Flipped Classroom Model: Enhancing Students' Interaction and Engagement in Large Classes

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Abstract

This study sought to determine the extent of students' learning interaction and engagement in large flipped classrooms at Islamic University in Uganda (IUIU). With major focus attributed to determining the extent of the flipped classroom method on; student-lecturer, student-student and student-content interactions, and also on students' emotional and behavioural engagement. The study further sought to determine students' perceived value of large flipped classroom. A mixed methods approach with an embedded design was adopted, with questionnaires and interviews administered to the 3rd year Education students of 2020/2021 at IUIU. A descriptive analysis was conducted and the results indicate that, the greatest interaction existed between students themselves and students and content, although a moderate interaction was witnessed between students and lecturer. With descriptive means (M) and percentages stated as, Student-Student interaction M=3.14 (34.7%), Student-Content interaction M=3.12 (33.4%) and Student-Lecturer interaction M=2.88 (31.9%). Students greatly engaged through behavioural and emotional attributes, with means noted as M=3.31 (50.8%) and M=3.20 (49.2%) respectively. Students had strong positive perception on the instructional value of large flipped classroom method. Therefore to improve on the interaction and engagement of the learners in large classes, stakeholders should adapt student centred approaches like flipped classroom. Perhaps with technology advancement it's quite easy. Although not all is done, there is still need to determine the relationship between the students' interaction and engagement in flipped classroom method and establish relationship between flipped classroom method and learning interactions, and learning engagements in large classes of over 200 students.

Keywords: ERP, learning interaction, learning engagement, out-of-class activities, in-class activities

In the recent years, higher institutions of learning globally have experienced an increase in number of students' enrolment which has resulted into increase in class sizes. This has raised tension on the institutions and the teaching staff (Mulryan-kyne as cited in Foley & Masingila, 2014). Globally, students' increase tertiary institutions from 2015 to 2020 was about 214.1 to 250.8 million, which is about 17.1% (Calderon, 2020). Just like in the rest of the globe, Uganda Bureau of Statistics (2020), showed a rise in tertiary enrolment of students between 2013 and 2016 from 201376 to 258866, which is about 28.5%. Especially at Islamic University in Uganda (IUIU) Main Campus with statistical

increase in the students' enrolment from 2598 to 2639 students, about 1.6% increase in enrolment, including Faculty of Education with about 14.6% in 2017/2018-2019/2020 (IUIU Dean Faculty of Education, Enterprise Resource Planning (ERP) Student enrolment, 20, May, 2021; Academic Registrar Admission List, 25, September, 2021).

These statistics have led to a drastic rise in lecturer-student ratio in Islamic University in Uganda, causing especially in the Faculty of Education, students being grouped into streams for lectures, and co-teaching being practiced. This was to meet the stipulated standard of the National Council for Higher Education (NCHE), of one lecturer to fifty students in a class (Statutory Instruments Supplements, 2008), for attainment of quality education (Calderon, 2020). Yet this troubled teaching in Faculty of Education at IUIU, which can be supported by employing instructional technological approaches like flipped classroom (FC) (Strayer & Jeremy, 2007).

Related Literature

The Concept of Flipped Classroom

Bagman and Sams (2014), the pioneers of flipped learning, described flipped learning as a learning approach of carrying direct learning instruction to individual learners in form of videos. Later, Spilka (2015), described it as inverted classroom, in which learning is directly opposite to that of traditional classroom. Flipped classroom is opposite classroom, intended for the creation of learning situation, which prepares the students with the learning content prior to in-class time. Pardo et al. (2019) suggested that in FC method, students' interaction and engagement has profound influence on their learning. This is because of its effectiveness in diverse situations especially in large classes of students with different learning preferences and styles (Johnston & Karafotias, 2016). In a study by Huang et al. (2016), students find it a better approach than the traditional lecture method. Its due to this dilemma, that this study opt to ascertain the extent of the adapted FC method in enhancing students' learning interaction and engagement in large classes, especially classes with 200 and above students.

Strayer (2007) stated that, the main purpose of flipped learning is to ensure that learners consume the learning content in form of instructional videos, recorded lectures and other instructional material prior to active traditional classroom such that, the traditional classroom is for the practice of the higher level cognitive domains of learning like problem solving, peer collaboration and deeper comprehension of the concepts.

