



Research Article

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The Influence of Instagram-Assisted Project Based Learning Model on Critical Thinking Skills

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Abstract

In today's 21st century, people are demanded to have the ability to communicate and to think critically. In addition, we are also expected to possess leadership qualities. In achieving such competencies, IT-Assisted Project Based Learning (PjBL) model can be used as an alternative. Hence, this study was conducted, aiming at determining whether there is an effect of Instagram-Assisted PjBL model on students' critical thinking skills in sociology subjects. This research was a Quasi-Experimental Study, with Nonrandomized Control Group Pretest-Posttest Design. The research data were obtained using objective tests in the form of multiple choice questions, which have passed validity, reliability, discrimination power, and difficulty level test. The data were analyzed using parametric statistical tests, in the form of comparative analysis and N-Gain. The results of the study showed that Instagram-Assisted Project Based Learning model had an impact on students' critical thinking abilities. The results of N-Gain test also showed that the increase in students of experimental class' critical thinking skills is higher than that of the students in control class. This implies that Instagram-Assisted Project Based Learning models can be used as a supplement in strengthening constructivist-oriented learning theories

Keywords: Project Based Learning, Instagram, Critical Thinking Skills

1. Introduction

In the 21st century, technological development influences all aspects of life. In the field of education, technology enables students to have the ability to: think critically, think creatively, produce new innovations, solve problems, as well as conduct collaborative work (Chatwattana & Nilsook, 2017). The ability to think critically is not only needed in dealing with challenges and solving problems in daily

life, but also in helping students construct knowledge.

One problem found in Indonesia is that the students encounter difficulties in developing their critical thinking skills. These difficulties are indicated by the students' inability to discover problems, verify them, and come up with ideas to solve the problems related to social phenomena in the society (Pusparatri, 2012). This inability of the students implies on the students' attitudes and behaviors, in that their attitudes and behaviors are not in line with absolute truth values, such as good or bad values. The phenomena that arise in Indonesia's society are as follows: students brawl, fight, and develop social conflicts that result in fatalities (Pusparatri, 2012). These phenomena are one impact of students' weak critical thinking abilities for such social phenomena. Thus, a learning model that can develop students' critical thinking skills in learning process, especially through sociology subjects, is needed.

The problem in Indonesia is that teachers are still a center and the one playing the dominant role in learning process (Yuliani & Lengkanawati, 2017). During learning activities, the teacher delivers material to students without involving the students actively. This affects the students' response to the subject, in that they perceive sociology as boring, as having lack of innovation, and as a subject in which the teachers talk and lecture, etc. This is because the teacher is still bound to use traditional methods, such as the lecture method which refers only to the text book used (Effendi, 2012). A lesson that uses traditional teaching approaches results in the students merely receiving the knowledge passively.

Thus, a learning model that can foster students' critical thinking skills based on the principles of constructivism is needed, so that students can participate in the learning activities actively and be given a direct experience (Sadrina & Mustapha: 2017). One learning model that can create direct experience is Project Based Learning (PjBL) model. PjBL is a learning method that let the students be actively involved, so that it is possible for them to participate during the learning process (Marklund et al., 2014; Lee & Lim, 2012), either independently or in groups based on their competencies, skills, and interests. Meanwhile, here the teacher only serves as a facilitator who provides guidance and advice (Chatwattana & Nilsook, 2017). PjBL helps students solve problems (Chatwattana & Nilsook, 2017; Chu et al., 2012; Robinson, 2013), improve their critical thinking skills (Lee & Lim, 2012; Hasan et al., 2017), train their decision making skills (Marklund et al., 2014; Thomas, 2000) and can also increase their learning motivation (Sadrina & Mustapha: 2017).

However, the PjBL model also has some drawbacks, namely: it is costly (Jacques & Martin, 2016) and it requires a long time to plan (Thomas, 2000; Yu et al., 2016). Therefore, several studies combined it with an application, such as Edmodo (Hursen, 2018), while others use social media such as Instagram (Utami et al., 2015). Combining PjBL model with Instagram is proven to be effective in enhancing students' creative thinking skills in Biology subjects in Indonesia (Utami et al., 2015).

In this study, Instagram serves as a teaching media that utilizes technological developments. Here, Instagram is expected to be able to improve critical thinking skills. It is chosen as a media because it is viewed as a media that keeps track of the current trend and also the media with the highest number of followers among teenagers in Indonesia (Supratman, 2018). Apart from serving as a mean to cover the weaknesses of the PjBL model, Instagram can also be used to facilitate teachers in monitoring the students' activities outside of the classroom. Therefore, this study was conducted with the aim to determine whether Instagram-Assisted PjBL model has any impact on students' critical thinking skills.

