



A Literature Review: Flipped Classroom Model to Developing Students' Higher Order Thinking Skills

Hanun Zata Amanisa, and Bunyamin Maftuh✉

Primary Education Program, School of Postgraduate Studies, Indonesia University of Education

hanunzataa@gmail.com; ✉ bunjaminmaftuh@upi.edu

Abstract: This article aims to discuss the implementation of a flipped classroom model to develop higher order thinking skills in elementary school students. The research method used is a literature study to describe the application of the model flipped classroom based on several experts and based on supporting reference studies. The focus of the discussion in this study is on the implementation of the model flipped classroom to improve and develop the higher-order thinking skills (HOTS) in the learning activity. A flipped classroom is a student-centered learning model to improve the quality of learning in the classroom. This model utilizes technology that provides additional support for student learning from a variety of learning media that can be accessed online outside the classroom, then in the classroom followed by discussion activities about material that students have obtained outside the classroom. Thus, flipped classrooms allow students to have more learning opportunities both online and offline and can assist in developing their higher-order thinking skills to achieve the goals in forming HOTS.

Keywords: Higher Order Thinking Skills, Flipped Classroom.

How to Cite: Amanisa, H. Z., & Maftuh, B. (2021). A Literature Review: Flipped Classroom Model to Developing Students' Higher Order Thinking Skills. *The 3rd International Conference on Elementary Education*. 3(1), 105-111.

INTRODUCTION

In this 21st century as a new teacher to improve the quality of education utilizing learning that meets student needs. 21st-century skills in education are seen as an era of countermeasures with the development of technology and ICT, globalization, and the need for increasingly rapid innovation, consequently attracting the need for students to develop relevant skills and competencies (Chalkiadaki, 2018). The need to improve the quality of education becomes stronger as the 21st Century Skills Partnership formulates a 21st-century learning framework. The framework includes academic content in the form of 3rs (writing, reading, and arithmetic) and 4cs (critical thinking, problems, collaboration and creativity. and innovation) is very important in learning activities in the 21st century (Laar, VE, Deursen, AJM, Dijk, J AGM, Haan, JD, 2017). Based on this framework, HOTS-based learning is the answer in answering the challenges in 21st-century learning (Wangid et al., 2020).

The concept of higher-order thinking skills (HOTS) comes from Bloom's taxonomy theory in the cognitive domain which involves the development of intellectual or cognitive skills and gradually from concrete to abstract thinking (Forehand, 2010; Pappas, 2012). In HOTS, students are required to master knowledge in the level of analyzing, studying, and creating (Created). So that the critical power and critical power of students are needed in HOTS. These skills which are at the core of HOTS are the main assets of students in living life. Through HOTS-based learning, students will be accustomed to thinking critically and creatively in making decisions and problems related to analyzing, learning, and creating (Krathwohl, 2002). Krathwohl's theory is a renewal of Bloom's theory of classifying into 2 parts, namely low-level thinking (remembering, understanding, and applying) and high-order thinking skills (analyzing, assessing, and creating).

Learning to achieve higher-order thinking skills requires strong synergy between education actors. Supervision of the curriculum as the basic foundation and the



components under it, including the main actors, namely teachers are required to continue to develop a learning process that must accommodate HOTS development. Active learning, learner-centered, orders of curiosity (the desire to ask) and based wants. The concept of active and student-centered learning from the experience of students who are responsible for the educator to create a learning environment oriented to a deep learning approach (Case & Marton, 2009). In line with the previous opinion, according to Cheung & Leung (2013) digital-based active and innovative learning must be adopted to develop higher-order thinking in learning in the 21st century.

Education as a means of developing science and technology must continue to develop and process according to the times. Richter and McPherson (2012) argue that technological developments in the 21st-century digital era make it easier for both teachers and students to be able to access various learning resources from the internet for free, such as teaching videos on YouTube, to various other educational websites. Students can learn from this digital source anywhere and anytime. The development of information technology has changed teaching and learning styles from passive learning to active learning, from traditional learning models to digital-based innovative classroom models (Asfar & Zainuddin, 2015).

The flipped classroom learning model is a form of solution to solve problems about higher-order thinking skills (HOTS) learning that can be applied in the face of 21st-century education. A flipped classroom is a learning activity or the art of teaching (pedagogy) teaching changes from Teacher-Centered to Student Center which involves innovative ways of delivering content. This innovative way includes learning and receiving information that is usually conveyed in the classroom through traditional lectures which are made even more simplified by accessing learning material content from learning media on the internet or printed media that is not found in the classroom. The form of activity in flipped learning is the activity of students studying

teaching material through a video at home or before coming to class, while class activities will be used more for group discussions and questions and answers (Zen & Syamsuar, 2019).