Questions to consider before flipping include: 1) "What is the best use of the traditional in-class time with students" Bagman and Sams (2014) 2) Are you demonstrating the flip for students? 3) Is it the first time that you are flipping or you have done it more than once? 4) Is the material you are selecting appropriate? 5) Is there an indication that the students have watched the videos and learned? 6) Have you adopted a proactive approach to classroom management? (Moran & Young, 2015).

Theoretical Review

This study based on the framework of Bloom's revised taxonomy of learning (Anderson et al., 2001) and three theories of learning with technology i.e., the theory of interaction by Moore (1989), extended theory of transactional distance (Hillman et al., 1994) and engagement theory for technology centred teaching and learning (Shneiderman & Kearsley 1998), were adapted. With Moore's (1989), and Shneiderman and Kearsley's (1998) being critical.

Anderson et al. (2001), re-organized the process of knowledge acquisition into six levels, from the lowest to the highest level attainment i.e., Remembering, Understanding, Applying, Analysing, Evaluating and Creating. In this study, during learning with FC method, the lower levels of knowledge attainment i.e., remembering and understanding were conducted by the lecturer and students during the outside of class sessions, through students interacting with the content in the IUIU ERP platform for online learning. The moderate and highest levels of knowledge attainment i.e. applying and analysing, and evaluating and creating, were collectively practiced in-class with fellow students in groups and hands-on through interactive and engaging learning activities, facilitated by the lecturer. Figures 1 and 2 below adapted from Brame (2013), and Zainuddin and Hermawan (2019), show the revised Bloom's taxonomy and with its application in FC model respectively.

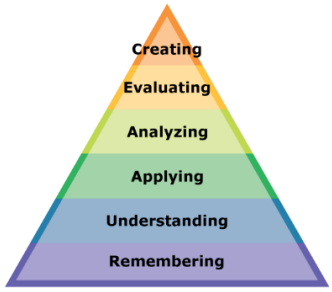

Figure 1. Revised Bloom's Taxonomy

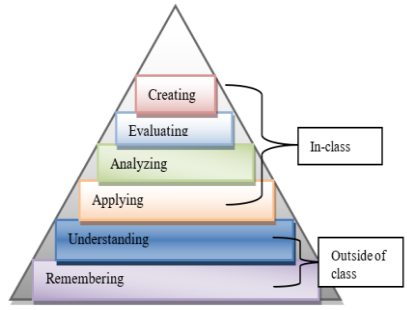

Figure 2. Application of Bloom's Taxonomy in Flipped Classroom Model

Moore (1989) asserts that, lecturer-student, student-student, and student-content are the interactions that exist in learning. He defined learning interaction as, a learning experience that allows the exchange between the student, instructor and content. And that, student-lecturer interaction – involves the lecturer guiding student's learning of the instructional material, student-student interaction - involves a student and others, in a group or alone, with or without the instructor, sharing instruction in a real-time and student-content interaction – students use of the intellectual domain to interact with the content, resulting into the construction of meaningful knowledge (Moore, 1989; Spilka, 2015). Therefore, this study determined the extent of the three categories of interactions in large classes through the application of an instructional approach i.e. flipped classroom model.

Shneiderman and Kearsley (1998) postulate that, a meaningful engagement occurs in a learning experience in which students are in a continuous interaction with the learning activities and others (instructor and the peers). Thus, they defined learning engagement as a learning activity in which students are actively involved through the use of their cognitive domain i.e., decision making, problem solving, reasoning and evaluation. This study therefore, determined the extent of the students' emotional and behavioural engagements exhibited during the teaching and learning process with FC method.

Hillman et al. (1994 as cited in Weidlich & Bastiaens, 2018) stated that interaction of students with a given learning technology is anticipated to facilitate their other learning interactions such as student-student, student-lecturer and student-content interactions in classroom. This is because, technology facilitates communication between students and other elements of learning i.e., lecturer and content. This study adapted a technology-based approach of teaching and learning, in which the researcher assumed that students are in possession of the basic technological knowledge, of accessing the IUIU ERP e-Learning platform, which facilitated their interactions with the lecturer and the content.

