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THE EFFECT OF FLIPBOOK-BASED FIELD TEACHING MATERIALS WITH ANCHORED INSTRUCTION MODEL TO IMPROVE STUDENTS' CRITICAL THINKING SKILLS

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Abstract:
The use of tennis court teaching materials with an anchored instruction model based on a flipbook is an interesting innovation for students, especially for indoor learning such as tennis court courses. This flipbook-based learning with the anchored instruction model includes material, practice questions, and answers which are packaged in a flipbook form. This study aims to empower critical thinking skills in PJKR students on the tennis court course. This study used a quasi-experimental method with the provision of pre and post-tests to the control class and the experimental class, respectively, 30 students. In the experimental class stage, tennis court teaching materials were used with the flipbook-based anchored instruction model, and the control class used conventional learning. The learning outcome data were analyzed using ANCOVA. The results showed that the tennis court teaching materials with the flipbook-based anchored instruction model were able to empower the critical thinking skills of PJKR students in the tennis court course.

Keywords: tennis teaching materials, flipbook, critical thinking skills

1. Introduction

Critical thinking skills are considered fundamental skills in 21st-century learning. In every subject and at every level of education, the learning process needs to integrate learning content knowledge with activities that require developing critical thinking skills. According to Wang (2017), critical thinking is a reflective way of thinking that makes sense or is based on reason to determine what to do and believe. Critical thinking is a

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power and a source of energy in people's social and personal life (P. A. Facione, 2011). Critical thinking skills must be developed in higher education because critical thinking is an important learning outcome for students (O'Hare & McGuinness, 2015). Critical thinking skills can assist in dealing effectively with a variety of social, scientific, and practical problems (Shakirova, 2007). Critical thinking brings the right way of thinking and working, helps to be more accurate and specific in noting what is relevant and not, useful for problem-solving and project management (Cottrell & Neuberg, 2005). Therefore, critical thinking is an activity that is very important to be developed in higher education. Lecturers are expected to be able to realize learning that activates and develops critical thinking skills in students.

Facts in the field show that lecturers have not empowered students' critical thinking skills. This is supported by research of Patonah (2014), which reveals that the learning process is still dominated by lecturers. Learning tends to memorize rather than develop thinking power so that students are weak in conveying their own ideas, weak in analyzing, and dependent on others rather than being responsible for their own choices. Other research also shows that students' critical thinking skills still need to be improved (Altura & Curwood, 2015; Syamsiara Nur, 2017).

The results of the research also provide information that students' critical thinking skills are still low because they only listen to explanations from lecturers without being actively involved in the learning process (Kumar, 2017; Suhita, 2019). Tennis Court is one of the compulsory courses at the tertiary level in the Health and Recreation Physical Education (HRPE) study program IKIP Budi Utomo Malang study program. Riyanto & Susilowati (2018) research at one of the colleges at IKIP Budi Utomo Malang shows that the average critical thinking ability of students reaches 47%, which is in the poor category. These results indicate that students' critical thinking skills are low.

The use of sophisticated teaching materials based on the latest technology has become a trend in learning today, including in the tennis court subject in the HRPE study program. This is because students are more active in using applications with an internet connection. One application that can be used in learning is flipbook-based teaching materials. Over time, the flipbook has evolved into an extraordinary system and is in great demand by smartphone users because of its many advantages. According to Riyanto et al. (2020), the flipbook is an application designed to make it easier to use textbooks because flipbooks are very flexible and very relevant to pandemic conditions. This advantage can be used by educators to apply flipbook-based teaching materials in weighty classes so as to create a class that is more interesting and far from being monotonous.

Based on the description of the benefits of flipbook-based teaching materials, this study focuses on the application of flipbook-based tennis field teaching materials to improve the critical thinking skills of PJKR students in the tennis court course at IKIP Budi Utomo Malang. The flipbook-based tennis teaching materials used in this study are part of research on the development of tennis teaching materials with a flipbook-based

anchored instruction model for students of education sport, health, and recreation study program in IKIP Budi Utomo Malang (Susanto & Riyanto, 2020).

