The Effect of Flipped Classroom Learning Model Implementation in Student Learning Activities Post-pandemic Covid 19

Munira Hasjim(✉)

Hasanuddin University, Makassar, Indonesia
munirahasjim@unhas.ac.id

Abstract. Students learning activities post-pandemic Covid 19 are still influenced by learning behavior patterns during the pandemic. Two years of online learning activities at home had a less-than-optimal impact when learning patterns took place offline on campus. Thus, lecturers must respond to this post-pandemic Covid 19 situation with various innovations and creativity in their teaching. One form of creativity carried out by teachers is by utilizing learning technology media with the media technology that the learning process becomes active and learners become motivated. Research *classroom research* is done by applying the learning model *Flipped Classroom* assisted by Zoom meet and WhatsApp applications. This study was conducted to determine the effectiveness of the *flipped classroom* model in improving the quality of learning outcomes of research students using the classroom research method with a population of 1st-semester students totaling 35 people in Indonesian language courses. The results showed that applying the *Flipped Classroom* model could improve the quality of students' learning outcomes because they have carried out intensive learning activities outside of online classes, namely utilizing the WhatsApp application to communicate between students and teachers. Learning activities in offline classes run. Students can discuss and communicate smoothly because students have previously studied the teaching materials that will be discussed in online-offline classes. The effect of flipped classroom model is considered effective in improving the quality of student learning outcomes.

Keywords: influence

1 Introduction

Students' learning activities after the Covid 19 pandemic in the campus environment have shown a vibrant situation full of interaction among them. After two years of online learning (online) in their homes, the learners look excited and enthusiastic to carry out face-to-face learning activities in the classroom. However, to avoid things that can trigger the reappearance of the coronavirus attack, which is considered not completely gone, the policy of campus or school leaders still applies a hybrid learning system. The hybrid learning system in question is an online and offline learning system alternately every week. This system is considered an anticipation of the possibility of a new virus outbreak and a trial stage of face-to-face learning activities in the classroom.

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The situation described above certainly requires its teaching strategy. Thus, lecturers must apply teaching methods to help students learn quickly. The problem is that the learning model can be presented in a hybrid so that it is appropriate and to the conditions of the student.

In answering the problems mentioned above, lecturers must be able to create, innovate, and adapt to various digital-based learning models (Collins & Halverson, 2018). In this way, the teachers are expected to be able to apply the learning model that suits their needs (*learner's needs*). Students are used to spending time with devices to access various information and knowledge sources.

The use of Information Technology in learning is considered a model that can answer the challenges of the Times. The rapid advancement of this technology has implications for innovation and collaboration in digital-based forms of teaching. Zainuddin & Keumala (2018) mentioned that one of the learning models widely used in this digital era is *blended learning* by combining the learning method with the use of online technology media, especially outside the classroom, and face-to-face interaction (*face-to-face*), especially in class. Methods *flipped classroom* is considered a derivative method of the method of *blended learning.* (Sergis, Sampson, & Pelliccione, 2018). Although this method is relatively new (*novelty*), it is already widely practiced in various educational institutions and produces practical and interactive learning.

The situation after the covid 19 pandemic that befell the world community also impacts the education system. Learning activities usually take place at home have now switched to a face-to-face teaching system. After the Covid-19 pandemic, the situation was changed to a non-face-to-face and face-to-face learning system alternately taking place online and offline. Thus, this problem becomes interesting to study to determine the effectiveness of the *flipped classroom* model assisted by WhatsApp social media to increase students' interaction in higher education, mainly when learning activities occur outside the classroom online. In addition, the application of this model o be able to introduce the latest learning models at universities in Indonesia and become a reference is expected for further studies. Blau & Shamir-Inbal, (2017) explain that *Flipped Classroom* is a learning strategy for students to learn the material study video before entering class and present to the class to discuss and exchange ideas (*knowledge exchange*).

One of the social media that is widely used by students in Indonesia, in general, is WhatsApp. Facilities available in WhatsApp social media are used to create course groups. The Group is used to communicate between the student with the student and the student with lecturers. Media use WA Group is very familiar among students, so it will make it easier for them to access various materials and interact directly online outside the classroom. Application of the model *flipped Classroom* application-assisted *WhatsApp*, and the use of YouTube videos in this study is expected to have a positive impact in transforming conventional learning models into creative - innovative learning models according to this XXI century era. The application of this concept can motivate students to interact either between students and students or with lecturers in or outside the classroom is expected. A course group forum was created to streamline the use of WhatsApp as a communication medium. This Group allows students to discuss lecture problems they do not understand when the lesson is in progress, both offline (offline)

and online (online) lectures to fellow students or lecturers. Therefore, WhatsApp media will be used as a platform in this study as an online media outside the lecture class.

