

Jigsaw Strategy

Summary:

The Jigsaw Strategy is an efficient way to learn the course material in a cooperative learning style. The jigsaw process encourages listening, engagement, and empathy by giving each member of the group an essential part to play in the academic activity. Group members must work together as a team to accomplish a common goal; each person depends on all the others. No student can succeed completely unless everyone works well together as a team. This "cooperation by design" facilitates interaction among all students in the class, leading them to value each other as contributors to their common task.

Appropriate Student Level: Any Level

Suggested Class Size: Any Size

Ease of Use Rating: Moderate

Activity Description:

The strategy, developed by Elliot Aronson, involves the formation of Home Groups to resolve the task. The Home Groups allocate one member to each Expert or Research Group to gather data to bring back to the Home Group.

For example, students are divided into small groups of five or six students each. Each member of the group is assigned a portion of an assignment or research project. Each member must research the material pertaining to their section of the project and be prepared to discuss it with their classmates.

The Jigsaw strategy places great emphasis on cooperation and shared responsibility within groups. The success of each group depends on the participation of each individual in completing their task. This means the Jigsaw strategy effectively increases the involvement of each student in the activity. (See "Some suggestions for forming groups" for more information on groups).

Dr. Aronson sponsors a website with important information about his methods at <http://www.jigsaw.org/>

To implement the Jigsaw:

1. Divide the material needed to cover a topic into four roughly equal parts.
 - In upper division or graduate classes, you might assign four different articles. In introductory level classes you might need to assign four different sections of a chapter or four abridged articles. Finding four equal parts is sometimes tougher than it seems.
2. Assign a different topic to each team member.
 - You make the assignment: for example, all #1's will read the article by Johnson & Johnson, all the #2's will read the article by Kagan, all the #3's will read the article by Millis, and all the #4's will read the article by Davidson.
3. Develop and assign homework questions or essays over the material. These can be turned in for points or a grade in undergraduate classes.
 - Jigsaw falls apart if students are not prepared. Assigning questions, reading logs, study guides or reaction papers helps to ensure preparation. You may write different

- questions for each article or you may simply ask for a summary. In small classes some faculty just check off students' work as they come in. Other faculty grade and/or respond to the assignment.
4. When class meets again, students consult with experts from other teams.
 - When students arrive in class, they turn in their homework and then meet in expert groups. If you have a large class, you will have to have more than one expert group for each article: you don't want eight people in one expert group. Give the expert groups instructions on their task.
 - If you simply asked your students to read a chapter and write a summary for homework, you might give them instructions like these:
 - Introduce yourselves to the other expert group members.
 - Discuss the reading with the group, coming to consensus on the main points you will teach your teammates. Make sure everyone participates.
 - Try to think of at least two examples from your personal experiences to illustrate the main point(s).
 - Plan how you will check your respective teammates for understanding without asking, "Do you understand?"
 - Thank your expert group members for their help.
 - If you had them answer focus questions for homework, your instructions might look like this:
 - Introduce yourselves.
 - Take turns leading the discussion to compare your responses to the questions. Try to come to consensus on the most important points. If there are things you can't agree on, make note of them to share with your teammates. Also note any interesting or useful examples from any of your expert group members. Check for understanding before moving on to the next question.
 - Plan your strategy for teaching your teammates in the limited amount of time that you will have.
 - Thank your expert group members for their help.

Other ideas you could add to the instructions include:

- Reminders about social and cooperative skills: "The cooperative expectation for this assignment is that all group members will participate fairly equally in the discussion. It is each person's responsibility to ask for the opinions and ideas of quieter group members. The individual accountability expectation is that any group member, if randomly called upon, could summarize the group discussion."
 - Instructions to promote critical thinking: "Try to come to any criticisms of the author's work – is it biased, unsubstantiated, overly narrow in applicability, etc." or "How might this article call in to question Smith's theory that we discussed last week?"
5. Experts return to their teams and teach.
 - When students return to their base teams, have each team teach in the same order. This way, if a team's #2 is absent, team members can disperse and sit with the teams next to them when it's time for the #2's to teach. If they all teach on their own schedule, you can't compensate for absences.
 6. Team synthesis activity.

- Try to design an activity that will synthesize the information that students learned in the four articles. They might analyze a case, write a team essay or position paper or solve a problem.

Adapted from: Susan Ledlow's Version of Jigsaw at:
<http://www.public.asu.edu/~ledlow/sledlow/jigsaw.htm>

“The jigsaw structure is somewhat complex. It may be best suited for when the students are comfortable with group work. There are high expectations and responsibilities placed on the students. Teaching the students in the original group can be a demanding experience for students. This can be mitigated if the jigsaw structure is altered so two group members share the same section and then join with another pair of students, if the sections are more open-ended so there is no single right answer, or if students are encouraged to take notes during the focus groups to provide a support when the original groups re-assembles” (Clarke, 1994).

Research and Applications:

Aronson, Elliot (2000) “Jigsaw Classroom” <http://www.jigsaw.org/index.html>

Choe, S. W. Tina, (2001) “Analyzing scientific literature using a jigsaw group activity” Journal of College Science Teaching 30(5) p. 328

Clarke, J. (1994). "Pieces of the puzzle: The jigsaw method" In Sharan, S. (Ed.), *Handbook of cooperative learning methods*, Greenwood Press.

Fortner, Rosanne W (1999) “Using cooperative learning to introduce undergraduates to professional literature” *Journal of College Science Teaching* 28(4)p. 261

LabNotes, ABC Science Education On-Line (1999) “Jigsaw Strategy” Retrieved from: <http://www.abc.net.au/labnotes/curric/blackholes/jigsaw.htm>, Australian Broadcasting Corporation

Ledlow, Susan (1999) “Susan Ledlow's Version of Jigsaw” Retrieved from <http://www.public.asu.edu/~ledlow/sledlow/jigsaw.htm>

Lucas, Carol A. (2000) "Jigsaw lesson for operations of complex numbers" *PRIMUS* 10(3) pp. 219-224

Dori, Yehudit J. (1999) “Question-posing capability as an alternative evaluation method: analysis of an environmental case study” *Journal of Research in Science Teaching* 36(4) p. 411

The Core Competencies are:

1. Writing, speaking and/or other forms of self-expression
2. Information gathering, such as the use of the library, computer/electronic resources, and experimentation or observation.
3. Synthesis and analysis in problem solving and critical thinking, including, where appropriate, the application of reasoning and interpretive methods, and quantitative thinking.
4. Collaborative learning and teamwork.
5. Activities that promote and advance intercultural and/or international understanding.
6. Activities that promote the understanding of issues pertaining to social behavior, scholarly conduct, and community responsibility.
7. A significant alternative competency for active learning designed for and appropriate to a specific course

