Jigsaw-Based Cooperative Learning to Enhance Reading Comprehension in Agricultural-based Social Science General Education Courses

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Introduction

In primary, secondary, and higher education settings, classroom dynamics are evolving to focus more on student-to-student interaction instead of solely teacher-to-student interaction (Johnson & Johnson, n.d.). The idea of cooperative learning through methods such as Task-Based Language Teaching (TBLT) has sparked instructors' interest in using it as an instructional tool (Prasetyaningrum, 2018). Multiple cooperative learning studies conducted on students in the medical education field have shown an overall improvement in not only reading comprehension but also interpersonal and teamwork skills (Azmin, 2015; Baneng, 2020; Jeppu et al., 2023). One technique incorporated into the classroom to promote cooperative learning has been jigsaw-based learning (Azmin, 2015; Baneng, 2020; Jeppu et al., 2023). Jigsaw-based learning involves assigning students to a group in which they first complete a task independently before collaborating with group members to discuss the material. They then report their overall comprehension of the material to the larger group. The idea of group discussion and storytelling through this activity allows students to grasp a better understanding of the presented reading material (Baneng, 2020) while allowing them to practice individual accountability and group interaction (Johnson & Johnson, n.d.).

Comprehension of scientific text can present an obstacle to students (Baneng, 2020), particularly when it comes to agriculture literacy (Park & Osborne, 2007). With cooperative learning techniques, specifically jigsaw-based activities, showing positive impacts on students in other disciplines, it shows hope for its ability to positively impact reading comprehension of students in the agricultural field (Jeppu et al., 2023; Baneng, 2020; Azmin, 2015). The use of both formal and informal cooperative learning (Johnson & Johnson, n.d.) has been implemented into agricultural-based social science general education courses classes at The University of Tennessee and supports prior research that TBLT can enhance a student's learning experience, reading comprehension, and interpersonal skills benefiting them in future professions (Kumar et al., 2017).

How It Works

First, primary sources are broken into sections, if necessary, and assigned to pre-determined student groups. Using a learning management software discussion board for each group, students share three to five findings or insights from the assigned reading portion. Following discussion within their assigned role or reading section, student groups identify at least five educational talking points to share with the entire class to teach peers about the reading or section of the reading. Once completed, students share their talking points on either a classroom whiteboard, Padlet, or other digital collaborative board. After class, instructors share the completed jigsaw on a learning management software as a resource for students to prepare for formative or summative assessments.

Implications

A total of 11 jigsaw activities were implemented during the Spring 2023 and Fall 2023 semesters in two face-to-face agriculture-based social science courses offered at The University of Tennessee, reaching a total of 147 undergraduate students. Jigsaws covered material related to

guest lectures, federal acts, popular press articles, and philosophical subjects such as Plato's *Allegory of the Cave* and *The Divided Line*, Aristotelian Ethics, Hume's thoughts on empiricism, and Pragmatism.

End-of-course evaluations for both courses spoke highly of the small group discussions. Students shared that course discussions improved their understanding, with one student stating, "... I appreciate that there is a combination of notes, discussion, and group work. I learn better when we are not only taking notes and we can do things that help kinesthetic learners." Another student shared, "I liked how the lectures were structured and readings were divided amongst students" with a third reporting how in-class activities "...allowed us to work together and share our ideas and elaborate on them as well." Other students shared that they valued peer interaction and stated, "Discussions was my favorite aspect of this course. I really enjoyed talking with classmates to see how they understood something." Towards the end of the course, students were more comfortable sharing their ideas, which helped with student confidence and classroom rapport. One student stated, "I liked all the group discussions. Talking first can be a little spooky, so just being able to discuss with peers helped me voice my thoughts a lot more thoroughly." A final student reported that smaller group work was their favorite part because they are "not much of a talker and didn't really have much to say but all of the different ideas people had really brought new perspectives to light. It also made the environment feel very welcoming."

Instructors for both courses have continued TBLT in Spring 2024 with adjustments such as group image collaborative assignments, which challenges students to use imagery, quotes, and illustrations to summarize their reading take-aways.

Future Plans/Advice to Others

Following implementation, the Agricultural Leadership, Education and Communications department has increased course capacity, added sections of both courses, and increased the frequency of course offerings to fall, spring, and summer semesters.

As the course instructors, we plan to evaluate the jigsaw-based cooperative learning activities as an instructional method to better understand their effectiveness as a preparation tool for problem-based learning. The course instructors are also developing the process for implementation into online, asynchronous sections of both courses.

After repeated implementation, we recommend evaluating the primary sources selected for students to read to ensure course alignment. It is encouraged to communicate to students the importance of contributing to the group discussion board to be prepared for class and succeed in the course.

Resources Needed

Applying jigsaw-based cooperative learning activities to a course is free with access to a printer or digital learning management system to upload an editable copy for students to submit their collected educational talking points. Jigsaw-based cooperative learning activities do take prior planning to ensure reading groups are well organized, students are evenly dispersed, and the instructor is prepared for facilitation.

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