

Overview

A number of simple, yet effective, evidence-based active learning strategies can be used to enhance learning, narrow achievement gaps, and promote equity and inclusion in the classroom (Freeman et al., 2014; Theobald et al., 2020). Simple, collaborative, discussion-based active learning strategies including think-pair-share, peer instruction, and the focus of this IR Recipe, the **Jigsaw Strategy** are examples that can be used to support student learning and achievement.

Jigsaw, first introduced by Aronson et al. (1978) is a structured, collaborative-learning technique that encourages peer interdependence and individual accountability and that creates opportunities for students to actively engage as both teacher and learner in the classroom (Johnson, & Smith, 1991; Perkins and Saris, 2001). The activity begins with presenting the students with some challenge (e.g., a difficult question, problem, topic, or process for students to learn).

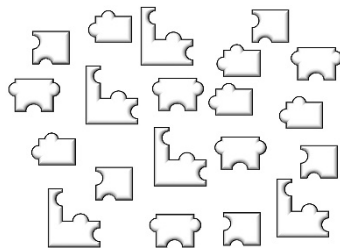


Implementation for Instructional Redesign*

STEP 1

Students are presented with the challenge. Students can be thought of as pieces that will form a “puzzle” as they work to collaboratively address the challenge.

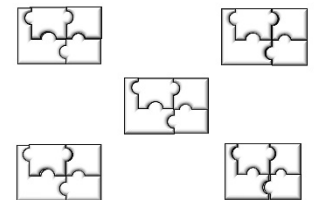
Present the challenge



STEP 2

Small groups are formed in which students will collaborate on the challenge. Here, four students per group, form a “blank” puzzle. The instructor next explains the jigsaw activity.

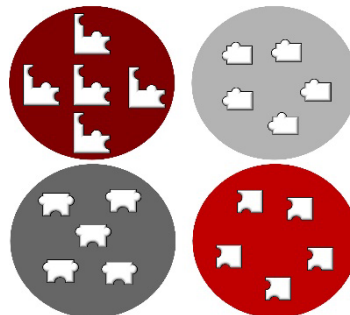
Students organize into “jigsaw” groups



STEP 3

Active learning exercises are provided for each critical learning element needed to address the challenge. The number of unique activities should parallel the number of students in each group. Groups rearrange to form “expert” groups. Members of these new groups collaborate to complete one of the supportive learning activities in order to gain a degree of expertise in that, “piece of the puzzle.”

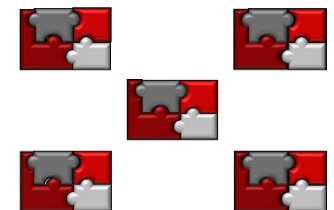
“Jigsaw” group members reorganize into “expert groups” to engage/learn



STEP 4

Students re-organize into original groups, now collectively having gained knowledge necessary to address the overall challenge. Each individual “reports out” through peer instruction on what was learned in the activity completed in the previous step. These groups then collaboratively work to generate a response to the original challenge.

Students re-organize into original groups; peer teaching occurs



* This 4-step model of the jigsaw strategy was developed from multiple sources (see <http://www.jigsaw.org>; Tewksbury, 1995; McConnell et al., 2017).

*For IR, the jigsaw strategy should be used for more than a single lecture/topic to give students repeated opportunities to engage in the jigsaw process.



How to Assess Impact and Effectiveness

A variety of simple, yet useful, strategies are available to gather data for evaluation of jigsaw strategy efficacy.

Student Learning

Review student performance on assessments or assessment items from your course that align to relevant content.

- Track topics and associated learning outcomes addressed using the jigsaw strategy.
- Identify exam or quiz questions, projects, papers, etc., that assess student learning of that aligned content.
- Conduct an analysis of how students performed on those aligned assessment items. Did they do better/worse compared to prior terms/other topics/your expectations?

SALG Survey

Employ a survey to ask students about their perceptions of learning and their thoughts on the strategy.

- The Student Assessment of Learning Gains (SALG) survey (Seymour et al., 2000) is a published tool for measuring student perceptions of learning and experience in a course.
- Create a custom course survey at <https://salgsite.net>. Consider items such as, "How did you feel the use of jigsaw in the course supported your learning?" or, "How did participating in the jigsaw activities used throughout the course help or hinder your learning?"

SGID

Request a Small-Group Instructional Diagnostic (SGID) from the Drake Institute to collect valuable mid-semester feedback.

- Request a SGID by e-mailing drakeinstitute@osu.edu with your name and course taught. *
- An instructional consultant meets with you to discuss your needs and interests in feedback.
- The consultant visits your class and (after you've left the room/space) asks your students a number of questions about the course, your instruction and what is helping or hindering learning.
- The consultant generates a report and provides you with guidance on how to respond to the results.

References

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- Freeman, S. et al. (2014). Active learning boosts performance in STEM courses. *PNAS*, 111(23), 8410-8415.
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- Tewksbury, B.J. (1995). Specific strategies for using the "jigsaw" technique for working in groups in non-lecture-based courses. *Journal of Geological Education*, 43: 322-326.
- Theobald, E.J. et al. (2020). Active learning narrows achievement gaps for underrepresented students in undergraduate science, technology, engineering, and math. *PNAS*, 117(12): 6476-6483.

*Read more: <https://drakeinstitute.osu.edu/instructor-support/getting-feedback-your-teaching>