Development of Indonesian Language Teaching Book Based on Higher Order Thinking Skills for Department of Network Computer Engineering Students in Vocational School

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Abstract—**This study aims to develop Indonesian language textbooks based on Higher Order Thinking Skills (HOTS) for class X students majoring in computer network engineering (TKJ) at SMK. This research is a research and development (R&D) modified into four steps, namely the information analysis stage, planning, product draft development, and product validation stages. The subjects of this study were six Indonesian language teachers at SMK, three experts, and 20 grade X SMK students in the TKJ Department. Data were collected using interview techniques, document recording, and questionnaires. The qualitative data were analyzed using the interactive model of Milles and Huberman. Quantitative data were analyzed using the percentage formula. The results showed: (1) the textbooks used were not under the needs of students and the characteristics of TKJ majors. The average score of the textbook is 75% in the proper category, but there are still deficiencies because the content of the material such as speaking and listening skills exercises is lacking. In addition, teachers and students need textbooks that are under the TKJ derivatives. (2) The output of this research is that the HOTS-based textbook draft has been validated with the mean score of teachers, experts, and students being 83 and categorized as feasible.**

Keywords: textbooks, computer networks, higher-order thinking skills

I. INTRODUCTION

Textbooks are a learning unit that contains information, discussion, and evaluation that students use as a learning resource and a provision of basic knowledge that can be used as a means of learning at school. Textbooks are books used in teaching and learning activities [1]. Textbooks are developed as a source of input that provides learning experiences in language learning [2]. According to Tomlison textbooks are useful (1) for the practical needs of untrained educators, (2) becoming a learning road map for educators and students, (3) providing structure and predictability that help students in social interaction, (4) assisting teachers in learning, (5) helping inexperienced and untrained educators, (6) textbooks scaffolding by experts so that their quality is guaranteed, and (7) textbooks as agents of change that

support innovative ideas. Textbooks can also be used by students in learning so that learning objectives are easily achieved [3]. Textbooks function to (1) identify the material being taught to students, (2) know the order of presentation of learning materials, (3) know learning techniques and methods, (4) obtain teaching materials easily, and (5) use them as a learning tool students inside or outside the school [4].

Textbooks are used as a supporting medium for Indonesian language learning which includes four language skills, namely: listening, speaking, reading, and writing. Brown classifies language skills into productive skills (speaking and writing) and receptive skills (listening and reading) [5]. In the 2013 curriculum, text-based language teaching materials with a communicative and integrative approach [6]. Indonesian Language Subjects in schools are one of the subjects taught starting from basic education to higher education. Indonesian is one of the fields of science that has an important role in human life and plays a role in mastering science and technology. In learning, students are required to master the material provided by the educator.

The results of the survey show that the Indonesian Language Subject books used in SMK are the same as the books used in SMA and MA. There are no special books under the majors in SMK. For example, books that are widely used in the 2013 curriculum are books published by the Center for Curriculum and Books, Balitbang, Ministry of Education and Culture, Indonesian Language Center 2017 for SMA and SMK class X. The use of textbooks that are not under school characteristics and harms learners' achievement. As a result, the learning outcomes of students in Indonesian subjects have not been optimal because there are still students whose grades are below the KKM. The KKM value that must be achieved by students in Indonesian subjects is 75.

The results of interviews with students at SMKN 3 Sumbawa, on March 15, 2020, obtained information that the language skills that students still lacked were writing skills, especially those related to punctuation and EYD. Students do

not understand the material presented in the textbook because it is not under the characteristics of the department so it is far from discussing Indonesian textbooks. Students hope that the material presented in textbooks can simplify the learning process.

Textbooks developed must match the needs of students in the learning process [7]. In addition, textbooks must be under the demands of the curriculum. Kuriklum 2013 recommends the use of textbooks that can improve students' critical thinking skills. Therefore, it is deemed necessary to develop Indonesian language textbooks based on high-order thinking (HOTS). Soleh, explains that HOTS is a characteristic of high-order thinking skills which includes critical and creative thinking which can encourage someone to always look at every problem faced critically and try to solve it creatively [8]. HOTS is a thinking level at the cognitive level C4, C5, and C6 (apply, analyze, evaluate, and create). Thus, the target output in this research and development is the continuation of Indonesian language books based on High Order Thinking Skills for Class X Students of Vocational High School, majoring in Network Computer Engineering. The book refers to the standard content of Indonesian language subjects in the 2013 Curriculum.

