

Development of Electronic Illustration Practicum Book Based On Scientific Explanation Bilingual Students

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Abstract. This study aims to develop an Electronic Illustration Practicum Book Based on Scientific Explanation Bilingual Text for primary teacher education students. This research is a research and development (R&D) according to Robert Maribe Branch, namely the ADDIE model. The steps taken in this development research are divided into five, namely: Analysis, Design, Development, Implementation, and Evaluation. In this study, it was limited to the development stage to see the feasibility of the Electronic Illustration Practicum Book Based on Scientific Explanation Bilingual Text for primary teacher education students. The data collection technique used in this study used a questionnaire. The results showed the feasibility level of developing an Electronic Illustration Practicum Book Based on Scientific Explanation Bilingual Text based on media and material experts. The material experts assessment gave a score of 42 with a percentage of 82% with a very good category and the media expert's assessment gave a score of 54 with a percentage of 83% with a very good category. From the results of the study, it can be concluded that the Electronic Illustration Practicum Book Based on Scientific Explanation Bilingual Text is suitable for use by primary teacher education students.

Keywords: Electronic Illustration Book, Scientific Explanation Bilingual Text.

1 Introduction

The use of varied learning applications during online learning as the impact of the COVID-19 pandemic on the world of education greatly helps the learning process. Teachers as educators always try to provide the best for the advancement of education in Indonesia, both by implementing online and offline learning. [1] in her research stated that students experienced an increase in learning outcomes during online learning compared to face-to-face learning outcomes. This can be seen from the activeness of educators in creating a maximum online

learning atmosphere. Various efforts made by educators are factors that support the success of a learning process, one of which according to [2]) in his research choosing Edmodo as an online learning medium is very effective because it is a free application that is easily accessible by teachers containing various features that can be used to facilitate learning. Learning material about assignment, quiz, file and link, library, gradebook, award badge, polling, and parent code. Natural Sciences or better known as science, as one of the subjects/courses taught in formal education units is felt to be less than optimal in the application of concepts or applications. As it is known that natural science requires practice to support the theory being taught. [3] also states that science is a science that deals with natural phenomena and objects that are systematic, regularly arranged, generally accepted in the form of a collection of observations and experiments. Systematic means that knowledge is arranged in a system, does not stand alone, is interrelated with each other, explains each other so that the whole is a unified whole, being generally accepted means that knowledge does not only apply or by someone or several people in the same way of experimentation will obtain the same or consistent results.

Based on a preliminary study conducted by researchers filled in through *google form*: <https://forms.gle/iWjpU7UyZf7BdTeu7> with the number of respondents 59 students who have participated in online learning in the basic concept of biology subject stated that the accepted theory is less understandable if it is not accompanied by practicum. The results of the questionnaire were 93.2% felt that students really needed practicum to support learning the basic concepts of biology. Furthermore, 67.8% of students agreed to use the electronic practicum guidebook in learning the basic concepts of biology. The results of the questionnaire are supported by several studies from [4] in his article entitled Development of an electronic practicum guide stating that the use of an electronic practicum guide is effectively used in practicum.

The hybrid learning lecture system which will take place in the even semester of 2021/2022 provides an opportunity for educators to be able to re-develop offline learning which has been delayed, but this learning will still be less than optimal due to the limitations of students who take part in the learning only about 50% offline. , and the rest still have to meet online. So that the use of books in hardcopy is still not maximally able to be given to students, but teaching materials are very important to be owned by every student, for that the author tries to compile an electronic practicum guide book to overcome the limitations of current learning, so that

students can do learning practicum at their respective locations without having to come face to face.

This guide will be designed attractively with illustrations that will be able to be carried out by students independently in their respective homes. [5] in his research entitled the design of interactive illustration books as educational media for Bekasi batik for elementary school children stated that illustration books are very capable of developing student interest in learning. In addition, this guidebook will also be designed using English, one of the reasons for making a guidebook in English is due to the rapid development of technology, the global market really demands that we continue to co-exist with the times so as not to be left behind, so skills are needed in learn English combined in a practical guide book. This research is supported by relevant articles from [6] research entitled Need Analysis for e-Book of Practicum Instructions based on Tri N (Niteni, Nirokke, Nambahi) found the following: (1) e -book practicum is very effective to use in practicum (2) e-book practicum is very effective to be used in practicum. From this strengthening, this research and development is limited to the availability of quality-tested prototype models to improve the critical writing skills of PGSD students as well as to support the online learning process. This has strengthened the author to research related to "Development of an Electronic Illustration Practicum Book Based on Scientific Explanation Bilingual Text for PGSD students".

