



Original Article

## Implementation of Think Pair Share as An Innovative Method in the Improvement of Academic Performance of Slow Learners in First MBBS Physiology Students

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Received: 08-04-2026

Accepted: 01-05-2026

Available online: 15-05-2026

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Medical and Pharmaceutical Research

### ABSTRACT

**Background:** Traditional lecture-based teaching often limits active participation and may not effectively address the learning needs of slow learners in medical education. Innovative strategies such as the Think-Pair-Share (TPS) method have been introduced to enhance engagement, understanding, and academic performance.

**Objective:** To evaluate the effectiveness of the TPS method in improving academic performance and to assess the perception of slow learners in first MBBS physiology students. **Methods:** This was an interventional study was conducted among 53 slow learner students identified based on scoring less than 50% in preliminary examinations. The intervention involved TPS sessions on “Nerve Muscle Physiology” conducted over four weeks. Pre-test and post-test assessments using MCQs were performed to evaluate academic performance. Student perception was assessed using a structured 5-point Likert scale questionnaire. Data were analyzed using SPSS version 21.0, and an independent sample t-test was applied, with  $p < 0.05$  considered statistically significant.

**Results:** The mean pre-test score increased from  $5.51 \pm 1.84$  to  $6.10 \pm 1.56$  in the post-test, indicating an improvement in academic performance; however, this difference was not statistically significant ( $p = 0.1695$ ). A majority of students reported positive perceptions toward TPS, with over 90% agreeing that it improved engagement, understanding, communication, and learning motivation. Additionally, 77% of students recommended its use in future teaching.

**Conclusion:** The TPS method enhances student engagement, understanding, and communication skills among slow learners, although statistically significant improvement in academic performance was not observed. TPS can be effectively used as an adjunct to traditional teaching methods in medical education.

**Keywords:** Think-Pair-Share, Slow Learners, Physiology.

### INTRODUCTION

Medical education has traditionally relied on didactic lecture-based teaching; however, this approach often promotes passive learning and limits student engagement, critical thinking, and long-term retention of knowledge. In recent years, there has been a paradigm shift toward student-centered and active learning strategies aimed at improving understanding and academic performance, particularly among learners who struggle to cope with conventional teaching methods<sup>1</sup>. Slow learners, defined as students who demonstrate below-average academic performance and require additional time and

support to grasp concepts, represent a significant subgroup in medical education who are at risk of poor outcomes if not appropriately addressed<sup>2</sup>.

Active learning methodologies have been shown to enhance knowledge acquisition, retention, and application by encouraging participation, discussion, and collaborative problem-solving. Among these, the Think-Pair-Share (TPS) strategy, first proposed by Frank Lyman, is a structured cooperative learning technique that promotes individual thinking, peer discussion, and group sharing. TPS allows students to first reflect independently on a question, then discuss their ideas with a partner, and finally share their conclusions with the larger group. This structured interaction fosters deeper understanding, improves communication skills, and enhances confidence among learners<sup>3</sup>.

Several studies have demonstrated that TPS significantly improves student engagement and academic outcomes across various disciplines, including medical education. Active participation through TPS has been associated with improved conceptual clarity, better retention of information, and enhanced problem-solving abilities compared to traditional lecture-based teaching<sup>4</sup>. Furthermore, TPS has been shown to be particularly beneficial for slow learners, as it provides a supportive environment where students can clarify doubts through peer interaction and learn at their own pace<sup>5</sup>.

In physiology education, which involves complex concepts and requires integration of theoretical knowledge with clinical application, innovative teaching strategies like TPS are especially valuable. Traditional teaching methods often fail to address individual learning differences, leading to gaps in understanding among slow learners. Incorporating TPS into physiology teaching can help bridge this gap by promoting active engagement, peer-assisted learning, and continuous feedback<sup>6</sup>.

Additionally, the use of TPS aligns with modern educational theories such as constructivism, where learners actively construct knowledge through interaction and experience. It also supports the development of higher-order cognitive skills, including analysis, synthesis, and evaluation, which are essential competencies in medical training<sup>7</sup>. Feedback collected through structured tools such as Likert scales further helps in assessing student perception and refining teaching methodologies.

