

Changing the Centre Stage for Effective Teaching and Learning : Flipped Classroom Approach

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ABSTRACT

An alternative to the traditional lecture mode of teaching which is actively being practised and has gained a tremendous amount of attention is the flipped classroom approach. In flipped classroom model the pre-learning materials like online audio, video and readings are shared in advance. Students use these materials prior to coming to class which leads to freeing up the class for discussions, hands-on applications, problem-solving, games and other engaging and collaborative activities. In this type of setup the role of the teacher/ instructor changes from deliverer of content to guiding students through a series of engaging and experiential-learning activities. During the course, students learn how to find answers together with the questions they prepared before the lesson i.e. group learning, problem-solving and analytical skills. The present research emphasizes understanding the student's perspective regarding flipped classrooms. Students being important stakeholders, this research considers their perspective as a crucial element to the present study. This study was conducted amongst students studying in management colleges located in the National Capital Region (NCR) with a sample size of 211 respondents.

Keywords: Flipped classroom, Learning material, Learning.

I. INTRODUCTION

In the 21st century, the traditional lecture style of teaching remains the most popular and commonly found in all kinds of college courses worldwide. Students and teachers both are familiar with the traditional lecture method and are generally comfortable in the conventional classroom. For many, it is a method that yields positive and better results. However, there are better approaches for everyone regarding learning style and flexibility. In our century, rapidly developed technologies affected education

training fields as they do in all areas. Change in knowledge and technology is so fast that in education also, development with innovative learning approaches is rapidly changing. This change and transformation in the education training field take out a new strategy: flipped classroom system in education. The flipped classroom approach, accepted as the most popular and active-based approach, is a specific change in blended learning. The main aim of this new learning approach is to prepare students in the subject before the course and during the period by applying

activities that increase the quality of class participation and education.

A flipped classroom is “a pedagogical model in which the typical lecture and homework elements of a course are reversed”. Video lectures, readings, and podcasts are just a few tools that allow students access to course materials and lectures outside of class time, mainly devoted to hands-on activities or discussion. This term has become widely adopted to mean any classroom that uses prerecorded material followed by a more active classroom setting. The nature of flipping a classroom is that the instructor of a course serves in many roles, including subject matter expert, instructional designer, and developer. The students in the flipped classroom use self-directed learning methods to review and critically consider materials outside of class and then actively apply what was learned in a collaborative class environment. While flipping holds promise for helping students achieve meaningful learning outcomes and for assisting instructors in making more efficient use of class time, it is but one of many instructional strategies.

The hands-on and interactive activities associated with the flipped classroom may better accommodate students of this millennium since the teacher, who acts like a facilitator, can guide the process and help students. At the same time, they are engaged in learning activities. In contrast, students in traditional lecture-style courses typically encounter difficulty learning in class and the most complex and frustrating outside of class, where they likely need access to such instructional help.

II. REVIEW OF LITERATURE

The flipped classroom is an approach that increases active learning activities and allows the student to use his knowledge in class with the guidance of a teacher. There are many definitions regarding flipped classrooms in literature. According to Bishop and Verleger (2013) flipped classroom is a student-centred learning method consisting of two parts interactive

learning activities during the lesson and individual teaching based directly on the computer outside the class. Mull (2012) defined it as a model that provides students to prepare themselves for the lesson by watching videos, listening to podcasts and reading articles. According to Milman (2012), it is an approach aimed at the efficiency of classes by transferring knowledge to students via videos and vodcasts, as well as through discussions, group works, and applications during the course. Hamdan and others (2013) explained flipped classroom is not a defined model; instead, it is a model that teachers use to compensate for the demands of students by using different equipment. Since educators in other countries use flipped classrooms with various methods, this caused the changing of flipped classroom concept to flipped classroom approach. It is emphasized that this new approach can be used with different learning methods (Flipped Learning Network-FLN, 2014).

Lord and Camacho (2007), in their survey of engineering faculty, found that only 36 % of teachers think that the traditional lecture style is good, whereas 60 % of teachers teach in the lecture style. Most faculty members recognized the need for an active learning environment and its incorporation. In this regard, one obstacle is the coverage of the course syllabus. In contrast, another obstacle is the delivery of basic knowledge, which competes with the application part of that knowledge within specified class time. Today's millennium students need both active and passive learning opportunities within class time.

