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| The Effect of Problem-Based Learning and Discovery Learning on Students' Critical and Creative Thinking Skills on Material of Islamic Kingdom DevelopmentMuhammad Eko Subagtio 1), Nasution 2), M. Jacky 3)\*1) Postgraduate of Social Studies Program, Universitas Negeri Surabaya, Indonesia2) 3) Faculty of Social Science and Law, Universitas Negeri Surabaya, Indonesia  |
| **Abstrak**Penelitian ini bertujuan untuk mengetahui : 1) perbedaan pengaruh *problem based learning* dan *discovery learning* terhadap keterampilan berpikir kritis dan kreatif siswa, 2) pengaruh *problem based learning* dan *discovery learning* terhadap keterampilan berpikir kritis dan kreatif siswa secara simultan. Jenis penelitian ini adalah eksperimen semu dengan desain *nonequivalent comparison-group design*. Pengumpulan data menggunakan *pre-test* dan *post-test* pada kelas eksperimen I dan II. Teknik analisis data menggunakan uji *independent sample test* dan Manova dengan bantuan aplikasi *IBMM SPSS Statictics* versi 23. Hasil dari uji *independent sample test* menunjukkan variabel berpikir kritis memperoleh skor thitung 2,180 > ttabel 1,996 dengan df. 66 dan variabel berpikir kreatif dengan skor thitung 2,103 > ttabel 1,996. Berdasarkan hasil tersebut dapat disimpulkan bahwa terdapat perbedaan pengaruh terhadap keterampilan berpikir kritis dan kreatif. Pada hasil uji Manova memperoleh signifikansi 0,26 < 0,05 sehingga disimpulkan terdapat pengaruh terhadap keterampilan berpikir kritis dan kreatif secara simultan pada materi perkembangan kerajaan Islam. Dari hasil komparasi menunjukkan *discovery learning* lebih berpengaruh terhadap keterampilan berpikir kritis dan kreatif dengan n-gain sebesar 0,49, dibandingkan dengan *problem based learning* dengan n-gain 0,41.**Kata Kunci** : problem based learning, discovery learning, keterampilan berpikir kritis dan kreatif.**Abstract**This research aims to find out: 1) the different effect of problem based learning and discovery learning towards students’ creative and critical thinking skill on Islamic kingdom development material, 2) the different effect of problem based learning and discovery learning on students’ creative and critical thinking skill simultaneously. The type of this research was quasi experiment with non-equivalent comparison-group design. Data collection used pre-test and post-test on experimental class I and II. Data analysis technique used independent sample test and Manova with assistance of IBMM SPSS Statistics application version 23. The result of independent sample test shows critical thinking variable obtains ttable score 2,180 > 1,996 with df. 66 and creative thinking variable with tcount score 2,103 > ttable 1,996. Based on these results, it can be concluded that there is different effect towards creative and critical thinking skill. In the result of Manova test obtains significance 0,26 < 0,05 until it can be concluded that there is effect towards creative and critical thinking skill simultaneously on Islamic kingdom development material. From the comparation result, its shows that discovery learning is more influential towards creative and critical thinking skill with n-gain in the amount of 0,49 compared to PBL with n-gain 0,41.**Keywords**: problem based learning, discovery learning, critical and creative thinking skills**How to Cite**: Subagtio, M. E., Nasution, Jacky, M. (2019). The Effect of Problem Based Learning and Discovery Learning on Students' Critical and Creative Thinking Skills on the Development of the Islamic Empire. The Indonesian Journal of Social Studies, Vol 4 (1): halaman. |
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**INTRODUCTION**

In this modern era in the 21st century, globalization has become an actual challenge in the world of education. In addition to utilizing ICT developments in student learning, the education system in Indonesia is also expected to be able to equip students with learning skills and life skills, including critical and creative thinking skills (Redhana, 2019: 2249; Kharbach, 2012 in Fuad, et al., 2015: 807).

Critical thinking specifically has become a skill that is quite important for the success of students. Analysis and reasoning are the keys to developing critical thinking (Al-Husban, 2020: 83). Cheong and Cheung (2008: 559) state that critical thinking can be taught by providing a problem through discussion forums, thus providing opportunities for students to observe, read, and discuss.