Meanwhile, the zoom meet application and the google meet application are online learning tools in the classroom. Online facilities from Google search and YouTube are used to obtain online-offline learning materials. The availability of many learning materials on the internet allows teachers to adopt learning video materials from YouTube and obtain various articles from journals, books, or other references. Students can also discuss and access teaching materials anytime and anywhere.

2 Literature Review

According to Blau & Shamir-Inbal (2017), when translated into Indonesian, the Flipped Classroom means "inverted class." The application of this model is widely used or is currently trending and is an issue *novelty* in various reputable international journals. This is to the concept proposed by Bergmann & Sam (2014) that the "*flipped classroom* is an innovative pedagogical approach that focuses on teaching and is learner-centered by reversing the traditional classroom learning system that teachers have carried out." In their article, McLaughlin et al. (2014) explain that the *flipped classroom* method has many benefits, such as students having a favorable opinion and being open to New Knowledge. Students can be more active, independent, and creative, and they can be critical of the problems they find.

The application of Flipped Classroom makes teachers do various activities, such as preparing teaching materials early. Then make video recordings when they teach, make material in the form of PowerPoint, or adopt videos from various sources such as YouTube, Wordpad video blog, Khan Academy, TED-Ed, BBC News, and other sources. Videos recorded will be uploaded to a learning platform, either social media, blogs, wikis, or *Learning Management System* (LMS) (Jovanovic, Mirriahi, G. A. Chernobevi, Dawson, & Pardo, 2019). In this study, the authors used the WA group as a platform or medium for learning outside the classroom. The video will be shared on this platform five days before it starts, and students must learn it (*review*) before coming to class.

Students in the Classroom can interact with their peers (peer interaction) and also with the lecturer. Asikainen, Blomster, & Virtanen (2018) explained that there had been many studies that emphasize the implementation of the interaction between students, interaction with friends, interaction with teachers, and interaction with learning materials in learning activities. This interaction is necessary for achieving the learning objectives.

They cite the opinion of Asfar & Zainuddin (2015) that interaction in learning based on digital media technology has a significant role in strengthening social communication between students and teachers both in the Classroom and Outside the Classroom. In addition, using technology media such as social media, LMS, or video will help students interact easily with all communities inside and outside the classroom. The problem currently faced by teachers is the low motivation of students to interact during the learning process. Students tend to be passive and do not trigger themselves to appear to express their ideas and ideas. Students will show enthusiasm when teachers require them to speak or give special rewards such as giving extra points or freeing students from a specific task.

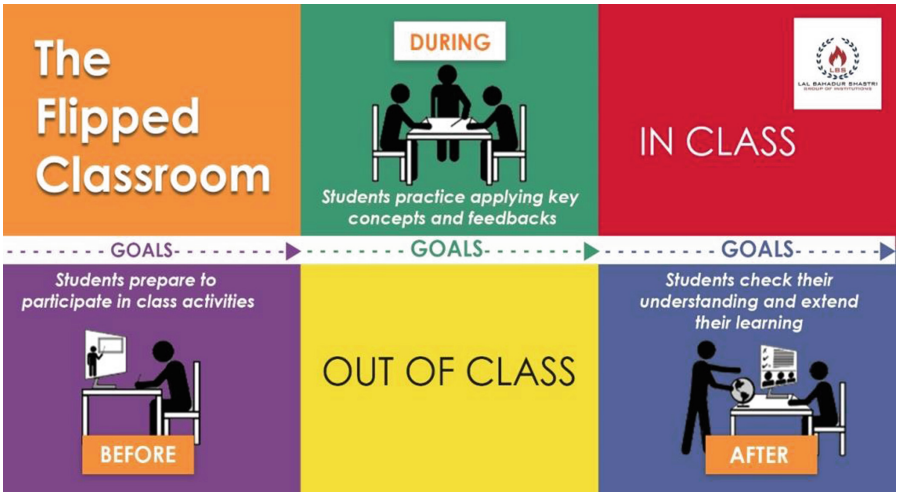

Fig. 1. Flipped Classroom implementation concept (source: literasidigital.com)

Based on Fig. 1, we can explain that in the FL method, students first learn the material/lecture material given by the lecturer as an independent task. When the lecture takes place, the student is no longer a listener of what the lecturer explains. However, he can interact with the lecturer and his friends. In this interaction activity, students will receive many and varied information from their friends. They each know the lecture material they have read before, and students may search for additional information/knowledge from various references that they can access easily. Thus, Lecture activities become interactive and quality.