2. Literature Review

The development of the increasingly complex world causes humans to continue thinking critically. Critical thinking skills are measured, vivid abilities used in mental activities such as making decisions, analyzing assumptions, and solving problems systematically (Jhonson, 2007). Critical thinking is cognitive abilities in the process of logical analysis and argument evaluation (Facione, 2000). This critical thinking was introduced by John Dewey as reflective thinking (Ennis, 2013), and thus some researchers refer to this concept (Choy, & Cheah, 2009; Rudd, 2007). Critical thinking ability has six basic elements, namely: focus, reason, situation, clarity, and overview (Ratnaningsih, 2017). Critical thinking always begins with asking questions, defining terms, assessing facts, analyzing assumptions,

considering alternatives in interpreting, and having the ability to engage in reflective and independent thinking, as well as developing a shared understanding of logical relationships between ideas (Singh, 2017). Critical thinking requires efforts and practice so that it can help determine empirical solutions to various problems that someone is facing (Johnson, 2007).

Strengthening students' critical thinking skills requires a learning model that allows learners to manipulate their cognitive skills (Nurbekova et al., 2020). One learning model that can be used to foster a critical mindset in finding and solving problems is the use of Project Based Learning model (Lee & Lim, 2012; Hasan et al., 2017). PjBL model is a learning model that is based on constructivist principles, which involves students and liberates them to think and develop their thinking skills (Hasan et al., 2017). In order for this model to be more effective, it is combined with social media Instagram which serves as a tool to monitor students outside the classroom so that they are punctual. In addition, it also encourages student learning motivation (Jacques & Martin, 2016). Many studies have proven the effectiveness of application-assisted project-based approaches in developing soft skills such as critical thinking and communication skills (Muyan-Özçelik, 2017; Rahman, 2018). Media applications are successfully used as a part of innovative educational technology to enhance learning in various disciplines (Dothang Truong, 2014) and mobile application learning is still relevant up to this day (Francesca et al., 2015; Scharff & Verma, 2010). The application of instructional media is also a determining part in the formation of the graduates' competitiveness, viewed from the learning input factors as stated in the Diamond Porter theory (Sukardi et al., 2019).

3. Method

The approach used in this study was a quantitative approach, a type of Quasi Experimental with a Nonrandomized pretest-posttest control group (Ary et al., 2010) This is visualized in Figure 1 below.

Class (Group)	Pretest	Treatment	Posttest
A	Y_1	X	Y_2
B	Y_1	-	Y_2

Fig. 1. Control Group, Pretest-Posttest Design

As shown in figure 1, Class A is the Experimental Class which was given Instagram-assisted PjBL model as treatment, while Class B is the control class treated with conventional models. Both classes were given Y_1 as the pretest and Y_2 as the final test (Posttest) in order to observe any improvement on critical thinking skills in each class.

The research samples consist of two classes at Senior High School 1 Mataram, one class as experimental class, and one class as control class. Both classes are taken by random sampling after leveling the classes (Ary et al., 2010). Leveling the intended class includes: same teacher, same learning material, same learning time, same number of students, same media and learning facilities, same critical thinking instruments, and same level of learning achievement.

The research data were taken using objective tests in the form of multiple choice questions, which have met validity, reliability, discrimination power, and difficulty level test. In order to obtain instruments of a good quality, in this study, the instruments were put through a trial in the following steps: (1) composing question criteria or outline; (2) writing the questions; (3) reviewing and revising; (3) conducting test practice; (4) conducting trials; (5) analyzing the questions; (6) selecting the questions; (7) making question bank. One example of question items for critical thinking skill is shown in Figure 2 below.

Pengguna situs jejaring sosial (*Instagram* dan *line*) dari tahun ke tahun semakin meningkat. Banyak kalangan remaja memakai jejaring sosial ini. Pemakaian situs jejaring sosial ini pada masa sekarang juga memengaruhi perubahan pola interaksi remaja. Berdasarkan ilustrasi tersebut, maka rumusan masalah penelitiannya adalah...