Frاند (2000) mentioned in his research that students of the new millennium believe that doing is more important than knowing and that learning is a trial-and-error process. Lage, Platt, and Tregalia (2000) found that students in their economics courses felt they learned more in the flipped environment than in a lecture course. Students in their class enjoyed the hands-on as well as the group work experience and interaction with their classmates and felt easier asking questions in the less formal flipped classroom. Carlisle

(2010) mentioned in his study that he used the flipped classroom method in his introductory computer programming course. Interestingly, students indicated that the instructional videos he had developed for the system helped them learn the material, and they liked having more time to do hands-on programming work in class.

Deslauriers, Schelew, and Wieman (2011), in a large-enrolment physics course, compared learning achieved using a traditional lecture approach to that completed using a 'deliberate practice' approach with characteristics of the flipped methodology. The study found increased student attendance and higher engagement in the non-lecture section. Students in the non-lecture area also did more than twice as well on the given test compared to those in the lecture section. Day and Foley (2006) applied the flipped classroom approach in two human-computer interaction course sections. Using a small-scale quasi-experimental design, they taught one section using traditional lectures and one section using the flipped approach. They found that students in the flipped class section performed better on every course assignment.

Bette et al. (2014) found that students within a flipped classroom performed as well as their peers in a traditional classroom on the final exam performed well, representing conceptual understanding. They found this result necessary as the flipped classroom students learned the essential mathematical skills from their linear algebra coursework and enjoyed the classes more.

In a survey of university students on learning environment and activity, Strayer (2007) studied the comparison between a class that received traditional instruction and a class that was given flipped instruction. He found that students in the Flipped Classroom "preferred and experienced a higher level of innovation and cooperation in their classroom". Strayer (2007) also noted that students were less satisfied with the class structure, though they enjoyed the innovation and cooperation aspects of the flipped

classroom. The unstructured model of the course brought unsettledness among students, which needed to be experienced in the traditional lecture classroom. Strayer suggested that students should have a choice regarding how they interact with the course content, the activities in class should be less open-ended and more step-by-step, and lastly, that students be given a significant opportunity to reflect on their learning.

III. OBJECTIVES OF THE STUDY

The primary purpose of this study was to provide insight towards Flipped classrooms with an emphasis on student perceptions. The following are the objectives of the study –To study the flipped classroom approach.

- To study the management students' perception of the flipped classroom approach.
- To know whether there exists a significant difference level of management students' perception based on various parameters like different age, gender, educational qualification and comfort level with Information Technology among management students under study.

IV. HYPOTHESIS OF THE STUDY

In order to know the significant difference between management students' perception of the flipped classroom approach with reference to three demographic variables and comfort level with Information Technology, following hypothesis have been tested:

H₀₁: There is no significant difference in students' perception towards flipped classroom approach between students of different age group.

H₀₂: There is no significant difference in students' perception towards flipped classroom approach between male and female students.

H₀₃: There is no significant difference in students' perception towards flipped classroom approach between students of different qualifications.

H₀₄: There is no significant difference in students' perception towards flipped classroom approach among the students having different comfort level with Information Technology.

V. RESEARCH METHODOLOGY

This study is based on the survey results of 211 respondents. The self-administered questionnaire was circulated to 400 respondents, out of which 216 were received, but due to some missing values in five responses, only 211 of them were considered for the study. The respondents were students pursuing various undergraduate and postgraduate management courses in universities and colleges located in Delhi NCR. These students had the experience of attending flipped classes and are aware about the lecture based "Sage on Stage" and Flipped based " Guide on Side" classroom conduct.

The data were analyzed with the help of SPSS 19. First demographic data was tabulated as frequency and percentage distribution. Cross-tabulation of data was done where there was a need to know the joint distribution of two or more variables. To test the various hypotheses given in the study, independent sample t-test and multivariate analysis ANOVA were used.

VI. RESULTS AND ANALYSIS

6.1. Analysis of Demographic Distribution of Respondents

6.1.1. Age wise distribution of respondents

The age of the respondents varies between 20 years to 30 years. There were 2% responded between the age of 20 to 21 years and 4% of the respondents were having the age more than 25 years, whereas 71% of the respondents were in the age group of 21 to 23 years (Table 1)

Table 1: Age wise distribution of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Age Group	20-21	4	1.9	1.9	1.9
	21-23	150	71.2	71.2	73.1
	23-25	48	23.1	23.1	96.2
	Above 25	8	3.8	3.8	100.0
	Total	210	100.0	100.0	

6.1.2. Gender-wise distribution of respondents

There were 61% male and 39% female students who shared their opinion on the flipped classrooms (Table 2).