Student-Lecturer, Student-Student and Student-Content Interactions in Flipped Classroom

Technology enhanced learning methods such as flipped classroom can result into more interactive lessons. For example, Pardo et al. (2019); Preece and Popoola (2018) found that students' interaction has profound influence on their learning, which Hamadet al. (2019) emphasized that, flipped learning allows the lecturer to create interactive learning situations, that enhances student-lecturer, student-student and student-content interactions (Isaias et al., 2017). Although the interactions were more of student-student and student-content (Zainuddin & Halili, 2016) and less of student-lecturer interaction in flipped classroom Sun & Wu; 2016; Zainuddin, 2017).

The student-centred nature of the flipped classroom method makes it effective and facilitates teaching large classes with varying student learning preferences (Johnston & Karafotias, 2016). This is because it provides opportunity for the lecturer to develop instructional videos; and learners to work in teams and easily solve learning tasks, group discussions forum, compare answers and debate with friends among others during lessons, resulting into interactive learning (Kanelopoulos et al., 2017). Spilka (2015) suggested that, students can either stop or continue watching the instructional videos depending on the length of the video, although it takes time and commitment to watch and summarize the instructional video lessons in the Learning Management System (LMS) (Isaias et al., 2017). Despite the acknowledgment of the extent of the enormous interaction in flipped classroom (Pardo et al., 2019), in Uganda, this is still an innovation expected. This was the compelling reasons for this study, thus determined the extent of the student-student, student-lecturer and student-content interactions in large classes in the faculty of education in IUIU.

Behavioural and Emotional Engagement in Flipped Classroom

Students' involvement in learning is very paramount for a meaningful knowledge acquisition. Technology-based methods such as flipped classroom, in the current modern world has made it a bit easy. This is because students' learning engagement is enhanced through the learning instructions (Zainuddin & Halili, 2016). Students' cognitive, behavioural and emotional engagement results from the collaboration, effective communication, attitude of care towards students' learning, discussions and active learning opportunities provided in flipped classroom method (Kanelopoulos et al., 2017; Larsen, 2015; Jamaludin et al., 2016). Flipped classroom provides freedom and enjoyment of learning, making students lead their learning, hence feeling emotionally engaged (Hamad et al., 2019). Students who re-watched the videos posted in the LMS had more understanding of the content (Velegol et al., 2015), because they were interested in learning (Websteret al., 2016). Besides, Jang and Kim (2020) argued that students showed more of affective attributes such as emotions and interpersonal behaviour outcomes than the cognitive in flipped classroom.

Although positive learning usually results from the behavioural and emotional engagement of the students (Khalid et al., 2020). Newmann et al. (1992, cited in Jamaludin et al., 2016) argued that students completed their instructional activities and had positive learning without emotional engagement in the lesson. On the other hand, Casasola et al. (2017) revealed mixed views about students' interest in class, although students had increased attendance in flipped classroom. Kenney and Newcombe (2014) did not find students' interaction satisfactory and therefore suggested further assessment be conducted on the students' behavioural interaction in flipped classroom. Thus, this study, determined the extent of the students' behavioural and emotional engagement in a large flipped classroom at the faculty of education.

Students' Perceived Value of Flipped Classroom Method

Conneret al. (2014) found that, learners had mixed perception about flipped classroom method, although majority of the learners appreciated it. For instance, Kanelopolous et al. (2017) and Velegol et al. (2015) revealed that students appreciated the experience of prior learning, performed on their own and at their own pace. During evaluation of students, Isaias et al. (2017) claimed that students perceived positive outcome in flipped classroom because of the collaboration, assessment, comprehension of the instructional material, interaction and time management. Ruddick (2012 as cited in Ahmad, 2016) pointed out that students specifically liked the PowerPoint instructional material posted in the LMS.

Further, Al-Harbi and Alshumaimeri 2016) pointed out that students complained on the poor quality and substantial time required to watch the instructional videos in the LMS. Although Brooks (2014) found that students liked FC, he suggested further investigation to re-examine students' consumption of the videos posted in the LMS for their learning. There are limited studies that tried to assess the value of flipped classroom to the students in large classroom,

this was the problem that called for this study, and it determined the students' perceived value of flipped classroom in large classes above 200 students at the faculty of education.

