

Implementation of Flipped Classroom Model to Strengthening Students' Social Engagement and Its Relation With Students' High Order Thinking Performance

Zelhendri Zen, Syamsuar
 Universitas Negeri Padang
zelhendrizen@fip.unp.ac.id

Abstract-*The aims of this research were to analyze the Implementation of flipped classroom model in quantitative method teaching to strengthen students' social engagement toward their ability in High Order Thinking (HOT). This study used an experimental-quantitative research with survey methods. Sample of this study are fifth semester students of education technology major in State University of Padang as much as 60 people. Students' social engagement data were collected by using questionnaires with 5-point Likert scale and HOTs performance data were collected by using thinking analysis test. The data analysis used multiple linear regression tests. Research findings reported that implementation of flipped classroom model to strengthen Students' social engagement in the line of socialization ability have significant effect on students' HOTs performance. quantitative method faculty can utilize the flipped classroom model to science student class to improve students' high order thinking ability by strengthening their social engagement.*

Key words: flipped classroom, students' social engagement, HOTs performance

I. INTRODUCTION

In recent years the model flipped classroom widely adopted to support pedagogy. Flipped Classroom model application is made to give the attractiveness of learning in students, increasing students' success and improving the ability of students' affective. Talbert, (2014) examined the use of video media on students' interest and their learning outcomes, while Wrigh, (2015) examined the influence of flipped Classroom model by using printed media and written records is prepared to make students become more active and participative in class. In all cases, the dominant class time devoted to individual work and group directed to solve problems and find out an appropriately solutions.

Johnson, L., Adams Becker, S., Cummins, M., Freeman, A., Ifenthaler, D. and Vardaxis, (2013) states that the flipped classroom is a learning model that was developed in the last one or two years. Flipped classroom is a change of teaching from teacher centered to student center where in the classroom students learning more discussion by providing a meaningful learning opportunities for all students to discuss the material that they have learned at home before class begin. Task of material given can be learned at home by using educational technology media such as online video and used to 'deliver content' outside of the classroom. In the context of flipped Classroom model, the content delivery' can take many forms such as video lessons, handouts, and text prepared by the teacher or a third party to be used to convey the content, meaning of subject by using flipped classroom model so this model not only use collaborative media online or digital media, but also can use the printed media such as reading text (Abeysekera & Dawson, 2015). Meanwhile Davies, Dean, & Ball, (2013) adds that the learning objectives of flipped classroom is more to strengthening the discussions class and interactive communication class in order to solve the given problems related to the material that has been studied previously by students at home or outside the classroom.

Today, the implementation of flipped classroom is strong related to the strengthening of social engagement and student academic performance has not been done. Of the many International scientific studies recommends that this topic need the further research about the strengthening social engagement and its relationship with students' high order thinking ability especially in teaching quantitative method as science subject in order to improve students' high order thinking ability through strengthening their engagement social with their class environment.

Lowell, Utah, Verleger, & Beach, (2013) in their meta analysis stated that of eleventh related study about flipped classroom model, in fact there has not been a single study of affective factors for science

learners to explore the effect of flipped classroom on students' high order thinking ability, because so far the related research of flipped classroom is more associated with motivation, self efficacy and learning outcomes, whereas the reinforcement of students' social engagement is important to the smooth discussion and interactive communication among students in the classroom, particularly for teaching quantitative method in the class. (Lowell et al., 2013) stated that whatever the discussion active or not in class, nothing the reinforcement of social engagement was escaped in following the interactive teaching-learning process in the classroom.

In the UK, the flipped classroom model then becomes the pivotal study in future research. The study is more focused to the effects of flipped classroom models on positive change a student's academic performance by using flipped classroom through the continuity research of evaluating the significant effect of this model on the role of students' social engagement and its impact on their learning outcomes in the classroom. Mehring, (2016) in their case study reported that the model flipped classroom can improve students' academic performance that can be seen from formative and summative assessment. In quantitative method learning, this model of flipped classroom have been applied by quantitative method faculty widely to build the students' self-learning regulation in the class, improve students' cooperation skills and high order thinking skill in analysis discussions, it is not only in the classroom, but also outside of the classroom.

