



# Optimizing Small Group Learning: A Comparative Study of Jigsaw Technique and Case-Based Learning Methods in Medical Education

Geeta Yadav<sup>1</sup>, Sandeep Bhattacharya<sup>2</sup>, Shuchi Agrawal<sup>3</sup>,

<sup>1</sup>Department of Pathology, <sup>2</sup>Physiology, <sup>3</sup>Obstetrics & Gynecology, King George's Medical University, Lucknow, India, 226003

## INTRODUCTION

- ❖ Active learning techniques, such as Case-Based Learning (CBL) and Jigsaw Learning, have enhanced learning outcomes in medical education.
- ❖ These approaches promote higher-order cognitive skills, foster collaboration, and improve retention rates compared to didactic lectures.

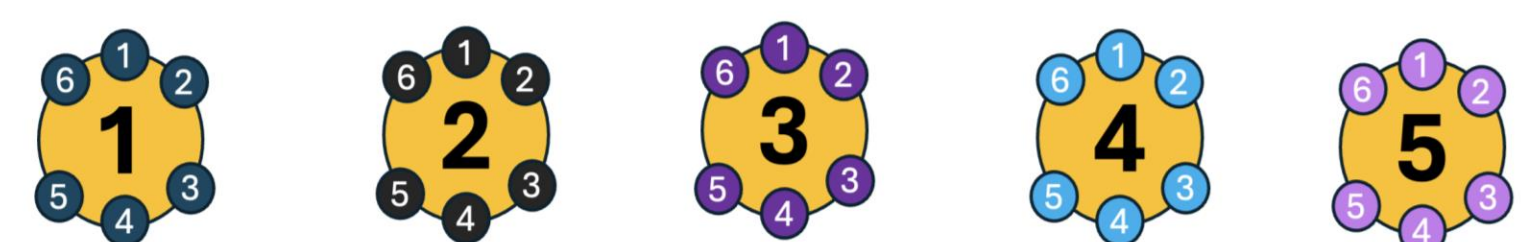
## AIMS & OBJECTIVES

- ❖ To compare the effectiveness of the Jigsaw technique and CBL for the acquisition of knowledge, critical thinking skills, and collaboration abilities.
- ❖ To assess the perception of students towards the Jigsaw technique versus CBL