II. METHODS

This research is a research and development (R&D) using the Borg & Gall development procedure which is modified into four steps, namely the information analysis stage, the planning stage, the initial product draft development stage, and the product validation stage. The following is picture 1 of the research procedure [9]. The subjects of this study were six Indonesian language teachers at SMK, 3 experts, and 20 grade X SMK students in the TKJ Department. Data were collected using interview techniques, document recording techniques, and questionnaire techniques. The instruments used in this study were interview guidelines, document recording guidelines, and closed questionnaires. Interview data were analyzed qualitatively using the interactive model of Milles and Huberman [10].

The data from the document analysis and validation questionnaires were analyzed quantitatively by using the percentage formula. Determination of the feasibility of textbooks used in schools and the eligibility of the HOTS-based Indonesian language book draft for Class X SMK TKJ Department Students refers to Table I Textbook Quality Assessment Intervals below.

TABLE I. TEXTBOOK QUALITY ASSESSMENT INTERVALS

Assessment	Criteria
85,01%–100,00%	Very Valid
70,01%–85,00%	Valid
50,01%–70,00%	Feasible Enough
01,00%–50,00%	Less Feasible /Valid

III. RESULT AND DISCUSSION

A. Result

The research and development results are grouped into three parts, namely (1) information analysis which includes the results of field studies and literature analysis results, (2) development planning, and (3) development and validation of HOTS-based Indonesian language book drafts for class X SMK TKJ majors.

1) Information Analysis Result

Information analysis was carried out to determine the condition of the textbooks used by students at school in the learning process. The textbook analysis is carried out to determine the strengths and weaknesses of textbooks used by students. Textbooks can help students in the learning process in class. The results of interviews with Indonesian language teachers who teach at SMK in TKJ majors show that the Indonesian language textbooks used in class X SMK in TKJ majors are the same as Indonesian textbooks used in SMA / MA. The description refers to the results of an interview with an Indonesian teacher. The results of the interview show that the Indonesian language textbooks in the 2004 curriculum and 2006 curriculum are already based on SMK because SKM and SMA / MA have different characteristics. The results of the analysis of Indonesian language textbook documents used in SMK TKJ majors show that the book does not match the characteristics of the Network Computer Engineering Department. The results of studying textbooks using textbook assessment instruments show that the textbook is suitable for use in terms of content and presentation aspects, language and legibility aspects, and graphic and appearance aspects. This can be seen in Table 2 Results of the Analysis of Indonesian Textbooks for Class X SMK Students.

TABLE II. RESULTS OF FEASIBILITY ANALYSIS OF INDONESIAN LANGUAGE TEXTBOOKS FOR CLASS X SMK STUDENTS

No.	Assessment Aspects	Average Value	Category
1	Content and Preference	76%	Valid
2	Language and Legibility	72,5%	Valid
3	Graph and Appearance	81,25%	Valid
	Scores	75%	Valid

Table II shows that the results of the assessment of Indonesian textbook documents for class X SMK students are categorized as feasible with an average percentage score of 75%. However, this textbook still has shortcomings because it is not under the characteristics of students and the characteristics of the Computer Network Engineering department. The textbook uses scientific vocabulary that is difficult for students to understand, as well as the results of interviews with teachers and students. The results of interviews with educators and students also show that they need Indonesian language textbooks that are under the characteristics of the Computer Network Engineering department and the characteristics of students.

The Indonesian textbooks used in class X Vocational High Schools majoring in TKJ are the same as the textbooks used in Indonesian used in SMA / MA. The textbooks used are not under the characteristics of TKJ majors and the characteristics of students. Educators and students need Indonesian language textbooks that are under the characteristics of students and the characteristics of TKJ majors. Educators need HOTS-based Indonesian textbooks under the demands of the 2013 curriculum.

2) Textbook Development Plan

The first activity carried out at the planning stage is to compile product specifications, then browse the literature, and compile a product validation instrument. The product specifications developed in this study refer to the results of information analysis. The product specifications in this research are as follows: The title of the book developed is

Indonesian based on High order Thinking Skills for Class X Vocational High School Students majoring in Network Computer Engineering, the book contains material for listening, reading, speaking, and writing skills according to the 2013 Curriculum. teaching is arranged under the content or material components, material presentation, language and readability, appearance, and graphics. The typeface used is Times New Roman with a size of 12 fonts. The textbook structure being developed is: (a) front page with cover page, (b) introduction, (c) table of contents, (d) literacy development, (e) material concept chart, (f) chapter I makes an agreement through negotiation, (g) chapter II argues through debate, (h) chapter III learns from biography (i) chapter IV explores poetry, (j) assessment indicators (j) bibliography, (l) index, (m) writing profile.