Learning activities that aim to train thinking processes, generally only emphasize convergent thinking processes, which are limited to verbal reasoning, and logical thinking. Thus, if students face a real problem, they will have difficulty solving the problem creatively (Haryanto, 2006: 2-3). Sani (2014:15) suggests that creative thinking is the ability to develop ideas that are unusual (out of the box), of high quality, and according to logic.

Those studies indicate that critical and creative thinking skills are very important for students to master. These two thinking skills can be a provision for them in social life in the community. However, the role of schools that actually teach critical thinking skills is very little (Jacqueline and Brooks in Santrock, 2010: 360). Furthermore, the creative thinking skills possessed by graduates of elementary school to tertiary education are still relatively low. The low critical and creative thinking skills are due to this aspect of thinking skills that have not been handled properly in schools (Munandar, 2009: 31).

There are several ways that can be done in an effort to improve the process and learning outcomes of students, including through Problem Based Learning (Yew & Goh, 2016: 78) and Discovery Learning (Druckman & Ebner, 2017: 21). Jerome Bruner is the figure who initiated the PBL learning model based on the discovery learning concept that he developed\ (Arends, 2008: 402; Suprijono, 2009: 68).

In the pandemic era, it is a challenge to apply PBL and discovery learning. Online learning is one of the efforts to stem the spread of COVID-19, with the hope of reducing crowds and preventing crowds in the educational environment (Circular of Ministry of Education and Culture No. 15 of 2020). In Bojonegoro Regency, the implementation of learning at the high school level is carried out virtual and face-to-face which is attended by 50% of the total number of students in one class, they learn face to face in turn. This blended learning method has been running since November 2020/2021 school year. The media used in blended learning is the result of an agreement between the teacher and students, provided that each has been able to operate it (Subagtio, 2020: 161). The Edmodo application was chosen as a learning medium because it can be used for free, has more complete features, and has a graphic user interface (GUI) that resembles social media (Kuntarto, 2018: 17-20).

The use of Edmodo in problem-based learning and discovery learning models can be applied to certain subjects, for example in Indonesian history subjects. Among the subject matter of Indonesian history, one of them is the development of the Islamic empire. Islamic history learning materials invite, understand, and appreciate Islamic culture, which then becomes the basis for their way of life through guidance, teaching, training, use of experience, and habituation. In the context of learning, Islamic history has several functions, including educational functions (Karim, 2013: 7). To realize these functions, Islamic history learning requires an integrated approach from several other social science disciplines such as anthropology, politics, sociology, and others. Thus, learning is not boarding and can be more comprehensive.

Based on the background of the problems above, the objectives of this study were to find out: 1) Are there any differences between the Problem Based Learning Discovery Learning models based on blended learning with the Edmodo application on students’ critical and creative thinking skills in the development of the Islamic empire; 2) Is there any the effect of Problem Based Learning and Discovery Learning based on blended learning with the Edmodo application on students’ critical and creative thinking skills simultaneously on the material for the development of the Islamic empire.

There are many studies conducted on the effect of PBL on critical thinking skills such as those conducted by Yuan, et al. (2008: 85), El-Shaer and Gaber (2014: 74), Herzon, et al. (2018: 42), and Amin, et al. (2020: 743). Meanwhile, research on the effect of PBL on creative thinking skills was carried out by Birgili (2015: 73), Orozco & Yangco (2016: 7), Ulger (2018), Rudibyani (2019: 6), Armana, et al (2020: 63).

The effectiveness of increasing creative thinking skills can also be done through the application of discovery learning such as the results of research conducted by Tumurun, et al. (2016: 101), Rahman (2017: 101), Nurlaela, et al. (2019: 65), and Juniarso (2020: 40). In addition to having an influence on increasing creative thinking skills, discovery learning is also effective in improving critical thinking skills such as the results of research conducted by Rudibyani (2018: 50) which adapted Bruner’s theory that discovery-based learning makes students actively seek knowledge. Thus, it will provide the best learning outcomes. These findings are in line with the results of research from Batubara (2019: 118), Sucipta, et al. (2018: 4), and Nurmayani (2020: 239).