Learning using the flipped classroom model includes reversing the place, time, and way of delivering content to save class time for more discussion, motivating students to collaborate with peers, and helping teachers manage classrooms to create an effective and fun learning environment (Salem, 2018). The advantages of the flipped classroom learning model are not only in providing effective learning but also teaching and providing student information to further improve media or literacy IT which is very important in the implementation of education. One of the uses of IT and media literacy is through e-learning to improve students' higher-order thinking skills, Wolff & Chan (2016). According to Werner, Hanks, & McDowell (2004) and Nouri (2016), flipped classrooms are learning that allows increasing student activity because learning activities using this model involve reciprocal communication between teachers and students. Besides, flipped classrooms also make it possible to develop problem-solving skills as a step to improve students' abilities to solve and face their daily lives. In problem-solving skills, students can involve in activities that require them to think at a higher level, namely in the skills of application, analysis, and synthesis.

Based on the urgency of implementing learning to develop HOTS in students, the purpose of this article is to examine various journal articles in depth to get an overview of the implementation of HOTS-based learning using the flipped classroom model that can be used in learning, especially in elementary education.

METHOD

This study used the literature study method by examining four journal articles related to the implementation of flipped classrooms to develop higher-order thinking skills (HOTS) as well as several articles on the flipped classroom learning model. The articles reviewed in this study were articles published in the last ten years with the



keywords used in the form of learning flipped classrooms and HOTS. The results of the research in this article can be used as a reference for the application of learning with flipped classrooms to develop students' higher-order thinking skills (HOTS), especially in elementary schools.

RESULTS AND DISCUSSION

The concept of the flipped classroom learning model is that students at home do what is done in class, namely learning by understanding the material that has been given by the teacher, and in-class students do what students usually do at home, namely working on problems and solving problems (Bergmann & Sams, 2012). Activities in this model of learning emphasize the delivery of content that can be obtained and accessed from various forms such as video lessons, handouts, and texts prepared by teachers or third parties. The delivery of these materials is used to convey the content, meaning of learning materials from various sources, so that this model does not only use online collaborative media or digital media but can also use printed media such as reading books and other printed media (Abeysekera & Dawson, 2015). Bergmann and Sams (2013) also add that in implementing the flipped classroom approach students can learn by interacting with teaching videos before coming to class and conducting group discussion activities with the teacher in the classroom.

Research results from Davies, et al. (2013) stated that using teaching videos can make teaching and learning activities more effective, interesting, and can save teachers time in delivering long lectures in class. Besides that, students will also be trained and accustomed to studying the material

independently outside of the classroom and can increase self-confidence when they come to class because they are considered to have mastered some of the material to be discussed. Another study also states that one of the reasons for the success of students in learning using the flipped classroom model is because students can prepare more learning material and do it more freely before coming to class (Galway, et.al., 2014). The flipped classroom is also a new teaching model and suitable for promoting HOTS which adopts a student-centered approach. This is proven by the opinion of Bergmann and Sams (2012) that the inverted class model can include 6 cognitive thinking domains where low-level thinking skills (remembering, understanding, & application) are achieved outside the classroom session while higher-order thinking skills (analyzing, evaluating, & make) treated in the classroom. So, flipped classrooms allow students to have and get more learning experiences both from inside the classroom and online outside the classroom. Such learning experiences can help students to develop their higher-order thinking skills. The effectiveness of the application of the flipped classroom learning model is also found in the research results of several previous researchers as in the table below:

Table 1. Implementation of Flipped Classroom to Develop HOTS in terms of Previous Research

Study	Participant	Methods	Basic Findings
EFL Classroom: Promoting HOTS in Speaking Skill (Riza & Setyarini, 2020)	18 students of 11th grade High School in Aceh	Case study	Through the flipped classroom model <i>is</i> effective for developing students' higher-order thinking skills when learning in class, especially in speaking simulation activities or discussion activities in English.



Implementation of <i>Flipped classroom</i> Model to Strengthening Students' Social Engagement and Its Relation with Students' High Order Thinking Performance (Zen & Syamsuar, 2019)	60 students of 5th grades students at Padang State University	Experiments with a quantitative approach. The research design used was a survey.	The application of <i>flipped classrooms</i> was at least able to build students' high-level thinking performance well through the practice of quantitative methods in every learning discussion activity and interactive question and answer session in class.
Facilitating higher-order thinking with the <i>flipped classroom</i> model: a student teacher's experience in a Hong Kong secondary school (Lee & Lai, 2019)	28 students in public secondary schools in Hong Kong	Mix methods with exploratory studies	The results of this study are mostly students accept the application of this learning model. Through the application of <i>flipped classrooms</i> , there is plenty of class time for discussion, creating a supportive learning environment, and allowing for higher-order thinking skills.
The implementation of the <i>flipped classroom</i> learning model using Moodle to increase students' higher-order thinking skills (Mas'ud & Surjono, 2018)	62 students of TKJ class in SMKN 3 Padang	Quantitative research with a quasi-experimental design	The results of this study indicate that student learning outcomes in simulation and digital communication subjects using the flipped classroom learning model with Moodle media tend to increase compared to student learning outcomes who still use conventional learning models/lectures using printed books as learning media.

