

Needs Analysis Of Interactive Digital Books Based On Project At Biological Learning And Strategy Learning Designs Subject

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Abstract – Learning in the 4.0 era brought many changes in the technology sector. One of the media that can be used in lectures is digital books. Digital books can guide students to study on their own, related to biology learning strategy and design courses. For students to be better trained in psychomotor skills, it is necessary to make this digital book juxtaposed with a project approach. For this reason, an analysis of student needs was carried out for making project-based interactive digital books. This research is a quantitative descriptive study using a questionnaire as a data collection tool. The data is processed with a percentage formula. The results show that students and lecturers need project-based interactive digital books. So it can be concluded that the needs of students and lecturers for the availability of digital books are very much needed to be able to foster students' understanding and knowledge in the biology learning strategy and design course.

Keywords – Digital Book, Project Based Learning.

I. INTRODUCTION

Learning in the 4.0 era brought many changes in the technology sector. Many updates have been made, including in the field of education. By the conditions during the Covid 19 pandemic, many of the latest innovations have been made in learning. One of the most current trends in the use of various digital media as a medium in conveying messages from lecturers to students and can be used in any situation, whether studying independently or in groups. One example is digital books.

Digital books are a medium that can make it easier for students and teachers to study outside of school by taking advantage of technological and communication developments (Winatha, 2018). Digital books are preferred because they have a small size besides that they have several search features, which will help make it easier to search for the words contained therein (Tri & Karya, 2020). Digital books are books in electronic versions that can be accessed and read via personal computers (Andi Dian Angriani, Andi Kusumayanti, 2020). Digital books can be used independently or in groups. To help improve student skills in biology learning strategy and design lectures, digital books are expected to be able to overcome this.

The biology learning strategy and design course is a compulsory subject that students must take for their provision in practicing students' teaching skills in real schools. So far, in the lecture process, the only students are their friends in the classroom. However, this time in the field practice the students are the students at the training school itself. Biology learning strategies and designs teach students how to choose and try out approaches, methods, models, and tools that can be used in teaching a particular subject, apply the components of classroom management and teaching and learning interactions, and practice compiling learning tools such as an educational calendar, a semester program, annual program, syllabus and lesson plan. Thus students need a lecture guide to apply, understand and can apply all kinds of skills in this lecture. Thus, of course, the digital book is also able to provide various features

so that student skills can also be improved through various appropriate projects. One of them is by using a project-based approach to the digital books being developed.

Project-based learning is learning that makes students work collaboratively and discover the knowledge they have learned for themselves (Oktay Kizkapan and Oktay Bektas, 2017). In project-based learning, the teacher acts as a facilitator, students emphasize giving assignments that make students more motivated to learn independently (Aldabbus & English, 2018). Project-based learning focuses on questions or problems that encourage students to solve the main concepts and principles of a discipline and engage students in constructive investigations (Zancul et al., 2017). Several studies that have been carried out regarding this project-based digital book include Winatha's research with the title development of interactive e-module based on digital simulation lesson projects and the results stated that it was successfully applied and feasible to be implemented in the learning process (Winatha, 2018). For this reason, it is necessary to conduct a review of the needs of students and lecturers for making interactive digital books based on projects in biology learning strategy and design courses.

II. INSTRUMENTS

The instrument used in this study was a questionnaire that consisted of 14 statements. The questionnaire was prepared with two answer choices, namely yes and no. The questionnaire consists of seven indicators, namely the readiness of teaching materials, the readiness of digital books, the desire to make digital books, the components of teaching materials, the materials and contents contained in teaching materials, a project-based approach, and the implementation of learning (Susanti, JPPIPA 2020).

III. PROCEDURE

This research is a quantitative descriptive study that describes an event or incident and reveals a truth in the relationship between variables or phenomena (Nenty, 2009). This research procedure begins with the creation of a questionnaire indicator, then it is broken down into fourteen statements. After the preparation of the research, the instrument was completed, it was continued with the distribution of questionnaires to participants, both lecturers, and students. This activity was carried out using the Google form, related to the new normal covid 19 periods. After the questionnaire was filled, it was continued with processing the questionnaire data using a percentage formula (Riduwan, 2010).

$$\text{Percentage Value} = \frac{(\text{Score obtained})}{\text{Maximum score}} \times 100\%$$

After the processing results are obtained, they are converted to the criteria for student learning activities in the following table.

Table 1. Student Learning Activity Criteria

Achievement Rate (%)	Conversion
81 – 100	Urgently Need
61 – 80	Need
41 – 60	Enough
21 – 40	Less Need
1 – 20	No need

IV. RESULTS

From the results of data processing that has been carried out through distributing questionnaires to students and lecturers who teach biology learning strategy and design courses, the following data are obtained.

