

Research Article



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A Study to determine the effectiveness of Flipped classroom method over Traditional tutorial method in teaching to third year medical students.

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Abstract:

Background: Flipped classroom method is an innovative teaching learning method, based on the concept that traditional teaching is inverted and learning done by students in class is flipped or switched with that which is normally done by the students out of class.

Aims and Objectives: To determine effectiveness of flipped classroom method over traditional tutorial method by comparing the student's performance and to know perceptions of students regarding the flipped classroom method.

Methodology: A case control study was conducted among third year (part-1) MBBS students of 6th semester after verbal informed consent. Non-probability, convenience sampling method

applied in the study. Randomly one batch assigned as Case group while other as control group. Case group was taught by flipped method while control group was taught by traditional lecture method on same topics. Posttest was taken in both groups immediately after session in preformed questionnaire and after three weeks, an assessment done of both groups to determine the extent of retention of topic. Data entry and analysis was done in a Microsoft Excel.

Results: Majority of students agrees that flipped class room method is effective in understanding the topic better and improve their communication and critical thinking skills than conventional teaching methods. 2) statistically significant difference found in performance score between cases and control taken 3 weeks after the session ($p < 0.05$).

Conclusions and recommendations: Flipped class room method is an effective interactive teaching method for better retention of topic and should be incorporated as a routine teaching method in the medical curriculum.

Keywords: Flipped Class room, communication, students, traditional, conventional, innovative

Introduction

Over the years there have been a great revolution and changes in the teaching methods and teaching styles. Teaching and learning are no longer remains a recitation or memorization of facts. The interactive and innovative teaching learning methods are proven effective in good memorization and retention of the knowledge gain in learning by the students. This is an education reform which provides an entirely different angle of teaching and learning because modern teaching methods do not treat all students at the same level of their understanding ability, unlike the conventional method of teaching. Rather than the only teacher centric, modern teaching methods focus more on student centric teaching and questioning, demonstration skills, explaining, practical, collaborative and are more activity-based teaching and learning. The flipped classroom method is an innovative teaching learning method which is based on the concept that traditional teaching is inverted and learning done by students in class is flipped or switched with that which is normally done by the students out of class. So instead of students listening or learning in lecture in class and then doing homework at home,

they read lecture material through video at home and engage in teacher-guided and assisted problem-solving, analysis and discussions in class.

Rationale for the study: Students are less interactive in didactic lectures and unable to understand the topic with less retention and conceptualization of topic. They lack the applicability of knowledge in real life situations and fails to develop communication skills and critical thinking which the basis of patients counseling and disease management. A flipped classroom is a form of blended learning and students learn by watching video lectures, and reading materials, usually at home, and what used to be homework (assigned problems) is done in class with teacher's guidance and interaction with students, instead of lecturing. So, the study was undertaken with the objective to determine effectiveness of flipped classroom method over traditional tutorial method by comparing the student's performances and to know the perceptions of students regarding the flipped classroom method.

Materials and Methods:

A case control study was carried out on third year (part- 1) MBBS students of 6th semester. Students were posted in a batch of 25-30 for one month for clinical postings in the department. Prior written permission from an Institutional Human Research Ethics Committee was taken. The Study period was from 1st May 2018-1st August 2018. In this study we applied a non-probability, convenience sampling method. Students of batch posted in June 2018 was taken as Case group and designated as Batch A, while another batch of students posted in month of July 2018 was taken as control group and assigned as Batch B. Prior to study, oral consent was taken from the students. The student of batch A was taught by flipped classroom method on the topic of Hand Hygiene practices. Some reading material and videos on steps of handwashing was given one day prior to the class and instructed to go through the material and come with preparation for discussion on the given topic, while the Batch B was taught by traditional lecture method on the same topic of hand hygiene practices.

