

# Flipping the Script: Exploring Learning Outcomes and Perspectives of Phase 2 MBBS Students in a Flipped Classroom Environment

Dr.Loveleena, Dr.Richa Pandey Department of Microbiology at Dr. SLPASMC Pratapgarh; 9956978962

## Introduction

The goal of medical education is to equip students with the skills necessary to bridge the gap between theoretical knowledge and its practical application in real-world clinical settings. Traditional didactic lectures are effective for delivering information to large groups, but they often fall short in fostering the critical thinking, problem-solving, and decision-making abilities that are essential for success in clinical practice. To address this gap, active learning strategies have been introduced, offering a more interactive and student-centered approach to learning.

One such active learning strategy is the flipped classroom, which has gained popularity across various fields of education, including medical training. In a flipped classroom, the traditional model of passive learning—where the instructor lectures and students absorb information—is reversed. Instead, students are expected to come to class with a foundational understanding of the topic, typically through pre-class materials such as videos, readings, or online modules. Once in the classroom, the focus shifts from passive listening to active participation. Students engage in discussions, problem-solving exercises, and case-based learning that require them to apply the knowledge they have gained.

The flipped classroom has shown promising results in improving student engagement, retention of knowledge, and the development of practical skills. This model promotes deeper learning, encourages critical thinking, and enhances the development of clinical reasoning skills, as students are actively involved in the process of learning rather than simply receiving information.

## Aims and Objective

**Aim:** To implement newer methods of teaching in keeping pace with the advancing technology.

### Objectives

1. To evaluate the educational significance of learning in a flipped method of teaching.
2. To study the perceptions of phase 2 MBBS students for the Flipped Classroom

## Methodology

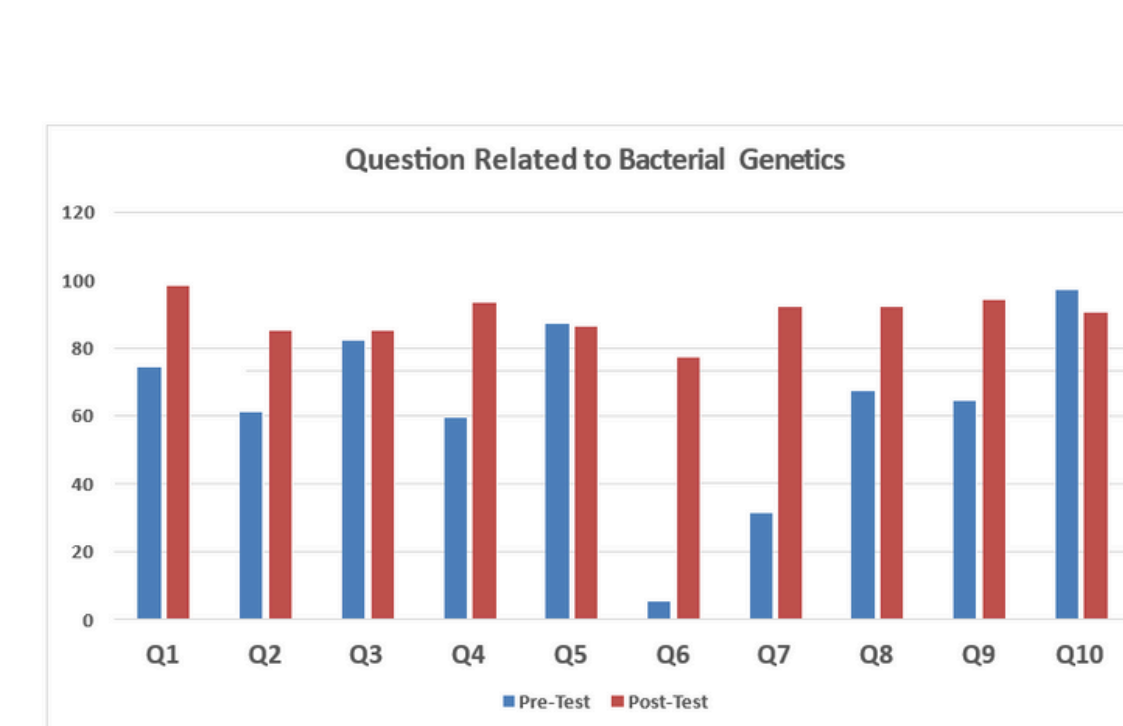
The study was designed as an interventional educational research project conducted at the Department of Microbiology at Dr. SLPASMC in Pratapgarh, lasting six months.

