

Enhancing Online Learning Activities for Groups in Flipped Classrooms

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Abstract. Flipped classrooms have been the latest trend in online learning. They have been accepted as a novel model because of an application based environment with the students. In this paper, the flipped classroom model has been studied in the context of online classrooms. The author vents in the context of groups in online classrooms and tries to understand the match within the flipped classroom scenario. This study is conducted with instructors and students to understand this attitude towards online classrooms and to integrate them with the flipped structure. Key requirements are identified from the study; which are proposed to influence the design of such a platform. Finally from the study the gaps are recognized, and the author proposes a novel platform for online group activities with a focus on flipped classroom scenario.

Keywords: flipped classroom, online learning, groups.

1 Introduction

Flipping the classroom, has become a buzzword in the last several years. Flip teaching is a form of blended learning technique in which students engage in learning new content online by watching video lectures. The homework is done in the class with the instructor offering more personalized guidance and interaction to the students; instead of lecturing. The students do lower levels of cognitive work outside of class. They are engaged in reviewing the lectures, viewing the support materials. The students focus on application, analysis, synthesis of content in class, where they have the support of their peers and instructor. The Wikipedia mentions flipping changes the role of teachers from “sage on the stage” to “guide on the side”. This allows them to work with individuals or groups of students throughout the session. The instructor acts a facilitator of the student’s activities and discusses with them their misconceptions [5]. A Flipped Classroom would look very different from the setting of a traditional classroom. There would no necessity of students sitting in individual desks facing the instructor while, they lecture, because of the high interactive nature of the classroom students, instead might sit at tables or desks pushed together. Students are off by themselves working on problems and the concepts that they have learnt in the

lectures, which they reviewed before coming to the class. [12] It may appear that flipped classroom are chaotic, loud, or even messy, but the action and collaboration taking place in the flipped classroom will help in student learning. Students are motivated to try out the problems for they are free to commit mistakes as they aware instructors regard that as a part of the learning process. Flipped Classroom stress on the students working interactively with each other. Students learn by doing and by asking questions to both the peers and the instructors. Though the classroom design in such a scenario may highly depend on the instructor, course and institution. Thus, the interaction within the classroom increases. There is a dynamic of increasing the student interactivity among students.

2 Problem Space

In flipped classrooms, there arises a scenario of working together in groups. Students need to interact more with each other because of the dynamics of the classroom. It can be both for helping or seeking help. Thus, a variable of class interactivity added with instant communication among the peers. In such a classroom students often form their own collaborative groups, which may be to the geography of the class or due to student preferences. Students help each other and learn from each other, instead of relying on the teacher. The teacher might not be regarded as the sole disseminator of knowledge.[13] Flipped classrooms let students carry out meaningful activities instead; that helps them do get engaged and learn. With the advent of such a scenario, in modern day classrooms, leads to the demand and need of course content beyond pdf's and power point, audio and video lectures. For there must be more supplementary materials that can help in in-class activities, in flipped classrooms. Materials that are more organized and that can help enhance students to learn. Working in groups, as well as peer learning, are keys to this set of a classroom environment. As flipped classrooms, support group collaboration in learning by doing. As the flipped classroom setting remains no longer isolated to one individual rather the platforms on which the students work should be group centered instead of being self-centered. A novel platform in such a scenario is where activities can be carried out for collaborative and co-operative learning activities. In such an environment, the students may not require reviews from the instructor but can take benefit from the peers through such platforms. Peer inter-action, review, recommendation can be integrated into platforms to enhance learning activities.

Flipped Learning Classrooms can be supported by active learning strategies for better experiences with peer learning. There is a demand for higher enriched material that can support students while the class is in progress. The flipped class-room matches with the traditional classroom scenario, but the need of a flipped classroom are very different in an online classroom. However, flipped classroom can inculcate the scenario from its traditional classroom into an online platform. There needs to be a novel scenario where even the students of the online courses can maintain the asynchronous nature of the online classrooms. At the same time be a part of interactive learning activity in the online environments.

As students working in the flipped classrooms are definitely not working in isolation. [8]There can be possibilities where students can be connected through the online classrooms.

2.1 Learning Models

Flipped classrooms provide free class time for hands-on work. Flipped Class-room stress on the students working interactively with each other. Students learn by doing and asking questions. Thus, the interaction within the classroom in-creases. There is a dynamic of increasing the student interactivity among students. Students tend to help each other, a process that benefits both the average, advanced and poor learners in the classroom. It justifies the main objective of the flipped class-room. Active Learning; which is to activate the higher order thinking and maximize the class learning time.[8] Active learning forms as the base of such higher order learning that acts on learning by doing.

