



# The Integration of Flipped Classroom and Learning Management System for EFL Students: A Case Study

Widi Andewi<sup>1</sup>(✉) and Tommy Hastomo<sup>2</sup>

<sup>1</sup> Information System Department, Institut Teknologi & Bisnis Bakti Nusantara, Lampung, Indonesia

widiandewi.91@gmail.com

<sup>2</sup> English Department, STKIP PGRI Bandar Lampung, Lampung, Indonesia  
tommy.hastomo@stkipgribl.ac.id

**Abstract.** The integration of flipped classrooms and LMS offers chances for the learners to enable them to take risks and make mistakes while gaining experience in expertise and collaboration in the learning environment. This study aimed to explore the students' perspectives on integrating flipped classrooms into LMS, which affected learning outcomes, namely productivity, time management, and critical thinking. The researchers employed a purposive sampling technique for determining the research sample in this research. Moreover, 26 college students in two classes participated in this study. The research design was mixed-method research which consists of quantitative and qualitative research. The researchers divided the semester into the conventional learning model and flipped classroom. For gathering the research data, the researchers utilized a research instrument that consisted of a 22-question survey. The findings showed that collaborative-driven flipped classroom in LMS was practicable and robust options for learning compared to the conventional learning pedagogy. In contrast, the researchers also found that the combination of aspects of the conventional learning model and flipped classroom led this learning environment stronger than before. The instructor-led learning from the conventional classroom could be integrated with the collaboration, various activities, and in-class discussions from the flipped classroom features. The integration of conventional and flipped classrooms promoted the students to achieve their learning target and fostered the instructor to enable learning within collaborative activities.

**Keywords:** flipped classroom · learning management system · mix method

## 1 Introduction

Multitasking adaptability and creativity are examples of ability in higher order thinking that can be promoted by the students' learning activity in today's higher education institutions in a quickly shifting digital workplace. In higher education campuses today, the conventional teaching environment overcomes the projecting learning procedure,

notwithstanding the development of technology in students' daily activities [1]. The limitation of the conversation between student and instructor can influence a negative learning manner in the lecture-driven classroom, even though the conventional classroom lecture mode allows the instructor to actively deliver the material and convey the information to the student over a limited amount of time. Moreover, the student passively learns to replicate the instructors' thinking and think within the box to finish the assignment. The development of student's skills can be uncertain based on the inability to practice and match the learning style of the learning target in classroom activity [2].

The instructor can invert the conventional lecture format into a new learning model by implementing the flipped classroom strategy. Furthermore, the learning format can be conducted in group-centered activities, and the instructor can post pre-record lectures for the students to read or view the content under the flipped pedagogy, even though they still require homework [3]. The student's knowledge of teamwork and proficiency in the range is the goal when they take risks and make mistakes in discussions and group work in the classroom activity. Moreover, the students also can apply and practice their English ability in their course of study based on self-directed learning and critical thinking in collaborative learning. For entering their profession upon graduation, creativity and problem-solving skill are the main aspects that can be achieved by the students who have higher-order thinking abilities.

The instructor can prepare the presentation of the lesson material and teach course material simultaneously under the implementation of the flipped classroom model [4]. Furthermore, the students also have chances to be involved in group discussions and events in class based on the experience of learning context outside of the classroom. Homework, textbook readings, and lectures can be employed to foster a connection between content and application in the flipped classroom. In the flipped classroom model, the instructor can answer students' questions or concerns, engage in student group discussion, and review student work through the LMS platform during class. Moreover, the student's practical experience, communication, and critical thinking skills can be fostered by interacting with teammates and instructors [5]. This research aimed to investigate how the students perceived students' partnership in a flipped classroom associated with the conventional learning format for English subject at Institut Teknologi & Bisnis Bakti Nusantara. Moreover, the effect of collaboration can enhance the creativity and critical thinking of the students. Therefore, there were two research questions in this research, such as:

1. Do student collaborations in integrating flipped classrooms and LMS influence learning outcomes and motivation, such as productivity, time management, and critical thinking?
2. Do student collaborations facilitate richer learning and more meaningful activity than the conventional learning format?

