Pegem Journal of Education and Instruction, Vol. 12, No. 3, 2022 (pp. 190-196)

RESEARCH ARTICLE WWW.PEGEGOG.NET

Optimizing the Discussion Methods in Blended Learning to Improve Student's High Order Thinking Skills

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Abstract

The purpose of this study was is to analyze how the implementation of the discussion method was carried out in on and offline modes in order to improve students' high-order thinking skills in university because this skilss is necessary in this globalization era. The qualitative observation was an approach exercised in collecting the data. There are 123 Educational Technology students of Universitas Negeri Padang as a research participants in this research. The finding signifies that the repetitive synchronous and asynchronous discussion methods better improve the students' higher order thinking skills through sharing knowledge/ information, exploring and investigation, and making critical judgment synchronously and asynchronously. Consequently, it grows the students' digital literacy. The implications of this finding are to encourage the lecturers to prepare discussion scenarios, learning materials, and assessment. Flow of Blended Learning Discussion Forum is the novelty of this study. In conclusion, repetitive blended learning discussion methods scaffold them to analyze, evaluate, and create new ideas.

Keywords: Blended learning, Discussion methods, HOTs, Synchronous, Asynchronous

Introduction

Higher education prepares graduates with life skills in the 21st century including Reading, Writing, Arithmetic, Creativity, Critical Thinking, Collaboration, and Communication (Dallman & Downey, 2019; Evans & Apraiz, 2018). These skills need to be integrated with technology-based skills (Ah-Namand & Osman, 2018; Korkmaz & Mirici, 2021) so that students are directly involved and collaborate with each other, including in blended learning (Gambari, A.I; Shittu, A. T; Ogunlade, O.O; Osunlade, 2017; Hew & Cheung, 2014; López-Pérez et al., 2011). Blended learning has become an important part of the learning experience in higher education. In this E-Learning course, it implements blended learning system where both lecturer and students are required to attend direct 8 face-to-face class meetings and the other 8 meetings are fully online learning. The processes of discussion, essentially, are similar. The methods of implementing it is, however, diverse (Smaldino et al., 2014). In other words, the blended learning model applied in the learning process uses the discussion method as a technique to develop students' higher-order thinking skills.

Discussion is one of the popular methods and massively used in higher education (R. Ellis & Goodyear, 2013; Lyon & Lagowski, 2008; Rovai, 2007). The discussion method is a way of presenting lessons, where students are faced with a problem, which can be as statements or questions that are problematic to be discussed and solved together. The purpose of the discussion learning method is to motivate or stimulate students to think critically, express their opinions, and contribute their thoughts and take an actual answer or a series of answers based on careful consideration (Hamdayama, 2015). In learning, the discussion has the meaning of a situation where lecturers and students or students with other students exchange opinions verbally, share ideas and opinions. Therefore, discussions have democratic value by allowing all students to express and develop their ideas.

Discussion method with Higher-Order Thinking Skills (HOTs) flow can improve 21st-century skills, namely Creativity, Critical thinking, Collaboration, and Communication which are widely known as 4Cs (Collins, 2014; Husamah, 2018; Slavin & Davis, 2006). Likewise, discussion method is one of the blended learning systems which is able to develop the students' 21st-century skills. A number of empirical researches have proved that the online learning discussion constructively affects students' critical thinking skills, information processing, digital awareness, and learning outcomes (Bentri et al., 2014, 2018; Ulfia Rahmi et al., 2017; Ulfia Rahmi & Azrul, 2019; Ulfia Rahmi & Darmawan, 2018; Ulfia Rahmi & Syafril, 2017). More importantly, other critical points from applying the discussion methods are to encourage the lecturer to design, develop, and apply the patterns or standard of

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How to cite this article: Rahmi U, Azrul (2022). Optimizing the Discussion Methods in Blended Learning to Improve Student's High Order Thinking Skills Pegem Journal of Education and Instruction, Vol. 12, No. 3, 2022, 190-196

Source of support: Nil

Conflict of interest: None.

DOI: 10.47750/pegegog.12.03.20

Received : 20.01.2022

Accepted : 27.03.2022 **Published:** 01.07.2022

discussion quality and measure to what extend the students are able to think critically. Meanwhile, in the classroom, this discussion method is carried out to empower students to hone discussion skills, communication, courage in conveying the idea, both with fellow students and with lecturers as well as the ability to think critically and develop ideas (Ulfa, 2012). It can be stated that the discussion method is not only able to develop students' critical thinking skills in online learning but also in face-to-face learning.