Today, the Quantitative method faculty's task is how they can use the time more effectively to study so that students can master science subject well in accordance with his/her expected competencies. The model of flipped classroom provides a good chances for quantitative method faculty to utilize a lot of their time to motivated the their students in order want to learn qualitative analysis in research method is more active and participative both outside and inside of the first, before the truly learning process of interactive discussion and social communication can be held in the class well (Tucker, 2012). To strengthen the students' social engagement in order to improve students' high order thinking performance, this study tried to examine the fifth semester of education technology students in State University of Padang.

II. METHOD

This study uses an experimental quantitative approach with survey design. According to Creswell stated that experimental quantitative study is to test the hypothesized among variables (Creswell W, 2014). The hypothesis of this study will be verifiable. It describe that the hypothesis have strong relationship between variables. This research used two independent variables are flipped classroom model and social engagement and one dependent variable of students' high order thinking ability. Social engagement variable consisted of three elements are socialization ability, personal communication ability and Self Control in cooperation with other. Population of this study was all fifth fifth semester of educational technology student of State University of Padang. Sample was taken as much as 60 people. Students' social engagement data were collected by using questionnaires with 5-point Likert scale and high order thinking performance data were collected by using analysis competence test. This research was conducted at State University of Padang from May to June 2018.

Questionnaires from was used to collect the data in the field. For the data of social engagement was measured by using Likert scale with 5-point. Measuring the students' high order thinking ability was obtained by analysis thinking competence test. All questionnaires should be valid and reliable firstly before distributing to the respondent of research. According to Creswell (2014) the validity of the test showed the extent to which a measuring device used to measure its validity and reliability. The measurement of it can be done by using product moment, the item can be considered as a valid question if it is greater than 0:30. While reliability is if all question asked of respondents trusted based on Cronbach alpha test. The inference analysis used linear multiple regression to know the relationship of social engagement and students' high order thinking ability.

III. RESULT

The finding of the implementation of flipped classroom model to fifth semester of educational technology student of State University of Padang was obtained the strengthening of students' social engagement consisted of *Socialization ability, communication ability and self control* can see on the table below:

Table 1. Quantitative method learner' Socialization Ability in Flipped Classroom Model

Elements of Socialization ability	Level			Mean	Category
	Low (1.00-2.33)	Fair (2.34-3.66)	High (3.67-5.0)		
Cooperative	3 (5.0%)	32 (53.3%)	25 (41.7%)	3.50	Fair
Friendly	9 (15.0%)	21 (35.0%)	30 (50.0%)	3.70	High
Tolerable	11 (18.3%)	7 (16.7%)	39 (65.0%)	3.80	High
Adaptive	13 (21.7%)	9 (15.0%)	38 (63.3%)	3.70	High
Average				3.7	High

From the table 1 above showed that the category of socialization ability elements to fifth semester of educational technology student of State University of Padang totally in the level of high with score of 37.0. For the detail to each sub variable of socialization ability elements are in the first sub variable of cooperative was 3.50. It consisted of in the high category as much as 25 people or (41.7%), in the fair category 32 people or (53.3%) and in the low category 3 people or (5.0%). Second, sub variable of friendly was 3.70 in the level of high. It consisted of in the high category as much as 30 people or (50.0%), in the fair category 21 people or (35.0%) and in the low category 9 people or (15.0%). For third sub variable of Tolerable was 3.80 in the high level which consisted of high category as much as 39 people or (65.0%), in the fair category 7 people or (16.7%) and in the low category 11 people or (18.3%). Finally, adaptive was 3.70 in the high level which consisted of high category as much as 38 people or (63.3%), in the fair category 9 people or (15.0%) and in the low category 13 people or (21.7%). For variable of personal communication ability, the result of analysis can be seen in the table below:

Table 2. Quantitative method learner Communication Ability in flipped Classroom Model

