

READABILITY OF TEACHING MATERIALS BY STUDENTS OF STABN SRIWIJAYA BASED ON FLESCH FORMULA

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As prospective educators, students must have the competence to write good teaching materials. One indicator of good teaching materials is readability in accordance with the level of education of students. This study aims to determine the legibility of teaching materials by students using the Flesch Formula. The research method used is descriptive quantitative with instruments in the form of performance tests as a data collection tool. The results of this study indicate: (1) based on measurements using the Flesch Formula, 24% of teaching materials are in accordance with the specified readability level and 76% of teaching materials are not in accordance with the specified readability level; (2) A total of 17% of teaching materials are included in the category of moderately easy, 4% easy, 31% moderate, 24% quite difficult, 21% difficult, and 3% very difficult; and (3) other factors that cause incompatibility of teaching materials made by students are sentences that are too complex with the number only ranging from 2-7 sentences every 100 words. Therefore, prospective teachers should develop the skills of writing teaching materials well by practicing independently or under the guidance of the lecturer. Institutions can also make policies to deepen the writing of teaching materials for students in existing courses or insert new courses in the curriculum structure.

Keywords: readability, teaching material, Flesch Formula

INTRODUCTION

There are many reasons why teachers or prospective teachers should be able to make teaching materials. Among these reasons, among others, teachers must be able to provide teaching materials according to curriculum demands, target characteristics, and solving student learning problems. Teachers must be able to provide teaching materials that are in accordan-

ce with the demands of the curriculum by considering the needs of students, namely teaching materials that are in accordance with the characteristics and social environment of students.

The existence of teaching materials can also assist students in obtaining alternative teaching materials in addition to textbooks which are sometimes difficult to obtain. Of course this is in accordan-

ce with the condition of the availability of Buddhist Education textbooks which are difficult to obtain, especially in the regions along with curriculum changes. The existence of teaching materials can be a solution in the midst of the limited printed books provided by the government. In addition, teaching materials make it easier for teachers to carry out learning because they are designed by themselves by considering various contextual aspects with the conditions of the teaching place.

Another benefit that can be obtained by developing teaching materials is to add to the repertoire of knowledge and experience of teachers in writing teaching materials. Another impact is to build effective learning communication between teachers and students because students will feel more trust in their teachers. For teachers, writing teaching materials can also increase credit scores as one of the requirements for managing promotions.

Teachers or prospective teachers must be able to make teaching materials that are appropriate to the age or education level of students. One aspect that determines the suitability of teaching materials is the aspect of readability. Readability implies the extent to which a teacher is able to make readings that can be understood by students and in accordance with their level of education. To have these skills, teachers must practice writing skills from an early age, especially in lectures.

As prospective teachers, students of the Sriwijaya State Buddhist College (STABN Sriwijaya) especially students of the Buddhist Religious Education Study Program (PKB) must have the skills to write teaching materials. The skill of writing teaching materials is not specifically taught in one course.

Nevertheless, the demands for prospective teachers to be able to provide te-

aching materials that are in accordance with the educational level of students are still non-negotiable. Based on the observations made by the author, it was found that students have a tendency to find it difficult to develop ideas, ideas, analyzes, and arguments when writing.

There are many factors that must be considered in writing teaching materials such as content accuracy, accuracy of coverage, digestibility, use of language, illustrations, appearance/packaging, as well as the completeness of the components of teaching materials (Sadjati, 2017)

Among these aspects, the use of language is an important aspect. The quality of textbooks as a source of information is not only seen from the form of presentation that is visually attractive but also easy to understand, namely the readability aspect (Saroni et al., 2016)

This means that readability has an important role that can determine the quality of a text. One of the analysis of language use can be done by measuring its readability. Readability is closely related to the ease with which a reading is understood by the reader. Janan & Wray (2012) claims "...the concept of readability have emphasised the elements in a text which were associated with comprehension (or lack of it) on the part of the reader: that is, the understanding of words, phrases and ideas in the passage." According to Wray, the elements in the text that affect the reader's understanding and misunderstanding include the words, phrases, and ideas of the text.

