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Research Article

Think-Pair-Share as an Active Learning Strategy in Anatomy

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ABSTRACT
Background: Anatomy is a foundational subject in medical education. While structured lectures continue to be the backbone of teaching, they are increasingly supplemented with active learning strategies to enhance engagement and understanding. Active learning strategies such as Think–Pair–Share (TPS) encourage peer interaction, critical thinking, and improved conceptual understanding. The Kirkpatrick model provides a structured framework to evaluate educational interventions across multiple outcome levels.
Aim and Objectives: To implement Think–Pair–Share as an active learning strategy in first-year MBBS Anatomy and to evaluate its effectivenes.
Methods: An interventional educational study was conducted among 150 first Year MBBS students. The study was conducted in the department of Anatomy at Apollo Institute of medical Sciences and research, Hyderabad for a period of 3 months.
Think-pair-Share was implemented during selected anatomy topics. Students first thought individually, then discussed in pairs and finally shared responses with larger group. Small group discussions were also conducted during Osteology sessions to reinforce active learning. Kirkpatrick Level 1 (Reaction) was assessed using a written student feedback. Level 2(Learning) was evaluated using pre- and post-tests comprising multiple-choice questions.
Statistical Analysis: Data was entered in Microsoft Excel and analyzed descriptively. Pre and post test scores were expressed as mean +/- standard deviation. A p value of <0.05 was considered statistically significant.
Results: Most students reported high satisfaction and active engagement with the Think Pair Share method. The mean pretest score was 6.38 ± 2.13 which significantly increased to 7.56 ± 1.87 in the post test. Paired t test showed a statistically significant improvement .Post-test scores showed a marked improvement compared to pre-test scores,indicating enhanced learning. Faculty observations revealed improved confidence, correct use of anatomical terminology, and increased participation in later sessions. Improved performance was also noted in assessments.
Conclusion: Think–Pair–Share is an effective active learning strategy in Anatomy teaching. Evaluation using the Kirkpatrick model demonstrated positive outcomes supporting its integration into undergraduate medical education.

Keywords: Think–Pair–Share, Anatomy Education, Active Learning, Kirkpatrick Model, Medical Education.

INTRODUCTION

Anatomy is a foundational subject in medical education. Teaching in large groups poses several challenges like keeping students attentive, interested and engaged, making sure all students have an equal opportunity to learn, very less time to address the questions and almost no feedback is provided to the students [1] .While structured lectures continue to be the backbone of teaching, they are increasingly supplemented with active learning strategies to enhance engagement and understanding. Think-Pair-Share (TPS) considered as a method that teachers may utilize for their student learning enhancement [2].Think-Pair-Share is a simple learner-centred strategy in which students think individually, discuss with peers and share in groups.

Think-Pair-Share(shortened as TPS) strategy is one of the cooperative learning methods that encourage individual participation[3].However,implementing active learning alone is not sufficient; its effectiveness must be evaluated systematically. The practice of this strategy enhances the cognitive and shared aspects of learning,

encouraging the development of thinking and the construction of knowledge.

The Kirkpatrick Model is a globally recognized method of evaluating the results of training and learning programs. It assesses both formal and informal training methods and rates them against four levels of criteria: reaction, learning, behavior, and results.The first level of criteria is "reaction," which measures whether learners find the training engaging, favorable, and relevant. This level is most commonly assessed by asking the students to rate their experience.

Level 2 gauges the learning of each participant based on whether learners acquire the intended knowledge, skills, attitude, confidence and commitment to the training. Learning can be evaluated through both formal and informal methods, and should be evaluated through pre-learning and post-learning assessments to identify accuracy and comprehension.

The Kirkpatrick model provides a comprehensive framework to assess outcomes across reaction, learning, behaviour, and results. With this background, our study evaluated Think-Pair-Share as a supplementary teaching strategy in first-year MBBS Anatomy. This study evaluates the effectiveness of Think-Pair-Share as a supplementary teaching strategy in first year MBBS Anatomy.

Aim: To evaluate the effectiveness of Think–Pair–Share in first-year MBBS Anatomy using the Kirkpatrick Model.

Objectives: 1. To assess student reaction to Think–Pair–Share.

2. To measure the learning outcomes using pre and post tests

MATERIALS AND METHODS

The study was a prospective educational interventional study conducted in the Department of Anatomy, Apollo Institute of Medical Sciences and Research, Hyderabad, over 3 months. A total of 150 students participated. Think-Pair-Share was implemented in Six batches of 25 students during routine small group discussions. All consenting first-year MBBS students enrolled during the study period were included. Students absent during either pre-test or post test were excluded.

Think-Pair-Share was applied to selected anatomy topics. Students first thought individually, discussed in pairs, and then shared responses with the larger group.

Think: Students were provided with focused questions and allowed time for individual reflection.Pair: Students discussed their responses with a peer to clarify the concepts and resolve doubts.