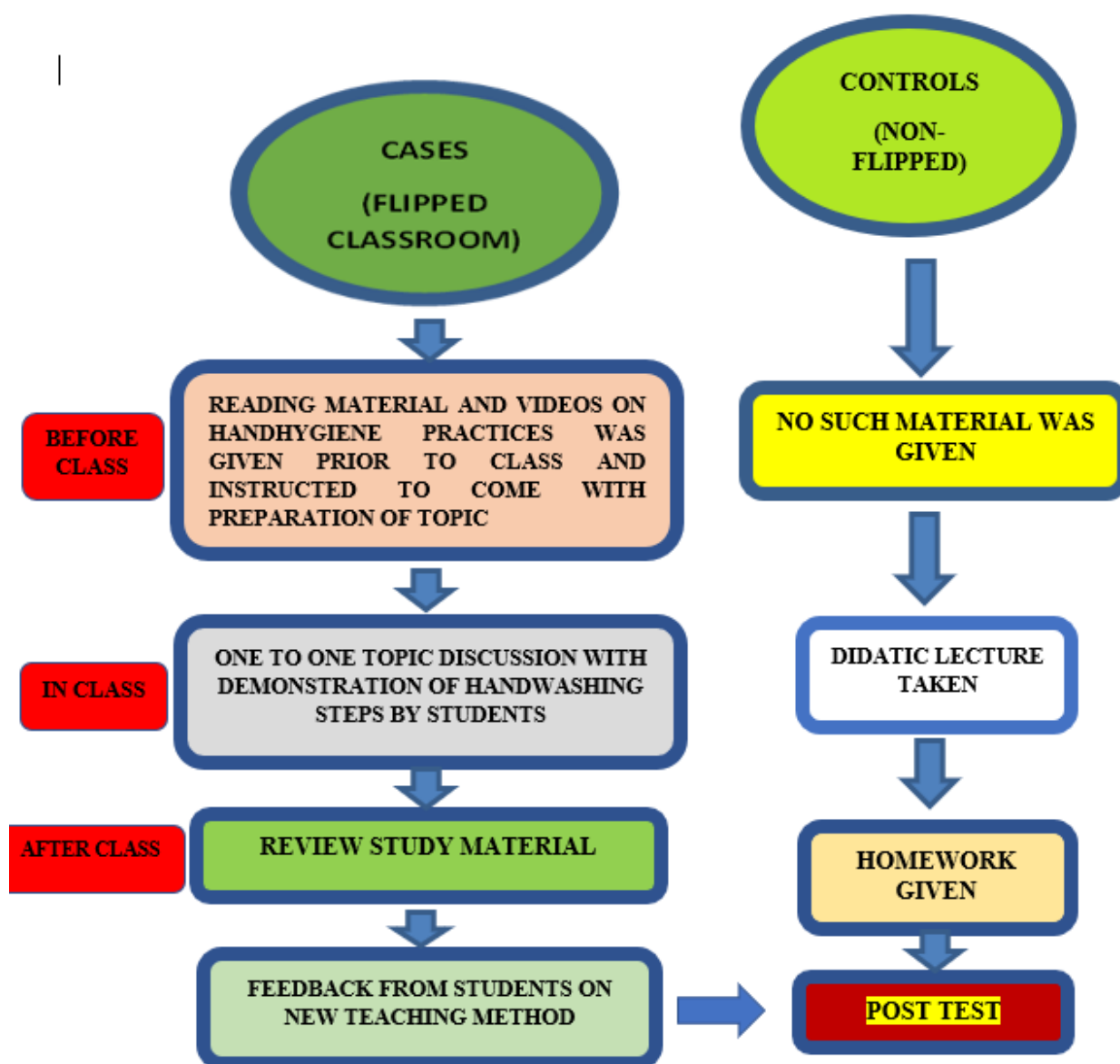
Assessment:

A posttest was taken in both the batches immediately after the session in a preformed questionnaire containing 10 MCQs to test knowledge and 5 questions on one sentence answers to test the comprehension. After three weeks of intervention, an assessment was done of both A and B batch to determine the extent of retention of topic take

Inclusion and Exclusion Criteria: Those students present at the time of study and willing to participate are included while those are absent or not willing to participate are excluded from study. Data entry and analysis was done in a Microsoft Excel.