2 Method

Research is a form of contribution in realizing quality learning, for this reason, this study seeks to develop an electronic illustration practice book based on scientific explanation bilingual text to improve critical writing skills of PGSD students. This research is planned to start in March-November 2022 in the PGSD FIP study program, State University of Medan. The population in this study was taken from the total number of students of the PGSD study program who took the basic concepts of biology course, then the sampling in the study will be carried out using cluster random sampling technique.

The stages that will be carried out in this research include several stages, in the early stages of research preparation, then the process of making research proposals and research design stages, research implementation, data processing, discussion of research results and reporting at the final stage. The type of research used is development research with 4D models (four-D models). 4D models (four-D models) were developed by Sivasailam Thiagarajan, Dorothy S. Semmel,

and Melvyn I. Semmel. Trianto, in (Rochmad 2012: 60) as a development model which consists of 4 main stages, namely: 1) define, 2) design, 3) develop and 4) dessiminate.

3 Result And Discussion

Research on the development of an Electronic Illustration Practicum Book Based on Scientific Explanation Bilingual Text was conducted to improve the critical writing skills of PGSD students. This research using the 4D model consists of define, design, develop, and desiminate stages which are carried out on odd semester students in the 2022/2023 academic year who take the basic concepts of Biology course. At the define stage, it is obtained based on the analysis of the design of the semester learning process based on learning achievements, then the student analysis is to determine the characteristics of the students. Furthermore, to analyze the needs of students in learning the basic concepts of Biology, a questionnaire is distributed using google form with a total of 59 students respondents. given randomly to PGSD students, the results of student responses to each question item are shown in the diagram below:

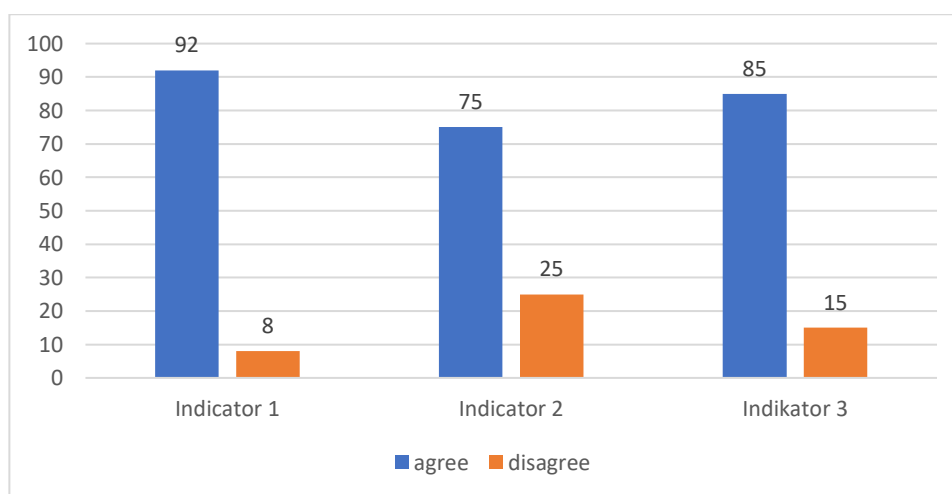


Figure 1. Diagram of Student Needs Related to Practical Guidelines

Based on the results of the preliminary study, it was obtained in indicator 1 related to the practical needs of students in the basic concept of Biology, obtained as many as 54 students or 92% agreed if the course was equipped with a practicum to connect the concepts obtained with practice so that later it can be applied in science learning. while 5 students or 8% disagreed

because they felt that the basic concepts of science only discussed concepts, while the practicum should be in different subjects. Furthermore, in indicator 2 related to student interest related to practical biology basic concepts if using an electronic book obtained as many as 44 students or 75% of students agree that the practicum guide to be used in electronic form because it will make it easier for students to access the practicum guide while as many as 15 people or 25% students do not agree if the guide used is in electronic form due to the difficulty of having to open a smartphone or laptop during practicum. Furthermore, in indicator 3 related to the implementation of the practicum is carried out directly, as many as 50 students or 85% of students agree if the practicum is carried out directly / face to face, while 15% or as many as 9 people do not agree because they feel that it is still a transition period from the pandemic. Based on the results of a preliminary study questionnaire related to the student's need for the use of practicum guidelines, it is felt that it is very appropriate to apply the Electronic Illustration Practicum Book Based on Scientific Explanation Bilingual Text in the basic concept course of Biology. Furthermore, based on the analysis of concepts and materials adapted to the learning outcomes that have been analyzed previously.

