Discourse readability of Indonesian language textbooks for middle school and high school/vocational schools

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ABSTRACT
The study is aimed at appraising the readability levels of the texts in the instructional textbooks of the Indonesian language subject published for the guide schools of the junior high and senior high/vocational schools by the Ministry of Education, Culture, Science, and Technology using the Fry graph. The study uses the qualitative research design. Research data sources are the Indonesian language instructional textbooks for Year VII of the Junior High School and Year X of the Senior High/Vocational Schools published by the Ministry of Education, Culture for Guide Schools. Data are focused on reading materials. Data collection involves the read-and-note technique using a human instrument and the Fry graph as the data collection instruments. Data analyses involve data condensation, data presentation, and making and verifying conclusion. Results show that the text readability of both the instructional textbooks for the Year VII of the Junior High Guide School and for the Year X of the Senior High/Vocational School are not yet suitable for the corresponding years. Results of the computation of the Fry Graph obtain a readability measure of level 5 for the text book of the Year VII of the Junior High School and level 6 for the Year X of the Senior High/Vocational School. Text readability is an estimation measure, such that deviation is possible for one level above or below. Therefore, it can be stated that, if the computation of the Fry graph shows the score of level 5, then the text will be suitable for years IV, V, and VI; and, if the readability test result shows the score of level 6, the text will be suitable for years V, VI, and VII.

Keywords: Indonesian language textbook, text readability, Fry graph, guide school

INTRODUCTION
A school instructional textbook is a component of the learning system and, simultaneously, one of the media to achieve learning goals. An instructional textbook contains materials or instructional substances constructed in accordance with the contents of the curriculum. The instructional material is a medium to achieve the instructional objectives and a source in constructing the evaluation instrument (Nurgiyantoro, 2016). In addition, an instructional textbook also functions as a medium to develop essential thinking competences required by the learner. The essential thinking competences that are presently needed at this time, in accordance with the demands of the competences of the 21st century, are those of critical thinking and problem solving, communication, creative and innovative thinking, and collaboration (Kemendikbud [Ministry of Education and Culture], 2017).

The contents of instructional textbooks, as one of the sources of learning, need to consider and adapt the demands of existing changes because an instructional textbook is the main source for the instructional processes used by the majority of the instructors and learners. The important role of instructional textbooks does not only occur in Indonesia, but also in other countries such as Finland, America, Canada, Hongkong, India, and Malaysia. Results of a study conducted by the team of Oates-Assessment Research & Development University of Cambridge year 2015 state that, in Finland, the textbook becomes the main source of instruction compared to other sources such as student sheets, real
objects, and computer devices. The instructional textbooks are used by 95% of the teachers and students in the mathematics class and 94% in the science classes (Ulumudin et al., 2017).

In line with the foregoing discussion, the instructional textbook for the Indonesian language class, as one of the media in achieving instructional objectives and main source of instruction, must be oriented to the demands of the development of time. In order to fulfil these demands, instructional textbooks must be oriented to three principle things: knowing, doing, and being (Sayuti, 2021). Knowing is related to knowledge, doing to skills, and being to attitudes. Consequently, in order to anticipate the development of technology in this digital era, instructional textbooks must be presented in the printed form (conventional) and digital form (e-book). The availability of instructional textbooks in the e-book form makes it easy for the teachers and students to access the information in the textbook.

An instructional textbook, as a medium for developing essential thinking competencies, must be able to facilitate learners to do practices and be accustomed to critical thinking and problem solving, communication, creative and innovative thinking, and collaboration as the bases of higher-order thinking. This is in line with results of the study by Zaki et al. (2020) that state that the more frequent the aspects of higher-order thinking skills (HOTS) appear in a textbook, the more trained the students in higher-order thinking. It is therefore true that the contents and presentation of instructional textbooks must be adjusted to the demands of present-day learning.

The development of present-day essential thinking competences in the Indonesian language instructional textbooks is suited with the existing curriculum. In 2020, the Ministry of Education, Culture, and Research through the Centre for Curriculum and Books, developed an instructional textbook as the primary textbook under the spirit of freedom learning. This policy is mandated by the Decree of the Ministry of Education, Culture, and Research Number 958/P/2020 about the achievements of learning of education for early childhood, grade level, and middle level. Subsequently, in 2021 the curriculum and instructional textbook were applied in the guide schools and central superior vocational schools by the decree of the Ministry of Education, Culture, and Research Number 1177 year 2021 about the guide school project (Ministry of Education, Culture, and Research and Technology, 2021).