The following, according to Siem (2020), in detail, can be shown the role of lecturers and students in applying the FL method in Table 1.

Looking at Siem's (2020) research results, as in Table 1, the FL method allows students to participate more actively in learning activities. In addition, through discussion activities, students can give birth to new ideas that may not necessarily appear in the classical learning method. The use of video media in the FL model also received a positive response from students because students can watch learning videos according to their absorption ability. Learning videos can be played back according to the needs of the information needed by students, both thoroughly and partially, so that the understanding of the content of the lecture material from the video can be absorbed optimally. The maximum absorption of student information from the learning media causes the level of understanding to improve. This causes students to be motivated to follow learning activities and more excited and confident when attending college.

Advantages and Disadvantages of the Flipped Classroom Method in Learning

The application of learning methods in different situations, especially during the Covid 19 pandemic, has a positive or negative impact. The flipped classroom method has a positive and negative impact, both directly and indirectly, on teachers and students.

Table 1. The role of lecturers and students in learning activities

Role	Outside the lecture hall	In the lecture hall
Instructor	- Provide learning media in the form of video - Prepare topics and texts to be studied in advance by the student - Provide answers to student questions online	- Provide quizzes related to the discussion through video - Provide additional explanations as needed - Supervise and support group discussion activities - Provide comments and assessments on the results of group discussions
Student	- Follow the lecture through video media - Make inquiries related to lectures through video media - Perform tasks given by the lecturer - Doing Group Discussion tasks online	- Participate in group discussions and present the results - Comment on the results of other group discussions

Some of the benefits of applying this FL method can 1) direct teachers and students to do their roles well, 2) learning activities can be tailored to the needs of students, and 3) students motivated to involve themselves in learning activities because they have high confidence.

The challenges that may be faced by teachers and students in the application of this FL model are as follows:

1. **Motivation and self-regulation (*self-regulation*) is still low among students**
   The occurrence of a change in learning habits can make learners feel awkward and insecure. Learners will need support to adjust to learning concepts *flipped classroom* because this concept requires a high level of motivation and self-regulation. The adjustment must be accompanied and directed by the teacher. (Asikainen, Bloomster, & Virtanen, 2018).
2. **Ability to manage good time**
   Teachers can help students by giving them enough time to do pre-class assignments because each student's abilities are different. Teachers must know that all learners acquire the knowledge they need to complete active assignments in the classroom. Learners, eventually, will realize the benefits of pre-Class Activities.
3. **Teachers can adapt to technological advances**
   The use of technology in the flipped classroom method is extensive, so teachers must be able to implement technology well. For example, the system manages LMS-based online classes, gives online quizzes, selects or creates exciting learning materials, edits videos, Etc.
4. **Monitor students to be active in learning outside the classroom**
   The role of the teacher in ensuring that learners are active in learning activities outside the classroom. Teachers monitor student activities and need to allow extra time to access the learning management system (LMS). Plan tasks that can engage learners actively and guide them toward learning outcomes (*learning outcomes*).

This is done to monitor the understanding by making notes (*note-taking*) or creating a forum to discuss the material. In this approach, internet facilities are also essential and mandatory. Thus, students must have access to be connected to the internet.

In his theory (1989), Moore explained that interactive learning between students, teacher interaction, teaching materials, and media technology both in the Classroom and Outside the Classroom is essential. Therefore, in applying the *flipped classroom* model in learning, students as teaching participants must interact with these four elements. Students who have advantages can share knowledge with other friends and vice versa. This interaction between students will also support exchanging information, collaborating on solving problems, and helping them understand the learning content (Zainuddin & Perera, 2018). In addition, through the interaction of students and lecturers, feedback (*feedback*) from lecturers can be directly given to students so that they can immediately know the improvement of learning outcomes. Lecturers can also directly correct the mistakes and shortcomings of students (Esterhazy & Dama, 2019).

Similarly, the interaction between teaching materials and technology media outside the classroom. Students can learn independently through various sources, such as online videos or websites, to increase their insight and references (Lai, Hu, & Lyu, 2018). Bergmann and Sams (2014) mentioned that in the learning model *flipped classroom*, students not only watch instructional videos but also interact with videos, such as being able to repeat the video several times if they have not mastered it. They can also interact with instructional videos anywhere and anytime before entering class.

3 Methods

This research was conducted by Hasanuddin University students who took Program Indonesian general courses in the final semester of 2021–2022.

