the quality of education [36]–[40]. In this study, the PST participants showed to have a positive attitude towards the use of the Web-FX and Readability Analyzer tools to improve their future career as a teacher. They felt confident to incorporate the tools into their future teaching. This confidence has become the lead factor in the use and integration of technology as teaching media, which in turn would induce more usage and self-efficacy in using the tool(s) [41]–[43].

The study also shows that the PST respondents did not have prior experience and knowledge of the readability tools. They had no clue that the tools were freely available. However, they expressed high enthusiasm to use the tools and incorporate them into their teaching due to the perceived benefits and user-friendliness of the tools. These findings resonate with what Khan and Qudrat-Ullah [44] have statement that certain technology would be accepted due to their usefulness and ease of using it. In addition, the lack of prior knowledge of the tools did not inhibit the learning of the tools as prior knowledge did not affect technology acceptance and the teachers' acceptance upon the use of technology [45].

In this study, it is apparent that the PST participants equipped themselves with skills to learn the teaching tools. A past study explained factors that discouraged teachers to embed technology in their teachings, i.e. having no experience and lacking skills in using them [12]. From the data analysis, the inclusion of a course in technology use in the teachers' preparation program did help the PST participants to increase their capacity in using technological tools and familiarizing themselves with using technology. The teaching of the readability checking tools enabled the PST participants to have the experience and improve their ability to analyze texts, especially since they were involved in hands-on activities when using the tools. This finding showed how important hands-on learning was for learning technological tools in teaching since it helped the PSTs to immerse themselves with the tools and be involved in meaningful experience [41]. Further, this study emphasized that the SLTE program could provide a better teachers' preparation education through hands-on activities and practical courses to equip the students with technology skills useful for language teaching and learning. This study has also responded to a study conducted by Syafriyadin *et al.* [46] which revealed that the inadequacy of technology teaching and training could hinder educators to adopt and/or incorporate any form of technology for teaching and learning purposes.

Next, the PSTs conceded that the skills and knowledge they obtained from the class allowed them to select or develop appropriate texts. The correct selections of texts would enable them to create materials that were in line with their students' needs. As the consequence, the PST participants believed that their students' engagement with the texts increased. This finding corresponded with the theory of readability. When texts are readable, students will understand the content easier and find them more interesting. Schmidt *et al.* [47] argued that technological knowledge should be part of the learning process. The teaching of readability tools to PST would have met this requirement. The PST participants admitted that the class have made them both acquire technical knowledge and strengthen their pedagogical skill especially in using technology and developing a better lesson plan. This finding echoed a past study [48] that giving chances to experience the intertwining of lesson planning and technology through classroom teaching during PST education was crucial for shaping the PST's knowledge of how technology worked in classroom settings.

Furthermore, according to previous studies [49], [50], the facilitation of technology teachings contributes to the attitude of those teachers in their future adoption of technology in their classroom. In the current study, the teaching of readability tools to PST participants has helped change the participants' attitude towards technology. The PST participants used to think that technology was not an important factor for teaching and learning as they tended to focus more on mastering the English-related courses during their SLTE program since they had limited knowledge of the benefits of technology for language teaching and learning. Learning the technological tools in their ITFELT course has shifted their thinking to acknowledge that technology could definitely be incorporated into teaching and learning to meet the learning objectives. Moreover, the ability to demonstrate an understanding of what technological tools and skills are necessary to the learning process [51]–[56]. The positive beliefs that the PST participants gained after taking the course can motivate the PST to include technology and use technology to better prepare the lesson plans and engage the students more, as technology is expected to enhance the learning outcomes [48].

Although the PST participants disclosed that several challenges and some feelings of doubt occurred during the learning of the readability tools, the positive acceptance of the tools was reflected in their final thoughts about the teaching of the readability tools. One potential reason for the doubtful feeling is that the PST participants have not had a chance to use the tools in a real classroom. They were doubtful whether they could optimally use these tools due to context differences; and this doubtfulness is natural [48]. Even, the premise that the tools work best only in the context where English serves as the first or second language can flag the tool's developer to improve such tools so that they can work regardless of the context.

Another positive outcome of this current study is that the PST participants expected that pre- and in-service teachers, as well as students, were introduced to and taught about these tools. In other words, the SLTE program and its curriculum may need to embed these tools into their curriculum. What the PST participants' described after taking the ITFELT course resonates with past studies [24], [34] that postulated several success factors for incorporating technology in teaching and learning, i.e. a careful instructional design, modeling, and meaningful learning. The teaching and learning of the readability tools to PST have indeed agreed with the past studies' recommendations. In addition, the current study revealed that the PST participants were willing to share what they had from the ITFELT course with others, such as fellow PST, in-service teachers, and/or the students. This finding implies the need to conduct professional development for

PSTs on technology use, especially on the two readability tools since such training would contribute a significant effect on the teachers' information communication technology ICT skills. Once the teachers' skills in using technology have improved, the quality of teachers in teaching and facilitation of their students' learning will also improve, contributing to the betterment of Indonesia's educational sector, especially technology competency that is still developing [57], [58].

#### 4. CONCLUSION

The current study found that the majority of the PST participants have positive acceptance towards the teaching and the use of readability tools, i.e., the Web-FX and Readability Analyzer. The experience in using the tools has familiarized them with technology and improved their using-technology teaching skills and supported their pedagogical competency. The teachings have also been proved to shift the PST participants' attitude towards the importance of technology for teaching and learning. The lack of knowledge on the readability tools was not found to hinder the PST participants' acceptance of the teaching. Despite the challenges, the PST participants were still keen on using the tools for their future career as a teacher and willing to share their expertise with others. Further, the researchers of the current study admit that this study only involved participants in a specific site and course, and evaluated only two freely available readability tools among many others. Therefore, a future study on similar issues is warranted, especially by involving larger number of participants from various research sites. In addition, a future study may investigate how the teaching and learning of readability tools are best conducted and expand the scope of the study by inviting in-service teachers to assess their attitude towards the use of readability tools.

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