



Development of Research Methodology Textbook Based-On Contextual Teaching and Learning

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Abstract

The need for teaching materials at the university level is a concern for many parties. One thing that is considered in the development of teaching materials is how the teaching materials can provide a real learning experience for students. This study aims to develop a research methodology textbook based on contextual teaching and learning. This research is development research by adopting four stages of the 4D model (define, design, develop, and disseminate). The results showed that the developed textbooks were in the proper category with an average score of 84.14. In addition, this textbook is also proven to improve student learning outcomes, with an average score of 84.38. This finding shows that the textbook can be an alternative as a reference in learning activities.

Keywords: *Development Research; Contextual Teaching and Learning; Research Methodology Textbook*

Introduction

Learning material must be prepared first to make the learning process easier for educators and students (Karyono & Subandowo, 2019). Based on observations at the State University of Surabaya, especially in the Economic Education study program, most learning activities have no textbooks developed specifically according to the characteristics of students. Most of the learning activities use general textbooks available in the library. Therefore, there is a gap between the lesson plan and the material in the textbook.

The learning model that pays attention to the characteristics of students and provides direct experience in learning activities is contextual teaching and learning (CTL) (Suryawati & Osman, 2018). The benefits of CTL are making learning meaningful to students by connecting to the real world. It draws upon students' diverse skills, interests, experiences, and cultures and integrates these into what and how students learn and how they are assessed (Parnell, 2001). Therefore, it is good to develop learning materials using the CTL approach.

Based on the results of a preliminary study in the Unesa Economics Education S1 study program, several realities are also the basis for this research topic. The results of observations and interviews with

several students writing their thesis also show that they have not mastered and understood the research method. The supervising lecturers also stated that they often re-explained related research methods according to the student's research topic. This phenomenon shows that students have difficulty understanding themselves from reference books of research methods commonly used in lectures. This is coupled with the lack of availability of research method textbooks that are easily understood by students in the department of economics education Universitas Negeri Surabaya. For this reason, it is necessary to develop a research methodology textbook that students can easily understand by integrating it with the contextual teaching-learning approach.

Method

This study uses a 4D model which includes four stages, namely define, design, develop, and disseminate (Thiagarajan, Semmel, & Semmel, 1974). The define stage is carried out through the needs analysis before designing a textbook, including curriculum and student analysis. The design stage starts from preparing the concepts and content in the textbook product. The development stage contains activities for realizing product designs that have previously been made. In this development stage, textbook validation was carried out by three experts, namely material/substantial experts, graphic experts, and presentation experts.

After three experts validated the textbook draft, the next step was a limited trial on learning activities to measure the practicality and effectiveness of the textbook. A questionnaire measures the practical aspect to see the responses of students and lecturers after using the textbook. While the effectiveness aspect is done by using a test after the learning activity. The minimum criteria set for learning outcomes are 70 or B grade.

Result

The development of a contextual approach-based research methodology textbook includes 4 stages, namely define, design, develop, and disseminate.

1. Define

This stage aims to identify the curriculum, learning objectives, and students. These components are used as the basis for compiling teaching materials.

Based on the curriculum analysis in the lesson plan, the teaching materials to be developed in the contextual-based research methodology textbook consist of eight chapters, including (1) Understanding the importance of research, (2) The process of discovering scientific truth, (3) Types of research, (4) Educational research methods, (5) Developing research instruments, (6) Research evaluation criteria, (7) Data analysis and presentation, (8) Statistics in research.

Student analysis was carried out to see the test subjects of this textbook. The results of the analysis show that the limited trial subjects for this textbook are 32 students. The determination of the trial subject was based on the level of ability and understanding of the homogeneity. Furthermore, the results of observations in classroom learning, in introductory research methodology courses, most students have difficulty understanding the material. Many students can only memorize the subject matter they receive but do not understand it, and they are usually taught using something abstract.

