INTRODUCTION

Medical school curriculum is tasked with producing lifelong self-directed learners, a set of characteristics requiring strong metacognitive skills. Metacognitive skills directly impact students’ metacognition, which is their ability to understand and regulate their own thinking and learning. It may then be postulated that metacognition may be key in distinguishing students that require a postbaccalaureate program from those that do not. Metacognition has two critical domains: metacognitive knowledge and metacognitive regulation, each of which contain multiple subprocesses. Metacognitive knowledge includes knowing strategies for learning, when to use those strategies, and knowing oneself as a learner. Metacognitive regulation includes strategies for planning, monitoring, evaluating, and debugging learning strategies. Therefore, the purpose of this study is to investigate: 1) the impact of a graduate TBL course on students’ metacognitive awareness, and 2) the relationship between metacognition and course performance.

METHODS

Students enrolled in a TBL graduate histology course at Indiana University took part in this study.

1. Students completed a 19-item Metacognitive Awareness Inventory (MAI) at the beginning (MAI1) and end of the semester (MAI2). The MAI has two domains, Knowledge (8 items) and Regulation (11 items), where items are rated on a 5-point scale from “not at all typical of me” to “very typical of me.”

   I. Free response questions asked about knowledge and study abilities, plans for studying in history and how study skills and abilities have improved across the semester.

   2. Finally, students completed a voluntary reflection about their examination performance after the first unit exam.

Differences between MAIs were investigated using a Wilcoxon signed-rank test. Spearman’s correlations explored the relationship between MAI and final course grades. MAI free responses and exam reflection were analyzed using thematic analysis. Responses were coded using a conceptual framework of metacognition based on processes of knowledge and regulation.

RESULTS

![Figure 4. Grade distribution for Debugging Strategies Subdomain. While only 5 students had responses that coded into the debugging strategies subdomain, all five of these students earned a final grade of A in the course. This may be a potential domain worth focusing on in future studies.](image)

DISCUSSION

- There were no racial or gender differences in MAI total scores, domain scores, or subdomain scores.

- While the MAI failed to demonstrate improvement in metacognition, students reported an increase in their ability to adapt study strategies to their learning.

- Educators using TBL in their classrooms may need to provide students with additional resources and strategies to regulate their own learning, as evidenced by:

  a. Students consistently scoring themselves higher in the knowledge of cognition domain compared to regulation

  b. Students’ responses to questions regarding their learning in the course falling primarily in the declarative knowledge subdomain

  c. The fact that when debugging strategies were mentioned, they were always mentioned by students with an A grade in the course

- Future studies aim to investigate the validity of the MAI for measuring metacognition in anatomy courses, and the impact that explicit metacognitive instruction using journaling throughout the semester will have on MAI scores and survey responses.

REFERENCES