Moreover, there were three reasons why this study had significant research. First, this study allowed two classes in different faculties to investigate the effectiveness of the flipped classroom for teaching English. The instructor led their subject using the conventional method for the first eight weeks, while the flipped classroom was employed in the last eight weeks. Second, this study promotes two classes in different faculties to decide whether both can be employed in the flipped paradigm entirely. Last, this study

facilitated the integration of flipped classrooms in LMS to enhance better students' collaboration in the learning environment.

## 2 Literature Review

### 2.1 Flipped Classroom

This learning model facilitated the students to access different perspectives of classmates and learn based on experiences how their friends can connect and process ideas. Consequently, the students can improve their ability to convey, analyze, examine, and organize communication. In the meantime, the growth of critical thinking skills based on collaboration activity arises [6]. The students can participate in following course contents without class constraints, experiential class activities, in-class instructor support, meaningful discussions with their instructors and peers, and perceive more significant control over their learning through this open teaching method [7].

Moreover, this flipped classroom also exploits the technology available and the visualization ability of the students to promote critical thinking and exchange ideas in a collaborative setting [8]. The instructor in this study can use technology through course time to communicate to their students to participate in the class community, socialization, and collaboration regardless of context or content. Furthermore, flipped pedagogy promotes collaborative and social opportunities while developing the competencies needed for this modern era [9].

Some previous research studies illustrated that flipped classrooms could promote and improve students' cognitive ability. Still, some literature also proposed that this learning model did not significantly improve students' achievements or performances in the learning environment [10]. Moreover, the previous researchers also stated the drawbacks of this learning model, such as the students expected the instructors to explain the task during a learning activity, and they do not view or read the instructor's required assignment outside of class. Moreover, the students had negative perceptions of implementing the flipped classroom because they must complete more preparation and work than the conventional method implementation [11].

### 2.2 Peer Assisted Collaborative Learning

The students need some critical abilities for working in real life, such as they must have the ability to collaborate, convey, and implement the concepts that answer to an everchanging modern life [12]. Some researchers proposed that peer collaboration and learning content within a group played an essential role in students' learning activities. To achieve the learning target, the common shared goal of the students can enhance the effectiveness of communication of learning activity [13]. Therefore, the instructor can ask the students to make a group prepare for the knowledge base of teamwork in the workplace. The group can be formed based on the students' various skill sets, knowledge, and abilities [14].

Every student in the group can bring forth new experiences and perspectives, such as applying concepts and problem-solving. Peer collaboration can be conducted effectively based on a team partner's previous experience [15]. Moreover, the students also

can improve their critical thinking skills and grasp course content easier based on the immediate feedback in peer-to-peer learning through the diversity amongst peers [16]. Those collaborative groups take on individual social frameworks when peers are in the group. To forge team success, every student must be responsible for achieving the goals and tasks of the team. Furthermore, the students had to be fully vested and motivated in the team's achievement with peer accountability critical to the team target [17]. Therefore, the team's success can be achieved based on the contribution of the entirety of every member of the team successful. The students can be motivated and encouraged to participate and complete the team's goal.

There were some challenges to teams based on forming working relationships amongst peers in settings where colleagues are well-known for their peers' skills. According to the literature, the students' sensitivities to the imbalanced evaluation of group projects became a key disadvantage of peer collaboration [18]. Moreover, the free-rider difficulty comes from group participants getting a similar score regardless of work ethics, communication ability, and work completion became adverse effects of the implementation of team projects [19]. The inability to communicate or voice concerns, poor time management skills, unpreparedness to work, and not to accomplish tasks successfully or in a well-timed are the other examples of opposing sides in a team project [20]. Furthermore, this problem can also be overcome with regular assessments outside of the team by the instructor and within the group by peer members.

### 3 Methodology

The research design in this research was a mixed method, consisting of quantitative and qualitative research. This research investigated how the students perceive the collaboration based on implementing flipped classroom versus conventional lecture format in English subjects at Institut Teknologi & Bisnis Bakti Nusantara. There were two research questions in this study. First, do student collaborations in flipped classrooms into LMS influence learning outcomes and motivation, such as productivity, time-management, and critical thinking? Second, do student collaborations facilitate richer learning and more meaningful activity than the conventional learning format?

The researchers created 22 questions online survey as the instrument for collecting the data. The research instrument used a combination of open-ended qualitative and closed-ended questions. The uncovered general demographic information was gathered by the 19 closed-ended questions as part of the quantitative phase. Moreover, the researchers employed a 5-point Likert-type scale to measure the students' perceptions. The researchers could explore and gain students' perceptions and their richer understanding of the collaboration in the flipped classroom implementation by conducting a similar survey at the beginning and end of the academic semester.