Despite growing evidence supporting active learning, there remains limited research focusing specifically on the impact of TPS on slow learners in undergraduate medical education, particularly in the Indian context. Therefore, this study aims to evaluate the effectiveness of the

Think-Pair-Share method in improving academic performance and student perception among slow learners in first MBBS physiology students.

## MATERIALS AND METHODS

This was an interventional study conducted among first MBBS students in the Department of Physiology at Parbhani Medical College. Slow learners were identified based on scoring <50% in the preliminary examination. A total of 53 students were included after obtaining informed consent and ethical clearance. The intervention involved the use of the Think-Pair-Share (TPS) method for teaching “Nerve Muscle Physiology” over four sessions (one session per week). In each session, students first thought individually (Think phase), then discussed in small groups of 3–4 (Pair phase), and finally shared their responses with the class (Share phase). A pre-test using MCQs was conducted before the intervention and a post-test using the same questions was conducted after completion of sessions to assess improvement in academic performance. Student perception regarding TPS was collected using a structured 5-point Likert scale questionnaire.

Data were analyzed using SPSS version 21.0. Mean and standard deviation were calculated, and pre- and post-test scores were compared using an independent sample t-test. A p-value <0.05 was considered statistically significant.

## RESULTS

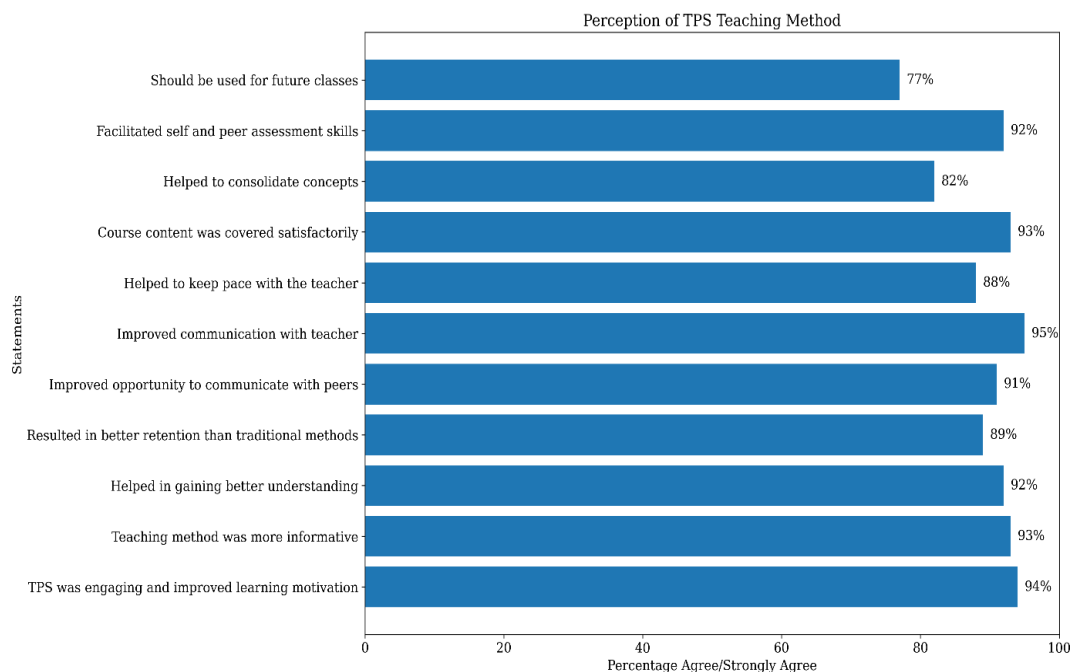
**Table 1: Comparison of Pre-test and Post-test Scores**

Test	Mean	SD	t-value	p-value
Pre-test	5.51	1.84		
Post-test	6.10	1.56	1.3697	0.1695

**Table 2: Perception of Students Towards TPS Method**

Sr. No.	Statement	% Agree/Strongly Agree
1	TPS was engaging and improved learning motivation	94%
2	Teaching method was more informative	93%
3	Helped in gaining better understanding	92%

4	Resulted in better retention than traditional methods	89%
5	Improved opportunity to communicate with peers	91%
6	Improved communication with teacher	95%
7	Helped to keep pace with the teacher	88%
8	Course content was covered satisfactorily	93%
9	Helped to consolidate concepts	82%
10	Facilitated self and peer assessment skills	92%
11	Should be used for future classes	77%



**Chart No.1- Perception of Students Towards TPS Method**

A total of 53 slow learner students participated in the study. The mean pre-test score was  $5.51 \pm 1.84$ , which increased to  $6.10 \pm 1.56$  in the post-test following the implementation of the Think-Pair-Share (TPS) method, indicating an improvement in academic performance. However, statistical analysis using the independent sample t-test showed that this difference was not statistically significant ( $t = 1.3697$ ,  $p = 0.1695$ ).