Conceptual Framework

The conceptual framework in Figure 3. Indicates the flipped classroom method as the independent variable (IV) and students' learning interaction and engagement are the dependent variables (DVs). The IV was further broken down into in-class and out of class activities, while for the DV, learning interaction was categorized into student-student, student-lecturer and student content interactions and learning engagement broken into emotional and behavioural engagement. Figure. 3 shows Conceptual Framework adapted from Moore (1989) and (Shneiderman & Kearsley, 1998).

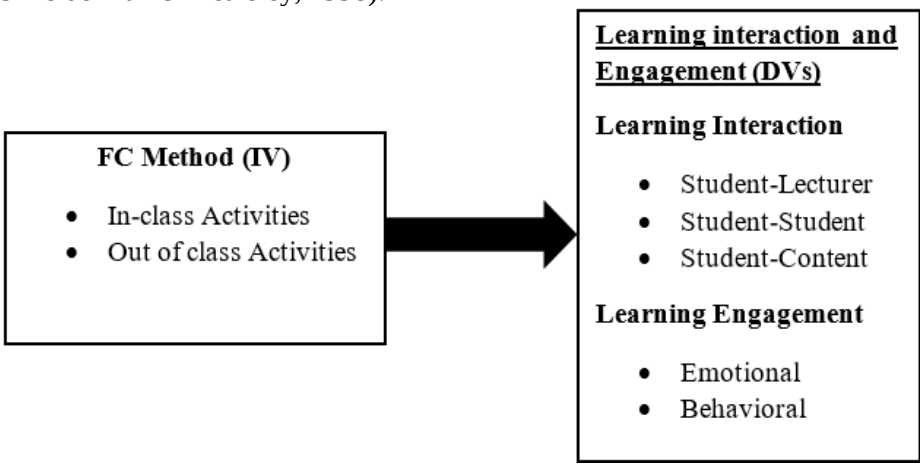

Figure. 3. Conceptualisation of flipped classroom and student interactions and engagement

Objectives of the Study

The study aimed at determining the extent to which students' learning interactions and engagements in large classes can be enhanced by the application of the flipped classroom method. The specific objectives were to:

1. Determine the extent of the student-lecturer, student-student and student-content interactions in large flipped classroom at the Faculty of Education.
2. Determine the extent of the students' behavioural and emotional engagement in a large flipped classroom at the Faculty of Education.
3. Explore the students' perceived instructional value of a large flipped classroom model at the Faculty of Education.

Methodology

Research Design, Population and Sampling

The study employed embedded design and mixed method approach, being predominantly quantitative and less dominant in qualitative. This design serves to address distinguished research questions (Hesse-Biber & Nagy, 2010). The data was simultaneously collected with quantitative survey and qualitative interview methods, but separately analysed (Creswell, 2012).

From a population of 754 faculty of education undergraduate students of 2020/2021 (Academic Registrar, 2021), purposeful sampling of 203 Third Year undergraduate students taking Curriculum Studies was conducted. This choice was made based on the large class of students in that course and the fact that they were finalists who had substantive experience of the university academic system. Purposeful sampling technique allows for the selection of case with rich information regarding the attribute that interests the study (Creswell, 2012).

Instruments

A 5-point Likert-scaled survey questionnaire from strongly disagree to strongly agree, with three sections; A measuring student motivation, B student interaction and C students' engagement and with a total of 35 items of CVI 0.7 (Ithnin et al., 2014; Preece & Popoola, 2018). From the questionnaire, this study adapted 22 items that measured students' interaction and engagement in FC, reduced the scale to 4-likert scale, removing the choice for undecided, thus in total the study had 38 Questionnaire items. The questionnaire is paramount in collecting data from many respondents and in describing trends within a short time (Creswell, 2012). Two hundred and thirty (230) respondents received questionnaires to fill but 203 filled questionnaires were returned.

While a semi-structured interview guide with 6 measuring students' opinion on the FC model by Kanelopolous et al. (2017); and Al-Herbi and Alshumaimeri (2016) was adapted to address the study objective 3. This was to obtain the distinctive perspectives of the students on their perceived value of flipped classroom method (Merriam & Tisdell, 2016). From the three different ready clustered third year undergraduate course programs of Bachelor of Art, Science and Concurrent education, a sample of 6 students with 2 selected on convenience from each of the course programs.