Furthermore, questions 20–22 were the items for collecting the qualitative data in this research. Those questions offered information about the students' worst and best experiences in the flipped classroom method. In contrast, they also allowed additional student feedback on implementing classroom experience. After collecting the data, the researchers also performed the cross-case comparative analysis as the next step of conducting this research. Furthermore, the qualitative study was conducted based on the

procedure recommended [21]. The researchers broke the data into some topics, coded similar statements from the respondent, and identified the themes of data information. Participants' experiences were affected by the articles' most prominent components and the themes' accuracy based on the findings of regularities within the data.

### **3.1 Research Content and Participants**

The researchers asked college students at Institut Teknologi & Bisnis Bakti Nusantara as the participants in this research. There were 20 female students and six female students who participated in this research. The researchers employed a purposive sampling technique for choosing research samples in this study because some criteria had been decided to match the characteristic of the goal of this research. Furthermore, this research included 16 information systems students and 10 informatics management students.

### **3.2 Limitations**

The limitations were unavoidable, although the researchers already conducted the study as understandable as possible. First, this research was only completed in 16 weeks (1 semester). A more extended period or an added semester could be utilized to gather more robust data and investigate flipped pedagogy more effectively. Second, the findings could not be generalized to the enormous student population because this study only focused on two classes with small participants.

### **3.3 Procedures**

The flipped classroom model was a relatively new learning model at the campus where this research occurred. In this institution, the traditional learning model is the memorization approach. Therefore, the researchers decided to promote the students learning outcomes by offering the chance to convey alternative learning experiences to the participants. Before conducting this study, the researchers had discussed with the chairman of both study programs implementing flipped classrooms as the learning model in one semester. After explaining the goal of this study, both agreed to allow one course in their study program as a research study, namely English for Informatic Students. The students were asked to complete the online survey at the beginning and end of the academic semester after the researchers explained the procedure and the steps of conducting the English subject in both classes. The researchers also asked the students to answer pre-survey and post-survey online to collect the data. Furthermore, Wilcoxon signed rank tests and descriptive statistics were employed using SPSS 22. The common themes could be identified after analyzing the qualitative data after the researchers finished studying the survey responses.

### **3.4 Class Projects**

#### *1) Information Systems Study Program*

There were two phases in this class project. First, the researchers conducted the learning activity using the conventional method: deadline-driven, student presentation

and a lecture. Individual student projects revolved around writing an English essay based on a topic. Second, the researchers employed flipped classrooms as the learning model in this class project. The students were asked to make a group for collaborative projects in this implementation learning model. This stage is dedicated to student group discussion intended to design an English essay based on a lesson plan that the instructor in LMS already made. The students were asked to solve the issues about the urgencies of implementing web 2.0 as teaching media for learning English as the group assignments in the class. The student members then presented their English essays in front of the course. As the preparation for jobs and in-class group discussion, the instructor asked the students to read the lecture and watch the video material prepared in LMS.

### 2) *Informatics Management Study Program*

In the conventional method phase, the instructor employed the traditional activities that consisted of PowerPoint presentations and lectures. In addition, the students were asked to read the assignment and complete homework before class. Their knowledge of the coursework could be measured based on the student's completion of three in-class tests. Next, the instructor employed flipped classroom as the learning model. The students were quite friendly with one another because the program was small. Therefore, they were very acquainted with their colleagues' skills and knowledge through the instructor appointed persons randomly to groups. They were asked to foster students' preparedness for class activities and learn the critical concepts before classes through pre-class activities in LMS, which consisted of reading textbook chapters, watching YouTube videos, and reading instructor-provided PowerPoints. The instructor employed LMS as a learning platform for pre-class activities to improve an understanding of writing English essays. The flipped classroom model promoted brainstorming activities that enhanced the high-order thinking ability, namely communication and creativity skills. Moreover, the instructor divided the students into small groups to foster more significant interaction of the students to engage in team problem-solving, receive peer feedback, and exchange ideas. Therefore, the indicators the students fully grasped the course material could be achieved based on the take-home test evaluated comprehension of concepts, instructor's questions, and the content of class projects.