**RESEARCH METHOD**

This study employed a quantitative approach with the type of quasi-experimental method. The research design used was a nonequivalent comparison-group design. The essence of this design is to compare two groups of classes that are given a comparable type of learning treatment (Johnson & Christensen, 2014: 359). Both experimental groups were given a pre-test to measure initial ability. Then, the treatment was given with different but still comparable types, namely Problem Based Learning in the X-IPS 2 class group and Discovery Learning in the X-IPS 1 class group, each class consisting of 35 students. The research location was at SMAN 2 Bojonegoro. The study was conducted in 4 meetings, from April 5 to May 4, 2021. The data analysis techniques used to answer the research hypothesis were independent sample tests and multivariate analysis of variance with the help of the IBM SPSS statistics version 23 application.

**Table 1.** Nonequivalent comparison-

group design (Johnson & Christensen, 2014: 359)

|  |  |  |  |
| --- | --- | --- | --- |
| **Group** | **Pre-test** | **Treatment** | **Post-test** |
| Experiment1  | O1 | *X1* | O2 |
| Experiment 2  | O3 | *X2* | O4 |

The indicators used in assessing critical thinking skills are interpretation, analysis, evaluation, inference, explanation, and self-regulation (Facione, 2011: 5). Meanwhile, the indicators used to assess creative thinking skills consist of fluency, flexibility, originality, and elaboration (Bosch, 2008; Munandar, 2009: 32).

**RESULTS AND DISCUSSION**

**Results**

The data collected from the results of the assessment of critical and creative thinking skills in each class were then used as primary data to be processed. However, the results of the collected values are still in the form of raw scores. Therefore, it is necessary to carry out a prerequisite test as the basis for statistical hypothesis testing, some of these prerequisite tests include normality, homogeneity, and the homogeneity test of the variance-covariance matrix / *Box’s M*.

*Pearson Product Moment Validity Test*

The validity of students' critical thinking skills was calculated using the Pearson product-moment formula with the help of the IBM SPSS Statistics version 23 application. The research instrument in the form of essay questions was said to be valid if the value of rcount > rtable. The rtable provision for the amount of data n = 32 and significance of 0.05 is 0.349. Data on the results of the instrument validity test of students’ critical thinking skills are presented in the following table:

**Table 2.** The results of the validity of critical thinking questions

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Test Validity** | **rcount** | **rtable** | **Description** |
| 1. | Question number 1 | 0,657 | 0,349 | Valid |
| 2. | Question number 2 | 0,722 | 0,349 | Valid |
| 3. | Question number 3 | 0,771 | 0,349 | Valid |
| 4. | Question number 4 | 0,697 | 0,349 | Valid |
| 5. | Question number 5 | 0,771 | 0,349 | Valid |

**Table 3.** The results of the validity of creative thinking questions

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Test Validity** | **rcount** | **rtable** | **Description** |
| 1. | Question number 1 | 0,796 | 0,349 | Valid |
| 2. | Question number 2 | 0,671 | 0,349 | Valid |
| 3. | Question number 3 | 0,671 | 0,349 | Valid |
| 4. | Question number 4 | 0,850 | 0,349 | Valid |
| 5. | Question number 5 | 0,826 | 0,349 | Valid |

Based on the results of the validity test of each item presented in Table 2 & Table 3, all students’ critical thinking ability test items show a value of rcount > rtable. Therefore, it can be said that all items about critical and creative thinking skills are in the valid category and can be used as data collection instruments.

*Homogeneity Test*

The reliability of the students' critical thinking skill question sheet was tested using Cronbach's alpha formula. The criteria for determining the instrument reliability limit are 0.6 (Sujarweni, 2014: 199). The results of the reliability test of students’ creative thinking skills are presented in the following table:

|  |
| --- |
| **Reliability Statistics** |
| **Cronbach’s Alpha** | **N of Items** |
| 0,848 | 5 |

**Table 4.** Critical thinking reliability results **Table 5.** Critical thinking reliability results

|  |
| --- |
| **Reliability Statistics** |
| **Cronbach’s Alpha** | **N of Items** |
| 0,848 | 5 |

According to Tables 4 & 5, the students’ critical thinking skill question sheet instrument has a Cronbach’s Alpha score of 0.809 > 0.6, while their creative thinking skills have a Cronbach’s Alpha score of 0.848 > 0.6. As a result, it might be argued that the instrument is trustworthy or reliable.