The same thing was also conveyed by Rose & Nicholl (2002: 13) in order to deal with quick changes, students need to be provided with provisions on how to learn and how to think. It is very appropriate if education in universities continues to develop higher-order thinking skills (HOTS) and positive attitudes for students. Because by having HOTS abilities and positive attitudes, students will be able to think critically, research, solve problems, make decisions, and have good character. Threfore with these two things, university graduates will face increasingly complex global challenges. In order to develop students' critical thinking ability, the teachers have to be able to stimulate the process of students thinking by using an appropriate model of teaching and one of them is giving the HOTS or High Order Thinking Skill. Furthermore, higher order thinking skills consist of the top three domains in the cognitive skills from Bloom's taxonomy, analyze, evaluate, and create. Bloom's taxonomy is still considered as a helpful teaching tool today. Higher order thinking skill in learning process could improve students' ability in critical thinking skill to evaluate information and having this skill is very important for preparing themselves to do their own thinking in the real world ('Ilma, 2018).

There are some taxonomies from many experts in the educational field. One of the most famous one is Bloom's taxonomy. Bloom's taxonomy explains the way of thinking. In Bloom's taxonomy itself, there are three domains of objectives that are useful for assessing students' behavior in the teaching and learning process. Those three domains are cognitive, affective, and psychomotor. There are six types of cognitive processes identified in Bloom's taxonomy that have been revised by Anderson and Krathwohl with a group of colleagues and it was made some changes (Brookhart, 2010). The differences are only showed in the word-used and the rearrangement of the last two domains; synthesis and evaluation which change into evaluate and create. These last domains are rearranged because they are considered that the students need to be able to critique and check an idea before they produce and generate some results.

Additionally, if using the revised taxonomy, we turn to ways to assess students' abilities in the higher order thinking skill to analyze, evaluate, and create. Nevertheless, Brookhart points out that those taxonomies of cognitive processes are clearly have in common that as the thinking level gets more complex and more complicated thinking among them. Moreover, Airasian and Russsel (2012) highlight that, in general, any cognitive behavior that involves more than rote memorization or recall is considered to be higher-level cognitive behavior. Consequently, the rest levels of taxonomies that ask the students to carry out thinking and reasoning process more complex than memorization are included in the higher order thinking level of cognitive domains in Bloom" s taxonomy. The higher order thinking skill in the revised Bloom" s taxonomy looks like:

Analyze level means breaking apart the information into the smaller ideas and determining the relation of those ideas.

Evaluate level includes checking and critiquing the value of material based on criteria.

Create level involves generating, planning, and producing the new structure from the disparate elements.

From those explanations about the higher order thinking skills in the revised edition of Bloom's Taxonomy, we can see that all of the higher order thinking skills or the three top end skills of the Bloom's taxonomy; analyze, evaluate, and create, need students' critical thinking. In conclusion, the higher order thinking skill is the ability to think in the complex process which useful for transferring the knowledge in real life, thinking critically, and solving the problems. The students who already have the higher order thinking skills should be able to examine assumptions and values, evaluate evidence, and present the conclusions with their own words. It is also very crucial in today" s world.

One of the courses in the Educational Technology Study Program is E-Learning Development. The blended learning model that has been implemented has become a challenge for educators and students, especially in developing students' high-level thinking skills. However, in practice, there are still many students who still have difficulty in analyzing, evaluating, and creating in this E-Learning Development course. Students tend to be passive and have difficulty developing their ideas. This is certainly a challenge, especially in the blended learning model that combines online learning and face-to-face learning.

In addition, one of the higher-order thinking skills is measured by the problem-solving process carried out by students. This of course requires learning techniques and full guidance from educators so that students are accustomed to finding, solving, and explaining problems that can develop students' HOTS abilities.

The discussion method implemented in this blended learning model is one method to develop students' critical thinking skills. As stated by Trianto (2011) that the purpose of the discussion learning method is to motivate or stimulate students to think critically, express their opinions, contribute their thoughts and take an actual answer or a series of answers based on careful consideration. Based on this explanation, the blended learning model with this discussion method is

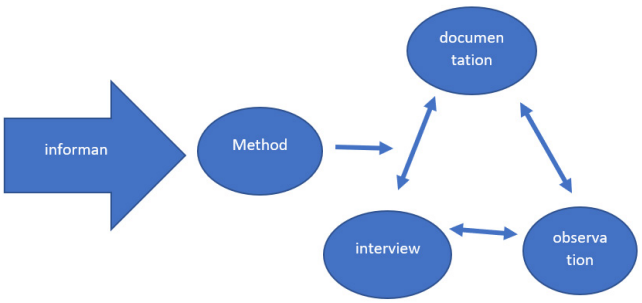
needed in developing an understanding of the material and also student learning. The selection of the right learning method is a manifestation of the creativity of a teacher so that students are not bored in receiving courses. The selection of the right learning method will also clarify the concepts given to students who are always enthusiastic about thinking and playing an active role (Dewanto et al., 2018).

