DEVELOPMENT OF MOOC-BASED BLENDED LEARNING PROCESS TO ENHANCE CREATIVE THINKING OF ART MAJOR STUDENTS

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ABSTRACT

The objectives of this research were: 1) to develop a MOOC-based blended learning process to enhance creative thinking among art major students, 2) to compare the level of creative thinking after learning with a criterion of 70 percent, and 3) to investigate students' satisfaction with the MOOC-based blended learning process. The sample for this study consisted of 30 students majoring in Fine Arts at ZhouKou Normal University, located in ZhouKou City, Henan Province. The participants were selected using cluster random sampling. The experimental design employed a one-group post-test design. The research instruments included six lesson plans for the MOOC-based blended learning process, a creative thinking test, and a student satisfaction questionnaire. The data analysis involved the following: 1) calculation of the mean and standard deviation (SD) for the post-test creative thinking data, 2) conducting a one-sample t-test on the post-test creative thinking data, and 3) calculation of the mean and standard deviation for the student satisfaction data.

The study yielded the following results. Firstly, the MOOC-based blended learning process consisted of five steps: 1) Learning on MOOC, 2) Creating New Knowledge, 3) Providing Situations for Creative Thinking, 4) Collaborative Creative Thinking, and 5) Exhibiting the Results of Creative Thinking. Secondly, the students' creative thinking improved significantly after engaging in the MOOC-based blended learning process, surpassing the criterion of 70% at a statistical significance level of .05. Lastly, the students' satisfaction with the MOOC-based blended learning process was significantly higher than the criterion of 3.51 at a statistical significance level of .05.

Keywords

Learning Process, MOOC, Creative Thinking

Significance of the problems

China's Higher Education Law stipulates that "the task of higher education is to cultivate senior specialized talents with innovative spirit and practical ability, develop science, technology, and culture, and promote socialist modernization." The core of the higher education development strategy is to accelerate the training of innovative talents. The key point of training innovative talents is to develop and stimulate people's creative thinking. The cultivation of creative thinking ability can effectively help students form creative values, dynamic knowledge views, and positive aesthetic views. These thoughts can not only form a deeper spiritual environment conducive to the development of creative thinking ability but also become the motivation for the reform of traditional education (State Council of PRC, 2010).

Today, the surface learning of art majors relying on mechanical memory and a simple understanding of knowledge can no longer meet the requirements of the training of art majors in the new era. At the same time, the lack of imagination, immobilization of thinking, lack of illogical thinking ability training, and other factors restrict the development of students' innovation ability. Therefore, it is required students to not only master the high-level learning abilities of understanding, analysis, application, and evaluation in class but also improve their creative thinking ability to gain a foothold in the future intelligent and innovative social environment. To meet the new learning needs of art major students, it is urgent to develop high-quality teaching resources and explore suitable learning models. In the new teaching environment, finding how to optimize learning strategies and provide effective support for art major students' classroom learning needs to be further studied (Bin, 2015).

In 2018, the Ministry of Education issued the Opinions on Strengthening the Construction of High-level Undergraduate Education and Comprehensively Improving the Ability of Talent Cultivation, which pointed out that "taking student development as the center, promoting learning reform through teaching reform, actively promoting blended teaching flipped classroom, and constructing online and offline learning mode". From the point of view of the principle of teaching design, it is in line with the humanistic learning theory to advocate meaningful free learning and student-centered teaching. The proposal of blended learning integrates independent online and offline learning into a new learning method that can promote meaningful learning for college students and provides a feasible path for advanced learning for students majoring in art. At the same time, the support of new information technology has brought about great changes in the way art majors learn. In particular, the emergence of MOOC has been hailed as the most profound technological change in higher education in the past 500 years, and high-quality MOOC can provide good support for blended learning strategies. Students have instant and easy access to quality multimedia teaching resources through the Internet. Teachers can also change the teaching concept, reasonably set up the organization form of MOOC and offline classrooms, and realize the flipped linkage between MOOC and traditional classrooms (Zhou, 2017).

