

Effectiveness of Flipped Classroom for Teaching Anatomy and Student's Perception in Covid -ERA.

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Abstract

Introduction: Recently, medical education has attracted increasing amounts of attention as well attributable to the flipped classroom method of instruction. Due to the complexity of the healthcare system and advancements in the medical field, it is extremely challenging for medical educators to balance more course material with less in-person instruction time.

Aim: To evaluate the effect of flipped classroom for teaching anatomy and student's perception in COVID -era.

Material and methods: The current retrospective study was carried out with institutional approval in the Department of Anatomy at the Government Medical College of Jammu. The study involved 120 first-year MBBS students in total. The data was entered into a Microsoft Excel spreadsheet and examined using SPSS version 21.0.

Result and observation: The study participants' average age was found to be 20.5 years and 2.1 years, with a male to female ratio of 1.2:1. 90% of students who took their exams using flipped teaching did so successfully, compared to only 75% of students who took their exams using traditional teaching, demonstrating the effectiveness of this method of teaching anatomy to students.

Conclusion: It is concluded that the flipped teaching method is more effective than traditional teaching method.

Keywords: COVID-19, Traditional learning, Flipped classroom, Perception, Anatomy and Effectiveness.

Introduction

"The sage on the stage" has been a traditional method of teaching since ancient times. The typical classroom presents teachers as content producers and students as content consumers. Students are thus rendered passive in the process of learning in the traditional classroom setting.¹

A flipped classroom (FC), also known as a mixed learning strategy, is a setting where students are given the opportunity to learn about a subject at

home before working through it in class. The FC is a teaching strategy that puts more emphasis on student-centered learning outside of the classroom by shifting the majority of teacher-centered instruction there.^{2,3}

The flipped classroom approach to teaching has drawn more and more attention recently for medical education also.⁴ Both medical educators and students have a huge difficulty as a result of

the complexity of the health care system and advancement in medical profession, as they have to balance more course material and less in-person instruction time. Therefore, we have to modify how we deliver medical education in accordance with medical curriculum.^{5,6}

Flipped classroom teaching (FCT) is a pedagogical intervention that is better for students than regular anatomy teaching approaches. It is referred to be a type of blended teaching-learning approach in which students are exposed to topic material at home in the form of presentations, photos, videos, notes, etc., and students exercise concepts and applied aspects during the flipped sessions.⁷

The evidence reveals that flipped classroom learning increases student satisfaction and appears to boost academic performance.⁸

Thus, the present study was undertaken with the aim to evaluate the effect of flipped classroom for teaching anatomy and student's perception in COVID -era.

Material and methods

The present retrospective study was conducted in the Department of Anatomy, Government Medical College, Jammu over a period of 1 year, after obtaining the Ethical permission from the institution. A total of 120 students (60 students

studied anatomy with traditional learning and 60 students studied anatomy with flipped classroom approach) of MBBS 1st year were included in the study after obtaining the informed consent from them.

Inclusion Criteria:

1. First year MBBS students.
2. Students studied through flipped classroom during COVID-19 era.

Exclusion Criteria:

1. Students who refused to participate.

Parameters of Assessment

The parameters of assessment were:

- a. Analysis of examination data of traditional classroom teaching (pre COVID era) and flipped classroom teaching.
- b. Open ended survey and feedback to know the student's attitude regarding teaching method on Likert's scale.

The data was recorded in Microsoft Excel sheet and analysed with the help of SPSS version 21.0.

Observation and Results

In our study the mean age of the study subjects was 20.5±2.1 years and the male to female ratio was 1.2:1.

Table 1: Analysis of examination data of traditional classroom teaching (pre COVID era) and flipped class room teaching

n=120

Result	Traditional teaching		Flipped teaching	
	n	%	n	%
Pass	45	75	54	90
Fail	15	25	6	10

Table 1 and figure 1 showed the comparative analysis of examination data of traditional classroom teaching (pre COVID era) and flipped class room teaching. It was observed that the flipped teaching was more effective in teaching the Anatomy to students as 90% students passed successfully their exam with flipped teaching, whereas only 75% students passed successfully their exam with traditional teaching.