There are several models used in assessing the readability of a text, including the reader's perception, graphs or charts, and readability formulas. The readability assessment based on the reader's perception is often known as the close procedure. The close procedure or klose technique is commonly used to analyze the readability

of a text after the book has been printed, such as popular books, newspapers, and textbooks. There are two kinds of readability measuring tools with graphs, namely the Fry and Raygor charts. Meanwhile, the readability assessment using formulas includes Flesch, Fog Index, SMOG, Dale and Chall, and Human Interest. In general, the use of graphs and closing procedures is more often used to measure the readability of Indonesian texts than formulas.

However, this does not mean that the formulas commonly used to measure English readability cannot be used to measure Indonesian readability. Both English and Indonesian formulas are equally accurate to measure the readability of the text (Yasa et al., 2013).

These results are strengthened by Saptono & Ningsih (2014) research who said that the Gunning Fox Index and Flesch Formulas were effectively used in the Indonesian text readability test.

Reading Ease Formula (RE) or The Flesch formula was introduced by Rudolf Flesch in 1948. This formula was developed and used as a means of measuring the readability of children from elementary school to college graduates. Flesch makes a readability formula by looking at several linguistic aspects in a text, namely Average Sentence Length (ASL) or the average number of words in one sentence and Average Number of Syllables per Words (ASW) or the average number of syllables per word. The calculation results are then consulted with the range developed by Flesch to determine the legibility of a text.

Therefore, researchers are interested in studying the readability of teaching materials made by students of STABN Sriwijaya with Flesch Formula. This study is also based on the fact that studies on readability are still focused on teaching materials made by teachers and the development team of

teaching materials as done by Widyaningsih & Zuchdi (2015); Reni Anggraeni (2018); Pebriana (2021), and Mursyadah (2021). The results of this study are expected to provide a description of the ability of students to write teaching materials in terms of their readability. In addition, it can also be used as a recommendation in the preparation of the Study Program curriculum related to the content of lecture material in the curriculum structure.

METHODS

This study uses a descriptive quantitative approach. Characteristics of descriptive research, among others, relate to the circumstances that occurred at that time, describe only one variable or several variables but are described one by one, and the variables studied are not manipulated or there is no treatment (Kountur, 2007)

The subjects of this study were students of the Buddhist Religious Education Study Program, STABN Sriwijaya, totaling 29 students. The object of this research is teaching materials for Buddhist Education subjects made by students for grade 6 Elementary School.

The readability analysis was carried out in the following steps: The steps of the readability analysis using the Flesch formula were as follows: (1) selecting a sample of 100 words for analysis; (2) calculate the average number of words in one sentence or Average Sentence Length (ASL). For Indonesian texts, the result of the syllable count must be multiplied by 0.6 with the assumption that the ratio of the number of Indonesian and English vocabularies is 1:6 (Gumono, 2016)

Therefore, if the number of syllables is 240, then it is calculated as $240 \times 0.6 = 144$ syllables; (3) calculate the average number of syllables per word or Average Number of Syllables per Words (ASW); (4) calculate

using the Reading Ease Formula (RE) with the provisions of $RE = 206,835 - (1,015 \times ASL) - (84.6 \times ASW)$; (5) convert the calculation results with the Flesch legibility table; and (6) determine the suitability of readability with the level of education of students. The Flesch level is said to be suitable for grade 6 SD if the result of the Flesch Kincaid Grade Level (FKGL) calculation is in grade ≤ 6 . Here's the full Flesch readability conversion table.

Table 1. Readability Score Conversion Flesch

Reading Ease Score	Style Description	Estimated Reading Grade
0 to 29	Very difficult	College graduate
30 to 49	Difficult	College
50 to 59	Fairly difficult	10 th to 12 th grade
60 to 69	Standard	8 th to 9 th grade
70 to 79	Fairly easy	7 th grade
80 to 89	Easy	6 th grade
90 to 100	Very easy	5 th grade

To calculate the variables used to determine readability, the researcher used the help of the Word Count menu on Microsoft Word and the www.wordcalc.com website. The results of the readability analysis using the readability formula are then presented as a percentage to determine the level of conformity and discrepancy. Readability is said to be appropriate if it is at the same level as the indicator, while what is not appropriate is the higher or lower level. The results of the readability calculation using various formulas are then presented as a percentage of their suitability. The formula for calculating the percentage of readability conformity is as follows.

$$P = \frac{f}{n} \times 100\%$$

Information

P = Percentage of readability conformity

f = Appropriate amount of readability

n = Total number of teaching materials

RESULTS AND DISCUSSION

Measurement of legibility using the Flesch Formula has definite formulas and results. There are two types of measurements with Flesch, namely the Flesch Reading Ease Score (FRES) and the Flesch-Kincaid Grade Level (FGL). FRES is used to determine the level of readability of a text, while FGL is used to determine the level of readability of a text. The table below shows the suitability of the readability level of teaching materials made by students.