A guide school is one which focuses on developing the students’ learning achievement holistically by producing the Pancasila profile learners encompassing competences and characters initiated by superior human resources (school principals and teachers). The guide school has the mission to realize advanced Indonesia that is free, independent, and characterized through the creation of Pancasila learners who think critically and creatively, are self-supporting, believe in and worship God the Almighty, have noble deeds, cooperation, and global diversity.

The curriculum of the guide school is, in essence, continuing and strengthening the 2013 curriculum which is presently operational with reinforcement in literacy and numeracy. The curriculum is oriented to the competency-based approach, flexible, Pancasila character, minimum structure, autonomy, simple, and cooperative. Instruction is presented in regular and project activities (minimally 20% of the total per year). Such instruction has not been practiced in the 2013 curriculum.

Readability is the level of ease on which a reader is able to understand a passage or text. Klare in DuBay (2004) defines readability as the level of reading comprehension caused by the writing style of the text. This definition is focused on a writing style which is distinct from content, coherence, and text structure. A more comprehensive definition of readability is given by Dale and Chall in DuBay (2004) as the total number (including interaction) of all the elements in a reading material which have an impact on the success of a specific group of readers in understanding it. Success here refers to how readers understand the text, read in the optimal speed, and find that the text is interesting.

In language learning, readability levels depend on the contents (complexity of the vocabulary and syntax) and presentation (aspects of typography such as size of fonts, spacing, and line lengths). So far, researchers have used various factors to measure readability such as perception speed, visibility, reflective wink technique, eye movement, fatigue, N-gram analysis, range (far or near), reading speed, and word difficulty level. Closing to 1980s, there have been around 200 formulas and more than 1,000 research studies which appraised the theoretical validities and statistics of these formulas to measure the readability of a text (DuBay, 2004).

The earliest technique of measuring readability is a subjective one that is called text levelling. This technique does not include contents, objective, design, visual input, and text structure. This technique is usually only used to determine readability levels in cases where the aspects of reading difficulty can be identified easily, such as in children’s reading. For higher levels of reading, the process
of measuring readability by this technique becomes more problematic because various obstacles which are experienced by individuals of this level are harder to be identified.

Subsequently, Lorge (1939) and Flesch (1943), as stated by Dubay (2004) tried to develop a number of testing techniques to evaluate students’ learning achievements simultaneously to give inputs to curriculum developments. Educators have long known that, in order to improve reading skills, especially beginners, reading material is needed that is in accord with their skills. To find the readability of a text, experts have conducted various research studies to produce readability measuring instruments. DuBay mention some readability measuring formulas produced by experts. Meanwhile, Lorge conducts a study on a number of variable combinations which can identify readability measures more accurately. Research results show that vocabulary becomes the most important factor in understanding a text. In 1944, Lorge developed the Lorge Index, a readability index which uses three variables in determining readability levels.

Flesch (1943) conducted a study entitled Marks of a Readable Style, which include readability formulas to predict the difficulty level of reading materials for adults. Flesch (1948) uses a scale from 0 to 100 (no use of grades anymore), where score 0 is equal to grade 12 and 100 to grade 4. The formula also makes a prediction of an individual’s interest using personal preferences on use of sentences. Flesch’s gives a big impact in the field of journalism. Then, in 1951, Farr, Jenkins, and Patterson, simplified the formula by changing the number of syllables, and, finally, since 1975, the formula has been popular and much used to test readability by name of the Flesch-Kincaid Grade Level (DuBay, 2004).

McLaughlin through Dubay (2004) developed the formula SMOG (Simple Measure of Gobbledygook). The work of this formula is by multiplying lengths of words and sentences, not adding up like other formulas. SMOG can make a prediction to how long one must take education in order to be able to understand a text of 30 sentences long. Based on the work of the formula, McLaughlin defines readability as levels on which a specific group of individuals finds that a text is interesting and can be comprehended.

In 1963, Edward Fry developed a readability formula, popularly called the Fry Graph Readability Formula, that initially was for readers of the high-school level. The readability levels of this formula are validated against the comprehension scores of reading materials for grade levels and middle high. Then in 1969, Fry expanded the formula to be used for the elementary school level. In his book, Elementary Reading Instruction of 1977, Fry again expanded the formula for use in the higher-education level. Fry states that the vocabulary owned by individuals will develop during the study in the higher education, but their reading comprehension abilities will be different depending on their individual characteristics, materials, and subjects they learn. This means that a reading text of the score 16 will be more difficult than that of 14.

