

Increasing Student Creativity Through the Application of Interactive Question Development Projects Using the Construct 2 Application

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Abstract

The aim of this study was to investigate how using the construct 2 application to implement an interactive question development project increased student creativity. This study uses a one-group pretest-posttest design and a pre-experimental methodology. The project-based learning approach is the independent variable in this study, while student creativity is the dependent variable. The research sample consisted of 22 students who enrolled in the multimedia design course during the 2023–2024 academic year. A creativity skills questionnaire was used as the research tool. The data was subjected to a normality test both before to and following the implementation of the project-based learning approach. The hypothesis test employed in this investigation is the one sample t test. This study can be concluded that the implementation of interactive question development projects using the Construct 2 application is effective in increasing the creativity of students who take learning multimedia design courses. The project-based learning model is very beneficial in improving the skills possessed by students, especially student creativity, it is hoped that the project-based learning model can continue to be applied in learning to improve student skills.

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1. INTRODUCTION

The rapid development of the digital era has made creativity one of the important skills to be mastered by students. The skills to generate new ideas and the ability to solve problems in an innovative way are very important to have. Increasing student creativity during lectures is needed as a provision and initial step in preparing graduate students to face rapid changes [1]. The ability of students to adapt to technological developments is very important [2]. One way to increase student creativity is through the application of project-based learning that is challenging and involves the use of technology, such as the development of interactive questions using the construct 2 application. Integration of technology in learning activities is very necessary, so that it can improve the quality of learning carried out [3].

Based on field observations, it shows that students do not know the usefulness of the construct 2 application. This can be caused by the lack of information that students have about the advantages of the construct 2 application. Along with technological developments, the delivery of learning activities including the evaluation of learning activities is more effective and efficient using technological assistance. Changes in the world of education due to technological developments make learning run effectively and efficiently [4]. Therefore, sample class students who are prospective teachers, must be able to master information technology that can be used in learning activities after graduating

from college. The selection of the project-based learning model in this study is because the learning model can increase student understanding of lecture material and activate students in learning activities carried out, so as to increase student creativity in completing the project. Learning carried out with a project-based learning model can increase student understanding of the material presented [5].

The construct application is a Hyper Text Markup Language 5-based application that is used as an interactive media based on educational games [6]. The development of interactive questions using the construct 2 application can increase student creativity because the process of developing interactive questions requires creativity to design questions that are interesting, relevant, and challenging for users. The use of the construct 2 application allows students to experiment with various types of questions, adding interactive elements such as images, videos, and audio. The use of construct 2 application can also make students add direct feedback features.

The project-based learning model involves students directly in its implementation which aims to improve students' ability to solve problems [7]. Project-based learning for developing interactive problems can increase creativity through collaboration and sharing ideas among students. Students can exchange ideas about the interactive problem project developed. The magnitude of the benefits of learning with interactive problem development projects in increasing student creativity. This research focused on the application of project-based learning model in learning multimedia design course activities. The purpose of this study is to examine the increase in student creativity through the application of interactive question development projects using the construct 2 application.

2. RESEARCH METHOD

This study uses a one-group pretest-posttest design and a pre-experimental methodology. The project-based learning approach is the independent variable in this study, while student creativity is the dependent variable. The research sample consisted of 22 students who enrolled in the multimedia design course during the 2023–2024 academic year. A creativity skills questionnaire was used as the research tool. Data for this study was gathered using the student creativity questionnaire. Prior to hypothesis testing, the normality of the creativity data was examined both before and after the project-based learning paradigm was put into practice. The sample class's student creativity data is normally distributed and eligible for parametric tests in hypothesis testing if the normality test yields a significance value higher than 0.05. The hypothesis test employed in this investigation is the one-sample t test. The research findings indicate that the use of interactive question formulation projects with the construct 2 application increases student creativity if the significance value is less than 0.05.

3. RESEARCH RESULTS AND DISCUSSION

3.1. Research result

This research begins with distributing creativity questionnaires to sample class students. The distribution of creativity questionnaires before learning using the project-based learning model in the form of implementing interactive question development projects using the construct 2 application aims to determine the initial level of creativity of the sample class students. The results of the students' initial creativity questionnaire are shown in Table 1.

Table 1. Creativity Skills

Before	After	Improvement
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70,55	83,09	18,48
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After the implementation of the interactive question development project using the construct 2 application, students filled out the final creativity questionnaire. Completing the final creativity questionnaire by students is intended to determine whether or not there is an effect of project-based learning in developing interactive questions on student creativity. The results of Table 1 indicate that students' inventiveness increased by 18.48 after participating in an interactive problem-development project. The creative data collected in the normalized sample class was determined by testing the normality of the creativity data collected before and after the interactive question development project was implemented. In Table 2, the normalcy test results are displayed.

Table 2. Normality and Hypothesis Test Results

Significance	Test
Normality	0.135
Hypothesis	0.000

3.2. Discussion

Based on Table 1 regarding the contents of the student's initial creativity questionnaire shows a result of 70.55. These results need an action to improve student creativity. The effort made to increase creativity in this study is that students are given the form of developing interactive questions using the construct 2 application. The selection of interactive question development projects is because in developing learning media, students can express their ideas according to their creativity. This is in accordance with research conducted by [8] which states that the project-based learning model facilitates students to investigate, solve problems, is centered on students, and makes learning more fun, so that it can provide a strong foundation for increasing their creativity.

Table 2's normality test results indicate a significant value of 0.135, indicating that the sample class's creativity data is normally distributed and amenable to parametric testing in the hypothesis test. A one-sample t test was then used to assess the hypothesis based on the creativity data. According to the hypothesis testing results in Table 2, which have a significance value of 0.00 or less than 0.05, this study demonstrates that the use of interactive question generation projects using the construct 2 application increases student creativity.

The increase in student creativity through the implementation of interactive question development projects using the construct 2 application can be due to the construct 2 application that is easy to operate and has high flexibility, so students who do not have a programming background can use the construct 2 application easily. This ease makes students able to focus on incorporating their creative ideas into the construct 2 application. These results are in accordance with research conducted by [9] which states that the creativity of students in participating in learning can be done by applying a project-based learning model.

The construct 2 application allows adding animations, images, and videos, so that the construct 2 application can produce more varied questions. The questions developed in the construct application are not limited to multiple choice questions, but can create crossword puzzles and match images. This can make students more interested in developing interactive questions. This is in line with study by [10], which claims that using the project-based learning approach can boost learning motivation.

In the interactive question development project using the construct 2 application, students can set the processing time, the feedback given, and the score obtained from each question. This can make students involved in the entire project, so student creativity is needed in completing interactive problem projects based on the construct 2 application. The project-based learning approach places a strong emphasis on learning outcomes and calls for student participation to finish the assigned work [11].

4. CONCLUSION

The implementation of interactive question development projects utilizing the Construct 2 program is beneficial in enhancing the creativity of students enrolled in multimedia design courses, according to the study's findings, which were based on research and debate. The significant value of 0.00 or less than 0.05 serves as proof of this. It is desired that the project-based learning approach will continue to be used in education to enhance students' abilities because it is highly helpful in enhancing their talents, particularly their creativity.

5. DAFTAR PUSTAKA

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