The target population consisted of Phase 2 MBBS students enrolled at the institution.

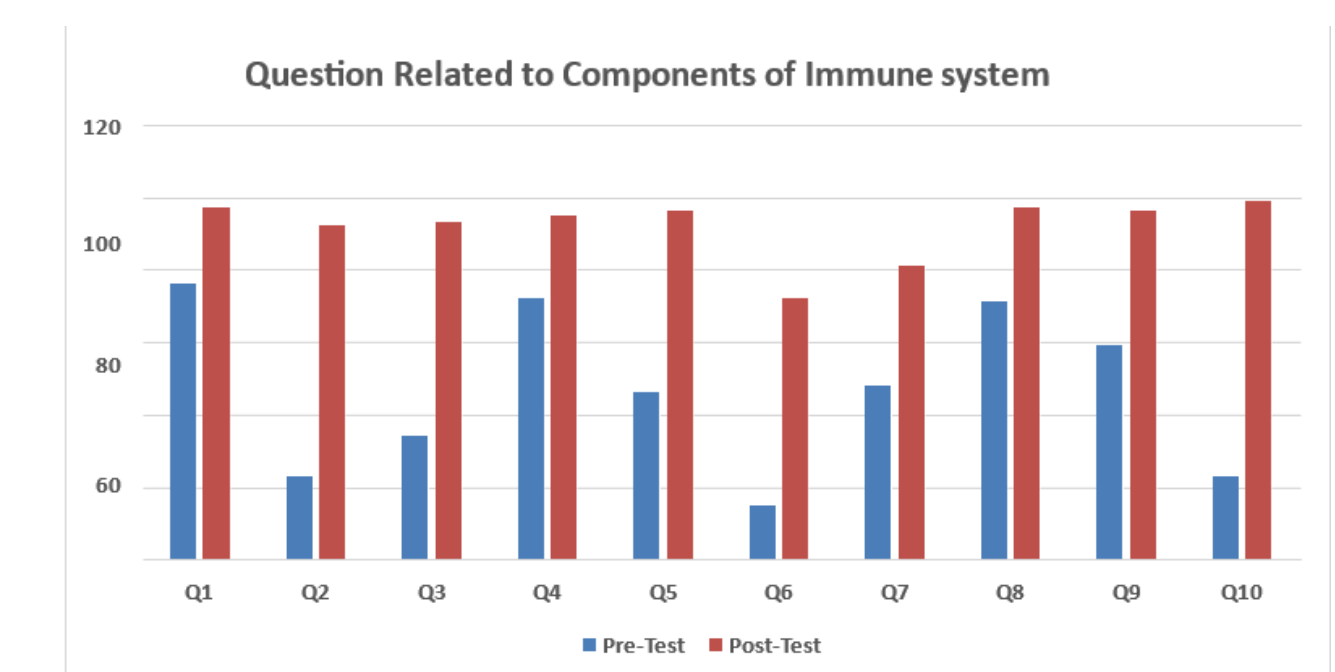
Participants were included if they provided written informed consent, while those who did not were excluded. The study aimed to involve 99 consenting students, utilizing a sampling method that included all individuals who met this criterion.

Academic performance was assessed through multiple-choice questions as pre- and post-tests, alongside gathering learner perceptions via feedback forms. Data collection incorporated both the MCQ test and the feedback form, with analysis conducted using Mann-Whitney Test.