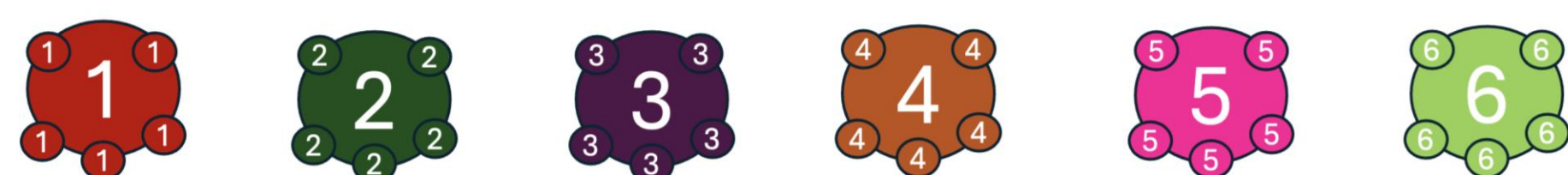
## RESULTS

### JIGSAW LEARNING AND GROUP FORMATION

#### Home Groups



#### Expert Groups



#### Home Groups



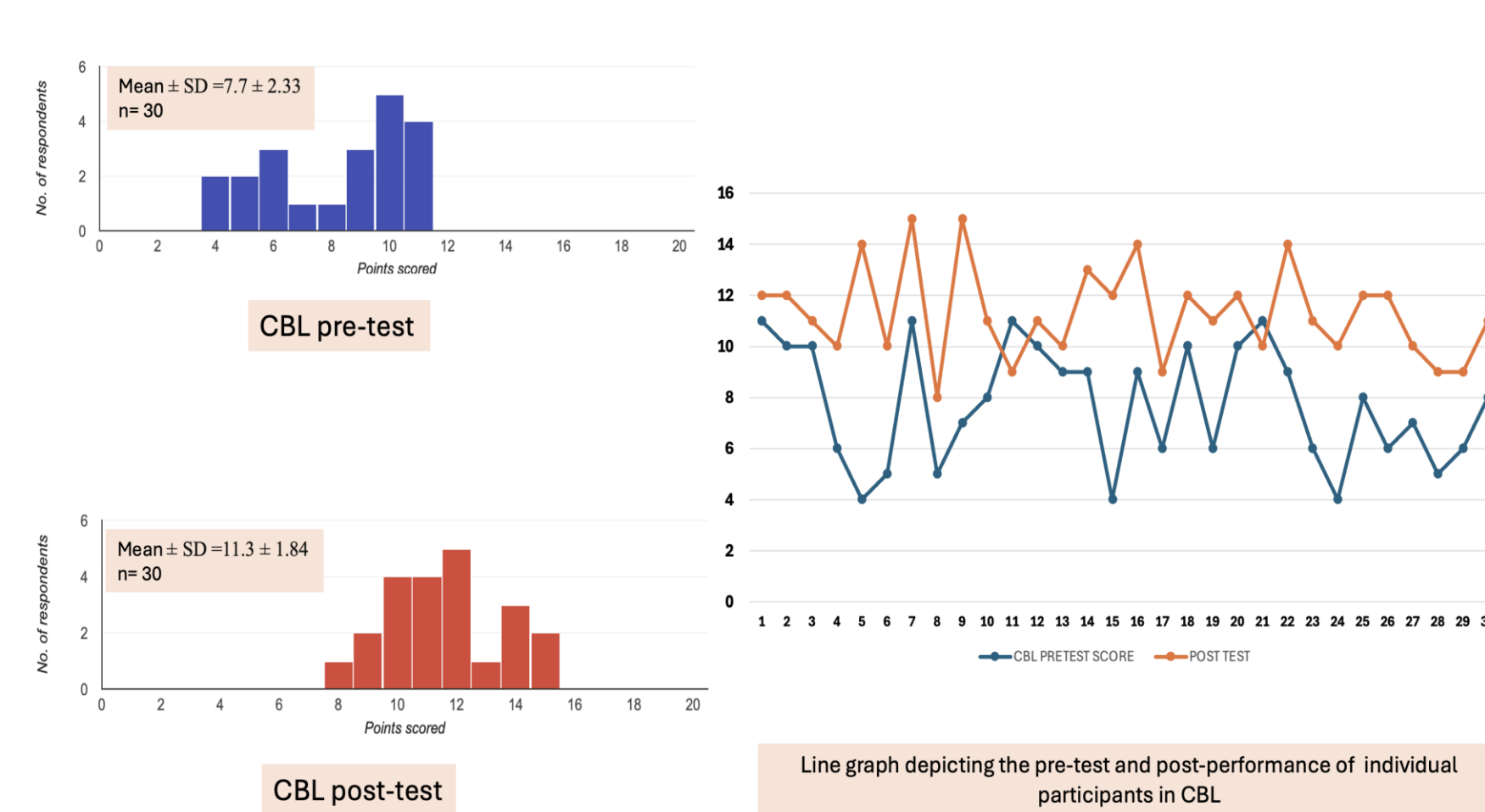
Graphic courtesy: Arnav Kuma

- ❖ The pre-test and post-test scores for CBL showed significant improvement, with a mean score of  $7.7 \pm 2.33$  before and  $11.3 \pm 1.84$  afterward ( $p=0.000$ ).
- ❖ Similarly, Jigsaw learning significantly improved, with pre-test and post-test scores of  $8.53 \pm 3.03$  and  $12.90 \pm 2.52$ , respectively ( $p=0.000$ ).
- ❖ Jigsaw Learning demonstrated a slight edge over CBL in terms of student performance, with a statistically significant difference ( $p=0.002$ ).
- ❖ 95.5% (29/30) of students strongly agreed that Jigsaw Learning was interesting, with a mean score of 4.95.
- ❖ Other aspects, such as ease of understanding, doubt clarification, and clinical relevance, had mean scores of around 4.77.
- ❖ However, only 63.6% of students believed Jigsaw Learning was beneficial for memory retention.

