

# A Feedback Session on Flipped Class Room

Manoj Kumar P  
Department of Computer Science,  
CUCEK, CUSAT.

**Abstract---**With the advent of modern digital technologies like internet and mobile technologies, flipping the class rooms have become much more effective. Flipped class rooms are inverted class rooms in which the out-class activities are restricted to watching inbuilt videos whereas the in-class activities include active learning techniques. Flipped class rooms are student centric whereas traditional class rooms are teacher centric. Flipped class rooms can be used to scaffold students to higher order thinking skills. In this study Java programming was taught to the under achievers using the flipped class room approach whereas the high achievers were taught using the traditional class room approach. The study participants were the 4th semester students in B.Tech. Computer Science (2015 admission at Cochin University College of Engineering Kuttanadu, Kerala, India). After the flipped class rooms and traditional class rooms were over, feedbacks from the students were collected over the various responses. This study gives a detailed view of the above responses.

**Keywords-**Flipped Class Room, Traditional class Room , Active Learning, Feed Back.

## 1. INTRODUCTION

There have been several studies on the effectiveness of flipped classrooms in a wide range of subjects but less works was done in this area which checks the feedbacks of flipped class room in these above domains. Here the author studies the flipped class room strategy employed in each area and reports the pros and cons found in the above areas. The study found that flipped class rooms were more effective compared to traditional class rooms in all the above areas. In future more courses will switch to flipped class rooms because of the availability of internet at a cheaper rate. Since the flipped class rooms employ active learning techniques it helped to develop exploratory and inventive skills in students, improved students' innovative consciousness and attitudes etc.

## 11 RELATED WORK

Bishop and Verleger conducted a survey on flipped class. Students preferred teachers to take class rather than watching video lectures. They prefer interactive class room activities over lectures. Evidences revealed that students learning has improved considerably for the flipped version compared to the traditional one. [1]. Stephanie Gray Wilson redesigned a statistical course to a flipped class room. This was done to increase student interest, engagement and retention of the types of statistical knowledge and skills needed for students to be successful in their academic and professional careers. Materials from the website ([www.khanacademy.org](http://www.khanacademy.org)) were provided. 41% of the students indicated that they found the site helpful in obtaining the learning objectives of the course. There was overall improvement in students' grade. Some students responded that the lack of lecture as a problem because they have to teach themselves an entire chapter of

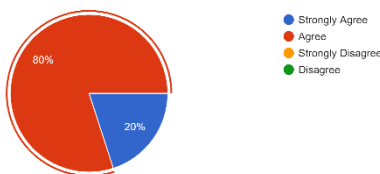
statistics. However, the changes imparted created a positive impact on students' attitude towards the class and it also reported a huge improvement in students' performance [11]. Diane Billings flipped lectures and discussions in Nursing Education. The task of memorizing facts in flipped class room is replaced with tasks applying in a real-world clinical situation. Studies shows that there is a considerable improvement in exam scores for students who employs flipped class room. But students' satisfaction was less. This happened because flipped class room requires more work compared with the traditional approach [12]. Herala et al. taught programming courses in a flipped method of learning. The results showed that flipped class room model found to be more efficient than the traditional class room. In flipped class rooms that students can learn at their own pace and teachers can concentrate on actual problems instead of repeating the basics in the class room and no costly lecturing is needed. At the end the feedback is that students learning has improved [2]. Hsieu-Ting Hung conducted English language learning course in flipped mode. The results showed that flipped class room showed considerable improvement in student performance compared to the traditional one. The results also showed that there is an overall positive effect on students learning attitudes [3]. Gregory S. Masol et al. conducted flipped class room in a control systems course in the department of Mechanical Engineering at Seattle University, USA. The two-year course was designed in such a way that the first year was taught using traditional class room where as the second year was taught using flipped class room. The study found that the content coverage in the flipped class room were much more compared to the traditional class room. Students participating in the flipped class room performed as well or better on comparable quiz and exam questions and on open ended design problems. Since the flipped class room was new to the students they struggled initially with the new format but adapted quickly and found the flipped class room format to be satisfactory and effective [4]. Mikael Cronhjort et al. introduced flipped class room approach in teaching calculus. Rate of failure decreased and the grade score improved in the flipped class room. The comprehensive survey showed that student's participation was more in the flipped group [5]. Heather D Hussey et al. introduced flipped class room in a psychology course. The study conducted in the field shows that students engaged in the flipped course design enjoy or prefer the course structure, regardless of actual learning outcomes. Students in the flipped course had outstanding academic performance compared with the traditional course. Learning was more effective in the flipped course compared with the traditional course. Teachers who employed flipped class rooms found that they are more enjoyable to teach, student involvement was high, one to one