Based on the literature review in the table above, it can be concluded that the application of the flipped classroom learning model is also effective in improving students' communication skills (Riza & Setyarini, 2020). Learning is carried out by discussing material from various sources, one of which is through learning videos, social media, and so on. Through the application of this learning model, the teacher can support students with complementary material in the form of e-learning modules made by the teacher, pictures related to the material, and several links to find out more about the learning material. Discussion activities with interesting video material are able for students to increase their HOTS level through HOTS-based activities in the

classroom. Hamdan et al., (2013); Herreid & Schiller (2013) added that high-level thinking can be promoted through learning with the flipped classroom model, one example in its activities is that students can pause learning videos or interactive videos to think about and answer problems and learning objectives.

The findings above are also supported by the results of other research by Zen & Syamsuar (2019) that learning activities using the flipped classroom model can maximize students' communication skills. This active involvement in communication plays an important role in supporting the teaching and learning process through discussion activities. Students can be more active in



creative and critical thinking skills at each discussion session, either in study groups or individually. So, learning with the flipped classroom model that is carried out and applied in the classroom at least allows us to build students' high-level thinking performance well through learning discussions and interactive question and answer sessions.

The two findings above are reinforced by the results of Lee & Lai's (2017) research that students feel they can get more support to develop creative and critical thinking skills from their teachers both in class and outside the classroom while using flipped classroom learning. Students in the study agreed that more free time was available in class, thus enabling them to do more and more effective activities such as rereading material or completing class assignments. Besides, they have more time to discuss their teachers during lessons. From Lee & Lai's research, it can also be found that the application of the Flipped classroom model provides more class time for teachers to increase interaction with their students and help create a sporting and fun learning environment.

The creation of a learning environment using a flipped classroom model that is sporty and fun and provides freedom for students to develop their higher-order thinking skills as reflected in the learning and research results of Mas'ud & Surdjono (2018). A flipped classroom is proven to be able to improve students' understanding of answering problems based on the higher-order thinking skills that are given. Learning in the classroom using the flipped classroom model which is supported by the use of IT and e-learning based learning directly has a positive impact on students, namely that it is easier to understand the material when it is outside learning in the classroom. The explanation of the material taught in the classroom as a learning center is considered sufficient. Outside the classroom, students can learn freely, get, and read the material through Moodle media or other online learning media as a pre-reading activity before starting learning in class. Besides, students are asked to study and deepen the

material then ask questions that are not understood as material for discussion at that time in-class learning. This learning style can improve students' thinking from low-level thinking skills obtained from learning outside the classroom and then switch to higher-order thinking skills when bringing it into the classroom. Based on the four previous studies above and various expert opinions about implementation flipped classrooms have shown the true purpose and essence of those models.

CONCLUSION

According to the review of the literature used above, it can be concluded that flipped classrooms allow students to have more learning opportunities both online and offline. Flipped classrooms can also help students develop higher-order thinking skills that discuss the application, analysis, and synthesis skills through discussion activities, learning from various sources on the internet or e-learning, and the freedom to learn that is not found in the classroom. The application of this model also helps students to develop problem-solving skills as a step to improve students' abilities in dealing with everyday life. This research is hoped to be able to become a reference for education practitioners, especially teachers in elementary schools, to be able to apply this learning model to develop higher-order thinking skills in elementary school education.

REFERENCES

- Abeysekera, L., & Dawson, P. (2015). Motivation and cognitive load in the flipped classroom: definition, rationale, and a call for research. *Higher Education Research and Development*, 34(1), 1-14. <https://doi.org/10.1080/07294360.2014.934336>
- Asfar, N., & Zainuddin, Z. (2015). Secondary students' perceptions of information, communication, and technology (ICT) use in promoting self-directed learning in Malaysia. *The Online Journal of Distance Education and eLearning*, 3(4), 67-82.