Table 2: Gender wise distribution of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Gender	Female	82	39.2	39.2	39.2
	Male	129	60.8	60.8	100.0
	Total	211	100.0	100.0	

6.1.3. Qualification wise distribution of respondents

Out of the total number of respondents, 172 i.e. around 81 % of the respondents were perusing a post graduation course in management (MBA/ PGDM) and around 19 % of them were doing under graduation course in management (BBA/BBM)(Table 3).

Table 3: Qualification wise distribution of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Qualification	PG	172	81.1	81.1	81.1
	UG	30	18.9	18.9	100.0
	Total	211	100.0	100.0	

6.1.4. Distribution of respondents with respect to comfort level with information technology

Table 4: Comfort level of various age group with technology

		Comfortable	Highly comfortable	Moderately comfortable	Not at all comfortable	Total
Age	20-21	3	1	0	0	4
	21-23	88	25	37	1	151
	23-25	26	12	9	1	48
	Above 25	5	1	2	0	8
	Total	122	39	48	2	211

Table 5 Comfort level of various age group with technology

		Comfort level with technology Among Different Genders				Total
		Comfortable	Highly comfortable	Moderately comfortable	Not at all comfortable	
Gender	Female	47	11	24	1	83
	Male	75	28	24	1	128
Total		122	39	48	2	211

Most of the students rated themselves comfortable with the use of technology (Table 4 and 5). They also stated that on an average they spent 1 to 2 hours every day watching online videos related to classroom content. (Table6 and 7)

Table 6: Time Spent on Watching Video by Different Age Group

Age	Time Spent on Watching Video by Different Age Group	Total
20-21	3	4
21-23	88	151
23-25	26	48
Above 25	5	8
Total	122	211

		1-2 Hour	Less Than an Hour	More Than 2 Hour	Total
Age	20-21	2	2	0	4
	21-23	73	38	40	151
	23-25	24	8	16	48
	25	3	3	2	8
Total		102	51	58	211

Table 7: Time Spent on Watching Video by Different Genders

		Time Spent on Watching Video by Different Genders			Total
		1-2 Hour	Less Than an Hour	More Than 2 Hour	
Gender	Female	40	22	21	83
	Male	62	29	37	128
Total		102	51	58	211

But when the question was asked whether these videos and readings were discussed or they are supplemented with lecture in the classroom, more than 75% of the respondents were of the opinion that classes are still held in lecture mode. (Table 8 and 9)

Table 8: Opinion of different age group on Lecture Mode Teaching

		Lecture Mode		Total
		Yes	No	
Age	20-21	3	1	4
	21-23	115	35	150
	23-25	39	10	49
	25	5	3	8
Total		162	49	210

Table 9: Opinion of different Gender on Lecture Mode Teaching

		Lecture Mode		Total
		Yes	No	
Gender	Female	40	22	83
	Male	62	29	128
Total		102	51	211

Gender	Female	59	24	83
	Male	102	26	128
Total		161	50	211

When respondents were asked about, whether they have done any self paced course or not more than 50% of male students and 25% female students have done a few self paced courses and hence are motivated to learn by themselves (Table 10 and 11). The research also says that students in the age group of 23 to 25 are more motivated to do self paced course, as almost 50% of the students in the age group of 23 to 25 have done some self paced course as compared to 33% students in the age group of 21-23.

Table 10: Gender Vs Done Self Paced Courses

		Done Self paced Course		Total
		Yes	No	
Gender	Female	23	59	82
	Male	64	65	129
Total		87	124	211

Table 11: Age Groups Vs Done Self Paced Courses

		Done Self Paced Course		Total
		Yes	No	
Age	21	1	3	4
	21-23	54	96	150
	23-25	26	23	49
	25	5	3	8
Total		86	125	211

6.2. Students’ perception level of flipped classroom approach

The questions in the questionnaire were so worded that each one of them indicated students’ positive perceptions. The mean weighted score of all responses was calculated and used to indicate students’ perception levels. Students’ perception level towards flipped classroom approach was 3.62 out of 5 which is above average or on the higher side. This result

indicates that management students under study have shown a positive attitude towards flipped classroom approach. They are keen to learn in interactive and technology-oriented environments. Students liked this innovative approach to learning than the traditional lecture style.

6.3. Hypothesis and Evaluation:

In order to know the significant difference between management students’ perception of the flipped classroom approach with reference to three demographic variables and comfort level with Information Technology, following hypothesis have been tested:

H01: There is no significant difference in students’ perception towards flipped classroom approach between students of different age groups.