Content validity was determined through four experts in the Faculty of Education observing the instrument for relevance in measuring its intention (Creswell, 2012). Results were recorded on a checklist. The content validation index (CVI) was re-calculated as 0.88 that suggested that the instrument is valid (Pallant, 2001). Credibility of the qualitative data was ensured by interviewing multiple individuals (triangulation) to obtain diverse perspectives (Hesse-Biber & Nagy, 2010).

The inter-rater reliability of the questionnaire was re-determined, because of the completely different sample. According to Creswell (2012) inter-rater reliability involves at least two experts examining behaviour. With copies distributed to two different experts of interest in the Faculty of Education for

review. Cohen's Kappa (k) based on Landis and Koch (2020) was calculated as .659, meaning a substantial agreement between the two experts' rating of the instrument. Through audit trail and keeping records of the research proceedings, the dependability of the qualitative data was retained. This authenticated the study findings (Merriam & Tisdell, 2016).

Data Collection and Analysis

Researcher had permission from the offices of the University Secretary IUIU. The normal programs in the faculty of education remained undistorted, therefore the study was conducted within the scheduled University calendar. The lecturer intentionally concealed the reason for teaching the students with the new flipped classroom method, but instead declared its imperativeness. This avoided the biases from the students considering themselves as experiment in a real traditional learning. Pseudonyms were adapted to represent students and respondents' information remained anonymous throughout the study.

Quantitative data was descriptively analysed through means and percentages, while responses from the semi structured interviews were transcribed, coded and themes generated.

Procedure for Flipping the Curriculum Studies Class

The researcher conducted a series of four (4) lessons as the lecturer of the Curriculum Studies paper to the Third Year undergraduate students of Faculty of Education using the flipped classroom method, as a priority before data was collected. Each period of a lesson was for three hours, for each of the four consecutive weeks. Following the four weeks of lessons, there was simultaneously collection of the quantitative and qualitative data from the participants in the flipped Curriculum Studies class.

In the 1st week, a brief introductory lesson on the flipped classroom method and IUIU e-Learning platform usage was held with learners, before the beginning of the lessons. Students had out-of-class activities on the e-Learning platform as a pre-requisite for the in-class traditional lessons, and this was repeated for each of the four series of lessons. The contents flow taught for the four weeks were as follows;

Week 1: *The Concept of Curriculum and Types of Curriculum and their Interrelationship*
Week 2: *Determinants of Curriculum and Curriculum Elements and their Interrelationship*
Week 3: *Process and Models of Curriculum Design and Development*
Week 4: *Patterns of Curriculum planning and Organization*

Out-of-Class Activities

The lecturer-cum-researcher uploaded the course content on the e-Learning platform, prior to the 1st week of the traditional lesson, for the students to revise as a preparation. The online contents included YouTube videos, pdf documents and assignments. Students interacted on the e-Learning platform.

They downloaded the course content by accessing "my digital classes" in the e-Learning centre. Therefore, the students watched the videos, took summary notes from the pdf documents, and solved the two assigned tasks as expected by the lecturer. Each student submitted both the summary notes and solutions to two assignment problems via the coursework section in the e-Learning platform. This was intended to evidence whether, they actually participated in the out-of-class activities on the e-Learning platform. Responsible students received two marks awarded for each submission, which totalled to eight marks for the four week lessons. This was repeated throughout the four weeks, though with different content and assignment tasks as preparation for the subsequent weeks' lessons.

In-Class Activities

For the traditional in-class lessons, the requisites expected of the students and the lecturer included; submission of summary notes, and solutions to two assignment problems. Then after, the lecturer-cum-researcher wrote the sample question previously posted as assignment problem in the e-Learning centre which the students had interacted upon during the out- of- class lesson, for further group discussion in the traditional class.