Regarding student perception, a majority of participants reported a positive experience with the TPS method. Approximately 94% of students agreed that TPS was engaging and improved their motivation to learn, while 93% found the method more informative. Around 92% of students felt that TPS helped in better understanding of the subject and facilitated self and peer assessment. Improved communication with peers and teachers was reported by 91% and 95% of students, respectively. Additionally, 89% of students believed that TPS enhanced retention compared to traditional teaching methods, and 88% felt it helped them keep pace with the teacher. About 93% of students reported that course content was covered satisfactorily, while 82% felt it helped in consolidating concepts. Overall, 77% of students recommended the use of TPS in future classes, indicating good acceptability of the method among slow learners.

## DISCUSSION

The present study evaluated the effectiveness of the Think-Pair-Share (TPS) method in improving academic performance and perception among slow learners in first MBBS physiology students. The findings demonstrated an increase in post-test scores compared to pre-test scores, indicating a positive trend toward improved academic performance following the

intervention. However, this improvement was not statistically significant ( $p = 0.1695$ ). This lack of statistical significance may be attributed to the relatively small sample size and short duration of the study. Similar observations have been reported in educational research where active learning strategies show improvement trends but require larger sample sizes or longer exposure to achieve statistical significance. Nevertheless, the observed increase in mean scores suggests that TPS has potential as an effective teaching-learning tool for slow learners.

A key finding of the study was the overwhelmingly positive perception of students toward the TPS method. A majority of participants reported that TPS improved their engagement, motivation, and understanding of the subject. This aligns with the principles of active learning, where student participation and interaction enhance comprehension and retention of knowledge. The high percentage of students reporting improved communication with peers (91%) and teachers (95%)

highlights the collaborative nature of TPS, which fosters a supportive learning environment. Such interaction is particularly beneficial for slow learners, who often hesitate to participate in traditional lecture-based settings.

The improvement in perceived understanding (92%) and retention (89%) further supports the effectiveness of TPS in facilitating deeper learning. The structured approach of thinking individually, discussing with peers, and sharing with the group encourages students to actively process information, thereby improving conceptual clarity. Additionally, the development of self and peer assessment skills reported by 92% of students indicates that TPS promotes reflective learning, which is essential in medical education.

Although 77% of students recommended TPS for future use, this comparatively lower percentage suggests that some learners may still prefer a combination of traditional and interactive teaching methods. This indicates the importance of integrating TPS with other teaching strategies rather than using it as a standalone method. Overall, the findings of this study suggest that while TPS may not have produced statistically significant improvement in test scores within the study duration, it significantly enhanced student engagement, communication, and perceived learning. Therefore, TPS can be considered a valuable adjunct to conventional teaching methods, especially for slow learners in medical education. Future studies with larger sample sizes and longer follow-up periods are recommended to further validate its effectiveness.

## CONCLUSION

The present study concludes that the Think-Pair-Share (TPS) method is an effective and well-accepted active learning strategy among slow learners in first MBBS physiology students. Although the improvement in academic performance, as reflected by post-test scores, was not statistically significant, a positive trend was observed, indicating potential academic benefit. Importantly, the TPS method significantly enhanced student engagement, motivation, understanding, and communication skills. The majority of students expressed a favorable perception of this teaching approach and recommended its use in future classes. These findings highlight the value of TPS in creating an interactive and supportive learning environment, particularly for slow learners who may struggle with traditional lecture-based teaching. In conclusion, TPS can be considered a useful adjunct to conventional teaching methods in medical education. Its integration into routine teaching may help improve learning experiences and outcomes, especially when implemented over a longer duration and with a larger group of students.

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