interaction with the students was also high and found greater enjoyment in the interactions [6]. Mike Mavromihales and Violeta Holmes introduced flipped mode in a module of the manufacturing technology and practical workshop-based work course in engineering and technology studies. Presentations using power point, study notes, audio and visual presentations were provided to watch and study as part of pre-class activity and the in-class activity are devoted to exercises, projects and discussion. The objective of the study was to find out how effective flipped class room approach was and how the students fared in this specific teaching technique. The feedback collected from the participants showed the higher success rate of this teaching technique [7]. Manoj Kumar.P et al. taught the under achievers programming in java using the flipped class room and the high achievers were taught using the traditional class room. Underachievers were scrutinized and their performance was compared with the high achievers after undergoing flipped class room sessions. The results showed that low achievers performed equally well with the high achievers of the traditional class room. [8]. B.Schmid flipped first semester engineering dynamics course. Here the pre-class activities are conducted by using pen casts. During lectures voting using clickers were enabled to stimulate peer discussion. After the discussion was over the students were asked to revote on the same questions. The second voting results improved tremendously because it was after the peer discussions. The solution was explained either by a student or a teacher. The remaining lecture was given in a traditional format as text book exercises to be worked from home and the right answers to these exercises were uploaded in the course home page. One class was taught by using traditional method while the other class was taught by the method described above by the same teacher. The results showed positive learning outcome for flipped class room in engineering dynamics course [9]. S.se et al. flipped class a Linear Algebra course. Pre class lectures were sent as videos and the students were asked to send feedbacks before the actual class, especially on the points he/she failed to understand. This enabled the teacher to focus on the weaker students of the class and helped the teacher to clarify the concepts in the best possible way. New computational experiments were framed to get maximum participation. As a result, active learning took place and the learning became more effective [10].

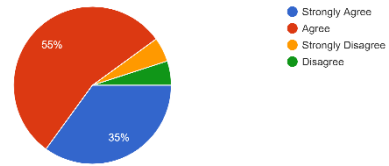
### 111 FLIPPED FEEDBACK

The following questions were asked in the survey and the following responses were received from the twenty participants. The responses are depicted graphically as follows.

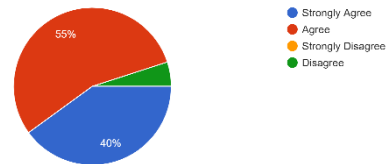
I like solving computing problems.  
 20 responses



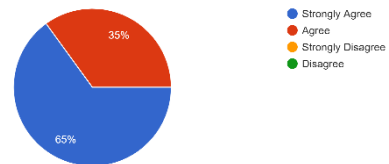
The subject 'Data Structures' was interesting to me.  
 20 responses



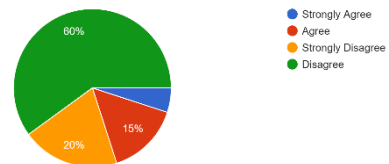
I require more time to understand 'Data Structures' better.  
 20 responses



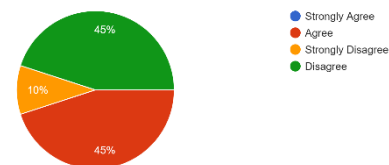
Flipping-the-class room makes learning joyful.  
 20 responses



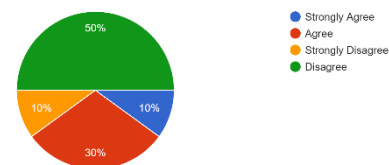
I do not get the opportunity to view the videos and other materials online because I do not have Internet connectivity at my home/hostel.  
 20 responses



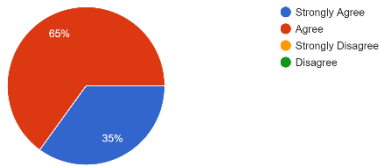
I have Internet connectivity at my home/hostel, but with limited bandwidth. This is the only difficulty that prevents me from watching/reading online videos/materials.  
 20 responses



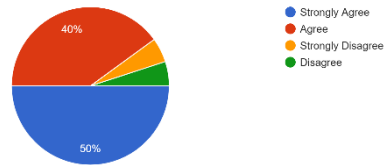
Availability of the videos on-time is higher among the day-scholar students compared to the hostellers.  
 20 responses



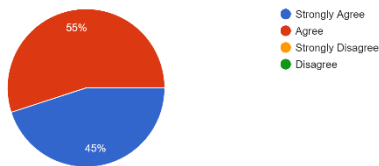
If I get the videos and other online materials sent by my teacher on-time, I feel that I get enough time to watch/read it before coming to the class.  
 20 responses