In the class, each group discussed and wrote short points on their instructional materials and devices available such as notebooks, manila papers, personal mobile phones, and tablets among others. Later, each of five groups would present their work to the rest of the class within the stipulated time. The lecturer then after clarified skills, ideas, concepts, principles and theories that concerned the students' presentations in each group and discussed the questions raised during the class interactions. The lecturer wrote new course work problems on the board for the subsequent weeks' lessons, and the same content was uploaded for out-of-class discussion on the e-Learning Centre, to wrap up the previous weeks' traditional in-class lessons. These procedures continued for the lessons throughout the four weeks.

Results and Discussions

This section involves description of quantitative data in terms of students' learning interaction, i.e., student-lecturer, student-student and student-content; and their engagement, i.e., behavioural and emotional.

Student-Lecturer, Student-Student and Student-Content Interactions in Flipped Classroom

The mean description of the student-lecturer, student-student and student-content interactions are shown in tables 4 to 6 below.

Table 1
Mean and Percentage Results for the Student-Lecturer Interaction

	Mean (M)	Percent (%)
I supplement on comments made by my lecturer in class	2.90	20.1
I add more explanation on the lecturer's explanation of course material in class	2.77	19.2
The lecturer is effective in replying to my questions	3.15	21.8
I supplement on the lecturer's solution to any challenges with the learning task(s)	2.74	19.0
I ask supplementary questions on questions asked by the lecturer	2.86	19.8

In Table 1, the item saying "the lecturer is effective in replying to my questions" had the highest mean of M=3.15 (21.8%), but the item that says "I supplement on the lecturer's solution to any challenges with the learning task(s)" had the least mean of M=2.74 (19.0%); suggesting that the lecturer was effective in feedback delivery in the flipped learning. However, some students didn't fully get involved in problem solving with the lecturer. Lecturer preparation of learning activities is paramount for enhancing student to lecturer during flipped learning, just as Pardo et al. (2019) suggested that learner involvement depends on the resource selection and content assessments during the learning experience. Further, team work and problem solving activities in learning resulted into interactive learning because they involve students and lecturer in the learning experience (Kanelopoulos et al., 2017).

Table 2
Mean and Percentage Results for the Student-Student Interaction

	Mean (M)	Percent (%)
I interact with other students in this course during the In-class activities	3.30	26.4
I share online materials in the ERP with other students	3.00	24.0
I solve tasks very well with other members in this class	3.17	25.3
In this class students support each other in case of any trouble on the course task(s)	3.05	24.4

In Table 2, item that says "I interact with other students in this course during the In-class activities" was with the highest mean of M=3.30 (26.4%) but the item that says "I share online materials in the ERP with other students" had the lowest mean of M=3.00 (24.0%), meaning students interacted within themselves through exchanging instructional content in discussions during the in-class lesson. Although some students didn't share much of the instructional materials on the e-Learning platform in flipped classroom. As the facilitator of FC, the lecturer should ensure situations to enable student to student interaction especially during the in-class activities. For example, Kanelopouloset al. (2017) suggest that problem-solving and team work activities allow for student

interaction in flipped learning because learning instructions in flipped classroom enhanced students' learning (Zainuddin & Halili, 2016).

Table 3
Mean and Percentage for the Results Student-Content Interaction

	Mean (M)	Percent (%)
The online materials in the ERP are clear	3.01	16.7
The online materials in the ERP are easy to understand	2.86	15.9
I carry out individual research to understand the online task(s)	3.13	17.4
The online materials in the ERP are appropriate for my needs	2.92	16.2
I carry out investigations to answer the online questions in the ERP before the in-class time	3.02	16.7
I do more research to clarify my ideas on the content	3.10	17.2

From the Table 3, item stating "I carry out individual research to understand the online task(s)" had the highest mean of M=3.13 (17.4%), but the item that says "The online materials in the ERP are easy to understand" had the least mean of M=2.86 (15.9%); meaning students had the opportunity to carryout individual learning. However, some students had challenges in learning instructional materials on LMS. The out-of-class activities in flipped classroom provide great opportunity for students to interact with the learning material on their own, especially by watching the instructional videos (Isaias et al., 2017); although the length and quality of the videos matters (Spilka, 2015). This forces the students to conduct their own further learning in order to understand a given subject.

Extent of the Student-Lecturer, Student-Student and Student-Content Interactions in Large Flipped Classroom

Items under student-lecturer, student-student and student-content interactions were computed as average values as shown in Table 7, with the aggregated average means and mean percentages.