The purpose of implementing the MOOC-based blended learning process in the Fine Arts major of ZhouKou Normal University is to enhance students' creative thinking. The researchers found problems in the existing principles, objectives, content, teaching process, teaching materials, and learning assessment. These problems lead to low enthusiasm and initiative in students majoring in fine arts, poor learning effects, and difficulty to improve creative thinking. Therefore,

researchers believe that it is necessary to develop a MOOC-based blended learning process and implement it in the teaching process. This is for enhancing the creative thinking of art students by cultivating and improving their fluency, flexibility, originality, and elaboration.

Research questions

This research question:

1. What is the MOOC-based blended learning process to enhance the creative thinking of art major students?

2. Can the MOOC-based blended learning process enhance the creative thinking of art major students?

3. Can the MOOC-based blended learning process enhance the students' satisfaction of art major students?

Research objectives

This research objective:

1. To develop the MOOC-based blended learning process for enhancing the creative thinking of art major students.

2. To compare creative thinking after learning through with criteria of 70 percent.

3. To study students' satisfaction through the MOOC-based blended learning process.

Research findings

1.1 Research Methodology

1.1.1 Five experts evaluate the MOOC-based blended learning process.

1.1.2 Population and Sample

The population was 160 undergraduate students in the Fine Arts major of ZhouKou Normal University, ZhouKou City, Henan Province.

The sample was 30 students majoring in fine arts, randomized by cluster random sampling method.

1.2 Research instruments

Research instruments were the tools for researching to collect data. The research instruments which were used in this study were:

1.2.1 Six lesson plans of MOOC-based blended learning process

Five experts which consisted of 2 specialists in the curriculum field, 2 specialists in instruction relevant to specific content, and 1 specialist in the measurement and evaluation field evaluate the evaluation form. It was found that the Index of Item Objective Congruence (IOC) of each item of the evaluation form was between 0.80-1.00 which was higher than 0.5. The result of analyzing the IOC index showed that the evaluation form for the lesson plans of the MOOC-based blended learning process was appropriate and could be used to evaluate the MOOC-based blended learning process.

Five experts used the evaluation form to evaluate the six lesson plans of the MOOC-based blended learning process. The evaluation form of the lesson plan was established

using the 5-point Likert scale method. According to the expert evaluation, the scores of the six lesson plans are all above 3.51. Therefore, the six lesson plans of the MOOC-based blended learning process are applied to teaching the students majoring in Fine Arts at ZhouKou Normal University to enhance their creative thinking.

1.2.2 Creative Thinking Test

The test is adapted from the graphic test in Torrance's Creative Thinking Test. There are five open-ended answers. The five items tested four elements of creative thinking: fluency, flexibility, originality, and elaboration. The Index of Item Objective Congruence (IOC) was between 0.60-1.00. The result of analyzing the IOC value showed that all test items were appropriate and could be used in the test.

1.2.3 Satisfaction Questionnaire

Five experts evaluated 22 items of the satisfaction questionnaire and then calculated the formula according to the Index of Item Objective Congruence (IOC). The IOC of each item of the satisfaction questionnaire was between 0.80-1.00. The result of analyzing the IOC index showed that 22 items in the satisfaction questionnaire were appropriate and could be used in the satisfaction evaluation of the MOOC-based blended learning process.

The Cronbach's Alpha method was used to analyze the student satisfaction data. The Cronbach's Alpha-value was 0.849 (Lee J. Cronbach, 1951). This showed that the internal consistency of the student satisfaction questionnaire met the requirements.

1.3. Data collection

The procedures of data collection were as follows:

1.3.1 The sample was taught by using a MOOC-based blended learning process.

1.3.2 After the sample implemented the MOOC-based blended learning process, the sample was assigned to do a post-test of the Creative Thinking Test which was the constructed instrument.

1.3.3 Assess students' satisfaction using a satisfaction questionnaire.

1.4. Data analysis

In this study, data were analyzed by using the statistical method according to the research objectives.