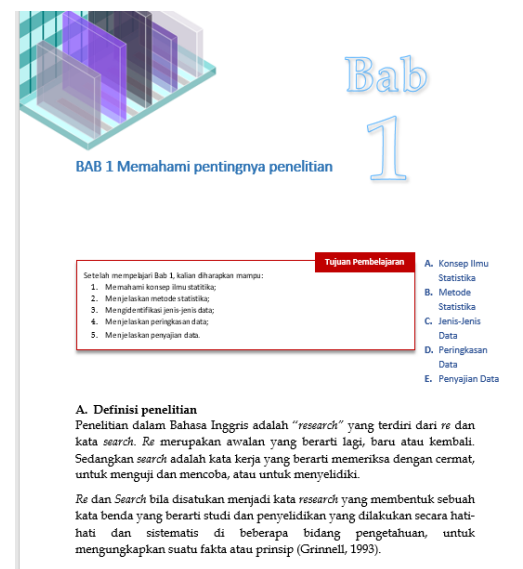
Furthermore, most of the students cannot make a connection between what they learn and how that knowledge will be used. Students only get research methodology material in an abstract, so this phenomenon makes students not have good independence in solving cases related to research methodology. Therefore, it is necessary to develop contextual textbooks.

Based on the results of observations in class, the difficulties experienced by students when studying research methodology materials are (1) students do not understand the material they are learning because they are just remembering/memorizing, (2) students are less able to relate the theory they have learned in class with daily experiences, (3) students experience confusion when given practice questions that are real-world problem solving, and (4) in working on practice questions, students depend on the instructions given by the teacher.

2. Design

This stage is to design teaching materials in research-based methodology textbooks. The textbook of research methodology consist of eight chapters, including (1) Understanding the importance of research, (2) The process of discovering scientific truth, (3) Types of research, (4) Educational research methods, (5) Developing research instruments, (6) Research evaluation criteria, (7) Data analysis and presentation, (8) Statistics in research.

The steps for preparing textbooks in this research activity include (1) Conducting curriculum analysis, (2) Determining the title of the textbook that is adapted to the essential competencies and subject matter to be studied, (3) Collecting references as writing material, (4) Writing material in the textbook (5) compiling practice questions in the form of descriptions and case studies related to the material contained in the research methodology course, (6) Evaluating the writings by rereading them to find possible deficiencies, and (7) Using various sources learning that can enrich the material in textbooks such as books, internet, magazines, and research journals.



3. Develop

We carried out two activities in this stage, namely a review by an expert and a limited trial. For textbook review activities by experts, three aspects are reviewed, namely material

substance, graphics, and presentation. Limited trials were conducted to measure the practicality and effectiveness of textbooks.

3.1 Textbook review

The experts review material/substantial aspects of the textbook. The expert gave several suggestions, including each chapter should be given contextual examples so that students can understand the topics presented in more depth. The examples given should be adapted to the characteristics of the study program. Moreover, the learning goals should be stated at the beginning of each chapter. This goal is adjusted to the lesson plan used as the basis for the development of textbooks. At the end of each chapter, practice questions are also given so that students can practice to measure the level of understanding of the material/topic of the chapter. In the first review, this textbook obtained a score of 67.19, which is in the fairly decent category. After making improvements based on input from experts, there was an increase in the score for the review of material aspects results, namely 83.75, which was in the very feasible category. The results of the material/substantial review are shown in table 1.

Tabel 1 Result of substantial review

No.	Aspects	Validation 1	Validation 2
1	Material Coverage	29	35
2	Material Accuracy	26	32
3	Material updates	27	34
4	Contains Productivity Insights	27	37
5	Stimulate Curiosity	25	31
6	Develop a sense of Diversity	28	35
7	Developing Life Skills	28	34
8	Using standard Indonesian Language	25	30
Total		215	268
Percentage (%)		67,19	83,75
Mark		fairly decent	very feasible

Next is a review by an expert from the graphic/display aspect of the textbook. The expert gave input as following: (1) the cover of the book cover should be accompanied by an image that is adapted to the contents of the book, (2) the size of the letters, the type of fonts to be uniform because there are differences between chapters, (3) the format and order of writing the contents of the book to be uninformed because there are differences between chapters, (4) the layout of the contents of the textbook should be designed attractively so that it is not dull for the reader. In the first review, the visual aspect for the draft received a score of 66 which means it is pretty feasible. After improving based on expert input, the review score increased to 84, with a very decent category. The results of the validation by graphic experts are shown in table 2.

Tabel 2: Result of graphical/visual review

No.	Aspects	Validation 1	Validation 2
1	Book Siza	4	4
2	Cover	3	5
3	Contents	26	33
Total		33	42
Percentage (%)		66	84,
Mark		fairly decent	very feasible

Finally, an expert with a linguistic background reviewed the presentation aspect of the draft. The suggestions obtained are (1) the systematic presentation of different materials between chapters, please equate them, (2) some materials have not been accompanied by illustrations and pictures, (3) please use simple language that is easily understood by students, if necessary provide examples or analogies to clarify the topic being discussed, and (4) there are no practice questions in several chapters. The results of the first review of the presentation aspect obtained a score of 65.83 with a fairly decent category, and the score of the second review after the revision was 85.67 with a very feasible category. The results of the validation by the presentation expert are shown in table 3.