The urgency of this study concludes that increasing students' HOTS abilities in blended learning with a discussion method needs to be developed considering the learning process is not only face-to-face in class but also in online learning so that this becomes a challenge for lecturers and students in understanding the material and operating applications in blended learning. Hence, the purpose of this study is to analyze how the implementation of the discussion method was carried out in on and offline modes in order to improve students' high-order thinking skills in university.

Method

The investigation was carried out qualitatively on four lecture sessions totaling 123 students. The investigation was carried out on e-learning development courses by observing synchronous discussion activities and asynchronous discussions. Samples were collected by the total sampling technique. Observations were made based on the guidelines for synchronous discussion and asynchronous discussion observation guides whose indicators were developed based on discussion quality standards. Meanwhile, the interview was conducted using the snowball sampling technique. Starting with finding the student who gave the highest response to the student who was less involved. Quantitative data is then analyzed and then triangulated with theories and research results from other relevant researchers. The data analysis of this study, starting with data collection, continued with data reduction, data presentation, and drawing conclusions (Huberman & Miles 1994).

Specifically, the data is then analyzed and then triangulated with theories and research results from other relevant researchers. Data analysis procedure:



Fug. 1: Data analysis procedure

The picture (Figure 1) is the process of data analysis in this study. Data collection was carried out from the results of in-depth interviews by digging up information related to e-learning development courses. The interviews conducted in this phenomenological research were conducted informally, interactively (conversations, and through open-ended questions and answers. The interviews flowed according to the respondent's responses or answers. Furthermore, observations were also made to get the validity of the data from the questions asked.

The analysis consists of three streams of activities simultaneously, namely, data reduction, data presentation, and drawing conclusions/verification. In this study, data triangulation was also used to check the validity of the data. The method used is to compare the data obtained with other sources. In this study, researchers made comparisons and re-checked the degree of confidence by comparing the observed data with interview data. Then, compare the results of the interviews with the contents of the data documents that have been obtained.

Results

Asynchronous online discussions are held at the LMS with the discussion feature on Moodle. Students' arguments in LMS through asynchronous discussions were assessed using a discussion quality assessment rubric. The rubric includes the assessment of a) discussion approach, namely deep approach and surface approach, b) conception includes the coherent conception and fragmented conception. Based on the names of the students involved, digitally, the quality of the discussion on which position of the assessment criteria.

The LMS was designed for 16 meetings. 2 evaluation activities, namely UTS and UAS. 14 times weekly presentations of material/topics. Each topic per week has three basic activities. Quizzes, assignments, and discussions. In this study, the focus is on assessing discussion activities to see students' higher-order thinking skills with the responses shown during the discussion. The discussion scenario is designed on a case basis. Cases are presented at the beginning of the discussion, students discuss and find similar cases, then find solutions from the cases studied.

Meanwhile, in offline learning, the process is almost the same as in the LMS. Observing face-to-face discussion activities, recording the position of argument quality according to standards. But face-to-face discussions don't get much involved. Allegedly due to time constraints, student confidence, students are more ready to be active online asynchronously.

Here are some examples of student discussion screenshots on LMS e-learning in the E-Learning Development course.

In the picture (Figure 2), the text-based discussion which is carried out asynchronously, students can send pictures

to clarify their arguments. Based on the picture above, all of students have the same opportunity to give opinions and argue. The picture above also shows that in general, all students seemed to be active in writing their opinions and also commenting on the arguments expressed by other students. In other words, this LMS is proof that all students are actively involved in the discussion. Asynchronous discussions that include pictures are conducted to explain ideas and express opinions. By sending a picture of the discussion participants wherever they are, they can equalize the perception of the included modality.