- Mengapa situs jejaring sosial *instagram* dan *line* digemari banyak orang?
- Adakah perbedaan presentase antara pengguna usia remaja dan dewasa?
- Bagaimana dampak penggunaan jejaring sosial terhadap perubahan pola interaksi remaja?
- Apakah *Instagram* dan *Line* bisa menjadi media aktualisasi diri bagi remaja?
- Adakah perbedaan persentase antara pengguna usia remaja dan dewasa?

Users of social networking sites (*Instagram* and *line*) are increasing year by year. Many teenagers use this social network. The use of this social networking site in the present also influences changes in the pattern of adolescent interaction. Based on these illustrations, the formulation of the research problems are ...

- Why are *Instagram* and online social networking sites favored by many people?
- Are there percentage differences between adolescents and adults?
- What is the impact of using social networks on changing patterns of youth interaction?
- Can *Instagram* and *Line* be a medium for self-actualization for teenagers?
- Are there differences in percentage between teenage and adult users?

Fig. 2. An example of questions for Students' Critical Thinking Skills

The data obtained were based on the results of the study. The data were then analyzed using comparative analysis procedure with two independent samples after they have passed homogeneity and normality test. In addition to the comparative test, N-Gain test was also carried out. The N-Gain test was used to see the increase on students' critical thinking skills before and after treatment.

4. Results and Discussion

Descriptions regarding the results of the study are divided into four parts, namely: instrument test results, analysis requirement test result, hypothesis testing result, and N-Gain test result.

4.1 Instrument Test Results

The Instrument Test includes validity, reliability, difficulty level, and discrimination power tests. The results for validity test showed that out of 40 questions, 33 questions were declared valid. The result for reliability test showed that the question criterion is 'high', with a correlation coefficient of 0.85. The results for difficulty level test discovered that 7 questions were difficult, 14 were moderate, and 12 were easy. Furthermore, the results for discrimination power test for the instruments showed that 8 question items are categorized as 'poor', 8 as 'fair', 11 as 'good', and 6 as 'excellent'. Thus, from the results of the trial and analysis, 30 question items that met the intended instrument quality were obtained.

4.2 Analysis Requirements Test Result

The analysis requirements tests for this study include normality and homogeneity test. For normality test using Kolmogorov Smirnov analysis, the Experimental class obtained a value of 0.642 with a probability of $0.804 > 0.05$, while the control class obtained a value of 1.168 with a probability of $0.130 > 0.05$. Based on these results, it can be concluded that the data for both classes were normally distributed. Furthermore, for homogeneity test using test of homogeneity of variance, the analysis obtain a statistical levene value of 1.161 with a probability value of $0.209 > 0.05$. Based on these results, it was concluded that the two classes were homogeneous.

4.3 The Result of Hypothesis Testing

The calculations results for hypothesis testing are summarized on table 1 below.

Table 1. t-Test Result Summary for Students' Critical Thinking Skills

Variable	Class/Group	N	Average ²	Sd.	T Score	Df	Sig.
Critical Thinking Skills	Experimental	36	80.33	7.946	3.599	70	0.001
	Control	36	72.83	9.655			

Based on the table above, it can be concluded that there is indeed an influence of Instagram-Assisted Project Based Learning models on students' critical thinking skills in Sociology subjects. This is proven by the probability value that scores below 0.05 and the fact that the average value of the experimental class is higher than that of the control class.

4.4 The Result of N-Gain Test

To calculate how much the students' critical thinking skills improve, N-gain test was conducted. The results of the N-gain test for both classes are shown in figure 3 below.

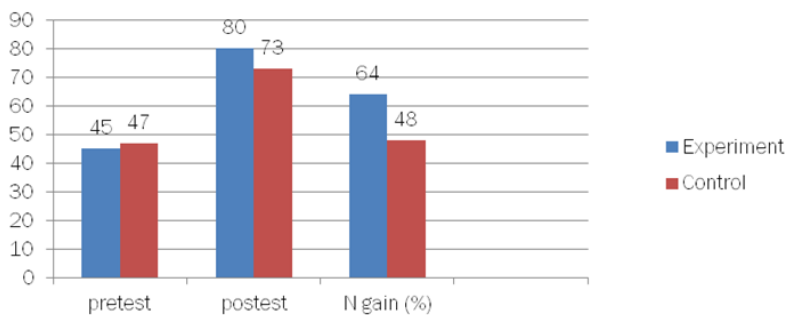


Fig. 3. The Result of N-Gain Test for Experimental Class and Control Class

Furthermore, Figure 4 visualizes differences in the improvement of students' critical thinking skills based on several indicators which include: focus, reason, inference, situation, clarity and overview (Ratnaningsih, 2017).