The Fry graph was first published in 1968 which then was revised in 1977. Developed by Edward Fry, the Fry graph is a formula which is very popular in measuring readability of texts. The formula can be used to measure text readability in accordance with the students’ education levels (Harjasuajana and Mulyati, 1997; Crawley & Montain, 1995; Sumarti et al., 2019).

Various research studies on readability using the Fry graph on Indonesian texts have also been conducted such as by Pramuwibowo (2015); Fadilah and Mintowati, (2015); Nuryani, (2016; Hidayati, et al. (2018); and Sumarti et al., (2019). Pramuwibowo conducted his study on the text readability of the Indonesian textbook entitled “Bahasa Indonesia Wahana Pengetahuan” [Indonesian Language Medium of Knowledge], Fadilah and Mintowati on the text readability of the Indonesian textbooks for Junior High and Senior High schools of the 2013 curriculum, published by the Ministry of Education and Culture 2014, Nuryani on the readability of the text items of the National Examination of the Senior High School, Indonesian language subject, and Hidayati, et al on the use of the Fry graph to analyze the readability of the reading materials for the students of the PGSD [teacher education program]. Meanwhile, Sumarti et al. studied the readability of textbooks in the Lampung language and culture using Fry graph and Raygor. Similarities of the present study and these foregoing studies lie in the use of the Fry Graph to measure readability. Meanwhile, the present study looks at the readability of the reading texts of the Indonesian textbooks for guide schools of year VII and Senior High School and Vocational School year X published by the Ministry of Education and Culture year 2021.

Based on these descriptions, it can be stated that the present study is aimed at measuring the readability level of the reading texts in the Indonesian textbooks of the Junior High and Senior
High/Vocational School published by the Ministry of Education and Culture for the guide schools by using the Fry graph. From the results of the study, it is expected that important information can be obtained on the depth and width of the contents of the Indonesian textbooks in line with the class and level of the schools.

METHOD

The present study used the qualitative research design. The study focused its discussion on the text readability of the textbooks of the Indonesian language subject of the guide schools of the Junior High and Senior High/Vocational School levels published by the Ministry of Education and Culture year 2021 by using the Fry graph.

The research data sources were the Indonesian textbooks for Year VII of the Junior High School for Guide School published by the Ministry of Education and Culture year 2021 written by Rakhma Subarna, Sofie Dewayan, and C. Erni Setyawati and Year X of the Senior High /Vocational School published by the Ministry of Education and Culture year 2021 for Guide Schools written by Fadillah Tri Aulia and Sefi Indra Gumilar. The selection of the data sources was based on the results of the reference analyses of the school guides of the Ministry of Education and Culture. Data were focused on the reading texts, meaning that not all the materials in the textbooks were used.

Data collection used the read and note technique. The research instruments were human instruments and the Fry graph. Use of the Fry Graph followed the steps modified by Harjasujana & Mulyati (Crawley & Mountain, 2005) and Harjasujana and Mulyati via Hidayati, et.al. (2018), as can be seen below.

1. Select 100 words representatively of the initial, middle, and final parts of the text (if all the texts are written by one writer). It was found that all texts in the textbook were written by different persons so that all texts were included in the analyses. Counting of the number of words in each text began from the first word of the text. 2. Count number of sentences in the 100 words to the nearest -nth. Count number of the syllables of the 100 words long texts. 3. Special for texts in the Indonesian language, the Fry graph needs adjustment by multiplying number of syllables by 0.6. 4. Input numbers of sentences and syllables into the Fry graph. The vertical column of the graph refers to number of syllables per 100 words, and horizontal row to number of sentences per 100 words. The intersection point of the column and row shows the level or class readers are able to read the text. If the intersection lies in the dark shade, the score is not valid. 5. If the text contains less than 100 words, the following steps were done: Count number of words in the text and round to it the nearest -nth; Count numbers of syllables and sentences in the text; Multiply numbers of sentences and syllables by converting them according to the conversion table.