Share: Shared their responses during a faculty facilitated group discussion.

Students reaction to Think-Pair-Share session was assessed through written feedback collected on paper at the end of the session.

Pre- and post-tests consisted of 10 validated multiple-choice questions based on the selected anatomy topics. The same questionnaire was used for both assessments.

Statistical Analysis

Data was entered in Microsoft Excel and analyzed descriptively. Pre and post test scores were expressed as mean +/- standard deviation. A p value of <0.05 was considered statistically significant.

RESULTS

Level-1 Students reaction to Think-Pair-Share session was assessed through written feedback collected on paper at the end of the session. Students expressed a positive perception of the active learning strategy. Most students reported high satisfaction and active engagement with the Think Pair Share method. Some of the comments included

Better engagement & higher confidence in answering questions.

Improved conceptual clarity.

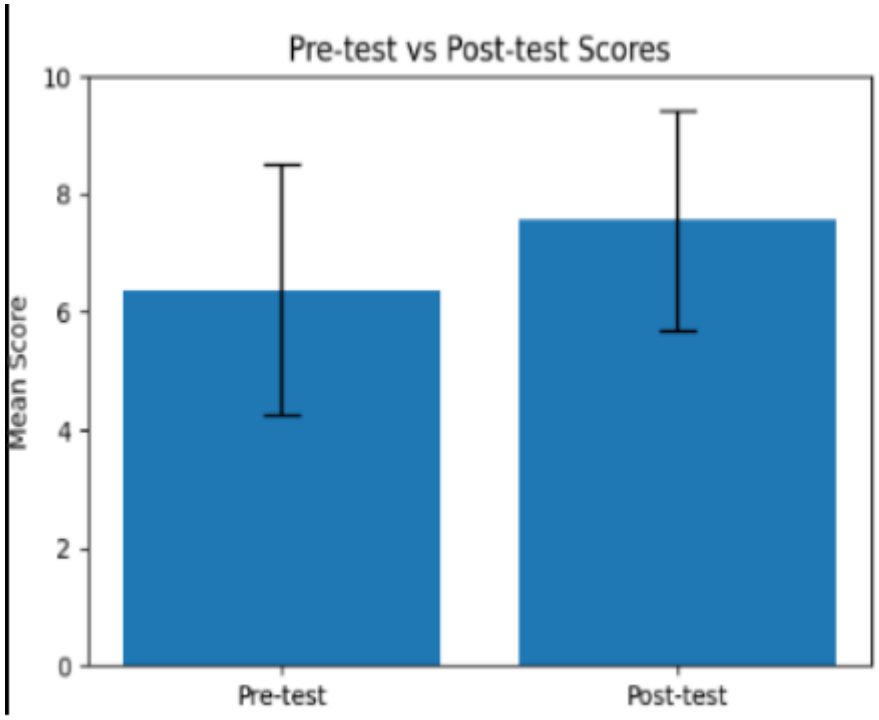
Appreciation of peer discussion. Productive session. Discussing with peers helped me understand better.

The session was interactive and fun.

Level-2 (Learning improvements)

The mean pretest score was 6.38 ± 2.13 which significantly increased to 7.56 ± 1.87 in the post test. Paired t test showed a statistically significant improvement

Majority of students showed an improvement of 1-3 marks indicating enhanced learning post Think-Pair-Share



DISCUSSION

The findings of the present study are consistent with earlier research demonstrating that Think–Pair–Share (TPS) enhances student engagement and understanding when used as a supplement to traditional lectures in medical education. Similar improvements in learner participation and conceptual clarity among undergraduate students have been reported, highlighting the value of structured peer discussion and collaborative learning[4]. The TPS strategy, encourages students to think individually, discuss ideas with peers, and share their responses with the larger group, thereby promoting active participation and deeper learning.

In the present study, TPS promoted active engagement and peer-assisted learning, allowing students to clarify concepts through discussion and reflection. Studies on active learning strategies have shown that such interactive approaches improve understanding, retention, and critical thinking compared with passive lecture-based learning. Many researchers showed the effectiveness and success of think-pair-share technique in achieving better and significantly higher post-test mean scores than the conventional groups. Think-pair-share strategy in classrooms has helped both teachers and learners in many different ways[5].

Furthermore, the use of the Kirkpatrick evaluation model, enabled a holistic assessment of the educational intervention in the present study by evaluating learner reactions and perceived learning outcomes. according to the evaluation, this model has a suitable and acceptable performance for assessing the educational programs[6] .The study was in accordance with previous studies by Fareed,Sumekto[7,8]

The positive responses observed among students indicate that TPS is an effective instructional strategy for fostering engagement and conceptual clarity

CONCLUSION

Think–Pair–Share is an effective active learning strategy in Anatomy teaching. Evaluation using the Kirkpatrick model demonstrated positive outcomes.

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