Tabel 3 Result of presentation review

No.	Aspek	Skor Validasi 1	Skor Validasi 2
1	Systematics in presenting the material must be consistent	32	38
2	The logic in presenting the material must be following the flow of deductive and inductive thinking	26	36
3	Presenting material reviews in the form of pictures or illustrations	28	38
4	Using illustration that match the chapter on the material	28	37
5	Presenting a summary of the material before starting a new material	29	34
6	Presenting practice questions in each chapter	29	37
7	Develop a mindmap at the beginning of the chapter	28	35
8	Make practice questions at the end of the chapter	27	36
10	Student-centered, according to the concept of CTL	28	35
11	Scientific approach	29	36
12	Creativity and variety of materials	29	37
13	Introduction	28	36
14	Content	26	37
15	References	28	36
Total		395	508
Percentage (%)		65,83	84,67
Mark		fairly decent	very feasible

3.2 Pilot test

The research methodology textbooks based on contextual teaching and learning that experts have reviewed tested in learning activities. The pilot test was conducted on 32 students with two lecturers of research methodology courses for four meetings. The pilot test was conducted to measure the practicality and effectiveness of the book by using a questionnaire.

The results of the practicality questionnaire showed that students and lecturers gave scores of 85.6 and 81.3. This shows that the contextual teaching and learning-based research methodology textbooks that were developed are in the very practical category when used in learning activities. Data on the practicality of CTL-based research methodology textbooks can be seen in table 4.

Tabel 4 Result of Practicality

User	Average	Percentage (%)	Mark
Students	4,42	85,6	very practical
Lecturers	4,06	81,3	very practical

Next is a test of the effectiveness of the textbook. The pilot test was carried out by giving students a test of learning outcomes after participating in learning for four meetings using this textbook. The results showed that 27 out of 32 students scored above 70 or were in category B (passed). Thus, CTL-based research methodology textbooks are effective in improving student learning outcomes.

4. Disseminate

After the previous three stages have been passed, the last stage is disseminated. In this stage, we will submit a draft of the CTL-based research methodology textbook to publishers for printing and distribution.

Discussion

1. Validation of research methodology textbook

The validation of developing a CTL-based research methodology textbook is seen from three aspects, namely the material/substantial, graphic, and presentation aspects. First is substantial aspect. The first validation by the expert obtained a score of 67.19% with several inputs, namely, including contextual examples that match the characteristics of each chapter to help students understand the material, provide learning objectives at the beginning of each chapter, and provide practice questions in each chapter. After being revised based on expert input, the score obtained increased to 83.75% with a very decent category.

The second is the graphic aspect. The results of the first validation by the expert showed that from the graphic aspect, it obtained a score of 66% with several inputs, (1) the leather cover of the book should be accompanied by an image that is adapted to the contents of the book, (2) font size, font type to be uniformed because there are differences between chapters, (3) the format and order of writing the contents of the book to be uniformed because there are differences between chapters, (4) the layout of the contents of the textbook should be designed attractively so as not to be boring for the reader. After revisions were made based on input from graphic experts, the score obtained increased to 84%, with a very decent category.

The third is the presentation aspect. The results of the first validation by the expert showed that from the presentation aspect, it obtained a score of 65.83% with several inputs, namely (1) the systematics in presenting the material differed between chapters, please equate, (2) there is material that illustrations and pictures have not accompanied, (3) please use simple language that is easily understood by students, if necessary, provide examples or analogies to clarify the topic being discussed, and (4) there are no practice questions in several chapters. After a revision was made based on input from graphic experts, the score obtained increased to 84.67%, with a very decent category.

Overall, judging from the three aspects, namely material, graphics, and presentation, an average score of 84.14% was obtained, which means the book is suitable for learning activities. The score was obtained after revisions were made according to expert input. These findings in line with previous finding by Heinich et al. (2005) that textbooks must be validated to identify weaknesses so that improvements can

be made. According to the Borg and Gall (1983) that development research aims to develop and validate products.