In order to understand whether there was any significant difference in the perception of the students between different age groups, one-way ANOVA test was conducted. The p-value obtained at the 95% level of confidence was 0.024, which is less than 0.05, hence null hypothesis is rejected. This indicates that students have a positive perception towards the flipped classroom, but the opinion across different age groups is not the same (Table 12). Students of the youngest age group (< 21 years) under study were having the highest positive perception (mean score = 3.9 out of 5) towards flipped classroom approach than the older age group (> 25 years with mean score = 3.56 out of 5). This gives a clear indication that the upcoming younger generation is more adaptive towards adopting new ways of technology-oriented learning

Table 12: ANOVA: Age and Students’ Perception towards Flipped Classroom

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.474	3	.491	3.220	.024
Within Groups	31.730	208	.153		

Total	33.204	211			
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H02: There is no significant difference in students' perception towards flipped classroom approach between male and female students.

In order to test the above hypothesis, an independent sample t-test was applied and it was found that the perception of both male and female students is not significantly different ($p > 0.05$). Both male and female students have almost the same high positive perception towards flipped classroom approach and believe that it is more supporting and engaging and results in better learning.

Table 13: Descriptive Statistics – Gender and Students' perception towards flipped classroom approach

Group Statistics					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
Perception towards Flipped Classroom	1	129	3.6322	.35806	.03153
	2	83	3.5954	.45162	.04957

Table 17: One sample t test – Gender and Students' perception towards flipped classroom approach

Independent Samples Test	
Levene's Test for Equality of Variances	t-test for Equality of Means

	F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Perception towards Flipped Classroom	.644	.423	.658	210	.511	.03680	.05589	-.07339	.14699
								-.07930	.15290

H03: There is no significant difference in students' perception towards flipped classroom approach between students of different qualifications.

In order to test this hypothesis, an independent sample t-test was conducted and the results of the test indicate that there is no significant difference in students' perception towards the flipped classroom approach across different qualifications (table 15) as the p-value is greater than 0.05. Respondents under study were undergraduate and post-graduate management students. The average perception of students undergoing both undergraduate and postgraduate courses towards flipped classroom approach is strongly positive (table 14) and students believe that it is useful in retaining learning and motivating them to participate in group work and class participation.

Table 14: Descriptive Statistics – Educational Qualifications and Students' perception towards flipped classroom approach.

Group Statistics					
	Educational Qualification	N	Mean	Std. Deviation	Std. Error Mean
Perception towards Flipped Classroom	1	172	3.6288	.34357	.02620
	2	40	3.5703	.57530	.09096

Table 15: One sample t test - Educational qualifications and Students' perception towards flipped classroom approach.

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Perception towards Flipped Classroom	Equal variances assumed	5.374	.021	.839	210	.402	.05850	.06968	-.07887	.19587
	Equal variances not assumed			.618	45.666	.540	.05850	.09466	-.13208	.24908

Ho4: There is no significant difference in students' perception towards flipped classroom approach among the students having a different comfort level with Information Technology.

In order to test the above hypothesis, one-way ANOVA test was carried out to know that whether there exists any significant difference in students' perception towards flipped classroom approach among the students having four different comfort levels with Information Technology. The comfort level of the students varies between highly comfortable to not at all comfortable. The hypothesis testing indicates that the null hypothesis is not rejected and hence the difference in the perception is not significant ($p\text{-value} > 0.05$). Students of all categories of comfort levels with Information Technology were having highly positive perceptions towards flipped classroom approach. This result shows that the new generation of young students was keen towards this new learning approach irrespective of their comfort level with Information Technology.

Table 16: ANOVA- Students' perception towards flipped classroom approach among the students having a different comfort levels with Information Technology

Perception towards Flipped Classroom					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	.397	2	.198	1.263	.285
Within Groups	32.807	209	.157		
Total	33.204	211			

VII. CONCLUSION

The study aimed to study and compare management students' flipped classroom approach with different demographic variables i.e. age, gender and educational qualification and also their comfort level with Information Technology. On the basis of analysis

of results, it was concluded that overall students' perception towards this innovative approach was very high which is a very good sign for the development of new generation business leaders as they are keen to adopt new methods of learning. The study brings out some startling revelations in the context of demographic variables that with age there is a significant difference in students' perception towards this innovative approach. The youngest category of students was having highest positive perception. The same is not seen apparent in the case of gender, educational qualification and comfort level with Information Technology.

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