Development of the 4C Integrated Project Based E-Learning Model to Improve Students' TPK (Technological Pedagogical Knowledge) In Implementation of MBKM Program

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Abstract

Based on the analysis of the questionnaire spread to 82 students of the Diksasindo FCS UB Study Program and 8 students of the PBSI FETT Untidar Study Program, it is known that there are still many lecturers who just implementing offline learning methods through online media. From the lecturer's perspective, the results of the analysis show that not all lecturers have sufficient competence in utilizing technology in learning. This condition is increasingly complex when lecturers of the Indonesian Language and Literature Learning Media course at the Diksasindo Study Program FCS UB and PBSI FETT Untidar in the Even Semester of the year 2020/2021 are faced with the implementation of the Student Exchange Program as the implementation of MBKM Program. The purpose of this study is to produce an integrated 4C Project-Based E-learning model and its effectiveness in increasing the TPK (Technological Pedagogical Knowledge) of students in the implementation of MBKM Program. This research is development research with a modified R2D2 model. The types of data include data on the focus of study, design of media and development, dissemination, and effectiveness testing. Sources of data are material and media experts, as well as practitioners and students of the PBSI Media course at Indonesian Education and Literature Study Program FCS UB and Indonesian Language and Literature Education FETT Untidar, totalling 90 people. The results showed that the 4C integrated Project-Based E-Learning product was feasible in terms of the feasibility of the RPS content, SAP, teaching materials, media platforms, and the language contained in the teaching materials.
Keywords: *4C; MBKM Program; project based 2-learning model; development; TPK*

A. Introduction

Since the Covid 19 outbreaks and the application of online learning, both students and educators are increasingly aware of the need for changes in teaching and learning strategies which are needed for the awareness of mastery of technology. Furthermore, lecturers in the Indonesian Language and Literature Education Study Program FCS UB (Diksasindo FIB UB) and the Indonesian Language and Literature Education Study Program FETT Tidar University (PBSI FKIP Untidar) have the responsibility of preparing Indonesian language teachers with superior competence

and preparedness for the twenty-first century's educational era. The current educational era requires educators to adjust learning activities to meet the needs of students in real-world contexts, using learning models that allow students to gain hands-on experience, focusing on the application of knowledge and reasoning abilities, and optimizing ICT as a medium to facilitate students' needs to learn without any limit. Consequently, lecturers must be able to design learning methods according to the needs and characteristics of students in this generation which can also be implemented for students as prospective Indonesian language teachers in the future.

However, according to the results of distributing questionnaires to 82 FCS UB students, 8 students participating in the FETT Untidar Student Exchange Program, and lecturers from both study programs and universities during the Even Semester of the 2020/2021 academic year during the focus identification stage. Students said that the lecturer explained the material through Zoom, then put the examples of media products in the form of PowerPoint in Google Classroom, without any tutorial on how to produce one. Usually, the types of media produced are visual media (e.g. comics), audiovisual (e.g. interactive Power Point), and multimedia (e.g. digital teaching materials in which there are PowerPoints, comics, and videos as one). Furthermore, the lecturer provides no specific comments on the task submitted, making it difficult for students to assess their learning progress.

According to the TPK questionnaire results, 92.5% of students required examples prior to practice in order to better understand the topic and follow each stage of media production. Then, 61.8% of students need more practice producing different types of media so that they are more familiar with the features of different media types and have complete competencies to support the chosen learning strategy, as well as provide opportunities for students to explore their creativity and skills further. Next, 50% of students need an introduction to accessible media so that they can

teach how to learn the material while learning to operate the media well. Further, 65% of students need feedback from lecturers when they practice producing media to find out their competency. In practice, 72.5% of students require a work schedule that is created according to a class agreement to help them be more disciplined when completing tasks.

From the lecturer's perspective, the results show that the lecturers do not have enough competence to operate ICT as learning media as the mastery of new lecturers is limited to making visual media in the form of comics and interactive Power Point. Thus, it can be said that nowadays lecturers still have "homework" regarding online learning. They have to know how to encourage students to interact actively, think critically, collaborate actively, and maintain their engagement in the learning process.

This condition is getting more complex when lecturers of the Learning Media course at the FCS UB and FETT Untidar in the Even Semester of 2020/2021 are faced with the implementation of the Student Exchange Program as the implementation of the MBKM Program. The objectives of the MBKM Student Exchange Program are to enrich students' experience, deepen knowledge in the field of study, and strengthen the Graduate Learning Outcomes (CPL). (Dirjen Dikti, 2020).

With this program assigned by the Ministry of Education, Culture, Research and Technology, universities as higher education institutions have challenges to create innovation, creativity, capacity, and provide forms of learning based on student needs so that it will produce graduates with superior and competitive competencies, hard skills, and soft skills (Dirjen Dikti, 2020).

Students should be able to grasp Technological Pedagogical Knowledge (TPK) using the learning method that is being used. As a result, the expected competency objective of this course is to provide students with the TPK Indicator and the option of selecting technologies that will improve collaboration, learning interaction, and learning motivation

in the subjects taught (Schmidt et al., 2011).

To meet these needs, the common project-based learning model developed into project-based e-learning, namely a learning model that combines project-based learning with e-learning (Rusman, 2016).

Furthermore, to build students' engagement in online learning in the MBKM Student Exchange Program, the 4C (Critical Thinking, Collaborative, Creative, Communicative) approach is applied, both during the teaching and learning process and the process of students designing content for their media products. The 4C approach is an approach that obliges the learning process to be able to provide opportunities for students to have critical thinking and problem-solving, collaborative, creative, and communicative competencies (Setiyani et al., 2020). Those four competencies are competencies needed to face today's globalized competition.