Elements of Communication ability	Level			Mean	Category
	Low (1.00-2.33)	Fair (2.34-3.66)	High (3.67-5.0)		
Communicative	16 (26.7%)	24 (40.0%)	20 (33.3)	3.51	Fair
Sharing idea	13 (21.7%)	25 (41.7%)	22 (36.7%)	3.57	Fair
Give comments	9 (15.0%)	32 (53.3%)	19 (31.7%)	3.57	Fair
Expression of opinion	12 (20.0%)	27 (45.0%)	21 (35.0%)	3.11	Fair
Average				3.33	Fair

From the table 2 above showed that the category of communication ability elements to fifth semester of educational technology student of State University of Padang totally in the level of fair with score of 35.1. For the detail to each sub variable of communication ability elements are in the first sub variable of communicative was 3.51. It consisted of in the high category as much as 20 people or (33.3%), in the fair category 24 people or (40.0%) and in the low category 16 people or (26.7%). Second, sub variable of sharing idea was 3.57 in the level of fair. It consisted of in the high category as much as 22 people or (36.7%), in the fair category 25 people or (41.7%) and in the low category 13 people or (21.7%). For third sub variable of give comments was 3.57 in the fair level which consisted of in the high category as much as 19 people or (31.7%), in the fair category 32 people or (53.3%) and in the low category 9 people or (15.0%). Finally, expression of opinion was 3.11 in the fair level which consisted of high category as much as 21 people or (35.0%), in the fair category 27 people or (45.0%) and in the low category 12 people or (20.0%). For variable of self control ability can be explained referred to analysis result as follows:

Table 3. Self Control of Quantitative method learner in Flipped Classroom Model

Elements of Self Control	Level			Mean	Category
	Low (1.00-2.33)	Fair (2.34-3.66)	High (3.67-5.0)		
Satisfaction	30 (50.0%)	19 (31.7%)	11 (18,3)	2.26	Low
Anxiety	8 (13.3%)	45 (75.0%)	7 (11.7%)	3.98	Fair
Emotional stability	11 (18.3%)	44 (73.3%)	5 (8.3%)	2.92	Fair
Emotional Intelligence	19 (31.7%)	39 (65.0%)	2 (3.3%)	2.88	Fair
Average				3.01	Fair

From the table 3 above showed that the category of Self Control elements to fifth semester of educational technology student of State University of Padang totally in the fair level with score of 3.01. For the detail to each the elements are: for satisfaction was in the low level of 2.26. It consisted of in the high category as much as 11 people or (18.3%), in the fair category 19 people or (31.7%) and in the low category 30 people or (50.0%). Second, sub variable of anxiety was 3.98 in the level of fair. It consisted of in the high category as much as 7 people or (11.7%), in the fair category 45 people or (75.0%) and in the low category 8 people or (13.3%). For third sub variable of emotional stability was 2.92 in the fair level which consisted of in the high category as much as 5 people or (8.3%), in the fair category 44 people or (73.3%) and in the low category 11 people or (18.3%). Finally, emotional intelligence ability was 2.88 in the fair level which consisted of high category as much as 2 people or (3.3%), in the fair category 39 people or (65.0%) and in the low category 19 people or (31.7%).

The influence of social engagement towards students' high order thinking ability can be explained by using multiple linear regression tests that can be seen in the table 4 below:

Table 4. Partially Influence of Students' Social engagement on Their high order thinking performance in Flipped Classroom Model

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	79.933	17.802		4.490	.000
	Socialization	.054	.126	.559	.432	.017
	Communication	.001	.074	.402	.412	.019
	Self Control	-.062	.076	.110	.816	.418

a. Dependent Variable: high order thinking performance

From the table above can be known the formulation of multiple linear regressions can be obtained as follows: $Y = 79,933 + 0,054 X_1 + 0,001 X_2 + 0,062 X_3$. From the formulation, exactly we can be predictable the relationship between Independent variable with dependent variable with the explanation are 1) Each increasing the value X_1 (socialization ability) at one point, then the value of Y (high order thinking performance) will be increasing by 0,054, 2) Each increasing the value X_2 (communication ability) at one point, then the value of Y (high order thinking performance) will be increasing too with 0,001 and 3) Each increasing the value X_3 (self control) by one point, then the Y-value will increase 0,062. Partially three elements of social engagement just obtained only two positive influence on student high order thinking performance namely socialization ability and communication ability when teacher apply a flipped classroom model for teaching quantitative methods learner in classroom. However the first sub other variables of self-control does not affect on the students' high order thinking ability.