Adaptive learning strategy is also being supported in many platforms currently. Brusilovsky in his paper proposes an architecture based on adaptive learning that integrates the benefits of the modern Learning Management Systems and educational material repositories. [4] Atkinson et al.'s GOALS tried to develop active learning strategies in an online environment for graduate students. They designed a course that incorporated knowledge from different forms of technology. Learners received voicemails that explained their assignments. It is a learner centered environment; injecting the responsibility of learning on learners. [1,11]

2.2 Understanding the Domain

Based on the reviews from literatures and linking the dots. The prospect of online flipped classroom was sought for as a challenge. It was believed that flipped classroom in an online settings need to be enhanced. For, group activity in online settings is sought for as challenging. The study tries to investigate how can group interaction in a peer learning environment be increased in an online flipped classroom scenario? What enhancements/ features are required for peer to peer interaction in such a case? If there is a novel product that can fulfill these needs of the stakeholders?

3 The Design Study

The study was designed to understand the general attitude of students towards working in groups in online environments. The study tried to understand what challenges were faced and what challenges were expected in online environments while working in groups. The three questions that seemed as a gap that were asked with its break up into minor questions that directed the answers of the interviewed user group. The study was designed to generate data to understand if there exists a gap to work in groups in online environments. The general perception was to understand, from the users, if there can be a novel hypothetical product that can satisfy the gap that is being found in the study conducted.

3.1 Demographics

A set of 10 students and 10 instructors are interviewed across different disciplines to understand the attitudes towards group learning activities. The instructors and students belonged to Informatics, Visual Arts, Business, Engineering, Liberal Arts and Medicine. The diversity in the user set was supposed to give a varied set of results but as the study followed a qualitative approach such diversity was supposed to understand if there are differences in different fields of study or if the pattern found was same. However difference in areas of study has not been taken into consideration in the study.

3.2 Design Study Process

Semi Structured Interviews. The questions that were asked were designed to answer the questions that raised from the existing literature. The questions were targeted to get valuable data for better insights into design synthesis. The interviews were conducted in the natural environment of the user. The interviewer asked the questions over a period of an hour. The interview took notes in paper sheet with the key points of the questions were written. Over the interview, sticky notes that were attached below the key points whenever the interviewer felt something was important, however to comfort the user some of the important points were not noted. However to not miss the interview the entire interview was audio recorded. The putting up of a sheet was an important way to keep up with the interview time without the interviewer being distracted.

The questions that were asked to the students were

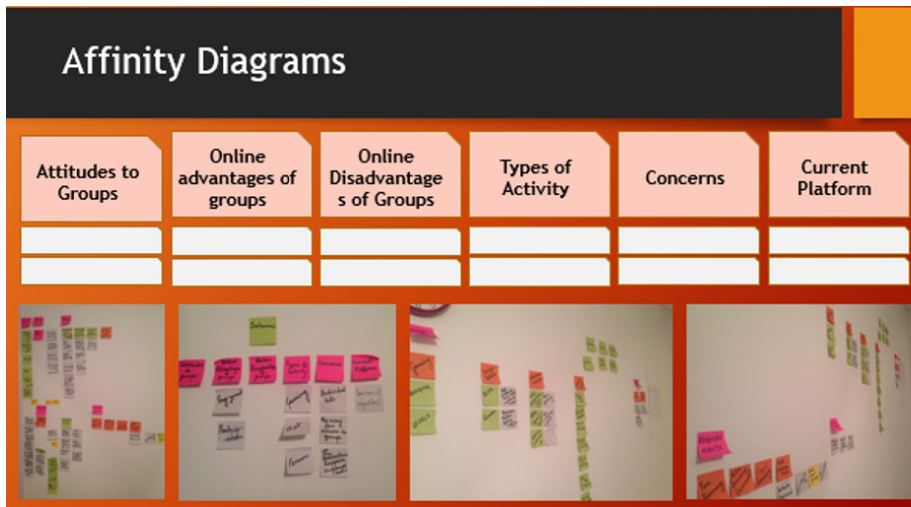
- Do you think online learning classes like blogs and forums help you in any form?
- What is your opinion in group learning in online classes?
- Are you comfortable in working on a project in a group or learning a new concept in a classroom?
- Do you know your peers in the online learning classroom?
- Would you like feedback from them? If yes, can you tell why?
- Do you think group work helps you learn technical skills?
- Do you have an opinion on the time management issue in an online group work?

The questions that were asked to the students were modified to suit the perspective of the instructor.

The Survey. A paper survey was conducted. A set of ten questions. They were respectively being modulated to understand the differences in student and the instructor attitude. The survey was responded after an in-person interview. The survey was generally responded in a time of 2 minutes to 5minutes.

