

## DEVELOPMENT OF E-LEARNING-BASED POCKET BOOKS TO IMPROVE STUDENTS' COGNITIVE ABILITY

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### ABSTRACT

The aim of this study is to develop a set of pocket book teaching materials that can improve students' cognitive abilities in basic science concepts. This research is included in the type of research and development (Research and Development) using the Borg & Gall research and development model. Research and development is a process to develop a new product or improve an existing product that can be accounted for. The products developed in this research are pocket book teaching materials and poster learning media based on E-Learning in the basic science concepts course. The results of the study found that students' cognitive results were known to have difficulty in answering questions given by the teacher during the learning process, because students before learning did not read the pocket books that had been provided, so there was a lack of knowledge and insight in answering questions given by the lecturer.

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### 1. INTRODUCTION

Education as the main means in improving the quality of human resources, it aims to improve life and be able to face the challenges of changing times. Education is a conscious effort of individuals to gain maturity and learn to get the same rights to access learning in developing personality, knowledge, and skills that already exist (Persico, 2014). The main success of a nation is determined by the success of the nation's education itself. Education is a very important part of a person's life individually, family, and nation and state (Awang, 2015).

Learning success is also influenced by the selection of learning resources and appropriate learning media that are able to support learning outcomes and goals. Lecturers have big challenges in choosing and determining the right learning resources to help provide understanding for students in the learning process (Rahmawati, 2013). Even interesting and fun learning will not be effective if only using instant teaching materials and learning media that do not meet the needs of learning materials (Listiyani and Widayati, 2012). While in Indonesia there are still many who use a variety of conventional teaching materials that are instant, ready to use without planning and compiling their own teaching materials.

Based on observations made by researchers in the PGSD study program in science courses at several private campuses in Banyuwangi Regency, several problems were found in learning. One of them is the low psychomotor ability of students, especially during practicum activities, besides that some students still have low learning outcomes, such as the average UTS result on the basic science concept material that has been carried out is approximately 17.58%. On the psychomotor abilities of students based on interviews conducted with lecturers of basic science concepts, it was explained that most of the students' psychomotor abilities were still low, especially in practical activities.

Basically, the cognitive and psychomotor aspects are closely related and cannot be separated. The cognitive domain includes brain activities, such as the ability to think, remember, solve problems, and evaluate. The psychomotor domain is related to physical activities, such as running, jumping, painting, dancing, hitting, sticking, writing, and so on. While the affective domain includes attitudes, values, feelings, emotions, and interests (Puslitjakdikbud, 2020).

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One alternative that can be done is by developing supporting teaching materials in the form of pocket books and more complete poster-based learning media based on E-Learning. Pocket books are books that are small in size, light in weight, can be stored in a pocket and are practical to carry and read anywhere and anytime (Sulistiyani and Dyah, 2013). So the researchers tried to develop a pocket book as an alternative to overcome the difficulties of the basic science concept courses. Based on the above background, the author wants to conduct development research with the title "Development of E-learning-Based Pocket Books to Improve Students' Cognitive Ability"

## 2. RESEARCH METHOD

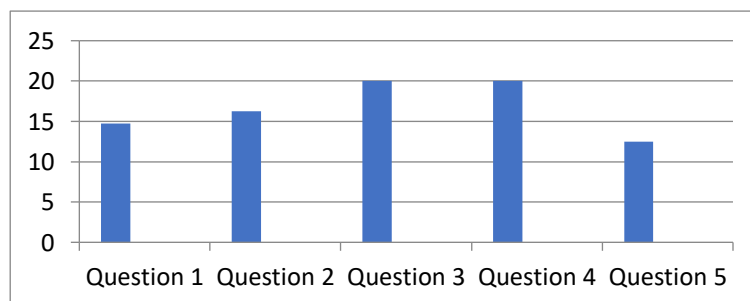
This research is included in the type of research and development (Research and Development) using the Borg & Gall research and development model. Research and development is a process to develop a new product or improve an existing product that can be accounted for. The products developed in this research are pocket book teaching materials and poster-based learning media based on E-Learning in the basic science concepts course.