Furthermore, asynchronous discussions can also be done by including videos to explain ideas and express opinions. By sending the video, discussion participants everywhere can

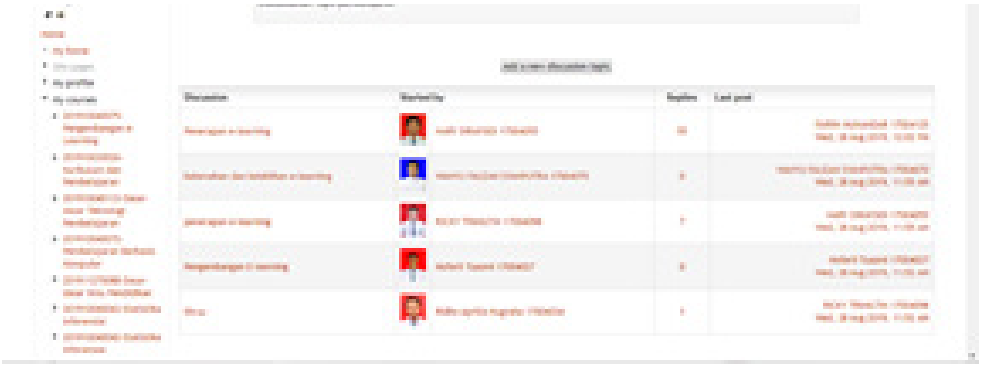


Fig. 2: Views of the Discussion Forum and the Number of Activities in each Asynchronous Discussion.

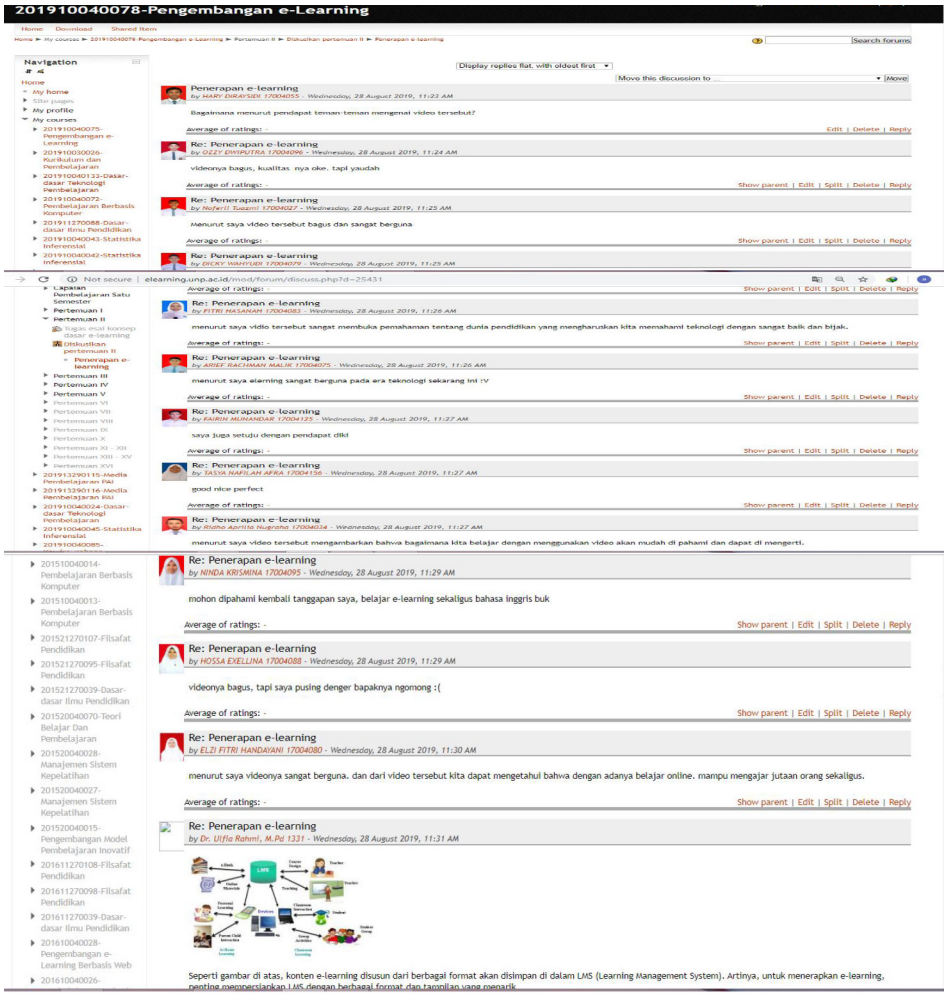


Fig. 3 Discussion activities that take place in the E-Learning Development Course