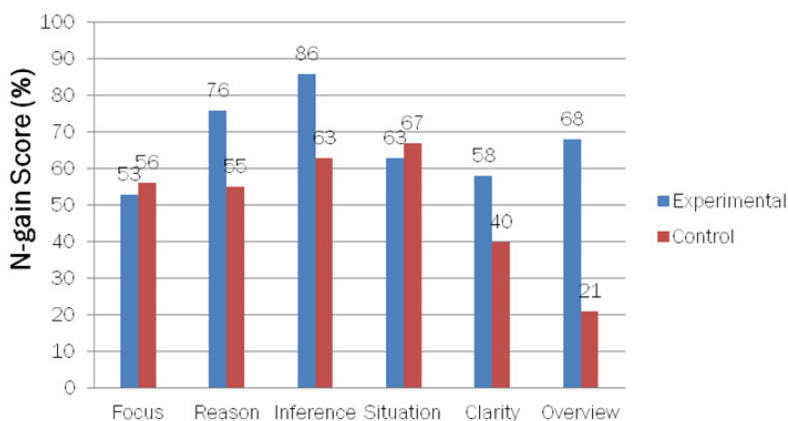


Fig. 4. A comparison of Students' Critical Thinking Skill Improvement for Each Indicator

As viewed in figure 4, critical thinking skills of students in experimental class are higher than those of students in control class (Figure 4). For example, the experimental class' overview indicator is higher than the control class'. That is because in PjBL, the students were provided with the actual experience in the form of project assignments. Thus, students are able to solve the problems they are facing based on relevant sources.

The implementation of Instagram-Assisted PjBL model received positive responses from students. This can be seen when the students posted their project results on their Instagram account (Figure 5).



Fig. 5. Screenshot of one of the groups uploading their project to Instagram

Figure 5 shows the students' positive response for lessons that implement PjBL. Through PjBL, students are able to come up with their own ideas through field observation activities, interviews with resource person, seeking information through mass media, etc.

The results above thus prove that a lesson or learning that is based on constructivism theory is still relevant in the 21st century. Constructivism theory creates understanding based on the knowledge obtained from the actual environment and students' experience (Jin, 2017) so that learning becomes more meaningful (Iskander, 2014). The learning process generated in constructivism theory is not only manifested in the form of joint activities, interactions, and cooperation in building knowledge based on reality or social problems, but also through direct practice in the life of the student itself (Sukardi, 2017; Sukardi, 2016).

PjBL provides opportunities for students to make decisions on determining their own projects. The students can develop their critical and creative thinking skills because the two skills are very important in finishing the project (Sadrina & Mustapha, 2017). PjBL encourages students to have a high level of self-efficacy and perceived control, to be open to group work and mindset growth as well as to have a great potential for deep learning, because they can scaffold real-world knowledge, they gained from developing their project (Iwamoto et al., 2016). The results of the study proved that the implementation of PjBL has positive impact on the development of students' proficiency in English as a Foreign Language (EFL) in the field of engineering research (Kovalyova, et al., 2016).

The use of technology in the form of Instagram becomes a solution in maximizing the use of time without having to meet face to face. Instagram provides a variety of facilities that can be used as teaching medias, such as: snapgrams photo edits (captions, filters, unique effects and funny stickers), instastories, short videos, boomerang, superzoom, rewind, handsfree and slow motion, and latest update (Supratman, 2018). The results of this study proved that the Instagram-assisted PjBL model was effective in improving students' critical thinking skills. Other empirical evidence also proved that the

use of Edmodo-assisted PjBL model was effective in improving future teachers' inquiry skills and academic achievements (Hursen, 2018). Students also gave a positive response to the use of Instagram, especially for writing assignments. The participants viewed Instagram as a meaningful learning media in motivating them to write better (Anggraeni, 2017). Thus, this study has confirmed that Instagram-assisted PjBL model is one innovative way of learning to improve students' critical thinking skills.

5. Conclusion

Based on the results of the research above, it is concluded that Instagram-assisted PjBL model does have an influence on students' critical thinking skills in Sociology subjects. This implies that Instagram Assisted PjBL model can make the lesson more contextual, interesting, and innovative which is student centered so that it fosters the students' motivation and improves their problem solving skills as well as their critical thinking skills. Hence, Instagram-assisted PjBL model serves as a supplement to strengthen the constructivism theory in improving the quality of learning in the social field.

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