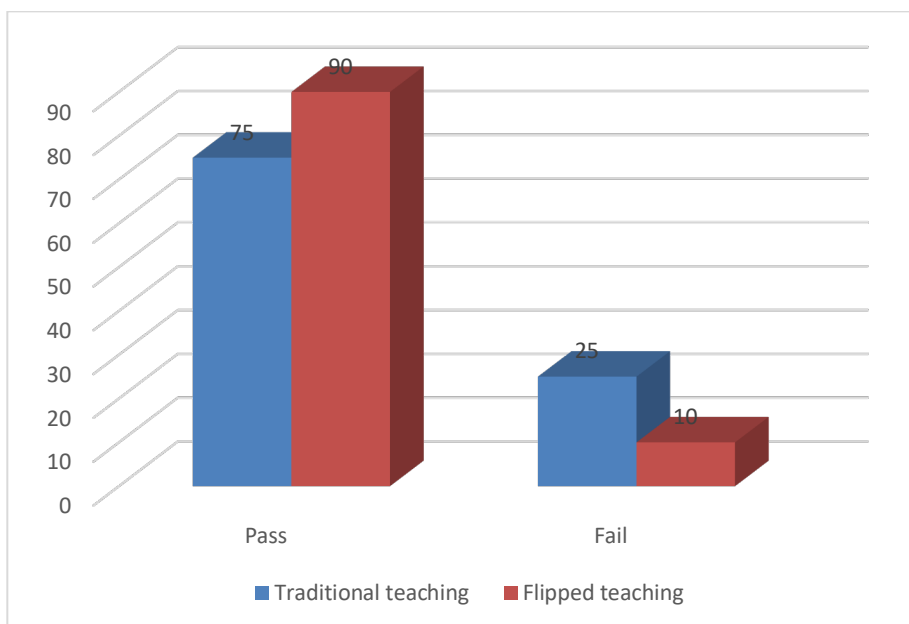


Figure 1: Analysis of examination data

Table 2: Mean score of traditional classroom teaching (pre COVID era) and flipped class room teaching

n=120

Mode of teaching	Mean \pm SD
Traditional	79.39 \pm 2.71
Flipped	86.52 \pm 1.98

Table 2 depicted the mean score of traditional classroom teaching (pre COVID era) and flipped class room teaching. A significant increase in the final exam score of students was found with flipped teaching than traditional teaching. The mean score with traditional teaching was 79.39 \pm 2.71 and mean score with flipped teaching score was 86.52 \pm 1.98.

Table 3: Item wise analysis of feedback of students for flipped teaching

n=60

Item	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Prereading material was accessible on e-learning portal.	35%	29%	30%	5%	1%
Confidence level was increased.	38%	30%	26%	4%	2%
Knowledge level was increased.	43%	35%	18%	2%	2%
Flipped teaching is better than traditional teaching.	42%	33%	22%	3%	0%
Flipped teaching is helpful than traditional teaching.	45%	40%	11%	1%	3%
Classes was interactive and the content was applied in learning.	39%	36%	22%	2%	1%
Classes were well organised.	50%	27%	20%	1%	2%
Learner's involvement was high.	45%	30%	22%	2%	1%

Table 3 showed the response of the students regarding flipped classroom on 5-point Likert scale. The analysis of feedback showed that the majority of the students learnt from the flipped teaching method perceived that it was very helpful in their learning, the content was accessible and overall, it helps in increasing their knowledge and confidence.

Discussion

The data was analysed and discussed with previously available literature. In our study the mean age of the study subjects was 20.5 ± 2.1 years and the male to female ratio was 1.2:1. These findings are consistent with the study conducted by Varachotisate P *et al.* (2023) reported that the mean age of the study subjects in pre-COVID-19 era group was 19.53 ± 0.67 years and in COVID-19 era group was 19.60 ± 1.13 years. In pre-COVID-19 era group 54% subjects were males followed by 46% females and in COVID-19 era group 49% subjects were males followed by 51% females.⁹

In our study the flipped teaching was more effective in teaching the Anatomy to students as 90% students passed successfully their exam with flipped teaching, whereas only 75% students passed successfully their exam with traditional teaching. These results are similar to the study performed by Priyanka P *et al.* (2022) reported that the students learnt with flipped classroom scored more (94%) than traditional teaching method (85%).¹⁰

It was observed that the mean score with traditional teaching was 79.39 ± 2.71 and mean score with flipped teaching score was 86.52 ± 1.98 . These observations are correlated with the study done by Lu C *et al.* (2023) found that the mean score of final exam with traditional teaching was 81.46 ± 1.27 and mean score with flipped teaching score was 85.47 ± 1.28 which shows the significant academic improvement with flipped teaching method.¹¹

The data analysis of feedback showed that the majority of the students learnt from the flipped

teaching method perceived that it was very helpful in their learning, the content was accessible and overall, it helps in increasing their knowledge and confidence. These findings are similar to the study conducted Khan S M by observed that 84.2% felt confident with flipped teaching and 56.6% found FC better than traditional classroom teaching.¹² In another study performed by Ji M *et al.* (2022) found the positive attitude towards flipped teaching method.¹³

Conclusion

The present study concluded that the student's academic performance was improved with flipped teaching method as the involvement of students were more than traditional teaching methods.

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