Ethics considerations:

This study was approved by the Institutional Ethical Committee and verbal Informed consent was obtained from all participants.



FLOWCHART SHOWING THE STEPWISE APPROACH OF STUDY

Results

1. Majority of students strongly agree or agree that flipped class room method is effective in understanding the topic better and improve their communication skills and critical thinking skills better than conventional teaching methods and found enjoyable and interesting method of learning. (Figure 1)
2. There is no statistically significant difference found in performance score between cases and control taken immediately after session. (Table 1)
3. There is statistically significant difference found in performance score between cases and control taken 3 weeks after the session suggestive of better retention of topic in flipped group ($p < 0.05$). (Table 2)

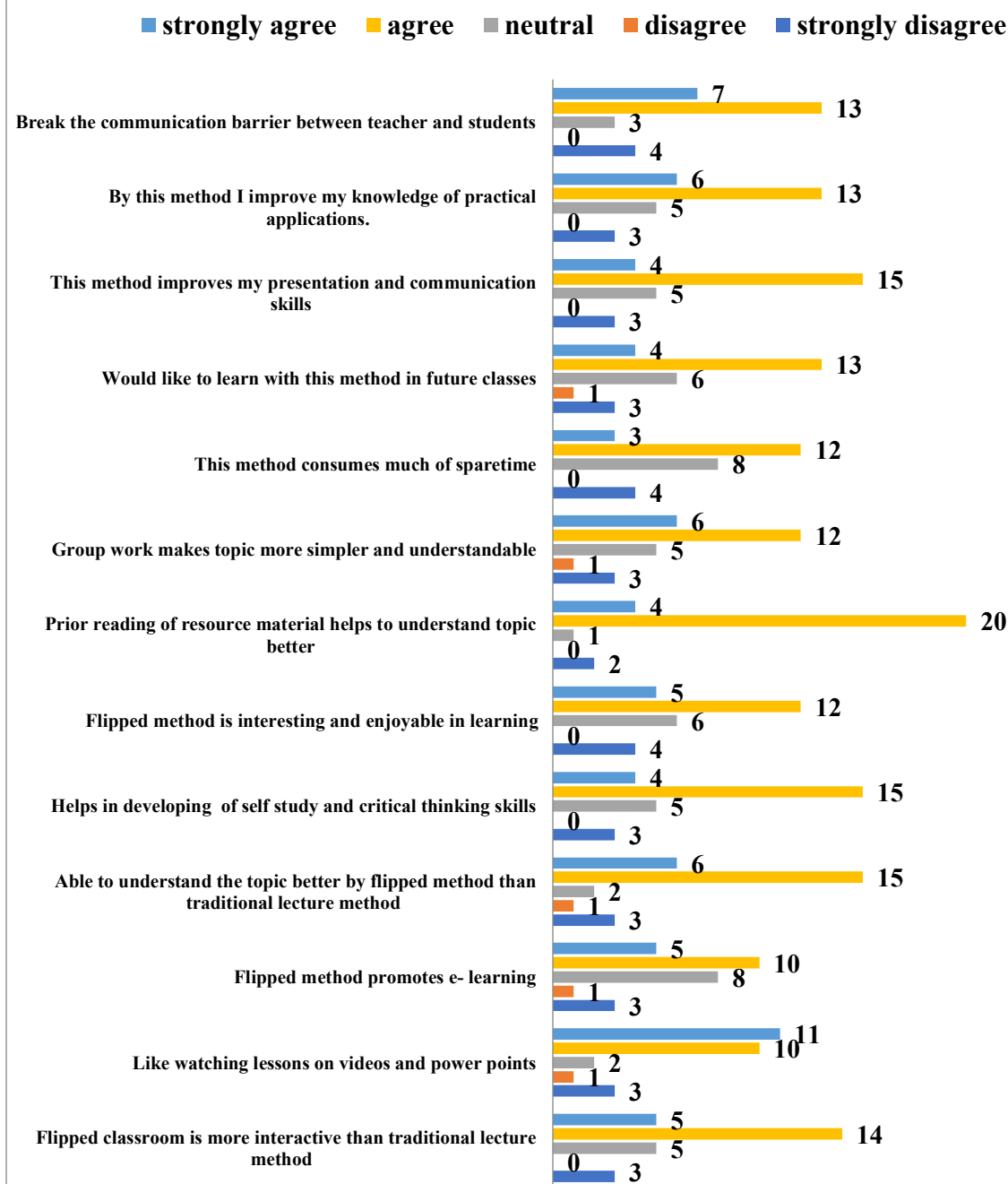
Table 1: Performance score of tests taken immediately after session