2. Literature Review

2.1 Anchored Instruction Model

Anchored instruction (AI) is an example of a curriculum and teaching approach that provides opportunities for students to learn important content while trying to understand and solve authentic problems that arise in certain disciplines (Elcin & Sezer, 2014). Another related approach is case-based learning, which is used in problem-based learning. Another way to organize instruction around problem-solving is through project-based learning. Anchored instruction tries to help students understand the use of knowledge, keeping them from memorizing facts to understanding how those concepts can be used to solve various problems (Pichert, Snyder, Kinzer, & Boswell, 1994). The anchor can be a book, field trip, case study, or, as in school research, a video. Markers are presented so that all students and instructors can share the same experiences that challenge them to seek new information. After seeing the anchors, the anchors and students are involved in the problem-solving process, identifying what they need to learn to respond to challenges in learning media.

2.2 Critical Thinking Skills

Critical thinking is a complex process, and if done properly, it helps in systematically assessing complex ideas, making problems easier to solve (Baharin, Kamarudin, & Manaf, 2018; John, Caniglia, Bellina, Lang, & Laubichler, 2017). Critical thinking skills use basic thinking to analyze arguments and bring students' insights into each interpretation, to improve coherent and coherent reasoning patterns, formulate problems, deduce and induce, and determine the right decisions. Facione (2011) states that critical thinking is a complex thinking process consisting of analysis, evaluation, exploration, inference, interpretation, and self-regulation.

According to Ennis (1992), the focus component measures the level of truth and clarity of an answer or writing. The second component is supporting reasons to see the level of truth, clarity, trustworthiness, the credibility of the supporting grounds or evidence and reference sources used. This explanation is the same as the third component, namely reasoning, then the fourth component of an organization to show the level of clarity and linkages between the flow of thinking. The fifth component of the conventions measures the use of grammar, and the sixth component, namely integration, shows a general evaluation of the clarity or correctness of the answer, whether it matches the question given.

The factors that affect students' critical thinking skills based on the results of research conducted by Mahapoonyanont (2012) are educational factors, student factors themselves, child development factors, and personal factors. One of the educational factors is related to the learning strategy used in the learning process, student factors,

namely the results of learning carried out by students, willingness to find out, reading, and especially self-motivation to carry out learning activities, child development factors and personal factors consisting of from the personal status of students, attitudes and child care.

3. Material and Methods

In this study, researchers used the True Experiment Design research design, which is the type of experiment that is considered good because it meets the requirements. What is meant by the requirements in the experiment is the existence of another group that is not known and is also being observed. With the presence of another group or control group, later results will be compared with the experimental group. In the True Experiment Design using design 4, namely control group pre-test and post-test (Sugiyono, 2010).

Table 1: Control Group Pre-test and Post-test

Groups	Pre-test	Treatment	Post-test
E	Q1	X	Q2
K	Q3	X	Q4

E : Experiment Group
K : Control Group
X : Learning Using a Flipbook
Q1 : Pre-test in the Experimental Group
Q2 : Post-test in the Experimental Group
Q3 : Pre-test in the Control Group
Q4 : Post-test in the Control Group

The participants of this research were two classes of a tennis court, totaling 60 students who were randomly selected to be the control class and the experimental class. Each has the same number of students, namely 30 students per class. To determine the effect of the application of flipbook-based tennis court teaching materials. This study used a quasi-experimental method using two classes, namely the experimental class, and the control class. The class is determined to be class A as an experimental class using flipbook-based tennis court materials and class B as a control class using conventional tennis court textbooks.

The research instrument used was a critical thinking ability test consisting of 20 questions in the form of essays on tennis sports material. This test is made with reference to indicators of critical thinking, according to Ennis, namely focus, supporting reasons, reasoning, organization, conventions, and integration (Ennis, 1992). This test was tested on 40 students and the validity value was obtained by calculating the product-moment correlation worth 0.011 and the reliability value by calculating Cronbach alpha worth 0.027. Based on the criteria, if the sig value is less than 0.05, TKBK is said to be valid and reliable.