Table 4
Aggregated Mean and Percentage Results for the Learning Interactions

	Mean (M)	Percent (%)
Student-Lecturer	2.88	31.9
Student-Student	3.14	34.7
Student-Content	3.02	33.4

Table 4 shows that student-student interaction had the highest mean of M=3.14 (34.7%), followed by the student-content interaction with mean of M=3.02 (33.4%) and the least was the student-lecturer interaction with mean of M=2.88 (31.9%). Meaning in flipped classroom students greatly interacted with peers and the learning materials. Although students interacted with the lecturer,

it was not more than their interactions with the peers and the learning content during flipped classroom method of learning. As revealed in the findings, FC method enhanced students' learning interaction, with greatest enhancement of student to student and student to content interactions, yet it still facilitated students to lecturer interaction though not much as the former interactions. Just as Pardo et al. (2019), and Preece and Popoola (2018) seconded the claims, they found that students interacted during flipped learning because of the opportunities it provides for meaningful learning. Just like the finding in this study, students mostly interacted within themselves and with the content, and least with the lecturer (Sun & Wu, 2016; Zainuddin, 2017).

Behavioural and Emotional Engagements in Flipped Classroom

The mean description of the Behavioural and Emotional engagements are shown in tables 8 to 9 below.

Table 5
Mean and Percentage Results for the Behavioural Engagement

	Mean (M)	Percent (%)
When I'm in this class, I listen so carefully	3.31	20.2
I pay attention in this class	3.36	20.5
In this class I consult in the areas where am not doing well	3.21	19.6
In this class, I do advance reading	3.19	19.5
I participate in class discussions	3.33	20.3

From Table 5, the item saying "I pay attention in this class" showed the greatest mean of M=3.36 (20.5%) but the item that says "In this class, I do advance reading" had the lowest mean of M=3.19 (19.5%). This suggested that students were interested in the learning activities through being concerned in class, which strengthened their content mastery in flipped classroom. Although somehow somewhere students did little on individual learning. Flipped classroom method provides for the attraction of students' attention in learning. This can be facilitated through different behavioural means like; discussions, active learning, collaboration, effective communication, and attitude of care towards students' learning (Larsen, 2015; Jamaludin et al., 2016).

Table 6
Mean and Percentage Results for the Emotional Engagement

	Mean (M)	Percent (%)
When we work on something in this class, I feel interested	3.25	25.4
In this class learning activities are full of enjoyment	3.17	24.8
I enjoy learning new things in this class	3.18	24.9
When I'm in this class, I feel good	3.19	24.9

Table 6 showed that, the item stating "When we work on something in this class, I feel interested" had the highest mean of M=3.25 (25.4%) but the item that states "In this class learning activities are full of enjoyment" was with the lowest mean of M=3.17 (24.8%); meaning students showed interest in class activities, although some didn't enjoy the classes. Through the watching of videos in FC during the out of class time, students' interest can easily be captured in learning just as Kearsley and Shneiderman (1998) theorized that curiosity, interest, and attention among others, promoted students' emotional learning. This is because of more chances for freedom and enjoyment in flipped learning (Hamad et al., 2019).

Extent of the Behavioural and Emotional Engagement in Large Flipped Classroom

Overall average values of Behavioural and Emotional Engagement were obtained from the aggregated items of the behavioural engagement, and from the mean items of the emotional engagement. Table 10 shows the average aggregated means.

Table 10
Aggregated Mean and Percentage Results for the Learning Engagement

	Mean (M)	SD
Behavioural engagement	3.31	0.60
Emotional engagement	3.20	0.68

Table 10 shows that behavioural engagement had the highest mean of M=3.31 (SD = 0.60) and emotional engagement had the lowest mean of M=3.20 (SD = 0.68). This suggested that, the students greatly engaged through showing behavioural characteristics, but yet they at the same time greatly engaged emotionally. In FC, students learned through consultations, careful attention, discussions, watching of the instructional videos on the e-Learning platform, and advanced readings. These behaviours and emotional attributes facilitated students' learning. As Velegol et al. (2015) agreed with the finding that students felt emotionally engaged in re-watching the instructional videos; and Jamaludin et al. (2016) added that through effective communication, collaborative opportunities, discussions, attitude and care of students, and active learning opportunities in flipped classroom, students greatly engage in learning. The study of Jang and Kim (2020) still strongly support the findings; they found that affective domains like emotions and interpersonal attributes such as behaviours were shown more than the cognitive domains.