Table 1. Conversion Table for Fry Graph

<table>
<thead>
<tr>
<th>If number of words in the text is:</th>
<th>Multiply number of syllables and sentences by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>3.3</td>
</tr>
<tr>
<td>40</td>
<td>2.5</td>
</tr>
<tr>
<td>50</td>
<td>2.0</td>
</tr>
<tr>
<td>60</td>
<td>1.67</td>
</tr>
<tr>
<td>70</td>
<td>1.43</td>
</tr>
<tr>
<td>80</td>
<td>1.25</td>
</tr>
<tr>
<td>90</td>
<td>1.1</td>
</tr>
</tbody>
</table>

The data analysis technique consisted of data condensation, data presentation (display), and conclusion/verification (Miles et al., 2014: 31-33). Data condensation refers to the process of selecting, simplifying, and managing the data obtained from the textbooks. Data presentation were done descriptively in the forms of table and verbal descriptions. Conclusion and verification were made on the basis of the data presentation. In this phase, interpretation of data and description and cause-effect relation among the data were used as a basis for making the conclusion. Conclusion was verified by way of reporting and discussion with colleagues to ensure validity. The three data analysis steps can be visualized in the following figure.
Validity and reliability appraisals of the research data were carried out. The validity of the study was referential validity, conducted by carefully reading and analyzing the research data using the reference theories. Careful reading and analyses were followed by an expert judgement validation by experts in the field of reading instruction.

The reliability appraisal was done by intrarater and interrater techniques. The intrarater technique was conducted by carefully reading the data repeatedly to obtain in-depth understanding of the reading texts. The interrater reliability was obtained by discussions with colleagues for data confirmation and consistencies.

RESULTS AND DISCUSSION

Results

Readability of Texts in the Indonesian Textbook for Guide School of the Junior High Level

Results of the study concerning the Indonesian textbook for the Year VII of the Junior High School show that (1) there are 31 reading texts in the textbook, (2) the texts are fiction and non-fiction, (3) of the 31 texts, 21 are of the 100 words length and 10 below. Based on the criteria of the Fry graph, the ten texts which are under 100 words long will be subjected to the conversion rule by multiplying the numbers of the syllables and sentences by the figures found in the conversion table.

All the sentences and syllables in all of the reading texts in the textbook are identified and calculated for the total and means statistics to be used for further analyses of readability levels. Results of the calculations of the mean scores for the sentences and syllables are 8.73 and 133.97. These figures are then plotted in the Fry graph to find the readability measures. Results of the plotting of the Fry graph can be seen in Figure 2.
The plotting of the numbers of sentences (vertical columns) and syllables (horizontal lines), as can be seen in Figure 2 above, results in the intersection point of level 5.

**Readability of Texts in the Indonesian Textbook for Guide School of the Levels of the Senior High/Vocational Schools**

Concerning the Year X of the Senior High School/Vocational School, results of the analyses show that (1) there are a total of 43 reading texts in the textbook, (2) the reading texts are also of the fiction and non-fiction types, (3) of the 43 texts, 33 satisfy the count of 100 words long, and 10 below the mark. Conversion is done by using the conversion table. Results of the calculations show that a mean score of 9.5 for the number of sentences and 138.28 for syllables. Results of the plotting into the Fry graph can be seen in Figure 3.

![Figure 3. Readability of Texts in the Indonesian Textbook for Guide School of the Senior High School/Vocational School](image)

Results of the plotting of the numbers of sentences (vertical columns) and syllables (horizontal lines) for the Senior High/Vocational School level as can be seen in Figure 2 above, show that the intersection point can be found at level 6.

**Discussion**

Readability is one of the elements to be taken into account in developing instructional textbooks. Generally, readability is the level of difficulty of a text for the readers to understand (Crawley & Mountain, 1995; Klare dalam DuBay, 2004). Readability is needed by textbook developers to determine the suitability of the texts for the readers. Through the analysis of readability levels, it can be found out whether or not a text is difficult to understand, internalize, or digested by a certain reader target group. Usually, the target group to become respondents of a readability analysis are school students. Students are directed to answer Yes/No questions resulting in a certain score. From this score, the total number of vocabulary words can be obtained that are answered correctly, and, then, as the score increases, it will give an impact on the readability level of the text.

A total of 31 reading texts have been evaluated for readability of the Indonesian textbook for guide schools of the Year VII Junior High School level using the Fry graph. Of the 31 texts, it is found that the text “Jelajah Wae Rebo” has the smallest number of words, around 27, and 20 texts have the highest number or words at the average of 100 words.

Meanwhile, the reading text with the smallest number of sentences is “Jala Cih Lan dan Smong” with an average of two sentences. On the other hand, the text with the largest number of sentences is...
“Kue-Kue Mao” with 16 sentences. This shows that there is a discrepancy in the number of sentences in the texts of the textbook. This gap indicates that the reading texts in the textbook are written by different persons so that all the texts are subjected to analysis without exception as has been described in the research method of the study.