The data in this study were analyzed using descriptive statistics and inferential statistics. Descriptive analysis in the form of the lowest value, highest value, mean and

standard deviation. The results of the pre-test are used to measure the homogeneity before the action is carried out, while the results of the post-tests are used to measure the effectiveness of the flipbook-based teaching materials. At the same time, inferential statistics aims to answer the problem formulation and analyzed by homogeneity, normality, and hypothesis testing.

4. Results and Discussion

4.1 Students' Critical Thinking Skills

Students' critical thinking skills have increased in the experimental class using a flipbook. The six result indicators can be seen in Figure 1.

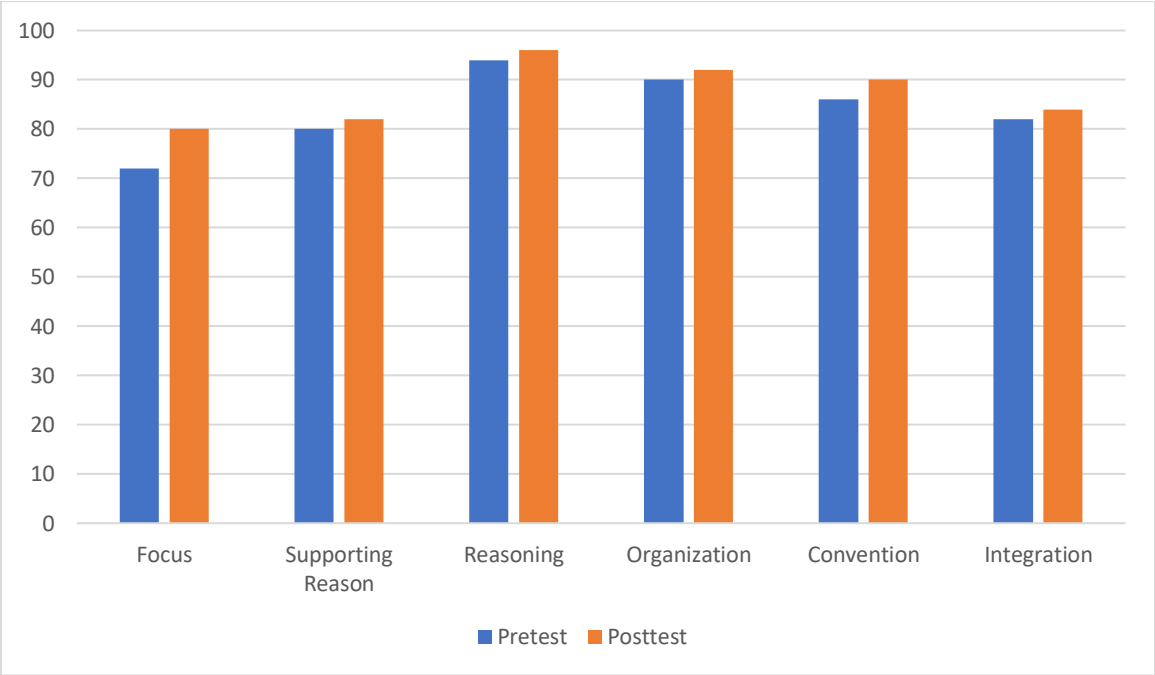

Figure 1: Students' Critical Thinking Skills Using a Flipbook

Figure 1 shows that the aspect with the highest score is the reasoning aspect and the lowest aspect is a focus. This shows that when carrying out reasoning through the flipbook, there is a less significant increase so that students' critical thinking skills can improve properly. Furthermore, the results of the students' pre-test and post-test are shown in Table 1 and Table 2.

In Table 1, it can be concluded that the 30 students in the experimental class and 30 students in the control class have differences in the highest and lowest scores. The highest score of the experimental class is 96 and the control class is 92.5, while the lowest score of the experimental class is 70 and the control class is 77.5.