Performance score	Cases (n=27) (Batch A)	Controls (n=25) (Batch B)	P Value
Mean $\pm$ SD	14.41 $\pm$ 1.95	13.48 $\pm$ 3.91	>0.05

Table 2: performance score 3 weeks later to test the retention of topic

Performance score	Cases (n=27) (Batch A)	Controls (n=25) (Batch B)	P Value
Mean $\pm$ SD	13.11 $\pm$ 2.65	11.28 $\pm$ 3.25	<0.05

Figure 1: perceptions of student regarding the flipped classroom method.



Discussions:

Our study was conducted to determine the effectiveness of flipped classroom over traditional tutorial teaching method and to know the perceptions of students about the flipped method. Also, it was evident in many studies that the flipped method of teaching is appreciated and well accepted by the students and it is also proven to encourage the students to take their own learning responsibility which further enhances their critical thinking skills. Similar study was conducted by Nouri et al among 240 students of which 180 students expressed a positive

attitude towards flipped classroom method (75%) and many students perceived that they had to take more responsibility for their learning ($M = 3.91$, $SD = 0.96$) in a flipped classroom teaching and learning method^{7,8}. Similar findings are also evident in our study that Majority of students strongly agrees or agrees that flipped class room method is effective in understanding the topic better and improve their communication skills and critical thinking skills better than conventional teaching methods. Moreover, the interactive teaching in flipped method breaks the barrier of lack of communication between teacher and students and it was also reported by majority of students in the present study (Figure1) and similar findings are revealed in study by Robin et al that the flipped classroom leads to more interaction and closer relationship between teachers and students and helps in improving their academic achievements and persistence⁹.

In our study there is statistically significant difference found in performance scores between two groups students taken 3 weeks after the session suggestive of better retention of topic in flipped group ($p < 0.05$). The findings reveals that flipped method is more effective in retention of knowledge for longer times than traditional method which is comparable to study by Abeysekera et al in 2015.^{10,11} while there is no statistically significant difference ($p > 0.05$) was found in performance scores among two groups of students taught by traditional method and flipped method which was taken immediately after session suggestive of no difference in learning the knowledge between the traditional method and flipped method, comparable results seen by Campillo et al in which Wilcoxon tests showed no significant differences between pre-tests and post-tests.¹² In contrast many studies reported a positive finding in their studies showing that the achievements of students were significantly improved compared to the traditional class. Davies et al. (2013) mentioned that students were motivated to learn the topics at their own convenience and also noted that they wish to encourage and recommend other students and friends to learn by flipped classroom method¹³. Experimental class with a flipped classroom was more effective and improved students' learning compared to a conventional or control class. Baepler et al also mentioned that Experimental class with a flipped classroom was more effective and improved students' learning compared to a conventional or control class^{14,15}. Furthermore, the flipped class room method compasses many interactive and active learning components which makes students engage in active learning and increase their logical thinking and practical skills. David et al conducted similar study and their results also revealed that active learning helps in further understanding and better concept of topics.¹⁶

Conclusion and Recommendations:

- ❖ Flipped class room method is an effective interactive teaching method for better retention of topic.
- ❖ Students perceived flipped class room method as more interesting in learning communication and critical thinking skills.
- ❖ Flipped method should be incorporated as a routine teaching method in the medical curriculum.
- ❖ Faculties as well as students should be sensitized with this method by trainings and workshops.
- ❖ Topics which require the practical approach should be taught by flipped class room method.

Availability of data and material: Not applicable

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