3.3 Analysis of Results

The analysis of the results led the author to come across various concerns. The method of affinity diagram was used to analyze the qualitative data collected. All the quotes that had been received from the interviews were put up in small notes which were then tried to be grouped. Once the data was grouped the respective categories were named. After the categories had been named the relations between each element was looked forth and extrapolated.



3.4 Synthesis of Results/ Requirements

The results were varying. With respect to a negative when it comes to volunteer in taking part in activities online, and, however, the theme of a hypothetical novel product was very positive. The interviewees were adding features and functionalities to the product. Some of the common issues that were observed from the instructors was the need of interactive content that don't need management. Some of the dissatisfaction using major LMS in such a scenario were mentioned with the naming of a few. The need of participation of each member of the team, the need of each student been evaluated without being veiled by the performance of other. There was a major concern about individual performance and evaluation across all the instructors.

Students complained that group activities break the self-paced nature of online learning environments. There is no noise in the online classrooms when they participate in groups. They don't feel connected and don't feel the need to connect with other users in an online environment. There was a high support for a face to face meeting in an online environment if there is a group activity. The said that they would try to have a hangout with the person they have been engaged in a group activity.

4 Design Synthesis

The study highly supported the hypothetical idea of a novel platform which supports the scenario of working together in groups, in flipped classrooms. Based on the study, a conceptual design defining the features of the platform where group activity can be enhanced is provided. The proposed platform is a new interactive communication platform that provides richer contextual environment to enhance the feature of online learning activities in groups.

The proposed platform can help in better in-class activities. It can help in better organized and motivated activities in a peer learning environment. The platform looks into the kind of enhancements that are required for peer to peer interaction and the involvement of interactive media. The students are offered an environment where student receives title and rewards for participation and, assessments. Whenever a student shows up to class excited, motivated, and well prepared additional rewards lie in store. The proposed platform can also be used in traditional learning environments to support in class activities while the class is in progress.

5 Requirement Analysis

The requirements that came up as part of the study were peer learning, providing with a playlist of activities that could be used for the learners, the students should be given a personalized learning space. A space where they are not monitored but receive a positive aura of learning. A place where they feel they are learning something but not being graded. Peer learning was felt as an important aspect of any such platform. These would be the key rules while interacting with any person. The students also would like to interact within a small group where they have the capacity to remember each other's name and skill. As a general feedback, the interviews stressed on Audio and video feedback from the studies. However from a design perspective this might not be an apt thing to do. The student also expressed interest where they are being evaluated by their peers. But it does not make the student feel discouraged. Instead of being evaluated they wanted frequent feedbacks from the environment. There is a need of interactive content. A content that expresses its form in a more expressive manner so that they can visualize their concepts. Though interactivity is not much stressed. Students said that they would want interactive tools to play with which are not very distracting due to their fancy features. The concepts of blogs and forums are criticized. However, they were found important features of the submission as well as evaluation. There should be a lot of peer learning going on. Gamification was something all the interviews carried with theme though the word was not explicitly used in the interviews.

The extrapolation of requirements was from the raw interview data that was received while interviewing. Various design methods were used like the 5why method; the author also used brainstorming methods to analyze the data from the interviews.

6 Design Ideas

A set of design ideas was put up with the features and functionalities of such a platform. A range of such twelve items was listed. They being gamification, socialization, interaction, rewards, noise, learning, activity, fun, peer learning, peer challenge, content aggregation and feedback. They were then arranged with a hierarchy to decide the core of the platform. Features and functionalities for the design ideas were decided on this.

7 V-Learn, a Concept

V-Learn is a platform that suits an environment where students can participate in group activities online. It's a platform that is self-paced. The students need not be synchronously present in the platform. A group is formed based on common interests by the platform. The students can be a part of activities that are based on the lessons that are being released for a particular week. Each student participates in the platform and completes a set of activities that are based on the lessons for the week. But the students' progress is based on the group's progress. They would receive instant notifications from the platform for advancing in the week's task. The students can challenge different groups together. In many cases, there are chances of discrepancies where the group activity in such a platform becomes peer led.

V-Learn is a conceptual model which can be a fit for students looking into the platform for enhanced learning activities and to feel the noise within the classes. Adding socializing features add to the demands of the platform being demanding.

8 Limitations of the Study

The study was conducted with a set of 20 users to understand the attitude of the users towards the attitude towards the online learning environment. The knowledge from this was used to understand the attitude towards these studies. The users were not directly part of the flipped classroom arena but were active participants of online classrooms. The users belonged to different majors that might have led to multiple features being included in the interface.

9 Future Work

The proposed platform has not been developed and tested with the users. The platform would look for testing its hypothesized design with prototypes. The demographics of the user also may be a concern with respect to the discipline.

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