3) Development and Product Validation

The development of the Indonesian language book based on High order Thinking Skills refers to the previously prepared specifications. Product development is carried out in several stages, namely (1) preparation of the initial draft, (2) revision of the initial draft, (3) product validation, and (4) preparation of the final draft. The development of the initial draft begins with the compilation of chapters I to chapter IV, after which the draft contents of the book are revised and include components that are deemed lacking. After that, it is followed by compiling a table of contents, introduction, cover page, bibliography, and glossary. The next stage that is carried out is product validation by experts. Product validation is carried out in two stages. In the first stage, the research team submitted a product draft to the expert accompanied by a validation questionnaire. Expert I suggested to the research team that the discourse topics presented in the book being developed were all related to computers and networks because the book was intended for TKJ majors. In addition, expert I suggested that the writing system be improved, especially concerning the correct use of misspellings and punctuation marks. The second expert suggested that the design of assignments and exercises in books be developed based on higher-order thinking skills (HOTS). Meanwhile, expert III suggests that the book's graphic design be packaged attractively. Each discourse is accompanied by an image under the topic of the text.

The research team accommodated all input submitted by experts. The research team revised the draft book according to the recommendations given by the three experts. After the draft is revised, it is followed by the second phase of validation. In the second stage of validation, the three experts responded positively because their suggestions had been accommodated. The results of the final assessment by the three experts obtained an average score of 81% with the feasible category as in Table 3 below.

TABLE 3 ELIGIBILITY CATEGORIES OF HOTS-BASED INDONESIAN TEXTBOOKS FOR CLASS X SMK TKJ MAJOR STUDENTS BASED ON EXPERT ASSESSMENT

No.	Assessment Aspect	Average Value	Category
1	Content and Presentation	82%	Feasible
2	Language and Legibility	78%	Feasible
3	Graph and Appearance	82%	Feasible
	Score	81%	Feasible

The results of the assessment of the readability assessment of the open draft of Indonesian Language Based on High Order Thinking for Class X SMK TKJ Department Students by 6 Indonesian language educators at SMK seen from the aspect of the feasibility of the content and presentation of the material, language and readability, and graphics and appearance obtained an average value of 85 % is categorized as feasible as in Table 4 below.

TABLE IV CATEGORIES OF HOTS-BASED INDONESIAN TEXTBOOK READABILITY FOR CLASS X SMK TKJ MAJOR STUDENTS BASED ON EDUCATOR ASSESSMENTS

No	Assessment Aspect	Average Value	Category
1	Content and Presentation	85%	Feasible
2	Language and Legibility	84%	Feasible
3	Graph and Appearance	88%	Very Feasible
	Score	85%	Feasible

The results of the readability assessment of the open draft of Indonesian Language Based on High Order Thinking for Class X SMK TKJ Department students by 20 grade X SMK students seen from the aspects of material presentation, language, and readability, and graphics and appearance obtained an average value of 82% feasible. For more details, it can be seen in Table 5 below.

TABLE V CATEGORIES OF HOTS-BASED INDONESIAN TEXTBOOK READABILITY FOR CLASS X SMK TKJ STUDENTS BASED ON STUDENT ASSESSMENTS

No	Assessment Aspect	Average Value	Category
1	Content and Presentation	81%	Feasible
2	Language and Legibility	75%	Feasible
3	Graph and Appearance	90%	Very Feasible
	Score	82%	Feasible

The results of the assessment of experts, educators, and students indicate that the Indonesian Language Book based on High Order Thinking for Class X Vocational High School Students in the TKJ Department is suitable for use as teaching materials and learning resources in schools. This can be seen from the average assessment results of experts, educators, and students (81%), (85%), and (82%) are categorized as feasible.

B. Discussion

The development of textbooks as a learning resource and learning media is important. Prastowo (2015) states that textbooks function as (1) reference materials or reference materials by students, (2) evaluation materials, (3) teaching aids in implementing the curriculum, (4) one of the determinants of teaching methods or techniques that will be used. used by educators, and (5) means to improve careers and positions. Textbooks are a very important part of learning because they are used by educators and students [11]. The developed textbook must be under the characteristics of students and the characteristics of the school. Textbooks for SMK must refer to the specific needs of SMK students. The results of the information analysis show that the Indonesian language books used in SMK are not under the characteristics of the school and the characteristics of students. In addition, the language used is difficult for students to understand. This data is relevant to the findings of Hendrayanto & Mulyani which state that Indonesian language textbooks are still complained of by

Indonesian language educators on the aspects of language and content [12].