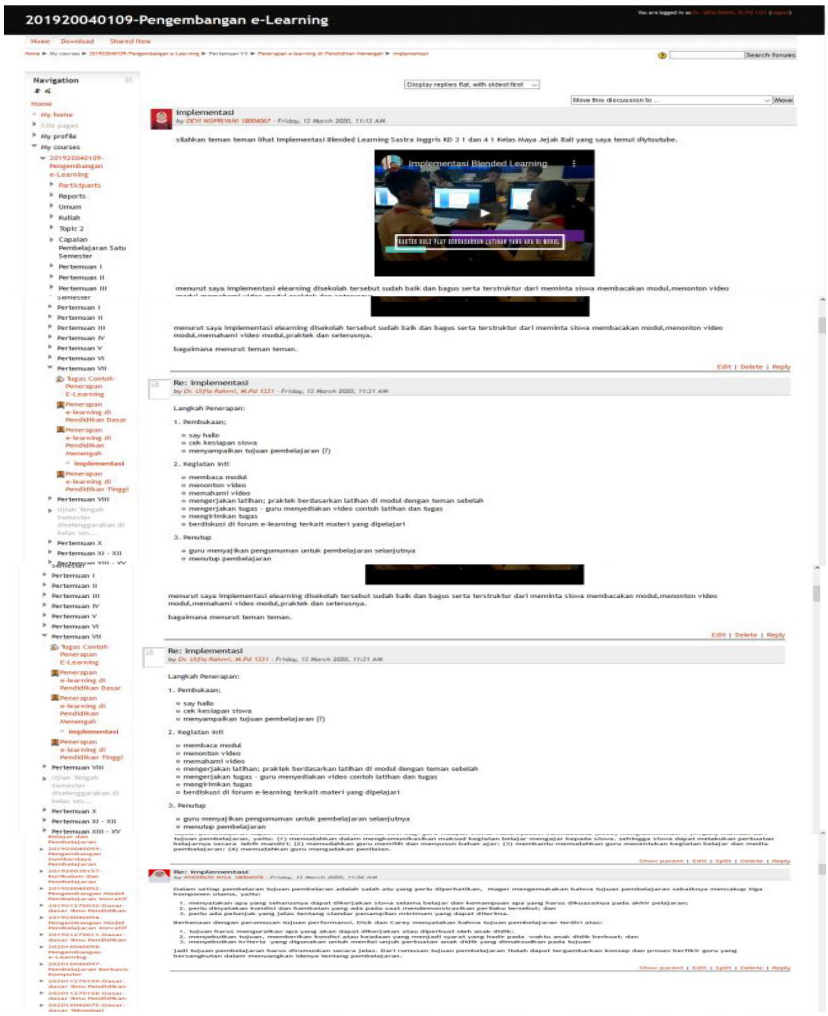


Fig. 4: Screenshot of Student Arguments following an Asynchronous Discussion

equalize the perception of the quality included. The video can enrich discussion materials to find solutions to the problems being discussed. The following are examples of discussion activities that include video and generate interest and maintain learning motivation for participants in the discussion. This is evidenced by the results of interviews conducted were almost all informants stated that they felt motivated to give opinions, comment and express their ideas during online learning. This is also evidenced by the LMS picture above that almost all students are actively involved in the discussion.

These synchronous and asynchronous discussions were observed by using the activities in the LMS and the process of online learning. Moreover, each argument put forward by the students is examined by using the the students' higher level thinking achievement. Based on this assessment, the following is an overview of students' higher-order thinking skills from the research data presented in table Figure 5.

CCS : **Coherent** conceptions of discussions
FCS : **Fragmanted** conceptions of discussions
DAAsyn : **Deep** approaches to face-to-face discussions
SAAsyn : **Surface** approaches to face-to-face discussions
DASyn : **Deep** approaches to online discussi
SASyn : **Surface** approaches to online discussion

Specifically, more than 97% of students give arguments that fall into the category of Deep and Coherent arguments.. It can be seen, the data presented in Figure 6 informs that the overall quality of the discussion is good. This is evidenced by the average overall assessment of the 45 students who participated in the discussion during the eight meetings obtaining a score of 3.20 from a value range of 1-5. Discussion activities in this blended learning environment also have an effect on learning achievement by presenting HOTS questions.