Table 2. Suitability of Teaching Materials with Levels

Text	ASL	ASW	FGL	Information
1	12,50	1,45	6,4	Suitable
2	11,76	1,46	6,2	Suitable
3	52,63	1,44	21,9	Unsuitable
4	20,83	1,55	10,9	Unsuitable
5	30,30	1,55	14,5	Unsuitable
6	20,83	1,55	10,9	Unsuitable
7	15,87	1,47	7,9	Unsuitable
8	13,16	1,48	7,0	Unsuitable
9	13,16	1,49	7,1	Unsuitable
10	45,45	1,37	18,4	Unsuitable
11	11,76	1,50	6,7	Suitable
12	21,28	1,45	9,8	Unsuitable
13	25,00	1,53	12,2	Unsuitable
14	27,03	1,56	13,4	Unsuitable
15	25,64	1,56	12,8	Unsuitable
16	25,64	1,56	12,8	Unsuitable
17	20,00	1,46	9,5	Unsuitable
18	18,52	1,55	10,0	Unsuitable
19	16,13	1,44	7,7	Unsuitable

20	10,10	1,39	4,7	Suitable
21	14,49	1,54	8,2	Unsuitable
22	12,20	1,53	7,2	Unsuitable
23	12,20	1,68	9,0	Unsuitable
24	8,93	1,40	4,4	Suitable
25	9,80	1,36	4,3	Suitable
26	18,18	1,52	9,4	Unsuitable
27	14,29	1,41	6,6	Suitable
28	55,56	1,60	24,9	Unsuitable
29	14,29	1,53	8,0	Unsuitable

Table 2 above shows that as many as 7 or 24% of teaching materials made by students are in accordance with level 6 of FGL readability or are suitable for 6th grade elementary school students. Meanwhile, as many as 22 or 76% of teaching materials made by students are not in accordance (higher) with the readability level of 6th grade elementary school students. In the following, the percentage of FGL compliance is presented in detail.



Figure 1. FGL Conformity Percentage

To determine the level of difficulty of teaching materials made by students, FRES is used. The level of difficulty of a text greatly affects the suitability of the text to be used at a certain level of education. The lower the difficulty level of a text, the more suitable the text is for use at low grade level. Meanwhile, the higher the difficulty level of a text, the more suitable the text is to be used at a high grade level.

Therefore, in addition to FGL, FRES analysis was also carried out to determine the level of difficulty of the texts of teach-

ing materials made by students. The FRES analysis also functions to match whether the teaching materials that are appropriate to level 6 have an easy level of difficulty. The following is the complete result of the difficulty level of teaching materials made by students.

Table 3. Difficulty Level of Teaching Materials

Teks	ASL	ASW	FRES	Category
1	12,50	1,45	71,31	Quite Easy
2	11,76	1,46	71,55	Quite Easy
3	52,63	1,44	31,59	Difficult
4	20,83	1,55	54,22	Quite Difficult
5	30,30	1,55	45,12	Difficult
6	20,83	1,55	54,22	Quite Difficult
7	15,87	1,47	66,36	Moderate
8	13,16	1,48	68,10	Moderate
9	13,16	1,49	67,59	Moderate
10	45,45	1,37	44,46	Difficult
11	11,76	1,50	67,99	Moderate
12	21,28	1,45	62,91	Moderate
13	25,00	1,53	52,02	Quite Difficult
14	27,03	1,56	47,43	Difficult
15	25,64	1,56	48,83	Difficult
16	25,64	1,56	48,83	Difficult
17	20,00	1,46	62,68	Moderate
18	18,52	1,55	56,57	Quite Difficult
19	16,13	1,44	68,64	Moderate
20	10,10	1,39	79,33	Quite Easy
21	14,49	1,54	62,18	Moderate
22	12,20	1,53	65,02	Moderate
23	12,20	1,68	52,33	Quite Difficult
24	8,93	1,40	79,50	Quite Easy
25	9,80	1,36	81,66	Easy
26	18,18	1,52	59,96	Quite Difficult
27	14,29	1,41	73,05	Quite Easy