## 4 Finding and Discussion

### 4.1 Finding

#### 3) *Quantitative Finding*

The student's collaboration in the integration of flipped classrooms and LMS influenced learning outcomes and motivation

The demographic information could be gathered based on survey questions one and two. Furthermore, research question one (RQ 1) could be answered based on the data collected from survey questions three to eight. To determine whether survey questions number 3-8 had the same construct, the researchers conducted a reliability test. The construct was reliable in pre-study (0.924) and post-study (0.843) based on Cronbach's

alpha test conducted in this study. The mean score from the responses of both surveys could be identified through descriptive statistical analyses. Furthermore, the mean of the pre-study research was higher than the mean of the post-study survey from these six items. Therefore, the understanding of participants in the flipped classroom model improved for the combined respondents. Based on data from Table 1, the participants had better learning experiences integrating flipped classrooms into LMS.

**Table 1.** The Responses To Survey Questions in The Both Tests

| Survey Questions  | Pre Study Mean | Pre Study SD | Post Study Mean | Post Study SD |
|---|----------------|--------------|-----------------|---------------|
| I like learning English through flipped classroom model better than the conventional learning model   | 3.1538         | 1.25514      | 2.5000          | 1.02956       |
| I can work more effectively in flipped classroom model than in the conventional learning model  | 3.1154         | 1.24344      | 2.7308          | 1.11562       |
| I can manage my classroom time to be more productive in flipped classroom model than conventional learning model  | 2.9231         | 1.23038      | 2.3846          | 1.02282       |
| I have better motivation to finish the assignment in flipped classroom model than conventional learning model   | 3.0385         | 1.34107      | 2.7692          | 1.06987       |
| I have a better understanding of English material while working collaboratively with my peers in flipped classroom model than conventional learning model | 2.8462         | 1.08415      | 2.4615          | 1.02882       |

(continued)

**Table 1.** (continued)

| Survey Questions   | Pre Study Mean | Pre Study SD | Post Study Mean | Post Study SD |
|--|----------------|--------------|-----------------|---------------|
| I have more variability in lesson content in a flipped classroom than in a school because of the preparation conducted by the instructors. | 2.3462         | 1.05612      | 2.0000          | .40000        |

The researchers explored the students’ perceptions of flipped classrooms through a “team preference” rating. An overall “team preference” was linked to all the means from the pre-study activity, whereas the similarities were tallied to the post-study activity means. The means of post-activity (14.37) was lower than pre-activity (17.41). The findings showed that students had better positive learning activity in the flipped classroom and LMS integration compared to the conventional learning model after experiencing both flipped and conventional classrooms. Therefore, the results shown in Table 1 were reinforced by this statement.

Moreover, Table 2 showed that there were well-defined member preferences in the integration of flipped classrooms and LMS based on the findings of Wilcoxon signed rank tests. The results illustrated that there were ambivalent about implementing both learning models based on pre-study surveys, except for the variety of English material. Furthermore, there were significant differences in perception varieties in learning material at the beginning of the semester.

In contrast, there were significant preferences apparent by the end of the semester in terms of more productive classroom time, better comprehension of the lesson using collaboration, and desire to take part in a flipped classroom because this learning model had a variety of learning material based on the identification of the student’s perception. The null hypothesis for those issues was rejected because the p values for questions 3,5,7, and 8 < .05 at the end of the semester. Therefore, the participants grew to enjoy more flipped classrooms than the conventional learning model after experiencing the course in both learning models. The flipped classroom learning did not affect workload management and student motivation in questions 4 and 6.

Student collaboration promotes more meaningful and more prosperous learning in both classes

Research question two (RQ 2) could be answered based on an analysis of the information from survey questions 9–19. The researchers performed a reliability test to measure the same construct in the survey questions 9–19. The construct was reliable in both surveys based on the Cronbach’s Alpha test of post-study was 0.727, and the CA test of pre-study was 0.904. To discover the mean score from the responses of pre and post-survey, the researchers employed descriptive statistical analysis. The mean of post-study questions number, 11, 12, 13, 15, and 16 was higher than the mean for pre-study from these 11 survey items. Therefore, these findings illustrated that participants became more