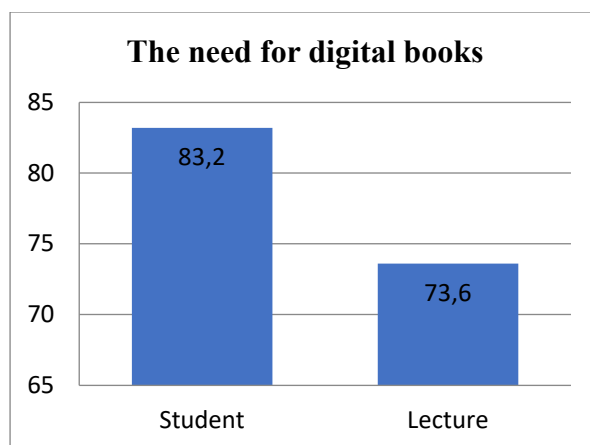


Figure 1. The Needs of Lecturers and Students for Interactive Digital Books

The data above explains that 83.2% of students need interactive digital books in the process of teaching strategies and biology learning design, while lecturers need interactive digital books as much as 73.6%. The details of this data can be seen in the following figure.

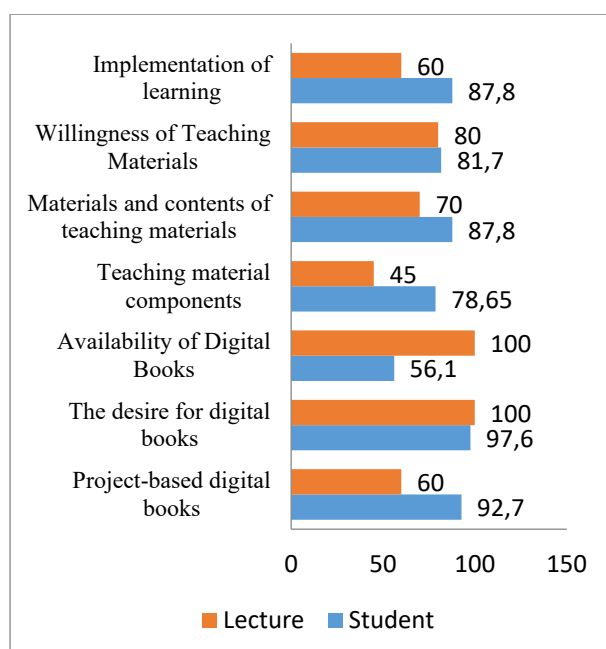


Figure 2. Needs Analysis for Interactive Digital Book

From the data above, on the indicators of learning implementation that have used teaching materials 60% of the lecturers' answers have been in the category of sufficiently implemented with teaching materials so far and 87.8% of students means it has been carried out very well. According to lecturers and students, the availability of teaching materials in the lecture process has been available with 80% and 81.7% assessments. Indicators of material and content of teaching materials used so far by lecturers and students have the highest ratings of 70% and 78.56%. Evaluation of the components of teaching materials that have been used by lecturers and students, namely 45% of the components of teaching materials according to the lecturers and 78.65% according to the students. %. According to the lecturer, the availability of interactive digital books is not yet available in this biology learning strategy and design course. and students only stated that 56.1% were available. The indicator of the desire for interactive digital books is in the same category, which is very much in need with the percentage of lecturers and students, namely 100% and 97.6% and making digital books based on projects, lecturers want as much as 60% and students 92.7%.

V. DISCUSSION AND CONCLUSIONS

Indicators of learning implementation when viewed from the difficulty of student lectures without using teaching materials, then the responses of students and lecturers from the results of the data obtained are very difficult. So far, the teaching materials used by students to study are power points and several printed books. The PowerPoint has been made by the lecturer by the curriculum study. So if students do not use teaching materials, it will be difficult for them to understand the material related to the curriculum in the learning strategy and design course. The curriculum usually contains a description of the material and is presented in learning, which is a tool to achieve educational goals and guidelines in teaching implementation (Thaib & Siswanto, 2015). In general, the content of a curriculum is a scientific discipline (Purwadhi, 2019). The curriculum is very important to achieve the success of the educational process, without a good and precise curriculum it will be difficult to achieve goals (Fujiawati, 2016). For teaching materials in the form of printed books, most of them are only available on certain materials. So it requires a lot of printed books to meet the demands of the strategy curriculum and biology learning design.