2. Practicality of research methodology textbook

The practical aspect was obtained from the questionnaire scores given to users, namely students and lecturers after the pilot test was carried out. The questionnaire results for the practicality aspect of students obtained a score of 85.6% and lecturers 81.3%. This shows that the textbooks developed are considered practical for learning activities in research methodology courses.

The questionnaire for the practical aspect measures three things, ease of use, clarity of teaching materials, and attractiveness of teaching materials. First, ease of use. The questionnaire results show that the developed textbooks can be easily used as learning materials in research methodology courses by students and lecturers. This can be seen by the questionnaire score of 87.29% from students and 80% from lecturers. This is due to the instructions for using the book in the developed textbook. This book also has a clear table of contents so that users can easily find the topic or material to be studied. Finally, this book is also equipped with a glossary to make it easier to understand foreign terms commonly used in research methods.

The second is the aspect of clarity of teaching materials, including the perception of students and lecturers on the style of language, style of delivery, and the completeness of the material in the textbook delivered. The questionnaire results showed a score of 84.38% from students and 80% from lecturers, which indicated that users could easily understand textbooks in the process of teaching and learning activities. The simple writing style in the developed textbooks makes it easy for users (students and lecturers) to understand the material or topic being discussed. This research methodology textbook was also developed based on the lesson plans used in research methodology course. This is one of the factors that make it easier for students to understand the material in the textbook. In addition, the textbook was developed based on contextual teaching and learning (CTL). The textbook is equipped with explanations and cases adapted to the scientific characteristics of the economic education study program. This helps users, especially students of economics education, understand the material or topics contained in textbooks more easily.

Lastly is the attractiveness aspect. This aspect measures user perceptions (students and lecturers) related to the layout design and appearance of the textbooks. Students and lecturers gave the same response, namely 85% for this aspect. This shows that the textbooks can provide a new and different feel compared to similar books that have been used. Students and lecturers become interested in reading this textbook during the learning process with an attractive display design and layout.

Overall, the total average score for the practicality aspect of the textbooks is 85.6% and 81.3% of student and lecturer responses, respectively. This shows that this study's CTL-based research methodology textbooks are in the practical category to be used in the learning process. This finding in line with the previous study that the textbook using CTL approach is ease to use and understand (Febrianto & Puspitaningsih, 2020; Hafiz, 2015; Herlina & Istikomah, 2019; Karyono & Subandowo, 2019; Tegeh & Kirna, 2013)

3. Effectiveness of research methodology textbook

The effectiveness of the CTL-based research methodology textbook is obtained from the learning outcomes test. The test was conducted in the pilot class. The criteria to pass the test is 70 or B grade. The test results showed that 27 of 32 students in the pilot class passed the minimum criteria (above 70 or B grade). It means the classical completeness of the pilot class is 84,38%.

The results show that the CTL-based research methodology textbooks effectively improve students' learning outcomes. An in-depth analysis shows that several factors cause this textbook to improve student learning outcomes. First, the textbooks' design, appearance, and layout are attractive so

that students do not feel reluctant when reading this research methodology textbook. Second, this book was developed in simple language to make it easy to understand. Third, the examples and cases in the textbook have been adjusted to the characteristics of the economic education study program. This makes it easier for students as users to understand. According to the Sadirman (2011) that the application of a contextual approach has several aspects, namely: constructivism theory, finding (inquiry), asking questions, learning communities, modeling, reflection, and authentic assessment.

With the three advantages offered by the textbook, students can easily use it and, in the end, can improve learning outcomes in research methodology courses. This is in line with Hull's and Sounders (1996) who argues that in contextual learning (CTL), students find meaningful relationships between abstract ideas and practical applications in real-world contexts. Contextual learning requires the teacher to design a learning environment that combines several forms of experience to achieve the desired results. Johar et al. (2018) stated that teaching materials using a contextual approach can improve student learning activities..

Thus, through development research, providing contextual-based textbooks using the 4-D development model can make it easier for students to understand the research methodology material. This study strengthens the previous finding that contextual learning will strengthen students' understanding and memory of the learning that has been carried out (Nurhadi, 2004). In addition, these findings reinforce several previous studies that contextual-based learning provides added value for students (Ambarwati & Rochmawati, 2020; Arwita, 2012; Belawati, 2003; Sihotang & Sibuea, 2015)

Conclusion

The development of research methodology textbooks based on contextual teaching and learning using the 4D method has been proven to establish textbooks that are suitable for learning activities. In addition, the textbook has also proven to be easy to use and easy to understand. Furthermore, after using the textbook, the student's learning achievement has been increased.

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