*Normality Test*

 A normality test was used to test whether the data were normally distributed or not. The normality test used the *Shapiro-Wilk* formula with a significance level of 0.05 or 5%, with the help of the IBM SPSS Statistics version 23 application. The decision-making guideline is the significance value is < 0.05, the data are not normally distributed. However, if the significance value is > 0.05, then the data are normally distributed. The results of the normality test are shown in the table and histogram below:

**Table 6.** The normality test of critical thinking

|  |  |  |
| --- | --- | --- |
|  | Class | Shapiro-Wilk |
|  | Statistic | df | Sig. |
| Critical Thinking Skill Results | Pre-test Experiment I | ,941 | 34 | ,066 |
| Post-test Experiment I | ,954 | 34 | ,161 |
| Pre-test Experiment II | ,949 | 34 | ,114 |
| Post-test Experiment II | ,940 | 34 | ,063 |

**Table 7.** The normality test of creative thinking

|  |  |  |
| --- | --- | --- |
|  | Kelas | Shapiro-Wilk |
|  | Statistic | df | Sig. |
| Creative Thinking Skill Results | Pre-test Experiment I | ,952 | 34 | ,140 |
| Post-test Experiment I | ,961 | 34 | ,256 |
| Pre-test Experiment II | ,946 | 34 | ,095 |
| Post-test Experiment II | ,964 | 34 | ,311 |

Data in Table 6 & Table 7 shows that all variables have a significance value of more than 0.05. Thus, it can be stated that all research variables are normally distributed. The distribution of the data is visualized in the histogram below:

**Picture 2.** Creative thinking normality test curve

**Picture 1.** Critical thinking normality test curve

*Homogeneity Test*

The homogeneity test was used to determine how similar various areas of the sample were. The Levene Test was used to determine homogeneity.

**Table 8.** The results of the homogeneity test of critical and creative thinking

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | F | df1 | df2 | Sig. |
| Berpikir Kritis | 1,887 | 1 | 66 | ,174 |
| Berpikir Kreatif | ,451 | 1 | 66 | ,504 |

Table 8 shows the homogeneity of critical thinking variables of 0.174 > 0.05 and creative thinking variables of 0.504 > 0.05. therefore, it can be concluded if the two variables are homogeneous. Based on the normality and homogeneity test that have met the requirements, it can be continued to the independent sample test hypothesis test.

*Homogeneity Test of Variance-Covariance Matrix / Box’s M*

 In performing the MANOVA test, in addition to the variance of the data groups, the variance-covariance matrix of the dependent variable must also be the same. To test the homogeneity of the variance-covariance matrix, it can be seen from the results of Box's M test. The results of the Box’s M test are as follows:

**Table 9.** The results of Box’s M

|  |  |
| --- | --- |
| Box’s M | 4,187 |
| F | 1,350 |
| df1 | 3 |
| df2 | 784080,000 |
| Sig. | ,256 |

Based on Table 9, it can be seen that the Box’s M value is 4.187 with a significance of 0.256. If the research significance level is 0.05, then the significance of Box’s M is 0.256 > 0.05, which indicates that Ha is accepted. Therefore, it can be concluded that the variance-covariance matrix of the dependent variable is the same. Thus, the test can be continued on the multivariate analysis of variance test.

*Independent Sample Test*

The first problem formulation hypothesis was tested using an independent sample test. The test was to find out the difference in the effect of problem-based learning and discovery learning based on blended learning with the Edmodo application on students’ critical and creative thinking skills. The results of the independent sample test calculation are presented in the table below:

**Table 10.** The results of the independent sample test

|  |  |
| --- | --- |
|  | t-test for Equality of Means |
| T | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference |
| Lower | Upper |
| Critical Thinking | Equal variances assumed | -2,180 | 66 | ,033 | -4,70588 | 2,15828 | -9,01503 | -,39674 |
| Equal variances not assumed | -2,180 | 63,099 | ,033 | -4,70588 | 2,15828 | -9,01873 | -,39304 |
| Creative Thinking | Equal variances assumed | -2,103 | 66 | ,039 | -4,26471 | 2,02755 | -8,31284 | -,21657 |
| Equal variances not assumed | -2,103 | 65,200 | ,039 | -4,26471 | 2,02755 | -8,31377 | -,21564 |

Table 10 shows the results of the analysis with the independent sample test on the critical and creative thinking skills variables. The tcount score is negative because the average value of experimental group I is lower than the value of experimental group II. The critical thinking variable has a tcount of 2.180 > ttable of 1.996 with df. 66. The results of *sig. 2* *tailed* gave a score of 0.033 < 0.05. therefore, Ha is declared accepted because the value of tcount is greater than ttable and the value of *sig. 2 tailed* is less than 0.05. Therefore, it can be stated that there is a difference in the effect between problem-based learning and discovery learning based on blended learning with the Edmodo application on students’ critical thinking skills.