Students' Perceived Instructional Value of Large Flipped Classroom Model

Five of the interviewed students said that they felt good when flipped classroom method was adapted for teaching and learning, because the method allowed for individual engagement through prior learning on the e-Learning platform, providing self-confidence during in-class activities. Discussions with

the lecturer on the instructional content, provided the opportunity for knowledge consolidation. Although student **F** had fair feeling on flipped classroom method because of lack of immediate feedback provided especially during out of class lessons on the e-Learning platform. Include some verbatim quotes

All the six students argued that flipped classroom enhanced their self-study skill, because it helped them build analytical skills, especially during the watching of the instructional videos, and noting summary from PDF contents. It also strengthened the students' research skill, because of the opportunity provided for further reading especially in re-watching of the instructional videos.

Five students understood the content taught through flipped approach because they remembered part of the instructional content learned. For example, student **A** mastered "*Types and models of curriculum*" and student **B** "*The definition of curriculum, terminologies in curriculum, types of curriculum, models of curriculum design and development and determinants of curriculum*"; citing enhancement by repetitive re-watching of the videos on the eLearning platform among other reasons. In contrast, student **F** fairly understood the content because of challenges in part of the instructional videos.

The students recommended flipped classroom to other instructors for teaching their respective courses, in other campuses of IUIU and other universities. They gave reasons like; flipped classroom was engaging and more active, built relationship with the lecturer, developed self-esteem and self-confidence, prepared students prior to the traditional in-class lessons, and thus eased the understanding of the instructional content. The method allowed students to learn on their own at any time. Approaches especially lecture method, make students passive, and inhibit meaningful learning. Although student **C** recommended flipped classroom but that its application depends on the lecturer.

Qualitative results indicate that, students believe flipped classroom method has lots of positive values for teaching and learning in large classes because most of them felt good and developed self-study skills etc. Just as Isaias et al. (2017), stated that students perceived positive outcomes in flipped classroom. In particular they appreciate the experience of punctuality in flipped class with prior knowledge on the instructional content (Kanelopolous et al., 2017). That made learning quite easy, because flipped involves comprehension of instructional material, assessment, interaction and collaboration.

A few students however, had doubts about flipped learning due to issues to do with provision for immediate feedback on disturbing queries in the LMS, challenges in watching the instructional videos which Al-Harbi and Alshumaimeri (2016) explained that students always faced some challenges in watching the instructional videos and that they needed some substantial time to re-watch again. This study had reasons associated with lecturer's weakness during facilitation. For instance, poor selection of the instructional videos. Conner et al., (2014) also found students having mixed views about flipped classroom. But all in all, students believed that flipped classroom has positive values for teaching and learning in large classes.

Conclusions

The experience revealed was that, flipped classroom method strongly enhanced both Student to Student and student to content interaction. Learners greatly interacted with the peers and the instructional content. It moderately enhanced student to lecturer interaction. Flipped classroom also greatly enhanced both students' behavioural and emotional engagements in a large class. Students actively involved in the learning and believed that flipped classroom method has lots of positive values for teaching and learning in large classes. Although large class size in most cases is associated with negative impact on the lecturer's method employed for teaching (Otaala et al., 2013); but flipped classroom was a great technology enhanced-approach that facilitated students' interactions and engagements in a large class.

Recommendations

Added to other methods of delivering instructions, like the commonest traditional lecture method, co-teaching approach among others, responsible stakeholders should slowly adapt Flipped Classroom Method to support students' interaction and engagement in large classes. Adaption of FC method currently with the advancing technology, will pave way for the future partial or fully flagged eLearning. It is through the customized technological approaches that learners can take lead of their learning. Thus, making learning successful.

Though not all is done, there is need to embark on studies to determine the relationship between the students' interaction and engagement in flipped classroom method. Relationship between flipped classroom method and learning interactions, and the learning engagements should be established. These should be done in large classes of over 200 students.

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