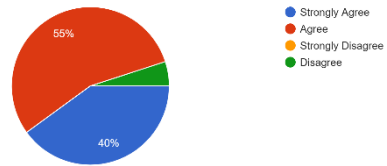
Based on the video, I prefer to spend the time in class to be utilized effectively for problem solving and other activities.  
 20 responses



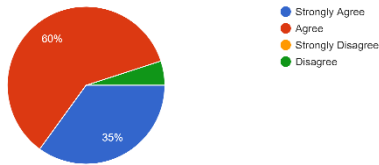
From the experience I got in flipped-classroom method, I strongly suggest to give early notices to us regarding a topic with its probable time-table with tent. This will definitely help us to prepare better.  
 20 responses



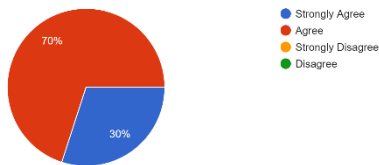
I enjoyed the lessons taught in the class using flipped-classroom method more than the lessons taught using traditional teaching.  
 20 responses



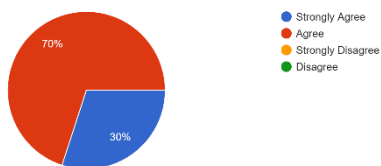
Notice period with videos and materials may be given one-week in advance.  
 20 responses



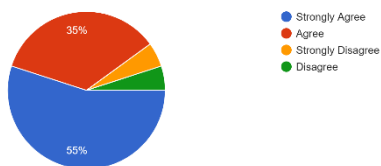
I go to the class, with the knowledge acquired after watching the videos and reading the materials supplied.  
 20 responses



I like to watch videos (created and featured) by our teacher compared to other readily available videos.  
 20 responses



In my opinion, as the video and other materials are always available to me (as offline content), I can go back and clear doubts at any time.  
 20 responses



After obtaining the following responses the following question was asked. The question was to state their experience on flipped class room. The answers of the twenty subjects are listed below: -

- 1) Earlier I am learning through traditional class but after attending the flipped class room I gain some new experience of learning.
- 2) Flipped class is more effective.
- 3) Amazing and a new way to learn.
- 4) Awesome.
- 5) The concepts uncached in a regular class room can be easily and effectively conveyed through this method.
- 6) Enjoying
- 7) It is a really different approach than I am familiar with and I whole heartedly support its further propagation in other fields of education.
- 8) This system allows students to drastically reduce the stress factors and provide a fun learning environment for all.
- 9) 22:1 ratio is far better than 45:1. Time do matter for understanding and programming which we all get in flipped classes.
- 10) It was a nice experience and it helped a lot.
- 11) I liked it because after watching I understand everything
- 12) Good.
- 13) It was a good experience for those who are not good at programming
- 14) Makes me to understand more about topics,
- 15) It was simply fantastic as my coding got better and better.
- 16) Nice.
- 17) Interesting
- 18) Easy to understand
- 19) It helped me to improve my knowledge in programming. Helped me to understand the programs.
- 20) It was a nice experience and it helped a lot.

Then suggestions were invited for improving flipped class room method of teaching and learning. The following suggestions were obtained: -

- 1) Usage of on-screen coding, implementation of daily problem solving, including out of box questions, more usage of tricky parts of concepts and Providing some assignments daily.
- 2) Class notification should come at least 7 days earlier.
- 3) Should include more theory in class based on the videos watched. Seminar classes should be taken from the videos watched.
- 4) More frequent arrangements needed.
- 5) The college activities and the flipped class room should be in synchronization so that the students regularly and honestly do the home assignments. Flipped class room technique should be used with all the subjects.
- 6) The videos can be shown in the class itself.
- 7) As reported in the survey if a time table is also provided with the list of videos earlier it would be helpful.
- 8) It will be better, if there is an option to implement the program in java from class after proving algorithms.
- 9) Provide more time for students,
- 10) Digital classes should also be there parallel with the flipped classes.
- 11) Please give coding problems than multiple choice questions.
- 12) Need more classes.
- 13) No suggestions. Continue it as it is.
- 14) No suggestions.
- 15) Digital class rooms.
- 16) Programming in java should be improved.
- 17) Video showing in classed.
- 18) More number of classes.
- 19) Nothing,
- 20) It would be better if it covers all the syllabus.

#### IV CONCLUSION

From the feedbacks of the students it is evident that flipped learning was a wonderful experience for the students. Learning became simpler and easier. It was easy to understand. Students enjoyed learning because the classes were interesting. Since the number of students were less in number, it was a nice experience. Flipped learning allowed students to drastically reduce the stress factors and provide a fun learning environment for all. All these factors made flipped learning more acceptable. I think in future traditional class rooms will give way to flipped learning because of the above reasons stated.

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