Table 5. Simultaneously Influence of Students' Social engagement on Their high order thinking performance in Flipped Classroom Model

ANOVA ^b						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	33.608	3	11.203	.648	.041 ^a
	Residual	1801.642	56	32.172		
	Total	1835.250	59			

a. Predictors: (Constant), Socialization, P. Communication, Self Control

b. Dependent Variable: high order thinking performance

From Table 5 above can be seen that analysis of the students' social engagement have strong relationship with students high order thinking performance when the teacher used flipped classroom model.

It gives simultaneously affect to other students' high order thinking abilities with the value of F is 0.684, with significant value 0.04, it means that simultaneously social engagement and flipped classroom model have been giving positive effect to students' high order thinking performance at fifth semester of educational technology of State University of Padang.

From the finding and study analysis to three sub variable of social engagement, they are socialization ability, communication ability and self-control which in total consists of 12 theme observed. In this section presented and discussed the twelve themes as the findings of this study. As for the twelve themes are: cooperative, friendly, tolerable, adaptive, communicative, sharing ideas, give comments, expression of opinion, satisfaction, anxiety, emotional stability and emotional Intelligence. Based on the findings of result analysis were known that students' socialization ability elements to fifth semester of educational technology student of State University of Padang totally of them in the high level with a score of 37.0 it means that the students' socialization ability has been good enough.

Socialization ability in the four focus of cooperative, friendly, tolerable, adaptive, communicative showed that almost of all students are willing to work together and have good commitment to accomplish the work together in the group, want to invest their time to study together and effort to build their friendly relationship in working with their peer to solve the problem together in the group class. Being tolerable with different idea and being adaptive each other in the study group by using flipped classroom model. In fact flipped classroom model can be give positive impact to improve the students' socialization ability well. Better the student socialization ability of science class will be better their high order thinking performance in the discussion and communication in the class.

The ability of students' social engagement aims to build their social skills in order being more cooperative, friendly, adaptive and respective the opinions of others both useful for supporting the cooperative learning process in the study groups of students both inside and outside of the class by using flipped classroom model. A similarity of key in the perspective of social construction is that the learning is a socially constructed learning through students' interaction, involvement and participation actively, and a generic term to social learning interaction (Baird, Hopfenbeck, Newton, Stobart, & Steen-Utheim, 2014). In this view, learning is the result of a continuous transaction between students with individuals and their environment (Sfard, 1998). It means that the study is based on involvement, activity and participation of students in their interactions with their peers and teachers based on context and content. The role of social action between the development of students' cognition is the premise of social construction has been built by (Vygotsky, 1978) known as the theory of social culture. Zone of proximal development is the key learning concepts that can be defined as 'the distance between the actual developmental level to solve the problems together according to the level of potential development of society in this case the community of EFL classroom under the guidance of a teacher or in collaboration with colleagues in study groups together. (Vygotsky, 1978:86) stated that this mechanism ultimately affect students' self-regulation. Through interaction with peers that are more capable, individuals can learn to regulate itself through the actions made by others, and integralize to himself action. The ability of socialization development to the students is very important in determining their success in the classroom, especially for science students to train their analysis competence abilities during the discussion and argued in finding a solution to the given case. Abeysekera & Dawson, (2015); O'Flaherty & Phillips, (2015), Stated that the main component of the flipped classroom is to involve students in social learning and active, usually through the preparatory work (from class activities) with the collaboration of the next group (to class activity). Based on this it can be concluded that flipped classroom can work well if the social skills of students can be built well, it can boosted students' social engagement to participate in the teaching learning process both inside and outside of the classroom.