**Table 2.** The Wilcoxon Signed Rank Test for Pre and Post Studies

| Survey Questions  | Pre Study Z Score | Pre-Study P value | Post-Study Z score | Post-Study P value |
|---|-------------------|-------------------|--------------------|--------------------|
| I like learning English through flipped classroom model better than the conventional learning model   | .750              | .453              | -2.210             | .027               |
| I can work more effectively in flipped classroom model than in the conventional learning model  | .473              | .636              | -1.183             | .237               |
| I can manage my classroom time to be more productive in flipped classroom model than conventional learning model  | -.195             | .845              | -2.583             | .010               |
| I have better motivation to finish the assignment in flipped classroom model than conventional learning model   | .252              | .801              | -1.089             | .276               |
| I have a better understanding of English material while working collaboratively with my peers in flipped classroom model than conventional learning model | -.696             | .486              | -2.379             | .017               |
| I have more variability in lesson content in a flipped classroom than in a school because of the preparation conducted by the instructors.                | -2.739            | .006              | -4.735             | .000               |

sought-after because of the teamwork involvement, felt more positive about communication skills, understanding class content, being on creative projects, and speaking to peers at the beginning of the semester. Nevertheless, Table 3 also illustrated that the participants earned a more optimistic perspective of flipped classrooms in positions of improved time-management, better willingness to effort in teams, better preparation, better control of student achievement, better work achievement, and time management.

At the end of the semester, the analysis of whether flipped classroom collaboration in LMS can promote more successful and meaningful learning than conventional learning was conducted through an analysis “team preference” rating. An overall "team preference" was linked to a total of the means for the pre-study activity, although the similar was tallied to the post-study action means. The standards of post-study (29.11) were higher than the means of pre-study (28.84). The findings showed that the students were more positive and open to integrating flipped classrooms in LMS at the beginning of the semester after experiencing both flipped and conventional learning models. In contrast, Table 3 showed slight differences in overall means, which could also be interpreted as students’ perceptions being divided into negative and positive issues.

Moreover, Table 4 showed significant differences in the richness and depth of both learning models based on students’ perceptions at the beginning of the semester. This

**Table 3.** Mean Responses to Survey Questions in Both Studies

| Survey Questions   | Pre Study | Pre-Study | Post-Study | Post-Study |
|--|-----------|-----------|------------|------------|
| Students who miss a flipped class can easily catch up with coursework.   | 3.2692    | 1.21845   | 2.5000     | 1.02956    |
| The flipped classroom can foster the students for being a success in achieving learning targets better than the conventional learning model.   | 3.3462    | 1.16421   | 2.5385     | 1.02882    |
| The flipped classroom can improve students’ collaboration better than the conventional learning model.   | 2.6154    | 1.20256   | 3.1923     | .98058     |
| The flipped classroom can promote the experience for the students to remember the material in collaboration projects with their classmates better than in the conventional learning model. | 2.5385    | .94787    | 3.0769     | 1.12865    |
| The flipped classroom can better enhance students’ creativity in collaborative projects than the conventional learning model.  | 2.3846    | 1.02282   | 2.6923     | 1.08699    |
| The flipped classroom can better prepare students for collaborative team projects than conventional learning models.   | 2.8846    | 1.03255   | 2.7308     | 1.00231    |

*(continued)*

**Table 3.** (continued)

| Survey Questions  | Pre Study | Pre-Study | Post-Study | Post-Study |
|---|-----------|-----------|------------|------------|
| The flipped classroom can make students speak more freely to their classmates in collaborative team projects better than the conventional learning model. | 2.4615    | .94787    | 2.9615     | 1.03849    |
| The flipped classroom can improve the students' interaction and communication ability better than the conventional learning model.                        | 2.0000    | .69282    | 2.1154     | .65280     |
| The flipped classroom can better develop analytical skills on collaborative team projects than the conventional learning model.                           | 2.3462    | .84580    | 2.3462     | .74524     |
| The flipped classroom can offer better positive student attitudes about working on collaborative team projects than the conventional learning model.      | 3.1154    | 1.03255   | 2.7692     | 1.06987    |
| The flipped classroom can improve students' time management skills better than the conventional learning model.   | 3.1154    | 1.03255   | 2.1923     | .63367     |

finding was identified by implementing the Wilcoxon signed-rank test in five ranges. Question numbers 12, 13, 15, 16 and 17 had p values less than .05. Therefore, there was an actual partiality of the flipped classroom in terms of working on creative projects, analytical skills, improved communication, open conversation, and remembering course material. In summary, those findings rejected the null hypothesis.