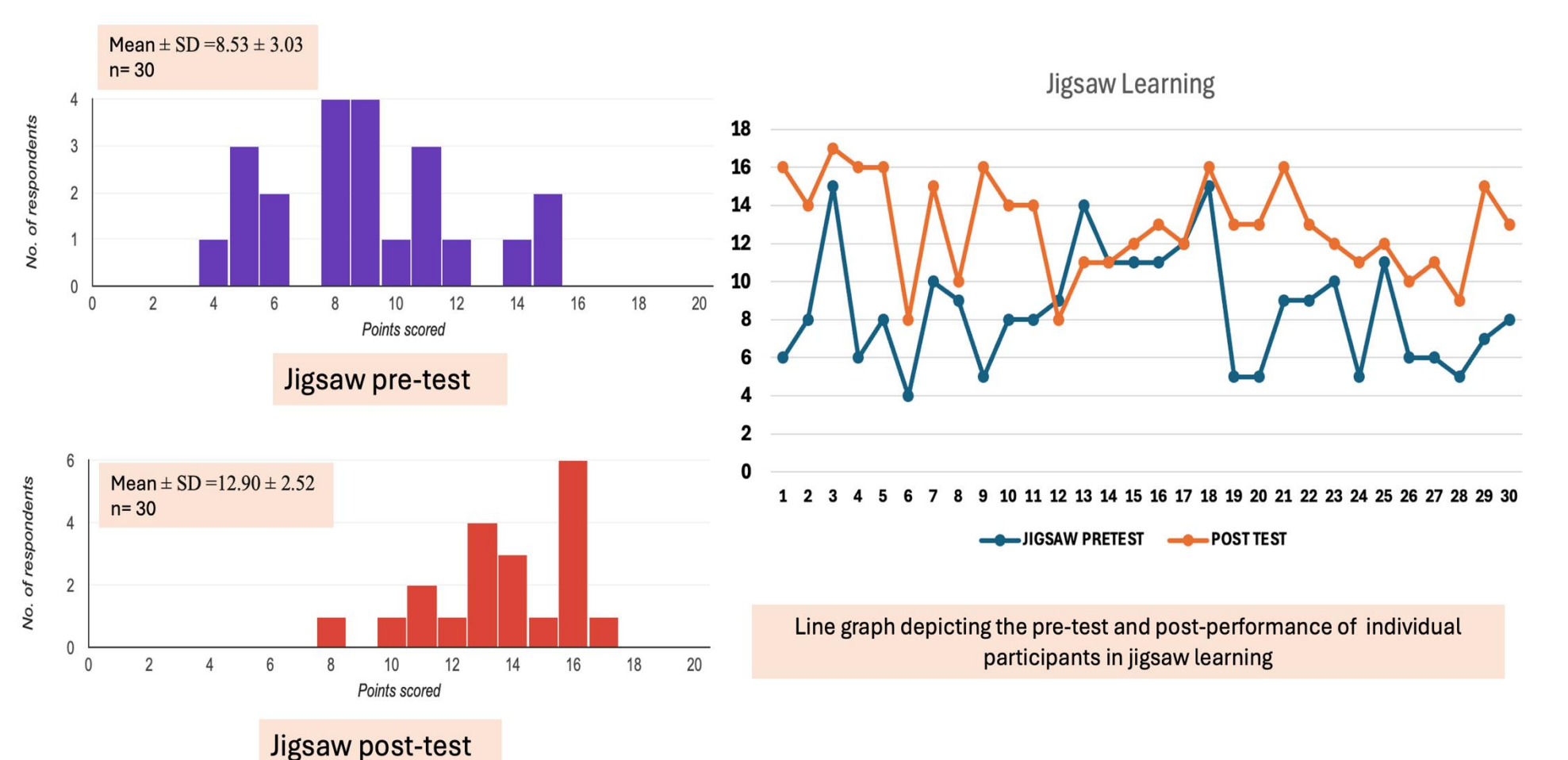
## MATERIAL AND METHODS

- ❖ The study included 60 postgraduate medical students from the Department of Pathology at King George's Medical University randomly assigned to CBL and jigsaw learning, 30 students each. Group allocation was carried out using simple random sampling through the lottery method.
- ❖ Learning outcomes were measured using pre-test and post-test scores using questionnaires consisting of 20 MCQs.
- ❖ Student perceptions were assessed using a 5-point Likert scale. The post-test of both CBL and jigsaw were compared, respectively.