- Bergmann, J., & Sams, A. (2012). *Flip Your Classroom: Reach Every Student in Every Class Every Day*. United States: The International Society.
- Bergmann, J., & Sams, A. (2013). Flip Your Students' Learning. *Educational Leadership*, 70(6), 16-20
- Case, M. J., & Marton, F. (2009). *Approaches to learning*. In M. Tight, K. H. Mok, & C. C. Morphew (Eds.), *The Routledge international handbook of higher education* (pp. 9–22). New York: Routledge.
- Chalkiadaki, A. (2018). A systematic literature review of 21st-century skills and competencies in primary education. *International Journal of Instruction*, 11(3), 1-16.
- Cheung, R. H. P., & Leung, C. H. (2013). Preschool teachers' beliefs of creative pedagogy: Important for fostering creativity. *Creativity Research Journal*, 25(4), 397-407.
- Davies, R. S., Dean, D. L., & Ball, N. (2013). Flipping the classroom and instructional technology integration in a college-level information systems spreadsheet course. *Educational Technology Research and Development*, 61(4), 563-580.
- Galway, L. P., Corbett, K. K., Takaro, T. K., Tairyan, K., & Frank, E. (2014). A novel integration of online and flipped classroom instructional models in public health higher education. *BMC Medical Education*, 14(1), 1-9
- Hamdan, N., McKnight, P., McKnight, K., & Arfstrom, K. M. (2013). *The flipped learning model: A white paper based on the literature review titled a review of flipped learning*. Flipped Learning Network/Pearson/George Mason University.
- Herreid, C. F., & Schiller, N. A. (2013). Case studies and the flipped classroom. *Journal of College Science Teaching*, 42(5), 62-66.
- Krathwohl, D. R. (2002). A revision of Bloom's taxonomy: An overview. *Theory into Practice*, 41(4), 212-218.
- Laar, V. E, Deursen, A.J.M, Dijk, J A.G.M, Haan, J.D. (2017). *The relation between 21st-century skills and digital skills or literacy: A systematic literature review*. DOI: 10.1016/j.chb.2017.03.010
- Lee, K., & Lai, Y. (2017). Facilitating higher-order thinking with the flipped classroom model: a student teacher's experience in a Hong Kong secondary school. *Research and Practice in Technology Enhanced Learning*, 12(1). doi:10.1186/s41039-017-0048-6.
- Mas'ud, H., & Surjono, H. D. (2018). The implementation of the flipped classroom learning model using Moodle to increase students' higher-order thinking skills. *Journal of Educational Science and Technology (EST)*, 1(1), 187-194.
- Nouri, J. (2016). The flipped classroom: for active, effective, and increased learning-especially for low achievers. *International Journal of Educational Technology in Higher Education*, 13-33. <https://doi.org/10.1186/s41239-016-0032-z>
- Ojalvo, H. E., & Doyne, S. (2011). *Five ways to flip your classroom with the New York Times*. New York Times.
- Pappas, E., Pierrakos, O., & Nagel, R. (2012). Using Bloom's Taxonomy to teach sustainability in multiple contexts. *Journal of Cleaner Production*. DOI: 10.1016/j.jclepro.2012.09.039.
- Richter, T., & McPherson, M. (2012). Open educational resources: education for the world? *Distance Education*, 33 (2), 201-219.
- Riza, Z., & Setyarini, S. (2020, April). EFL Flipped-Classroom: Promoting HOTS in Speaking Skill. *In the Twelfth Conference on Applied Linguistics (CONAPLIN 2019)* (pp. 251-255). Atlantis Press.



- Salem, A. A. (2018). Engaging ESP University Students in *Flipped classrooms* for Developing Functional Writing Skills, HOTS, and Eliminating Writer's Block. *English Language Teaching*, 11(12), 177-198.
- Vidergor, H. E. (2018). Effectiveness of the multidimensional curriculum model in developing higher-order thinking skills in elementary and secondary students. *The Curriculum Journal*, 29(1), 95-115.
- Wangid, M. N., Mustadi, A., Syamsudin, A., Hastuti, W. S., Perwitasari, N., Noor, A. F., ... & Prihandoko, Y. (2020). Pelatihan Pembelajaran dan Penilaian Berbasis HOTS Bagi Guru SD Se-Kecamatan Mantrijeron Kota Yogyakarta. *PengabdianMu: Jurnal Ilmiah Pengabdian Kepada Masyarakat*, 5(4), 394-403.
- Werner, L. L., Hanks, B., & McDowell, C. (2004). Pair-Programming helps female computer, science students. *Journal of Educational Resources in Computing (JERIC)*, 4(1), 4. <https://doi.org/10.1145/1060071.1060075>
- Wolff, L. C., & Chan, J. (2016). *Flipped classrooms for legal education*. Springer Nature.
- Zen, Z. (2019). Implementation of Flipped classroom Model to Strengthening Students' Social Engagement and Its Relation with Students' High Order Thinking Performance. *In International Conference on Education Technology (ICoET 2019)*. Atlantis Press.