## Results



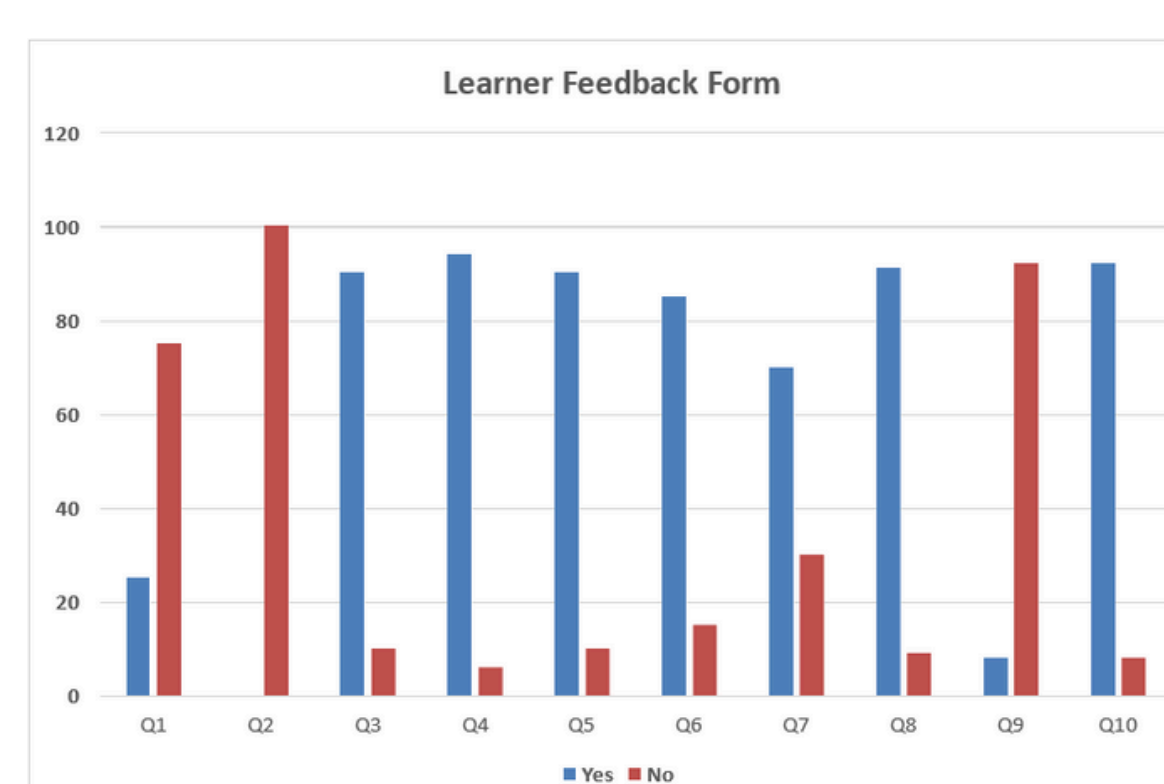
Graph 1: Exhibiting the comparison between the score of pre- and post-groups of questions related to Bacterial Genetics.