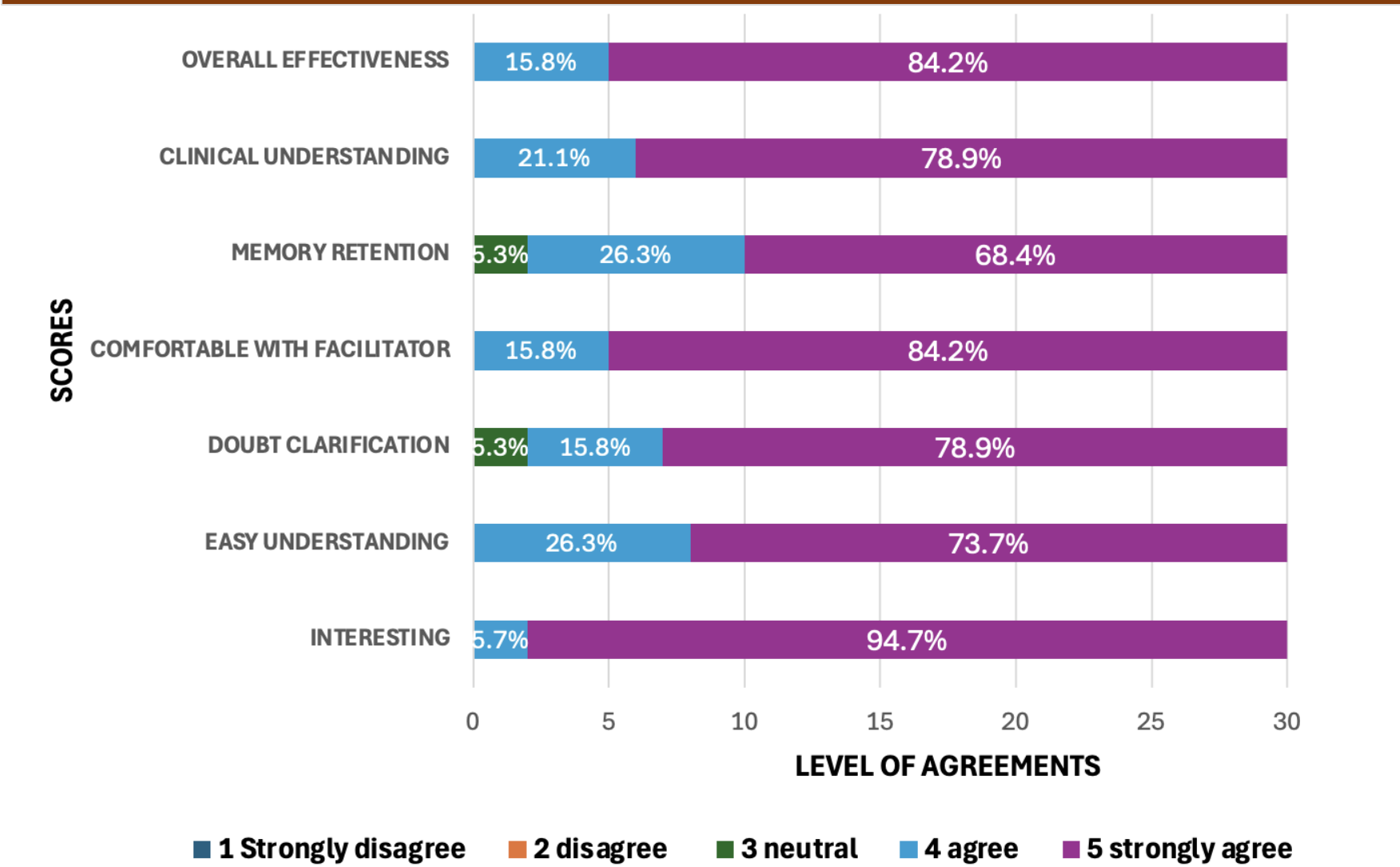
Comparison of the mean score of the pre-test and post-test, along with a line graph of individual participants' scores.