To build the students' social skills through flipped classroom model is to familiarize the students learning the subject into the groups with their peers. Learning groups are very important in the flipped classroom. The findings of the flipped classroom learning group shows that students' participation in their study groups can support their teaching learning process and encourage them to be more positive involvement in the discussion actively to all session of discussions and question and answer interactive either online (using social media WhatsApp) as well as offline in the class. This method allows each student to ask questions, discuss and collaborate with peers in their group. By using flipped classroom, there are more possibilities for study groups, given that a classroom session is held with a lot of the time allowed for discussion in the group.

With flipped classroom model of allowing inter-students can interact actively raised many questions in the group and involved in creative and critical thinking debate. If the exercise is difficult, then each member will help each other to explain their understanding of the theory and the problems studied. Through the flipped classroom, teachers can provide opportunities for students to play their other roles in learning are to giving the contribution to the group. Further Vygotsky, (1978) explains that the success of social a strong

engagement inside of students can make a positive contribution to his or her cooperative attitude development in the form of social interaction with their learning partners

Meanwhile the variable of communication ability, there are four theme are communicative, sharing idea, give comments, expression of opinion ability showed that not of all students have good communicative style are willing to sharing together about idea and opinion to the problem offered. Some of them did not give comment in the group study and lack of their expression of opinion ability in doing the thinking aloud to find out the solution of the problem given. In fact, the communication tool is a good media for Learner to practice their Creative and critical thinking skill in the group discussion both inside the class and outside. Students with have good communication ability will be easily to practice their creative and critical thinking skill in the class when studying quantitative method and it also give added value to support the student being diligent to practice their quantitative method analysis of high order thinking performance with peer both in the class and out of the class.

Active engagement in the communication plays an important role in supporting the teaching and learning process, especially in Quantitative method learning in the field of high order thinking performance. By this way student can be more active in their creative and critical thinking skill to each session of discussion, whether in the study group or individual. The implementation of flipped classroom at least enable to build the students high order thinking performance well through their quantitative method practice in each learning discussion and interactive question and answer session in the classroom. Students 'ability to establish a good communication in debate of quantitative result analysis referred to as a key factor to helps his or her quantitative method ability (Kahu, 2013). Many researchers believe that developing the communication skills of students in the classroom is an important role that teachers should be done, regardless of the meaning of the complex and multi-faceted (Fredricks, Blumenfeld, & Paris, 2004). The active involvement of student in the communication in the classroom can build various cognitive levels that ultimately affect to their learning outcome, in this study strengthening the students' communicative abilities showed a positive effect on their high order thinking performance. Other researchers claim the involvement of students is not only multi-faceted, but also dynamic, fluctuating, depending on the context and interactive to be built by teacher in class (Goldin, Epstein, Schorr, & Warner, 2011). Three key dimensions of cognitive behavior engagement and affective behavior as described by (Fredricks et al., 2004), is widely recognized that these two variables have a very strong relationship. In theory of social engagement (Kahu, 2013). Extending the view this term by calling the social engagement within the larger conceptual framework by considering various socio-cultural contexts in which structural factors and psychosocial effect on students' social engagement. In turn, the involvement of students in each social engagement by using the flipped classroom learning model provide a good academic consequences and social engagement for the development of the learner quality (such as improving the academic performance of students) and the strengthening of self-learning motivation (impetus to lifelong learning). In short, the social engagement of students in terms of building the high order thinking performance among peers and with the teacher needs to be seen as a psycho-social process, where this process is influenced by institutional factors and personality factors. In addition, through the development of socio-cultural context of students are expected to actively encouraged in any learning activity that have been established together in the implementation of flipped classroom model. To make sure that all can be integrated well in a single unit of learning process to improve students' learning behavioral and psychological. Data supporting this study, also supported by empirical findings are closely related to socio-cultural framework of the students involvement in learning class like as a means of quantitative method analysis by (Kahu, 2013) and the core dimensions affect the cognitive and behavior of students as discussed by (Fredricks et al., 2004). This dimension is recognized by (Kahu, 2013). Cognition refers to learning in students themselves through self-regulation of learning which have been built through social reinforcement. Dimensions of the students' social behavior associated with time and effort of students practice, interactive, and participative in each session of learning in the classroom both inside and outside of the classroom.