Sample selection using the method of purposive sampling determined by several specific criteria, among others; not experienced with learning methods flipped classroom in the field of Indonesian studies where the data can be obtained from this sample. Overall, 34 students, ten men and 24 women, participated in answering the questionnaire at the end of the teaching-learning process or the end of the semester. In addition, 34 samples consisting of 10 men and 24 women were selected to be interviewed (*interview*) in order to obtain in-depth data about the learning experience *in flipped Classroom*s.

Quantitative Data obtained from the survey questionnaire consisting of five levels of items *Liker scale* (1) strongly disagree (STS), (2) disagree (TS), (3) neutral (N), (4) agree (S), (5) strongly agree (SS). The ten questionnaire items are categorized into four parts; 2 parts for interaction between students, four parts for interaction between students-lecturers, two parts for interaction between students-teaching materials, and two other parts for student interaction. This questionnaire was first given to 34 students to test reliability and collect their feedback on the parts in the questionnaire content.

4 Results and Discussion

The results of this study began with interviews as qualitative data. Demographically, the 34 students who completed the survey comprised ten men and 24 women, and the 34 students were involved in interviews.

4.1 Qualitative Analysis

Researchers conducted a questionnaire survey analysis by dividing four parts, namely interaction between students (items 1–4), interaction with teachers (items 5–8), interaction with teaching materials (items 9–10), and interaction with technology media (11–12) (see Table 1).

Student Interaction

Part 1–2 is the first part surveyed in this questionnaire about student interaction. Analysis of Parts 1 to 4, the results 89% of respondents answered that the *Flipped Classroom* method could build learning interactions between the two, both face-to-face in the classroom and online outside the classroom, through a very positive WA group. Average value ($M = 3.73$, $SD = 0.905$); the results of this study also showed that the interaction had been built well between students during the teaching and learning process. This data shows that the flipped classroom application with YouTube video Learning media and WA groups does not reduce their learning and social interaction. Analysis of the responses of teaching participants about the experience of interacting with students during the teaching and learning process took place with the percentage, and the average reached 8.7.

The results above prove that the *flipped classroom* can create solid student social interaction. They can learn, discuss and exchange knowledge with each other either online or offline. The application of the *flipped classroom* method has made learning situations fun, and students who have low academic ability can interact. Moreover, ask questions with their friends who initially understand the subject matter freely so that learning situations occur *peer-tutoring* good among them.

Interaction with the Instructor

In Sect. 5, the number of respondents responded positively as much as 89.2%. Interactions that occur not only in the classroom but also outside of class hours through WA group courses. An average score of 8.5 means that students perceive adequate teacher involvement outside of online classes, so the results of this percentage level can be considered moderate. Therefore, teachers who implement learning methods *in flipped Classroom*s can set their time to interact with students outside of class hours online through social media, blogs, or Moodle.

Furthermore, Sect. 6 showed results of 86% with an average score of 8.9; students noted that their teachers are patient in repeating the explanation of the material that is still difficult to understand by students. The results of this study suggest that teachers who use this method will be more relaxed in explaining the concepts or teaching materials that still need to be explained by students.

Section 7, as many as 89% of students responded positively that the responses and answers given by lecturers when they asked were very understandable. Feedback (*feedback*) given by the lecturer in the class can improve their understanding of the material studied.

The response that students gave to the 8th section question that the teacher was able to answer their questions on time showed that 91% of students responded positively. The average score of 8.7 also shows a positive value that they feel satisfaction when the teacher

responds to their questions. These results prove that students and lecturers interact well in question-and-answer activities in the Classroom and Outside the Classroom. In addition, the report also shows that the lecturer has successfully provided feedback (*feedback*) to students as a formative assessment process (*formative assessment*) in improving student learning ability.

Interaction with Teaching Materials

The results of the analysis in Sect. 9 showed that 93% of students gave a positive response. Students can easily interact with instructional video materials outside the classroom, and video lessons can be learned according to their needs, such as pausing (*paus*ing) or replay (*replay*) the video.

In Sect. 10, the positive responses students gave showed that 90% of students could easily take notes while watching video lessons outside of class hours. From these results, the researchers concluded that watching video lectures outside the classroom allows students to take notes quickly before coming to class and be better prepared to discuss questions and answers later in class.

Interaction with Technological Media

This study obtained the answers from respondents who said that 88% of students responded positively to online technology used in learning activities. They easily interact with other students, especially outside the online classroom (item 11). In addition, using digital media such as WhatsApp, students will quickly establish interactions outside the classroom with their friends, teachers, or even with teaching materials from various online sources. Next, Sect. 12 also obtained results from 93% of students who strongly agree that the use of Technology media in learning makes it easier to communicate with lecturers.