Regarding the lecture atmosphere that has occurred so far, it has been conducive and fun. When viewed from the participation during lecture activities, students are still unable to participate or take an active role in lectures, which is because some of the available teaching materials have not been able to create student activeness in the lecture process. Student activeness can be seen from listening to and paying attention to teacher explanations, questions and answers between teachers and students or between students and students, reading teaching materials, doing assignments contained in teaching materials, presenting the results of discussion groups, providing criticism, suggestions, as well as opinions/ideas towards the group present, conclude the subject matter and irrelevant activity actions (Khairul Bariyah, 2018).

Teaching materials used by lecturers and students so far are in the form of modules and power points that the lecturers have made themselves. The power points that have been made have been adjusted to the learning outcomes for each meeting, but the modules used are only limited to certain materials. So that sometimes lecturers and students also take advantage of some material from the internet. Research shows that modules are effectively used in learning, and more than 60% of students complete their studies (Utami et al., 2018). The weakness of a module is that it is difficult to determine the scheduling and graduation process because each student has a different time to complete the module, which depends on their respective speed and abilities (Puspitasari, 2019). Others with Microsoft PowerPoint is an application program used for presentations for the public interest (Vinet & Zhedanov, 2011). One of the advantages of power points is that it stimulates children to find out more information about the teaching materials that are presented (Maryatun, 2015).

Also, lecturers who teach so far have not had specific teaching materials in lectures. This has also resulted in several important materials regarding learning strategies and learning designs of biology being less understood by students. So that student knowledge is still very minimal for some materials. If it is seen from the understanding that teaching materials are materials or learning materials that are given to students to be mastered and used by students (Agustina, 2018). The function of teaching materials makes students able to learn independently anytime and anywhere. Teaching materials have a very important role in the effectiveness of learning in Higher Education (Arsanti, 2018). Thus teaching materials can streamline lectures.

Regarding the material and content of teaching materials that have been used so far by both lecturers and students, it has been able to help explain abstract lesson concepts. Because the teaching materials that have been designed by the lecturer on PowerPoint are materials that have been described from competencies that are by the curriculum. Teaching materials are a set of subject matter that refers to the curriculum used to achieve predetermined competency standards and basic competencies (Lestari, 2013). The function of the curriculum is to determine graduates to determine changes in behavior after these students participate in the teaching and learning process (Aliangga Kusumam, Mukhidin, 2016). Teaching materials that have been used so far have also been able to increase student knowledge.

As for the components of the teaching materials used by the lecturers, according to the students, the components of the teaching materials needed are different, as is the case with the lecturers' assessment that the components of the teaching materials from some of the teaching materials they have are not suitable, because the components of the teaching materials support the achievement of more systematic material. One of the teaching materials that is owned is a module, while the components of a module are subject review, introduction, learning activities, exercises; signposts for answers to exercises, summaries, formative tests, and answer keys for formative tests. Also, some factors are considered in making a teaching material, namely accuracy of content, the accuracy of coverage, digestibility, use of language, illustrations, compilation/ packaging, and completeness of teaching material components

(Purwati & Suhirman, 2017). On the other hand, of course, the teaching materials will be supported by the display of images, videos, and animations, both those contained in the PPT or the modules used. Besides that, the presentation of teaching materials is also related to the delivery of the material contained in the teaching materials as well as the color combinations related to images, videos, or animations. Several teaching materials have been developed by lecturers on certain materials related to several learning approaches. Unfortunately, the teaching materials developed are only on one material, so other materials still lack information or understanding of other materials.

Making digital books on the biology learning strategy and design course is highly desired by lecturers and students. Regarding the availability of digital books that are still not available in the biology learning strategy and design course. Interactive digital books are expected to be able to present the material as well as animation/video regarding the material presented. Learning using digital books, of course, also has human-computer interaction or in other words, IMK (sustainable 2018). Digital books can be a solution in supporting multicultural education (Wardhan & Rizkiantono, 2017). So that it can become one of the readings that can be used by the whole community. The advantages of Interactive Digital Books are interesting learning, learning objectives can be formulated, systematic and complete material, have instructions, are equipped with animations and videos, practice questions are designed as attractive as possible, and help teachers in the learning process (Perdana, 2013). To improve student skills in the application of several psychomotor-related demands that will become provisions for students as a teacher, the project approach is expected to be able to overcome these problems.

Project-based learning is defined as teaching that tries to link technology with familiar everyday life problems with students, or with school projects (Rati et al., 2017). Project-based learning is process-centered, relatively timed, problem-focused, meaningful learning units by combining concepts from several components be it knowledge, disciplines, or the field (Yulita, 2016). Project-based learning can improve these psychomotor skills if it is also supported by facilities in the learning process (Indayatmi, 2020).

The conclusion obtained from this research is that interactive digital books based on mathematics learning strategies and design projects are needed by lecturers and students, this interactive digital book is one of the teaching materials that can be used independently by students in building knowledge and improving psychomotor abilities.

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