Based on the explanation of background of the study above, the researchers think that research with the title *Development of the 4C Integrated Project Based E-Learning Model to Improve Students' TPK (Technological Pedagogical Knowledge) In Implementation of MBKM Program* is important to be conducted.

B. Research Method

This research is a type of development research with a modified R2D2 model. The aim is to develop an integrated 4C Project-Based E-learning model product to increase students' Technological Pedagogical Knowledge in the implementation of the MBKM Program. The R2D2 model was modified because it does not require an effectiveness test. However, since this study also wanted to test the effectiveness of the 4C integrated Project-Based E-learning model to increase the TPK of students in the implementation of the MBKM Student Exchange Program, thus, a product effectiveness test was conducted.

The R2D2 model has three development principles including recursion, reflection, and

participatory (Willis & Wright, 2000). First, the principle of recursion. In this principle, the developer can make a provisional decision and review it based on the product at any time during the development process. Second, the principle of reflection. Following this principle, during the development process, developers while reflecting may find ideas from various sources which can be reflected back to as the product is developed. Third, the participatory principle. The developer involves a team of participants in some or all of the development processes.

The target in this study was 90 students participating in the Learning Media course, consisting of 82 students from FCS UB and 8 students from FETT Untidar. The selection of this sample was based on the results of the questionnaire analysis during the focus identification process which shows that students needed an online learning model that could adopt 4C competencies and increase their TPK as future teachers through practical activities of designing, producing, and implementing technology-based learning media. With this learning model, students can also optimize their potential in digital literacy and accomplish learning objectives.

As a trial class for the learning model product, class C of the Learning Media course with a total of 32 students consisting of 26 students from FCS UB and 6 students from FETT Untidar. For the limited scale user test, 12 students (40% of total students) were taken consisting of 6 students from UB and 6 students from Untidar. If the results have not reached the minimum eligibility criteria, then the product is revised up to the n^{th} product. Then, a broad-scale user test was conducted on 32 students (100% of total students).

The procedures followed in the development process are focused on identifying and determining design and development of the learning model.

C. Result and Discussion

The focus identification is done by distributing questionnaires to the lecturers who are in charge of the Learning Media course to find problems during the learning process.

As a result, lecturers from both universities have a challenge to package practical Learning Media courses into innovative online-based ones and make students master Technological Pedagogical Knowledge. Meanwhile, TPK indicators include being able to choose the types of ICT to support the strategies implemented and the material being taught, being able to evaluate the strengths and weaknesses of the applied ICT, being able to guide students to learn the material and operate ICT well, and being able to choose technologies that can improve students' collaboration, learning interactions, and learning motivation in the subjects taught (Schmidt et al., 2011). However, lecturers do not have enough competence to use the types of ICT as learning media as their mastery is limited to making visual media in the form of comics and interactive PowerPoint.

The distribution of questionnaires was conducted to find out the problems of learning from the student's side while at the same time to know the students' TPK. The distribution of questionnaires was on April 5, 2021, to 90 students participating in the Learning Media course consisting of 82 students from FCS UB and 8 students from FETT Untidar. The result, according to students, is that the lecturer only explains the material using Zoom, then puts it with examples of media products in the form of PowerPoint in Google Classroom, without any tutorial on how to make it. The types of media produced are visual media in the form of comics, audiovisual in the form of interactive Power Point, and multimedia in the form of digital teaching materials in which those previous medias are combined. Moreover, the learning product making tasks are not given descriptive feedback so that they find it difficult to know their learning achievement.

According to the TPK questionnaire results, 92.5% of students required examples prior to practice in order to better understand the topic and follow each stage of media production. Then, 61.8% of students need more practice producing different types of media so

that they are more familiar with the features of different media types and have complete competencies to support the chosen learning strategy, as well as provide opportunities for students to explore their creativity and skills further. Next, 50% of students need an introduction to accessible media so that they can teach how to learn the material while learning to operate the media well. Further, 65% of students need feedback from lecturers when they practice producing media to find out their competency. In practice, 72.5% of students require a work schedule that is created according to a class agreement to help them be more disciplined when completing tasks.

D. Conclusion

According to the research results above, there are some conclusions that can be drawn.

Based on the feasibility aspect of the content of RPS, SAP, and teaching materials in the media platform, the 4C integrated Project-Based E-Learning model product is feasible according to the results of the feasibility test by learning experts, practitioners, and users with a feasibility percentage of 87%-100%. This result is also supported by the findings which state that this learning model makes learning is oriented to students rather than the lecturer. Furthermore, this model gives students Technological Pedagogical Knowledge (TPK) since they are given the opportunity to learn the theory through the 4C stages and then apply it to the practice of producing media on various platforms. This results is obtained because students gain knowledge about how to make types of media according to student needs, basic competencies, and curriculum. In addition, students also be able to gain knowledge about how to optimize learning by applying the media that previously has been created.

Meanwhile, based on the aspect of media feasibility, the 4C integrated Project-Based E-Learning model product is feasible as the feasibility percentage is 88%-100% according to media experts, practitioners, and users. This results is supported with the fact that the presentation of material starts from easy to difficult,

simple to complex, and material to practice which make students understand the basic theory before the practice. The integration of various types of platforms into the media also serves as a model and a TPK debriefing for students.

Finally, based on the aspect of language feasibility, the 4C integrated Project-Based E-Learning model product is feasible because the practitioners and users gives a score with the feasibility percentage of 82%-100%. Moreover, the selection of diction and phrases in easy reading texts, materials, and practical instructions makes it easier for students to understand the subject and achieve necessary TPK competences, according to the findings.

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