Moreover, the null hypothesis was also rejected for questions 9, 10, 16, 17, and 19 based on the post-study findings in this study. The rejection occurred because significant differences were found in the students' collaboration with better time management, greater control of work, improved verbal and analytical skills, and catching up with work. Therefore, those findings rejected the null hypothesis. In contrast, questions 16 and 17 illustrated significant differences in improving analytical ability and communication skills based on the participant responses in Table 4.

#### 4) *Qualitative Finding*

Moreover, the qualitative understanding of participants was illustrated in questions 20-22 specified a more precise based on general students' awareness of the integration of flipped classrooms and LMS. Examining pre and post-study students' comments based on questions 20, 21, and 22 could emerge the subthemes and themes based on the order of regularity in Tables 5, 6 and 7. The understanding of students' perception of both learning models was conveyed in student voices through the following statements by participants. Question 20 asked about the two best benefits of integrating flipped

**Table 4.** Wilcoxon Signed Rank Test Pre and Post Studies

| <b>Survey Question</b>   | <b>Pre-Study Z score</b> | <b>Pre-Study P value</b> | <b>Post-Study Z score</b> | <b>Post-Study P value</b> |
|--|--------------------------|--------------------------|---------------------------|---------------------------|
| Students who miss a flipped class can easily catch up with coursework.   | 1.111                    | .266                     | -2.210                    | .027                      |
| The flipped classroom can foster the students for being a success in achieving learning targets better than the conventional learning model.   | .976                     | .329                     | -2.111                    | .035                      |
| The flipped classroom can improve students' collaboration better than the conventional learning model.   | -1.535                   | .125                     | 1.000                     | .317                      |
| The flipped classroom can promote the experience for the students to remember the material in collaboration projects with their classmates better than in the conventional learning model. | -2.233                   | .026                     | .298                      | .766                      |
| The flipped classroom can better enhance students' creativity in collaborative projects than the conventional learning model.  | -2.610                   | 1 .009                   | -1.421                    | .155                      |
| The flipped classroom can better prepare students for collaborative team projects than conventional learning models.   | -.592                    | .554                     | -1.347                    | .178                      |

*(continued)*

**Table 4.** (continued)

| Survey Question   | Pre-Study Z score | Pre-Study P value | Post-Study Z score | Post-Study P value |
|---|-------------------|-------------------|--------------------|--------------------|
| The flipped classroom can make students speak more freely to their classmates in collaborative team projects better than the conventional learning model. | -2.562            | .010              | -.192              | .847               |
| The flipped classroom can improve the students' interaction and communication ability better than the conventional learning model.                        | -4.153            | .000              | -4.124             | .000               |
| The flipped classroom can better develop analytical skills on collaborative team projects than the conventional learning model.                           | -3.145            | .002              | -3.400             | .001               |
| The flipped classroom can offer better positive student attitudes about working on collaborative team projects than the conventional learning model.      | .629              | .531              | -1.089             | .276               |
| The flipped classroom can improve students' time management skills better than the conventional learning model.   | .585              | .559              | -4.041             | .000               |

classrooms and LMS associated with the conventional learning model. Four participants gave responses to this question. The first participant stated that flipped classroom could verbalize ideas and encourage ideas. Next, the second participant said she was more attentive because flipped classrooms could break up the regular lecture. She also said that this learning model could facilitate a better discussion. The third participant shared that flipped classrooms make him listen more attentively to his peers, and he could retain

**Table 5.** Qualitative Themes For Pre- and Post-Study Survey

| <b>Themes</b>    |   |                     |                            |
|------------------|---|---------------------|----------------------------|
| <b>Pre-Study</b> |   | <b>Post-Study</b>   |                            |
| <b>Themes</b>    | <b>Subthemes</b>                                      | <b>Themes</b>       | <b>Subthemes</b>           |
| Learning         | Encourage teamwork                                    | Learning            | Variety of activities      |
|                  | Promote hands-on learning                             |                     | Learning from peers        |
|                  | Instructor’s support                                  |                     | Encourages teamwork        |
|                  | Explain content to peers                              |                     | Retain more information    |
|                  | Deeper learning                                       |                     | Different learning methods |
|                  | Able to apply content                                 |                     |                            |
|                  | Variety of teaching activities                        |                     |                            |
| Communication    | Better students’ engagement with peers and instructor | Learning activities | Adaptive to changes        |
| Life skills      | Time management                                       | Connectivity        | Support from teammates     |
|                  | Improved communication                                |                     | More attentive to peers    |

information better. The fourth participant stated that she enjoyed learning using flipped classrooms because she liked the change of pace in learning activities.