The development of Indonesian language books based on High Order Thinking (HOTS) for class X students of Vocational High School Computer Network Engineering Department was developed under the characteristics of students and school characteristics. HOTS-based Indonesian books were developed with the hope of improving critical thinking skills and students' ability to solve problems. The results of PISA (2016) show that the literacy, mathematics, and science skills of Indonesian students are ranked 69 out of 74 surveyed countries [13]. Literacy material is related to the ability to capture and understand information. HOTS-based Indonesian textbooks are expected to improve student's literacy skills.

The developed Indonesian textbook reflects four language competencies (listening, speaking, reading, and writing) according to the needs of students. This is consistent with the findings of Moiinvaziri, which states that language learning students need teaching materials to listen, speak, read, and write [14].

IV. CONCLUSION

Based on the results of the study, it is concluded that the Indonesian language textbooks used in a vocational school are the same as the textbooks used in senior high school. The results of the textbook analysis obtained an average value of 75% with the feasible category. However, the book is not under the characteristics of TKJ majors and the characteristics of students. The vocabulary of the reading text used in the book is difficult for students to understand. Educators and students need Indonesian textbooks that are under the characteristics of the department and the characteristics of students. The outcome of the development was a draft of the Indonesian language book based on High Order Thinking Skills for Class X SMK TKJ Major Students. The book draft has been tested for its feasibility through expert validation, readability assessment by educators and students. The results of the assessment of experts, educators, and students obtained an average percentage score of 83%, categorized as feasible. Thus, the textbook is suitable for use as a learning resource by students.

REFERENCES

[1]   A. Arifin, S. & Kusrianto, *Sukses Menulis Buku Ajar & Refrensi*. Jakarta: PT Gramedia Widiasarjana Indonesia, 2016.

[2]   B. Tomlinson, *Developing materials for language teaching*. A&C Black, 2003.

[3]   B. Tomlinson, "Materials development for language learning and teaching," *Lang. Teach.*, vol. 45, no. 2, p. 143, 2012.

[4]   S. Suwandi, *Pembelajaran Bahasa Indonesia Era Industri 4.0*. Bandung: PT. Remaja Rosdakarya, 2019.

[5]   H. D. Brown, *Language Assessment Principles and Classroom Practices*. New York: Longman, Inc, 2004.

[6]   Mahsun, *Teks dalam Pembelajaran Bahasa Kurikulum*. Jakarta: Raja Grafindo Persada, 2015.

[7]   C. I. Gunawan, *Pedoman dan Strategi Menulis Buku Ajar dan Refrensi Bagi Dosen*. Jakarta: CV. Rajawali, 2015.

[8]   Soleh, *Pembelajaran Bahasa Indonesia Berbasis HOTS*. Bandung: CV. Pustaka Setia, 2019.

[9]   M. D. Gall, W. R. Borg, and J. P. Gall, *Educational research: An introduction*. Longman Publishing, 1996.

[10]   M. B. Miles, A. M. Huberman, and J. Saldafia, *Qualitative Data Analysis: A Methods Sourcebook*, 3rd ed. United States of America: SAGE Publications Ltd, 2014.

[11]   D. Angga Gunantar, "LANGUAGE CIRCLE: Journal of Language and Literature XI/2 (TEXTBOOKS ANALYSIS: ANALYZING ENGLISH AS A FOREIGN LANGUAGE (EFL) TEXTBOOKS FROM THE PERSPECTIVE OF INDONESIAN CULTURE," *journal.unnes.ac.id*, 2017, Accessed: May 11, 2021. [Online]. Available: http://journal.unnes.ac.id.

[12]   Y. Hendrawanto and M. Mulyani, "Kelayakan Kebahasaan dan Isi Buku Teks Bahasa Indonesia Kelas XII Semester 1 SMA," *J. Pendidik. Bhs. dan Sastra Indones.*, vol. 2, pp. 58–62, 2017, Accessed: May 11, 2021. [Online]. Available: https://journal.stkipsingkawang.ac.id/index.php/JP-BSI/article/view/246.

[13]   OECD, "PISA 2015 PISA result in focus," 2016.

[14]   M. Moiinvaziri, "Students' voice: A needs analysis of university general English course in Iran," *GEMA Online® J. Lang. Stud.*, vol. 14, no. 1, 2014.