The product trial conducted by the researcher aims to collect data that can be used to determine the accuracy, validity and effectiveness of pocket books for learning basic science concepts. In the trial of this product, there are several things that need to be considered including the trial design, trial subjects, data collection instruments, and data analysis techniques. The types of data in the development of pocket book teaching materials are qualitative data and quantitative data. The instruments used in the development of pocket book teaching materials are observation, questionnaires or questionnaires, and tests. The data analysis technique used in this research and development is data collection through instruments and then carried out according to research and development procedures, the data analyzed in the development of this pocket book teaching material is quantitative data.

## 3. RESULT AND DISCUSSION

Learning in the post-pandemic period still applies online and online learning. The use of e-learning is one of the options in asynchronous learning. Most of the e-learning asynchronous learning processes have a role in the instruction process which includes the delivery of material and even assessment (Karwati, 2014). One of the successes in learning is influenced by the accuracy of the use of media and learning resources. The COVID-19 pandemic that hit Indonesia had a huge impact on the world of education. In addition to students, teachers and parents also feel a huge impact due to the lack of knowledge of technology which requires a large amount of expenditure to support learning. Determining the right media is a challenge for lecturers and teachers.

Pocket books are interesting learning media for students and teachers because they are considered more practical in their use (Laksita, 2013). The function of using pocket books can increase productivity during learning (Trsisianawati, 2017). In addition to pocket books and poster media, it can also make it easier to convey learning because it can attract the attention of students and is easy to remember (Sudjana, 2010). Meanwhile, in the post-pandemic period. The use of e-learning is one of the options in asynchronous learning. Most e-learning asynchronous learning processes have a role in the instruction process which includes the delivery of material and even assessment (Karwati, 2014).



Picture 1. Cognitive Test Results Diagram

Based on the results of the cognitive data analysis above, it was found that question numbers 3 and 4 were included in the easy category because overall students could answer correctly, while question number 5 was included in the difficult category with an average acquisition of 12.5%, with 5 items as shown in the table 1.

Tabel 1. Cognitive Assesement

No	Statement	Percentage
1	Define physic changes in objects	14,44%
2	Define chemical changes in objects	16,11%
3	Analyze the changes in palm oil as it sits in the open air	17,78%
4	Analyze the changes in burnt wood	17,22%
5	Make explanations for students related to changes in the form of objects	11,67%

Based on the results of the cognitive data analysis above, it is obtained that the number of questions number 3 and 4 are included in the easy category because overall students can answer correctly, while question number 5 is included in the difficult category with an average acquisition of 11.67%.

The use of pocket books as a medium and source of learning in addition to making it easier for students also makes it easier for teachers as teachers (Ardian, 2016). assist in the delivery of material that has not been conveyed by the teacher. As a concrete form of the teacher's explanation because it contains interesting pictures in it, so it will be easier to accept the material. Pocket books are one of the learning media in the form of books and small sizes that can and are easily carried everywhere that can be stored in a pocket. Pocket books have a smaller size that contains interesting pictures (Laksita et al, 2013)

Learning during this pandemic uses a lot of synchronous and asynchronous learning. One of the implementations of asynchronous learning can be done with E-Learning. E-learning can also be referred to as online learning, virtual learning, Wet-based learning which has the same meaning and meaning (Mutia and Leonard, 2013). As part of the asynchronous learning process, E Learning acts as an instructional process that involves the use of electronic devices in delivering, assessing, and facilitating the teaching and learning process where learning is student-centered (Karwati, 2014).

#### 4. CONCLUSION

It was concluded that the cognitive results of students were known to have difficulty in answering questions given by the teacher during the learning process, because students did not read the pocket books that were already available, so there was a lack of knowledge and insight in answering questions.

#### 5. ACKNOWLEDGEMENT

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