Question 21 in Table 6 showed some subthemes and themes the researchers could identify. The researchers would elaborate on some statements from four participants related to this question which asked about the two worst features of flipped classrooms associated with the conventional learning model. The first participant said that the students delivered most information, and the instructor provided minimal information because the type of learning activity conducted was student-centered. Second, the participant stated that she was easy to get lost in the class because the discussion of the topic was shallow. Moreover, the third participant said she relied on her classmates to get the information. She stated that the instructor should teach them and straightforwardly explain the material. Next, the fourth participant shared that flipped classrooms made the tests more confusing because classroom activities in this learning model seemed disorganized.

In this part, the researchers would define the responses in Table 7 related to subthemes and themes for number 22. Question number 22 asked about the student’s experience in a flipped classroom. The first participant stated that he felt like he did not learn any of the material well because he had struggled in the flipped classroom setting. The second participant said it was a waste of time when the instructor could just go over anything, and the students might rely on their classmates to share the information. Therefore, she did not think flipped classes were suitable. The third participant stated that flipped classrooms did not allow them to have better discussions of material after the presentation. So, she

**Table 6.** Qualitative Themes For Pre And Post-Study Surveys

| <b>Themes</b>      |                                    |                     |                             |
|--------------------|------------------------------------|---------------------|-----------------------------|
| <b>Pre-Project</b> |                                    | <b>Post-Project</b> |                             |
| <b>Themes</b>      | <b>Subthemes</b>                   | <b>Themes</b>       | <b>Subthemes</b>            |
| Learning           | Limited explanation of content     | Learning            | Learning is shallow         |
|                    | Stressful                          |                     |                             |
|                    | Coursework not defined             |                     |                             |
|                    | The teacher should teach the class |                     |                             |
|                    | Less prepared for class            |                     |                             |
|                    | Easily overlook key concepts       |                     |                             |
| Dependency         | Rely on self to learn              | Dependency          | Rely on colleagues to learn |
|                    | Rely on peers to learn             |                     |                             |
| Coursework         | Limited time for review            | Class content       | Confusing tests, homework   |
|                    | Easy to get behind                 |                     |                             |
|                    | Stressful                          |                     |                             |
|                    | More work                          |                     |                             |
| Class context      | Unorganized class                  |                     | Emerges disorganized        |
|                    | Wasting time                       |                     |                             |
| Life skills        | Poor time-management               |                     | Unproductive time           |

did not like this learning model in general. The fourth participant said she was more “used” to conventional learning modal, although she enjoyed this new learning setting.

The standard connections among students are central to developing skills and knowledge of group projects based on the research findings. However, the students observed the theme of studying as the worst and best aspect of the flipped classroom learning model. Furthermore, the students perceived a welcomed alternative to the conventional learning model and a variety of good frequency in the classroom activities. Flipped classroom helped the students refine their communication skills because they became more observant of colleagues’ contributions to the group. In the flipped classroom, the students perceived skill-set and work-ethics differences among teammates to be disadvantaged by the end of the semester. Moreover, they did not enjoy the dependency on their classmates as the dictation of academic success and their incapability to be occupied rule the project’s outcomes. Similarly, the students also observed leaving students longing for the instructors to explain the lessons, disorganized and confusing, and reliance upon classmates to discuss and collaborate in the learning shallow.