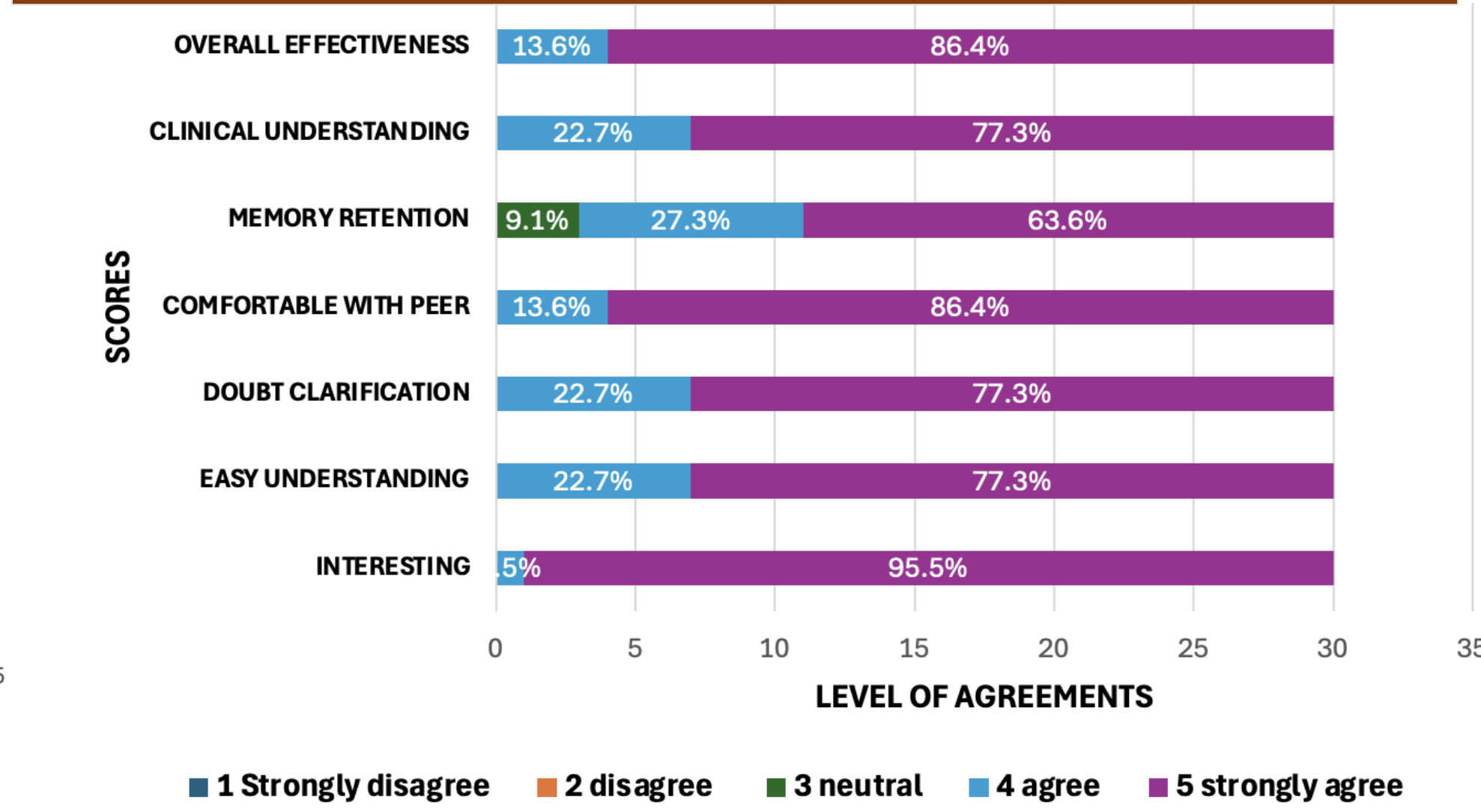
Comparison of the mean score of the pre-test and post-test, along with a line graph of individual participants' scores.



Diagrammatic representation of students' perception of CBL learning



Diagrammatic representation of students' perception of Jigsaw learning



## CONCLUSION

- ❖ Both CBL and Jigsaw Learning are effective in improving learning outcomes. While CBL fostered deeper understanding and application of knowledge, Jigsaw learning enhanced active engagement and peer-assisted learning.
- ❖ Jigsaw slightly outperformed CBL in post-test scores, suggesting that Jigsaw's peer-driven, collaborative nature is more effective in promoting deeper understanding.
- ❖ Both methods had challenges, particularly regarding time consumption and memory retention, highlighting the need for further refinement and integration of these strategies

## TAKE HOME MESSAGE

- ❖ Jigsaw Learning enhances active engagement and peer-assisted learning, leading to slightly better retention and understanding than CBL.
- ❖ Integrating a hybrid model that combines CBL's structured problem-solving with Jigsaw's active participation could be more beneficial.

## References

- Moin, H., Majeed, S., Zahra, T. et al. Assessing the impact of jigsaw technique for cooperative learning in undergraduate medical education: merits, challenges, and forward prospects. BMC Med Educ 24, 853 (2024). <https://doi.org/10.1186/s12909-024-05831-2>
- Cen XY, Hua Y, Niu S, Yu T. Application of case-based learning in medical student education: a meta-analysis. European Review for Medical and Pharmacological Sciences.