1.4.1 Compare the results of creative thinking after learning through the MOOC-based blended learning process using 70% as the standard.

1.4.2 Analyze the student satisfaction data using Cronbach's Alpha method (Cronbach, 1951) and determine the level of student satisfaction.

1.5. Research Results

The results were presented according to the research objectives as follows:

1.5.1 Result of comparing the Creative Thinking of the students after the MOOC-based blended learning process by using a one-sample t-test.

Table 1 The analysis of the sample test about Creative Thinking

Group	n	Full score	Criteria score	Mean	SD	*t*	*p*
Experimental group	30	5	3.51	4.84	0.17	42.37*	.001

*$p < 0.05$

As presented in Table 1, the mean score of 30 students' creative thinking after learning through a MOOC-based blended learning process was 10.23 from the full score of 12, and the standard deviation was 1.72. The result was statistically higher than the criterion of 70% at a .05 level of statistical significance (t=5.85, p= .001).

1.5.2 Data analysis result of students' satisfaction questionnaire

The satisfaction questionnaire was used to investigate the students majoring in Fine Arts at ZhouKou Normal University. 30 of them were randomly selected for analysis.

Table 2 The analysis of the mean score of students' satisfaction with the MOOC-based blended learning process

Group	n	Full score	Criteria score (70%)	Mean	SD	*t*	*p*
Experimental group	30	12	8.4	10.23	1.72	5.85*	.001

*$p < 0.05$

As presented in Table 2, after learning through the MOOC blended learning process, the average score of 30 students in the MOOC blended learning process was 4.84 out of 5, and the standard deviation was 0.17. This indicated that the post-test score after taking the MOOC blended learning process is high. It was statistically higher than the criteria which were set at 3.51 at a .05 level of statistical significance (t=42.37, p= .001).

Based on the results, we could state the following:

The results showed that the creative thinking of Fine Arts students at ZhouKou Normal University has improved significantly after adopting the MOOC-based blended learning process. The students' satisfaction was at a high level.

1.6. Research Conclusions

From the data analysis, it could be drawn the following three conclusions:

1.6.1 This study developed the MOOC-based blended learning process with 5 steps. Step 1 is "Learning on MOOC". In this step, students learn course content by using MOOC resources and then took online tests. The tests are automatically scored on the MOOC platform. Step 2 is "Creating new knowledge". The teacher assigns students to create new knowledge by

discussing online. Step 3 is “Providing situation to Creative thinking”. Teacher creates a situation that links with new knowledge, enhances students' creative thinking, establishes target learning, and masters in knowledge and skills. Step 4 is “Cooperating creative thinking. The teacher organizes classroom activities on various creative thinking topics and highlights the process of personalized learning and cooperative learning, and mastering knowledge. Step 5 is “Exhibiting the result of creative thinking”. Students demonstrate the result of creative thinking by using multiple media, sharing and reflecting on the main ideas, and summarizing learning processes.

1.6.2 This study analyzed and compared the post-test scores after using the MOOC-based blended learning process in a class by using 70% as the criteria for the improvement of creative thinking of Fine Arts major students at ZhouKou Normal University. Finally, the research results showed that students' creative thinking was significantly improved at a high level after using the MOOC-based blended learning process in the Introduction to Art Subject. The MOOC-based blended learning process fully combines online and offline learning. Through the online learning stage and MOOC learning resources, students can actively learn, discuss [i]and share their ideas. In the classroom learning stage and after the course stage, students actively participated and brainstormed through various activity situations which were created by teachers. In this process, students could better acquire knowledge and deepen their knowledge. Moreover, creative thinking significantly was improved.

1.6.3 This study assessed the students' satisfaction with the MOOC-based blended learning process by using SPSS software. The results showed that students' satisfaction with the MOOC-based blended learning process was at a high level. In the classroom which was applied the MOOC-based blended learning process, the learning content, learning discussion, learning tests, and learning activities organized in the MOOC platform provided students with sufficient opportunities for independent learning and cooperative learning. With the help of educational information technology, students could easily and quickly integrate into learning. It additionally improved students' enthusiasm and creativity. It obtained unanimous praise from students.