**Table 7.** Qualitative Themes For Pre- and Post-Study Survey

| <b>Themes</b>      |  |                     |                                     |
|--------------------|--|---------------------|-------------------------------------|
| <b>Pre-Project</b> |  | <b>Post-Project</b> |                                     |
| <b>Themes</b>      | <b>Subthemes</b>                       | <b>Themes</b>       | <b>Subthemes</b>                    |
| Learning           | An adjustment to learning              | Learning            | The instructor is not able to teach |
|                    | Flipped learning is entertainment      |                     | Not able to thoroughly learn        |
|                    | Feel lost with peers teaching a class  |                     |                                     |
|                    | Not a helpful learning model           |                     |                                     |
|                    |  | Learning Style      | Neutral on flipped style            |
|                    |  |                     | Prefer traditional style            |
| Group activities   | Colleagues should pick their teammates |                     |                                     |
|                    |  | Life abilities      | Improved interaction                |

**4.2 Discussion**

This research found that the student’s perception of team projects in the integration of a flipped classroom developed more constructive over time due in part to the social aspect of getting to know teammates, the better collaboration between colleagues, and the variety of class activities. Moreover, the students could construct a superior empathetic of material and enhance analytical and verbal skills through more significant opportunities to improve time management skills and complete assignments in class through various and frequent team collaborative activities. Moreover, the students could nurture their adaptability and creativity to participate in students’ collaboration and lead them to a more positive perception of implementing the flipped classroom in LMS. This finding was supported by Rao, who stated that students’ interaction in collaborative projects enhances students’ practical experience, communication, and critical thinking skills [18]. Moreover, the students could also discover a more significant number of possible answers to course assignments and participate in their colleagues’ numerous perspectives and methods by providing students with hands-on problem-solving opportunities and in-classroom discussion. Moreover, collaborative activities could gain strength from different viewpoints, experience, and knowledge that each participant groups bring to the team [20]. Thus, this collaboration also could enhance the learning outcomes based on learning environments in the classroom.

In contrast, the students also realized their motivation was unchanged by collaboration activities in integrating flipped classrooms and LMS. However, students perceived their communication skills as enhanced based on the converted classroom collaborative projects. According to the comparison in both learning models, the students were not motivated to effort any more complicated in this flipped classroom. This finding was in line with Wang, who stated that the students in collaborative learning might have



good motivation to finish and reach the learning target as a whole succeeds [17]. In other words, the students had no more reason to work in a flipped classroom than in the conventional learning model. However, the students in this research decided on their peers or were already familiar with their partner's skills before starting the projects. The researchers also found that the students perceived that they did not have to control their peers to complete their assignments and relied on their friends' ability to manage their projects. The researchers identified why the students decided not to be motivated to work harder in the team project; they thought their classmates did not put the same motivation and effort to succeed, so they chose to work unmotivated. Therefore, this problem caused frustration among groupmates, whether their groupmates were friends or not.

Moreover, the finding illustrated some benefits of collaborative projects: they could gain a positive view of collaborative efforts, speak more freely in the discussion, and become more attentive to their classmates. The group collaboration in the flipped classroom offered great chances for students to interact and communicate with their classmates in a more expressive learning activity [22]. In contrast, the worst aspect of flipped classrooms was the "learning" activity found at the end of the semester. Moreover, shallow learning occurred because the instructor did not teach them and just monitored the learning activity. Therefore, the students had grown to rely on their peers to understand and comprehend the material. In flipped pedagogy, the students tended to depend on classmates to earn the learning target, and they perceived that this learning model encouraged disorganization in the classroom and wasted time [23]. In summary, some students thought they preferred employing the conventional method to implementing flipped learning.

## 5 Conclusion

The findings showed that a collaborative-driven flipped classroom in LMS was a possible and robust option in the learning environment associated with the conventional learning model. In contrast, the researchers also found that the combination of aspects of the traditional learning model and flipped classroom made this learning environment stronger than before. The instructor-led learning from the conventional classroom could be integrated with the collaboration, various activities, and in-class discussions from the flipped classroom features. The integration of conventional and flipped classrooms promoted the students to achieve their learning target and enabled the instructor to learn through collaborative activities. Today's workplaces need communication and problem-solving skills as a combination of these learning models. Collaboration with peers was the solution that the students might have to solve real-world problems. The instructor could prepare the students to have a deeper understanding of expertise and content for being 21-century employers.

Furthermore, combining conventional and flipped classrooms was the first recommendation the following researchers can use. Moreover, the next researcher could conduct the study in the equivalent of one academic year or over two semesters because this study was only organized in one semester. This recommendation can measure whether the flipped classroom can be more effective in one study area than the other learning

models. Next, the following researchers could explore the flipped classroom implementation in different disciplines to investigate the educational benefits of this learning model across disciplines. Last, the following researchers can identify the various personal characteristics of participants as other variables of the research, such as students' preferences, interests, and work experiences.

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