Discussion

Based on the research results, it shows that the discussion method in blended learning is very important in improving higher-order thinking in students. The course of the discussion can be motivated by the lecturer through responses that can

Fig. 5. Synchronous discussion to see direct response from students

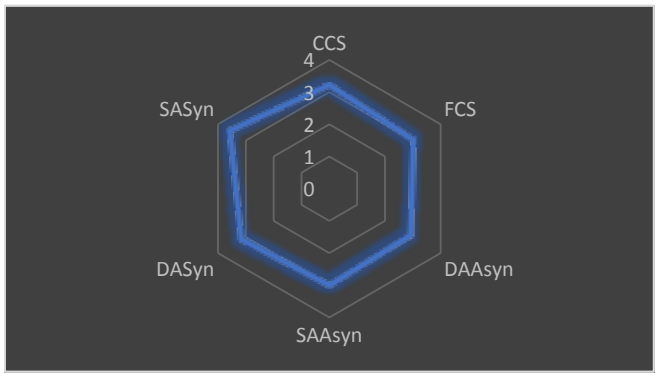


Fig. 6: Graph of Students' Higher Level Thinking Achievement

be used as scaffolding in student cognitive development. Synchronous and asynchronous discussions without the control of the lecturer can deviate from the topic or the learning outcome to be achieved. It is recommended for lecturers who facilitate students through the discussion method so that during the discussion they do not give conclusive answers to students. Lecturers can provide responses that force students to analyze, evaluate, and make / present ideas related to the topic being discussed. Discussion has an important role in the learning process in higher education, students are involved and actively participate in the knowledge construction process (Alkali & Amichai-Hamburger, 2004; Hamann et al., 2012; Huerta, 2007; Vonderwell, 2003) Students rely on prior knowledge and experience and try to synthesize multiple perspectives when interacting with faculty and other students.

The method of discussion has been recognized as the main component of learning and learning in higher education (R. Ellis & Goodyear, 2013; Lyon & Lagowski, 2008; Rovai, 2007). Previous research identified variations in students' conceptions of success in participating in blended learning discussions (U Rahmi et al., 2021). For example, research (R. A. Ellis & Calvo, 2004; Han & Ellis, 2019) identifies four categories of conceptions of learning through discussion, namely a) understanding ideas from different perspectives; b) comprehending the idea; c) exchanging ideas; and d) developing communication skills. There are five categories for face-to-face discussion and four categories for online discussion.

Besides, research has identified the difference between online arguments and direct discussion (Tsai & Tsai, 2013). The identification results obtained four online argumentation criteria and five online argumentation criteria. From research (Tsai & Tsai, 2013) and (R. A. Ellis & Calvo, 2004) it can be concluded that learning assignments such as discussions are a valuable and meaningful way of learning. In virtual discussions that need to be paid attention to is the student's manipulative cognitive (Bystrova-Yurievna et al., 2019), as a result, critical thinking and HOTS can be achieved. Students who take an active role in discussions will be able to interpret learning messages and construct material. Meanwhile, those who take a passive role and are not involved are only able to complete the task without meaningful learning objectives. Hence, the success of the discussion is influenced by the student's conception of the discussion and the lecturer in the ongoing discussion process.

One useful strategy is to post thought-provoking questions that encourage higher-order thinking is after students respond to a request, ask them to return to the forum and reply to one or more of their peers' messages. In many cases, students will read all posted messages to determine which message they will respond to, with the result of a discussion where everyone can talk and everyone listens. In addition, students will often return to the discussion area to read the comments offered on their initial message and respond to the post. Students who have more proficiency in these communication skills exhibit more with genuine discussion, as opposed to the nature of the post-and-go interaction that occurs when students only respond once to any question posed by discussion participants, lecturers, facilitators, and instructors.

In some discussions, moderated by students with questions generated from reading, or the use of forums to function as a warehouse for student assignments. This method is successful from the results of the research by Simonson, Smaldino, and Zvace that many faculties have found that requiring students to post their papers or projects in a public location often results in excellent work and offers additional benefits by providing students with benchmarks for their performance. alone. Or by posting student performance videos to social media that are open and the public shows more seriousness.

Conclusion

Based on the results of the research, it can be concluded that the discussion method can be optimized to improve students' thinking skills, especially higher-order thinking. This discussion method can be optimal in developing

students' thinking skills if it is managed well by the lecturer. In conclusion, in addition to the role of the method, higher-order thinking skills can be optimized with the maximum role of the lecturer in the ongoing blended learning discussion.

Acknowledgment

The authors would like to thank Lembaga Penelitian dan Pengabdian Masyarakat Universitas Negeri Padang for funding this work with a contact number: 956/UN35.13/LT/2021.References

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