At the design stage, it aims to design a learning implementation plan based on the results of the definitional analysis that has been carried out in the early stages through learning achievement analysis, student needs analysis, task analysis, and concept analysis. In the stages of designing an Electronic Illustration Practicum Book Based on Scientific Explanation Bilingual Text, the following are as follows selecting the media concept to be used in the Electronic Illustration Practicum Book Based on Scientific Explanation Bilingual Text, in this case using Canva and then planning the preparation of the initial draft of the Electronic Illustration Practicum Book Based on Scientific Explanation Bilingual Text. The results of the design at this stage obtained a draft book on the subject of basic concepts of Biology.

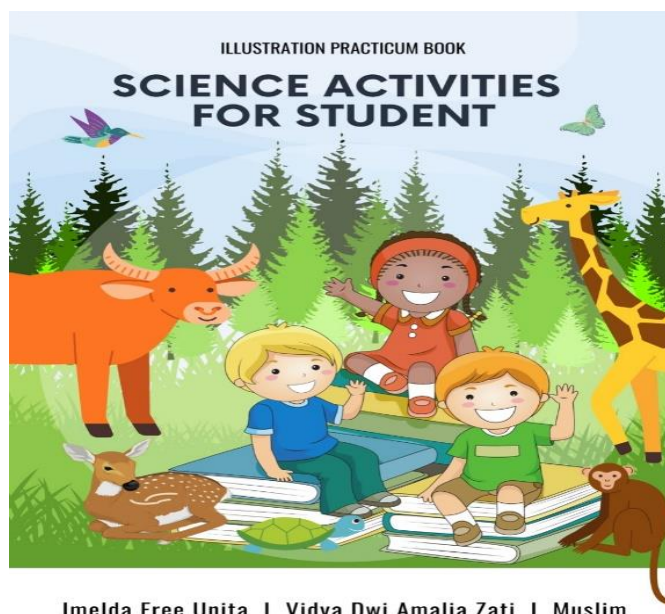


Figure 2. Illustration Practicum Book

Furthermore, in the development stage, the development stage aims to produce an Electronic Illustration Practicum Book Based on Scientific Explanation Bilingual Text. To see the feasibility of the product that has been prepared, it is necessary to do expert validation regarding the product, namely the media and materials presented in the Electronic Illustration Practicum Book Based on Scientific Explanation Bilingual Text.

Table 1. Expert Validation Results of Content Eligibility

Aspect	Result	Number	Maximal Score	Score	Classification
Components of teaching materials	The material presented still needs to be expanded with more references and in accordance with CPMK	1,2,3	15	8	
Material Substance	The material prepared is in accordance with the	4,5,6	15	16	

	learning outcomes of the Basic Biology Concepts course.				
Physical Appearance	Attractive design, appropriate font, able to increase the attractiveness of the reader	7,8,9,10	20	18	
Total			50	42	84% (Suitable)

Based on the results of the material expert's validation of the development product that has met the assessment criteria, the available teaching materials are in accordance with the learning outcomes of the course so that later they can improve student competence. There are several things that need to be developed related to the substance of the material that is adapted to the development of science and technology which can be obtained by reading more literature.

Table 2. Expert Validation Results of Media

Aspect	Result	Number	Maximal Score	Score	Classification
Suitability of Teaching Materials	The match between the material and the design is very good	1,2,3,4	20	16	
Flexibility	Easy to use	5,6	10	8	
Presentation	The design is packaged very well, the display and images presented are attractive and colorful	7,8	10	8	
Usefulness	Encouraging students to be able to develop creative thinking skills	9,10	10	8	
Total			50	40	80% (Suitable)

Based on the results of expert validation, the development product has met the assessment criteria, what is available is appropriate. There are several things that need to be developed related to the deepening of more material.

4 Conclusion

The stages that have been carried out in this research are the definition stage, the design stage, and the development stage, then the deployment stage will be carried out. Based on the results of the feasibility test, it was obtained that the material validation was 84% in the appropriate category and the media expert validation results were 80% in the appropriate category, so it can be concluded that the Electronic Illustration Practicum Book Based on Scientific Explanation Bilingual Text is suitable for use in the basic concepts of Biology for PGSD students.

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