The creative thinking variable obtained a tcount 2.103, > ttable 1.996, and the results of *sig. 2-tailed* with a value of 0.039 < 0.05. Therefore, Ha is declared accepted because the value of tcount is greater than ttable and the value of *sig. 2 tailed* is less than 0.05. Thus, it can be stated that there is a difference in the effect between problem-based learning and discovery learning based on blended learning with the Edmodo application on students’ creative thinking skills.

*Multivariate Analysis of Variance* (MANOVA) Test

The MANOVA test was conducted to test the third hypothesis of the study. The aim is to find out whether there is an effect of problem-based learning and discovery learning on critical and creative thinking skills simultaneously in the development of the Islamic empire. The test was carried out with the help of the IBM SPSS statistics version 23 program at a significance level of 5%. MANOVA test results are presented below:

**Table 11.** Multivariate test results

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Effect | Value | F | Hypothesis df | Error df | Sig. | Partial Eta Squared |
| Class | Pillai’s Trace | ,106 | 3,849b | 2,000 | 65,000 | ,026 | ,106 |
| Wilks’ Lambda | ,894 | 3,849b | 2,000 | 65,000 | ,026 | ,106 |
| Hotelling’s Trace | ,118 | 3,849b | 2,000 | 65,000 | ,026 | ,106 |
| Roy’s Largest Root | ,118 | 3,849b | 2,000 | 65,000 | ,026 | ,106 |

The results of the analysis indicate that the significance value of the class variables for the Pillae Traixe, Wilk Lambda, Hotelling’s Trace, and Roy’s Largest Root categories has a significance value of 0.026 < 0.05. This shows that the values for Pilar Traice, Wilk Lambda, Hotelling’s Trace, and Roy’s Largest Root are all significant. Therefore, it can be concluded that there is a significant influence between problem-based learning and discovery learning models on critical and creative thinking skills simultaneously on the material of islamic kingdom development.

**Table 12.** Descriptive statistical results

|  |  |  |  |
| --- | --- | --- | --- |
| Variable | Result | Experiment I | Experiment II |
| Critical Thinking | N | 68 | 68 |
|  | Minimum | 55 | 60 |
|  | Maximum | 90 | 90 |
|  | Mean | 74,12 | 78,82 |
|  | Std. Deviation | 9,80 | 7,89 |
|  | N-Gain | 0,39 | 0,49 |
| Creative Thinking | N | 68 | 68 |
|  | Minimum | 55 | 90 |
|  | Maximum | 60 | 95 |
|  | Mean | 72,65 | 76,91 |
|  | Std. Deviation | 8,81 | 7,88 |
|  | N-Gain | 0,43 | 0,49 |

**Picture 4.** Comparison graph of creative thinking skills

**Figure 3**. Comparison graph of critical thinking skills

The difference in the average value of students' critical thinking skills in experimental class I (PBL) was 74.12 and the experimental class II (DL) was 78.82. therefore, it can be interpreted that the discovery learning model is more effective than the problem-based learning model on improving students’ critical thinking skills with an n-gain of 0.49. This supports the results of research by Aritonang & Astuti (2021: 163), and Safitri & Setiawan (2020: 57) which states that discovery learning is more effective than problem-based learning as well as different from the research results of Prasetyo & Kristin (2020: 22-23) which states that problem-based learning is more effective than discovery learning on students’ critical thinking skills.

The difference in the average value of students’ creative thinking skills in the experimental class I (PBL) was 72.65 and the experimental class II (DL) was 77.06. therefore, it can be interpreted that the discovery learning model is more effective than the problem-based learning model on increasing students’ creative thinking skills with an n-gain value of 0.49. This supports the results of the study conducted by Adawiyah & Disman (2020: 37) which states that discovery learning is more effective compared to problem-based learning on students’ creative thinking skills. In the results, the average value of students in both classes showed a tendency for higher scores in the critical thinking skills category of 76.47 compared to creative thinking skills with an average of 74.85.