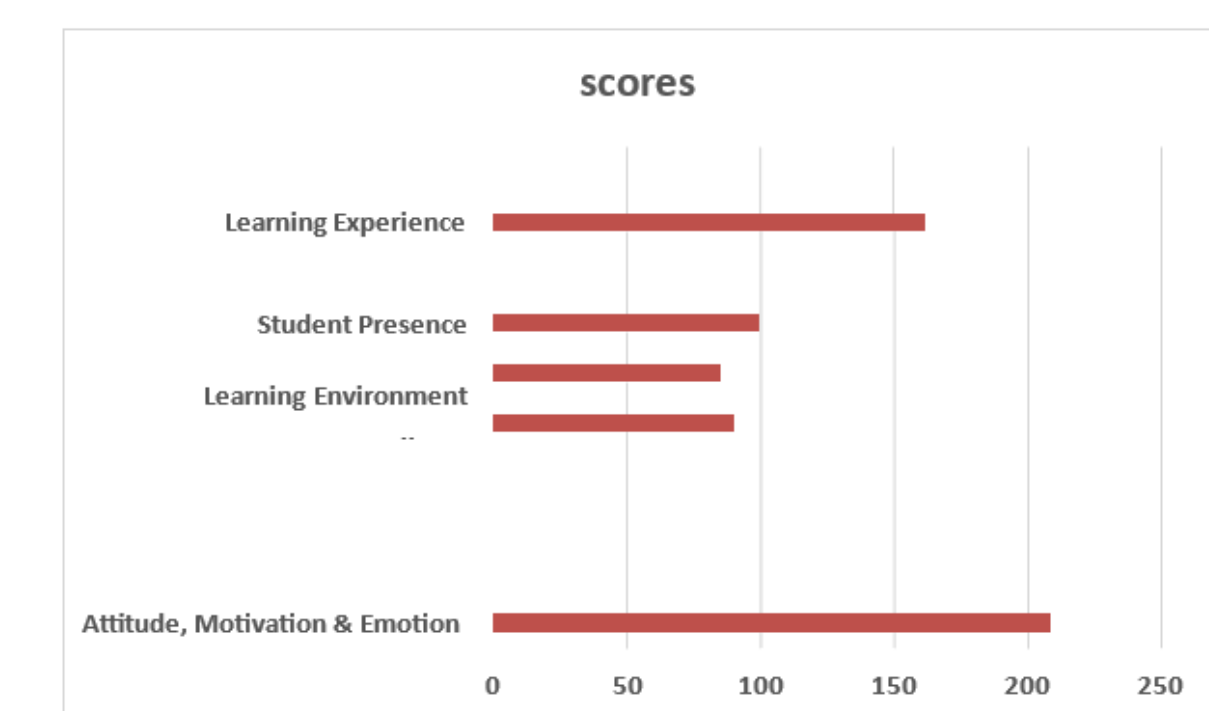
Graph 2: Exhibiting the comparison between the score of pre- and post-groups of questions related to Components of Immune system.

Topic	Groups	Average	STDEV	Type of Data	Compared	Statistics Test	p-value
Bacterial genetics	Pre-Test	6.27	1.61	Score	Unpaired Groups	Mann-Whitney Test	<0.05
	Post-Test	8.92	1.93				
Components of Immune system	Pre-Test	4.67	2.08				
	Post-Test	9.18	1.37				

Table: Showing the Average and Standard Deviation of scores related to Pre & Post Tests of questions related to Bacterial genetics and Components of Immune system. Statistical significance in terms of p-value.



Graph 4: Exhibiting the comparison between the scores of questions related to the Learner Feedback Form.



Graph 5: Exhibiting the correlation between the learner feedback and student perception of Flipped Classroom.

We compared the pre-test and post-test scores (including both average and standard deviation) for the Bacterial genetics and Components of Immune system groups. Our analysis revealed highly significant improvements in the post-test scores compared to the pre-test scores in both groups, with a p-value of less than 0.05, indicating a meaningful difference.

Furthermore, we examined the correlation between student perceptions of the flipped classroom model and the scores from the Learner Feedback Form. The results demonstrated a clear increase in student satisfaction with the flipped learning approach when compared to traditional lecture-based teaching. This positive shift was evident both in the numerical feedback scores and the qualitative comments provided by the students.

## Conclusion

Flipped learning not only enhances student engagement but also significantly improves satisfaction. This approach helps foster the development of "self-directed adult learners," as students are required to come prepared for interactive and collaborative learning sessions. The active involvement in the learning process leads to better outcomes and a deeper understanding of the material, supporting the effectiveness of the flipped classroom model in medical education.

## References

1. Hew KF, Lo CK. Flipped classroom improves student learning in health professions education: a meta-analysis. BMC Med Educ. 2018 Mar 15;18(1):38. doi: 10.1186/s12909-018-1144-z. PMID: 29544495; PMCID: PMC5855972.
2. Chowdhury TA, Khan H, Druce MR, Drake WM, Rajakariar R, Thuraisingham R, Dobbie H, Parvanta L, Chingwundoh F, Almushatat A, Warrens A, Alstead EM. Flipped learning: Turning medical education upside down. Future Healthc J. 2019 Oct;6(3):192-195. doi: 10.7861/fhj.2018-0017. PMID: 31660525; PMCID: PMC6798025.