In the case of syllables in the Year VII textbook, the reading text that has the smallest number of syllables is “Jala Cih Lan dan Smong” with a score of 91.8 syllables. Meanwhile, the text with the largest number of syllables is “Kue-Kue Mao” with an average number of 169.2 syllables. There is also a gap in the numbers of syllables in the textbook. The difference between the smallest and largest numbers of syllables is quite significant. This shows the importance of calculating the numbers of syllables on all of the texts in the textbook.

As a whole, results of the analyses of the text readability using the Fry graph for the Year VII textbook produce an average number of sentences for all the texts of 8.73 and for the syllables, after being multiplied by 0.6, of 133.97. These statistics are then plotted in the Fry graph and the intersecting point between the row line (average number of syllables) and vertical column (average number of sentences) is at the level 5. This means that the texts are suitable for Year VI and are not yet suitable for Year VII.

Subsequently, for the textbook of Year X for guide schools of Senior High School/Vocational School, a total of 43 reading texts are subjected to the Fry graph analyses. Of the 43 reading texts, the text entitled “Latihan Pentas Musik” has the smallest count of words, 31 words. Meanwhile, there are 32 texts with the largest number of words around 100 words.

Besides, the text with the smallest number of sentences is entitled “Deskripsi Perusahaan” with an average of 4.93 sentences. The text with the largest number of sentences is one entitled “Korupsi Kecil” with 16.5 sentences. There is also a gap in the numbers of sentences in this textbook caused by the fact that the reading texts are written by different persons. In this case, all the reading texts in the textbooks are subjected to the Fry graph analyses.

In term of syllable counts, the text which has the smallest number of syllables is that entitled “Membeli Sepatu” with 110 syllables. Meanwhile, the text with the largest number of syllables is “Deskripsi Perusahaan” with a syllable count of 169.2.

From the overall results, the readability analyses of the reading texts of Year X of the Senior High School/Vocational School give an average of numbers of sentences of 9.5 and of syllables, after being multiplied by 0.6, a total of 138.28. These are inputted in the Fry graph to find the intersection point between the row line (average number of syllables) and vertical column (average number of sentences) to be at level 6. This means that the reading texts are suitable for Year VI and are not yet suitable for Year X.

The foregoing research results are used to make estimation on the suitability of text readability measures based on the number of words, number of syllables, and sentence lengths, or on the semantic complexity found in the short description (Ruddel, 1993; Richardson & Morgan, 1990). This is because a reading text is, essentially, developed to give ease in comprehending the information that is passed and help readers to obtain the primary contents presented in the text. This is to mean that reading abilities have an important role for a person (read: the learner) to acquire various kinds of knowledge. Through reading various texts, learners will acquire the various pieces of knowledge contained in the texts (Kraal et al., 2019).

Text readability has an impact on the ease of readers to understand a text. The higher the readability level, the easier it is for the text to be understood; and the lower the readability level, the more difficult it is for the text to be understood. Although the sentences and words of the text are small in numbers, it is not certain that the text has a high readability level. This means that text readability is also influenced by vocabulary selection, whether the text uses technical words or familiar words. It can therefore be stated that the variables language structures which consist of semantics and syntax have an impact on the readability measure of a text.

Other than the language structures, text readability is also influenced by learner’s needs and characteristics. Texts with simple sentences and familiar vocabulary will make learners not think too hard to understand them. However, if the texts are brief with complex sentences and unfamiliar words, learners will have to think hard to understand them. Therefore, there should be adjustments in the learners’ needs and characteristics. There are certainly different needs and characteristics among students of junior high schools and senior high/vocational schools. Their psychological developments
are also different. This is in agreement with Pujiastuti and Lestari (2019) who state that the developed reading texts should be in accord with the levels of students in terms of their experiences (background knowledge), knowledge development in line with science and technological progresses, cognitive development, learners’ characteristics, and learners’ interests. It is expected that the use of reading texts in the textbooks is suited with the learners’ needs and characteristics.

CONCLUSION

Based on the research results and discussion that have been presented, it can be concluded as follows. The text readability of both the textbooks for Year II of the Junior High School and Year X for Senior High/Vocational School are not yet suitable. According to the Fry graph, the text readability for Year VII points to level 5 and that for Year X points to level 6. Text readability is an estimation which may deviate one level above or one level below. The text readability of level 5 on the Fry graph can therefore be suitable for Years IV, V, or VI. And the text readability of level 6 can be suitable for Years V, VI, or VII. Results of the readability measurement for the reading texts of the two textbooks in the present study are obtained by using the Fry graph which is computed on the basis of language structures, not involving text contents. It is strongly suggested therefore that another series of text readability evaluation is done using a formula that includes text contents such as the cloze procedure.

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