The conclusion of the 12 parts analyzed in this questionnaire data explains that almost all teaching participants have excellent or positive interaction with all elements proposed by Moore (1989). Both between students themselves (*peer interaction*), cans (*learner-instructor interaction*), teaching materials (*learner-content interaction*), and technology (*learner-technology interaction*). This interaction is built in the Classroom and Outside the Classroom.

4.2 Qualitative Data Analysis

A qualitative approach is used in this study to determine the perception of students when they interact in a learning *flipped classroom.* This analysis is also used to support the quantitative results of previous surveys/questionnaires. Determination of the sample is done purposively to 14 students to be interviewed. These students were asked to describe the form of their interaction during learning through the *flipped classroom* method. Four general themes emerged during the analysis of this interview and are very relevant to the interaction of Moore's model (1989), namely: (1) interaction between students, (2) interaction with lecturers, (3) interaction with teaching materials and (4) interaction with technology media. Here is an explanation.

Student Interaction

Respondents interviewed in this study mentioned that the *flipped classroom method* has

succeeded in making the atmosphere of interaction between students in teaching and learning activities of Indonesian language subjects goes well. Interaction is built not only in the classroom but also in the virtual classroom outside the classroom.

An example of a positive response model of an interview respondent is as follows:

"I agree; in this learning method, I have the opportunity to speak more than lecturers and more discussion with friends, meaning not passive, just listen to the lecture lecturer only."

Another positive response was discussion and interaction activities outside the classroom, especially online through WA groups. The form of statements in the model of a positive response to this theme is as follows:

"This method of learning is excellent. It allows us more time to discuss with friends both inside and outside the classroom, and can be more time to exchange ideas."

In addition, some respondents also explained that after watching the course material from the video outside the classroom, they could prepare notes of questions to bring and discuss in class.

Interaction with the Instructor

Appl*ying the flipped classroom* method gives students more time and space to interact with lecturers. The student feels comfortable (*comfortable*), self-confident (*confident*), and happy (*fun*) if the interaction with the instructor during the lesson. From the analysis of interviews in this study, the respondents stated that the method *flipped classroom* students have many opportunities to discuss and interact with lecturers. They are accommodating in improving their quality through *feedback* given directly by lecturers, both groups and individuals. Here is the respondent's statement sentence;

"When I mistakenly explain a context, the lecturer will immediately give correction-without blaming my statement." said one of the respondents.

Another statement reveals by one respondent who compared his experience when interacting with lecturers in other traditional methods classes.

Meanwhile, other respondents stated that learning through video before entering class could motivate carrying out formative assessments or daily quizzes.

Interaction with Teaching Materials or Materials

When students interact well with lecturers, students can also interact with learning materials from various sources, especially YouTube videos. Video recording teaching on YouTube allows them to repeat the material according to their needs anytime and anywhere before class. Examples of positive statements from respondents are as follows:

"The material uploaded on YouTube makes it easy for us to understand the lessons. We can watch and learn anytime, write notes, pause and replay when we do not understand."

The duration of the video is also a student assessment. Respondents said that the short duration of the video lecture made it easy for them to understand the content of the

video and was not dull. Other positive statements come from busy working or *part-time students* where the use of YouTube teaching videos helps them repeat the lesson after class or when they are at work.

Interaction with Technological Media

Implementing the *flipped classroom method* in this Indonesian class also makes students more familiar with and accustomed to using technology as a medium and source of learning. Students can easily access learning materials outside the classroom from various digital sources such as YouTube online videos and other Website sources.

> *"Yes, now I know more about various learning materials on YouTube and on the web that I can learn at any time without having to wait for information or lecture materials from lecturers."*

5 Conclusion

Based on the results of the qualitative data analysis above, it can be concluded that the influence of the application of learning models *in flipped Classrooms* has succeeded in improving the quality of student learning outcomes to all elements both between students, with teachers, teaching materials, and Technology media. The results of this study are very relevant to The Theory of Moore (1989) and Hillman et al. (1994). Which states that "in the teaching-learning process, the interaction of all elements in the learning community such as student interaction, student-teacher interaction, student-teaching material interaction and student-technology interaction has a very significant role in student learning success."

The results of this study can be applied in the post-pandemic Covid 19 situation and become a reference for teachers in Indonesia in transforming the teaching-learning process in the classroom from the *teaching-learning center* to *the student-learning center.* In addition, this study will also be a reference for teaching participants, especially university students, in understanding the concept of learning *in flipped Classrooms* and models of interaction in teaching-learning activities.

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