Table 1: Statistical Description of the Pre-test Results for the Experimental and Control Classes

	N	Lowest Value	Highest score	Average
Experiment	30	72	96	85
Control	30	71	87	79

Table 2 shows the differences between the experimental class and the control class in the tennis court subject after giving the action. The lowest score of the experimental class is 72 and the control class is 71, while the highest score of the experimental class is 96 and the control class is 87. From these scores, it can be concluded that the experimental class is better than the control class.

Table 2: Statistical Description of Post-test Results for Experiment and Control Classes

	N	Lowest Value	Highest score	Average
Experiment	30	83	95.	89
Control	30	80	91	85,5

4.2 The Effect of Textbooks on Students' Critical Thinking Skills

The first step of testing the hypothesis is to perform a t test for independent samples. The results of the t-test showed that the mean difference from SPSS was .012 ($p < 0.05$). This means that there is a significant difference between the pre-test scores of the experimental and control classes. So, the null hypothesis is rejected. The next step is to analyze the results of the post-test and pre-test using ANCOVA because the null hypothesis at the pre-test has been rejected. The pre-test scores were added as covariance. In Table 3, it can be concluded that the significant difference between the two values is .004 ($p < 0.05$). This means that the null hypothesis that there is no significant difference between the experimental and control classes' post-test scores is rejected. Therefore, it can be concluded that there is a significant difference in critical thinking skills between students who use tennis court teaching materials and conventional classes.

Table 3: Comparison of the Pre-test and Post-test Values of the Experiment Class and the Control Class

	N	Pretest Mean	Posttest Mean	Extra difference	Sig.
Experiment	30	83.26	91.65	2.60	004
Control	30	80.33	85.03	2.85	

5. Discussion

Flipbook based application users are very familiar. Use Children whose instincts like to play in the digital era have now switched to games that are related to Flipbook-based Smartphones, both for games and for communicating with peers using social media. To be able to understand character and behavior and to be able to activate students in learning, educators need to understand the development of the digital world today. This

technological development shifts the delivery of material with the lecture method towards the use of more interactive teaching materials (Mayer, 2005). Learning using learning media makes learning more interesting and fun (Arifin et al., 2017; Yin, 2016).

The development of flipbook-based teaching materials research for theoretical subjects is the impact of new human habits in utilizing technological sophistication. Several kinds of research on developing flipbooks as teaching materials were rarely accompanied by measuring the effectiveness of the teaching material on students' critical thinking skills. Previous studies that have measured the effectiveness of using flipbook-based teaching materials include those that have been conducted. The use of instructional media can improve critical thinking skills. This is in line with the results of the study that flipbook-based tennis court teaching materials are effective in improving students' critical thinking skills (Falah, Komaro, & Yayat, 2016; Parslow, 2012). Referring to the results of previous research, it shows that the use of multimedia animation in learning material in sliding fields can improve students' critical thinking skills in the lower, middle, and upper groups (Adriawati & Purwanto, 2018; Altura & Curwood, 2015; Syawaludin, Gunarhadi, & Rintayati, 2019). Tennis court also needs new methods and media to increase students' enthusiasm and interest. Based on the average assessment, the learning media developed in this study can be used to teach tennis court games to upper-grade elementary school children (Einum, 2020; Kusumawardana & Sukadiyanto, 2013). In addition, it can help Physical Education teachers in delivering learning materials for small ball games, especially tennis.

6. Recommendations

Based on the conclusions obtained in this study, suggestions can be made that need to combine the use of tennis court textbooks with a flipbook-based Anchored Instruction model with online learning.

7. Conclusion

The results showed that there was a significant difference in the value of 004. This means that the null hypothesis is rejected, so it is concluded that the tennis court teaching materials with the flipbook-based anchored instruction model are able to empower the critical thinking skills of PJKR students in the tennis court course.

Conflict of Interest Statement

The authors declare no conflict of interest.

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