28	55,56	1,60	15,42	Very Difficult
29	14,29	1,53	62,90	Moderate

Based on table 3, it can be seen that the level of difficulty of teaching materials made by students varies from quite easy, easy, moderate, quite difficult, difficult, to very difficult. As many as 17% of teaching materials are included in the fairly easy category. As many as 4% of teaching materials are included in the easy category. A total of 31% of teaching materials are included in the medium category. As many as 24% of teaching materials are included in the category of moderately difficult. As many as 21% of teaching materials are included in the difficult category. Meanwhile, 3% of other teaching materials fall into the very difficult category.

The largest percentage is teaching materials with moderate difficulty level, followed by teaching materials with moderately difficult, difficult, moderately easy, easy, and very difficult difficulty levels. Based on these percentages, it can be interpreted that in general students make teaching materials for levels above grade 6 SD. Complete data regarding the percentage of teaching materials can be seen in the image below.

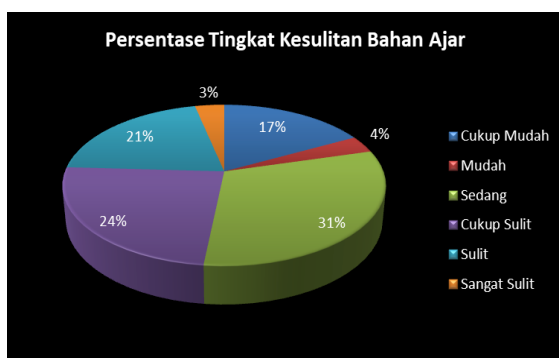


Figure 2. Percentage of Difficulty of Teaching Materials

Based on the results of the analysis of FGL and FRES, the readability of teaching materials made by students for grade

6 elementary school students is mostly not appropriate. Students tend to make teaching materials that are suitable for the level above. The text made by students has too many words in each sentence. The number of words in the text that does not match the legibility ranges from 12 to 55 words.

Another factor causing the discrepancy of teaching materials made by students is sentences that are too complex. This turned out to be a problem for most students in writing. Some research as Astuti (2018), Heryani (2019), and Ghufon et al. (2020) show a similar phenomenon. Students tend to change spoken language into written language.

In appropriate reading materials, the number of sentences per 100 words ranges from 8 to 11 sentences. This is in line with Chomsky's theory which says that children aged 9-12 years are able to understand sentences with a length of 6-12 words. Meanwhile, for teaching materials whose legibility is not appropriate, the number of sentences per 100 words only ranges from 2 to 7 sentences. That is, in one sentence can consist of 14 to 50 words.

Although the readability analysis using the Flesch Formula did not analyze the choice of diction in teaching materials, the authors identified that many diction and phrases were found that were not in accordance with the students' development. The choice of diction is mainly on terms that require special explanations. Examples of inappropriate use of diction include: "the conditioned", "the unconditioned", "particle", and "universal". Readability is closely related to the amount of vocabulary mastered by students at a certain level of education (Saptanto & Wibowo, 2018).

In general, the findings of this study are not different from the research on the readability of teaching materials by other students. Hidayati et al. (2018), who studied

the teaching materials of PGSD students, also found the fact that most of the legibility of students' writings was not appropriate. Most are at a higher level. This should be a serious concern for both lecturers and universities.

CONCLUSION

Based on measurements using the Flesch Formula, 24% of teaching materials are in accordance with the readability level of 6th grade elementary school and 76% of teaching materials are not in accordance with the 6th grade of elementary school's readability level. As many as 17% of teaching materials are included in the fairly easy category. As many as 4% of teaching materials are included in the easy category. A total of 31% of teaching materials are included in the medium category. As many as 24% of teaching materials are included in the category of moderately difficult. As many as 21% of teaching materials are included in the difficult category. Meanwhile, 3% of other teaching materials fall into the very difficult category. Another factor causing the discrepancy of teaching materials made by students is sentences that are too complex with only around 2-7 sentences per 100 words.

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