Finally in the line of students 'self control of emotional consisted of four theme. They are satisfaction, anxiety, emotional stability and emotional intelligence. The four of them mentioned above is important to support students' strengthening social ability in the new situation with of losing their temperament, and self control emotionally through building a cooperative learning in the class. By this way, all students have the same chance to get the assistant from his or her friends in their study group. The student who above to build a good emotional stability in interactive communication, it will push them become better in question answer interactive in the flipped classroom class by executing a good manner of Quantitative method teaching to the EFL Learner to improve students' high order thinking performances.

A good developing of self-control emotionally can affect the readiness of students in learning, especially in teaching quantitative method to reduce students' anxiety when they want to be actively involved in the discussions and interactive question and answer session. Affective factors such as satisfaction,

self-control and anxiety associated with a learning experience and an important dimension of student engagement (Kahu, 2013). Some of the students in this study reflect their emotional satisfaction to relationship with their environment in getting success their learning. The more emotionally stable person, the lower their anxiety levels and will improve their high order thinking performance. In contrast when emotional stability is lower, tends to increase the anxiety which caused the students become more afraid to be active in the discussion session of classroom learning. This condition is clearly hinder the progress of student learning and decreases the students high order thinking performance in studying quantitative method teaching. It was caused by the instability of the emotional and students' anxieties are strongly associated with students' high order thinking ability is lower.

Kahu, (2013) referring to Smith, R., (2007) stated that there is a strong relationship between students' emotional stability and teacher attitude in teaching. The non pleasant classroom situation that has been made by teacher can emerge the stress situation of the class so it can affect student learning performances. For example teacher gives a complex task, teacher does not tolerate with any mistake or teachers require students answered correctly, if do not be penalized by declining his or her mark and so on. Obviously the way like this have greatly affect to students' self-control, both from the point of satisfaction, anxiety, emotional stability and emotional Intelligence, which in turn give negatively impact on students learning performance. Kahu, (2013) stated that importance of students' self-control on the most favorable conditions during the learning process can be carried out in the classroom by using the model of Flipped classroom so that students' involvement becomes better that can be seen from their are being more active and creative in involving their lesson in the classroom to follow all quantitative method learning session. Vygotsky, (1978) shows the importance of dialogue in the relationship between teachers and students are one of effort to build a good atmosphere of satisfaction learning class, far from anxiety and intimidation. In the implementation of Flipped classroom model, teachers should be able building the satisfaction condition in the learning environment for all students in the class, by this way can be expected to increase the students' eager to be more active and creative in the Quantitative method lesson and reduce their anxiety, which in turn give a positively impact to strengthening students' emotional stability and intelligence.

Building a good social engagement for students via flipped classroom model can be realized by utilizing some online interactive media, in addition face to face media in the classroom. The online interactive media that can be used to improve students social engagement being more active and interactive in the class are to utilize the audiovisual media to learn a new content in the study group, use the media Google classroom as a learning space together outside the classroom and take advantage of online WhatsApp media to other types to support the group learning out of the class. In general, students will be enthusiastic to learn by using video supported by online interaction media such as by using Google Classroom or WhatsApp online media in completing the assignment of teachers before the interactive learning in the classroom begin. Almost all of the students expressed great satisfaction with the use of audiovisual and interactive online media like Google Classroom and WhatsApp. Building this interactive can be awakening students' social engagement and strengthening their self control is closely related to improving their learning outcomes.

IV. CONCLUSION

From the finding and the explanation of research result mentioned above can be concluded that students socialization ability was in the high category of 3.70, for communication ability and self control ability were in the fair ability with each score 3.3 and 3.01. the Relationship between social engagement and student high order thinking performance for Science student class simultaneously give positive effect, however in partially the relationship of social engagement on student high order thinking performance in the EFL class just two sub variable have positive relationship those are socialization ability and communication ability while for the students' self control on the their high order thinking performance in the class have no significant correlation.

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