**Discussion**

During this pandemic, the number of students attending school is only allowed to be 50% of the total students in one class, therefore, learning is carried out using blended learning. learning activities in the classroom with PBL and discovery learning were carried out according to the syntax (Arends, 2008: 57; Syah, 2004: 244) and the lesson plan that had been validated by experts validators. The lesson began with apperception and introductory material by the researcher. Next, the researcher gave a case/problem in the PBL class, where students were required to be able to discuss finding solutions or to respond to the problem. Meanwhile, in the discovery learning class, the problem was not given by the researcher, but the students themselves were asked to find and formulate solutions or the results of the analysis. The learning activities were carried out in small groups formed by the researcher at random. They were free to use any source of material to support their learning activities. This learning pattern was carried out offline (face to face) at school.

 As for students who were studying online, they took part in learning through the Edmodo application. The researcher deliberately chose the Edmodo application because it can be used for free, has more complete features, and has a graphic user interface (GUI) that resembles social media. It is also a new experience for students from those who previously only used the Google Classroom application. One of the highlights of Edmodo is the availability of small group features to divide students in one class into several small groups for discussion. This feature is not shared by other free learning applications such as Google Classroom which they often use. Therefore, the use of Edmodo as a learning medium is very helpful in every step of PBL and discovery learning. therefore, the application of PBL and discovery learning is not much different between offline (face-to-face) and online classes.

 PBL and discovery learning models have helped students to demonstrate critical thinking activities through problems that are solved together in one group. Through group discussion, students can reach the zone of proximal development, namely higher abilities obtained from the help of others. The fundamental of the PBL and DL models is based on the concept of scaffolding (Arends, 2008: 402).

 According to Vygotsky’s theory of constructivism, knowledge will be more developed when students can perform social interactions with their environment. The basic assumption of Vygotsky’s constructivism theory is that problem solving that children do by working together today, will be able to do independently in the future (Warsono & Hariyanto, 2012: 59). In line with this thought, the learning models applied in this study were PBL and discovery learning, both of which are social-based learning models and emphasize learning in an interactive dialogue. Learning in experimental class I and experimental class II emphasized social interaction with other people, either directly or through the Edmodo application.

In this study, problem-based learning and discovery learning provide opportunities for the student to think creatively through open-ended situations that are discussed in groups. Questions that provide problems openly can be answered by students from various perspectives. Arends & Kilcher (2010: 328) stated that inquiry in problem-based learning requires critical thinking skills and open-ended situations which can later lead to creative thinking skills. Through the ability to think creatively, students can have an understanding or idea to find a new solution to a problem. In the thinking process, students also have a sense e of interest in solving problems to foster students’ curiosity. According to Steinemann (2003: 218), creative thinking can be developed through open-ended questions during class discussions and integrating problem-based scenarios in student learning activities.

In line with the findings of Arends & Kilcher and Steinemann, the instrument used in this study was a set of questions in the form of essays. Students are not faced with questions that are accompanied by answer choices. The goal is that students can think broadly and deeply from the learning resources they read. Based on the results of the study, students felt that they could not find a definite answer in just one article. They had to read many articles to be able to conclude the formulation of the right answer. Accordingly, it required perseverance and higher thinking skills because questions cannot be answered by means of speculation.

Discovery learning is proven to improve critical and creative thinking skills compared to PBL. In the learning syntax, discovery learning requires students to think critically and creatively from the start by finding their own problems related to the material as a learning theme. Meanwhile, problem-based learning requires students to solve problems given by the teacher. The difference between the two models is that discovery learning requires students to think critically and creatively twice, namely when finding problems and solving them. Meanwhile, problem-based learning requires students to think critically and creatively once when solving problems given by the teacher.

**CONCLUSION**

Based on the results of data analysis, the results of the discussion can be concluded that there is a difference in the effect between the application of problem-based learning and discovery learning models on students’ critical and creative thinking skills in the development of the Islamic empire. Although the two learning models are implemented in a blended learning manner, they can run well according to their syntax with the help of the Edmodo application. Thus, they can have a simultaneous influence on critical and creative thinking skills. Critical thinking skills are obtained through solving a problem that is done together. Creative thinking skills are obtained through the provision of open-ended questions. Thus, students can think broadly from various perspectives. Discovery learning is proven to be able to improve students' critical and creative thinking skills compared to problem-based learning because discovery learning requires students to think critically and creatively twice, namely when finding problems and solving efforts.

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