Discussion

The following points based on the research results were discussed:

1. The MOOC-based blended learning process enhanced the creative thinking of art students. This may be due to the following reasons. The MOOC-based blended learning process is a hybrid online and offline learning approach. In the online learning stage, students use MOOC resources to learn the course content and create new knowledge through online communication and discussion. In the classroom learning stage, teachers use new knowledge to create situation links that provide opportunities to enhance students' creative thinking, establish targeted learning, and master knowledge and skills. Classroom activities are organized on a variety of creative thinking topics, highlighted collaborative learning and the process of understanding and mastering knowledge, and used a variety of media to present and share the results of creative thinking. Students consolidate and deepen their knowledge and results in the after-course stage. On the other hand, due to the MOOC-based blended learning process, brainstorming and debates in cooperative groups promote students' good observation, questioning, and originality in their views. They further stimulate the generation of creative thinking and also contribute to the

development of students' collective concepts and team spirit, so that their overall quality presents an overall improvement (Zhang, 2006).

2. Student satisfaction improves because of the MOOC-based blended learning process. There are several reasons for this: Firstly, the MOOC blended learning process helps to increase students' intrinsic interest and makes the learning process more educational and interesting. The group cooperative process in the MOOC blended learning process is a process of building solidarity and collaborative relationships. Students cooperate as a group. They share and communicate with each other to promote more effective learning and to improve students' cooperative ability. Secondly, the evaluation system of the MOOC blended learning process runs through the whole process of students' learning. In the whole MOOC blended learning process, there is mutual evaluation among groups, mutual evaluation of students in groups, mutual evaluation between teachers and students, formative evaluation, and process evaluation. Therefore, the MOOC blended learning process evaluation system is conducive to synthesizing the learning effects of students, so that students learn in evaluation and evaluation in learning, and are recognized by most students (Onchawiang, 2021).

Recommendation

1. It is recommended to encourage teachers to adopt the MOOC-based blended learning process. MOOC-based blended learning process which is the new teaching concept is adopted. In the process of teaching implementation, it is needed to create two kinds of teaching situations, both online and offline. Additionally, a variety of information technology support should be created. Based on the characteristics of the blended learning process of MOOC, teachers need to adapt and change. Especially, great changes need to be made for teachers who are accustomed to the teacher-led face-to-face classroom teaching model under the traditional teaching concept. Teachers should understand the advantages and good teaching effects of the MOOC-based blended learning process, and master how to apply the MOOC-based blended learning process to teaching (Ruangrit, 2018).

2. It is recommended to focus on the teaching environment of the MOOC-based blended learning process. The MOOC-based blended learning process needs to be carried out in both online and offline environments. To ensure that there is a smooth development of the MOOC-based blended learning process, schools need to provide an appropriate teaching environment, including hardware equipment and software services. The hardware equipment mainly includes the server and high-speed network equipment (switch and router) used to construct the online teaching situation. Moreover, multimedia classrooms, electronic blackboards, mobile desks, chairs, and touch display screens are essential to construct offline teaching situations. Software services mainly include a teaching management platform, learning management platform, knowledge sharing platform, and classroom interaction platform (Luo, 2019).

3. It is recommended to promote the MOOC-based blended learning process in universities. The MOOC-based blended learning process, on the one hand, relies on excellent MOOC educational resources and implements high-quality educational resources in classroom teaching through the selection of teachers. On the other hand, the MOOC-based blended learning

process combines the advantages of students' online teaching situations and offline teaching situations. By organizing students' learning process through learning topics, students can obtain a comprehensive and profound understanding of specific topics. The blended online and offline learning situations cannot only give full play to students' freedom and autonomy in mastering key basic concepts and core competencies but also promote students' creative thinking through collaborative exploration and practice activities. The MOOC-based blended learning process has a certain value in the exploration of improving the quality of classroom teaching, and it can be promoted and applied in other universities (Pachob, 2021).

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