A positive group experience borne of unique viewpoints is the intent of the novel 'poster book' approach implemented by the author. In this method, which has been implemented in interdisciplinary general education courses at the university level, students begin small group work by interpreting a collection of reading passages. The passages often include opinion pieces surrounding an economic / environmental / social issue where students are urged to challenge authors' viewpoints before deciding to accept or reject the proposed ideas. Students bring different knowledge and experiences to their group, and their variety of perspectives leads to a richer discussion of the author's bias and the reading's intent. As an outcome, each group creates two products which summarize the most important take-aways from the discussion: a poster-sized image and a one-sentence description.

When each group's products are complete, these picture book pages are presented to the whole class. Following a short whole-class discussion, students work together in small groups to determine how to best sequence and re-caption the images in context of one another. In doing so, they integrate an understanding of their own group's discussions, the discussions of other groups, and further discussions consolidating the two. They continue to integrate a variety of viewpoints into their final product while making it their own.

The Poster Book Instructional Method

What follows is a description of the Poster Book method, a cooperative learning project where new knowledge, existing perspectives, and sequencing of events all come into play. While it has so far been used in a variety of university environmental science courses, there is no reason it could not be used in other subject areas or with learners from kindergarten forward.

Part 1: The Reading

The Poster Book method begins with small groups of students being given an assigned reading relating to a broad topic. Each group's reading should be different than that of the other groups, both in terms of topic and viewpoint. While it need not be pure opinion, each reading should give room for students to ask questions, particularly questions related to believability or bias.

For example, student groups might be given information from inventors, sellers, and users of fishing equipment. Consider the list of readings which appears below.

- A short paper describing the invention of monofilament netting, which is much stronger and more durable than the types of fish netting which came before.

- A sales document describing different bottom-trawling attachments for that same netting: weights, tickler chains, and rock hoppers.

- A government order which describes the indefinite ban of all cod fishing in Grand Banks, Newfoundland after the species was overfished with bottom-trawling methods.

- The journal of a man who lost his job, boat, and livelihood following a similar order in New England.

- A promotional whitepaper from an aquaculture facility, which serves as an alternative to fishing practices like bottom-trawling.

- A newspaper opinion piece which describes the high prices hook-and-line fishers are getting when selling their catch in display auctions.

One possible narrative may seem clear from these readings, but because each group is operating independently, any larger narrative will remain unseen by the groups and in the end students may develop narratives which deviate greatly.

Part 2: The Poster and Its Caption

After each group has had an opportunity to read the assigned reading, the group discusses what they read, what they believe, and what they question. The group's aim is to determine what the author of their reading can safely contribute to a story based more on fact than on opinion.

The group is then tasked with creating two products: a single image which depicts the group's main take-away from the reading and a single sentence which could be used to caption that image, just as one might see on the opposite page of a picture book. The image should be free of words (though labels are acceptable) and be presented on a large piece of paper, for example a 15" square or 11" x 17" page. The sentence should be presented on a separate paper of similar size.

As groups finish, they are asked to hang their work prominently in the classroom, along the whiteboard or chalkboard, for example. As they hang their work, each group is invited to decide where their image might best fit with those which have already been posted.

Part 3: The Discussion

When all groups' posters are hung, students share their work and the ideas behind it. After describing their image and reading their sentence, different group members are asked to describe something the group purposely included or excluded from the image or statement in order to make it more objective.

When all groups have had an opportunity to do so, class members are invited to summarize the story they think the current sequence tells. From there, the discussion continues with considerations of how the story would change if the sequence were modified or if information excluded by one or more of the groups were added.

Part 4: The Rewrite

Following the whole-class discussion, each group is asked to re-sequence the images and re-write the sentences in order to create what they feel is the best version of the story. In this version, teams are invited to let opinion or perspective drive the story, though the sentences should still match the imagery. An example using images from the readings noted above appears below.

1. Monofilament netting was a great invention which made it easier for fishers to catch more fish.

2. Additional inventions like weights, tickler chains, and rock hoppers also made things easier for fishers.

3. Some of these inventions might not be needed if humans embrace aquaculture, where fishers have greater control over their harvest.

4. The fishing methods which use these inventions have proven harmful to natural ecosystems.

5. Fishers who use unsustainable methods could turn to more sustainable methods like aquaculture, though.

6. Fish which are caught sustainably look better in 'display auctions' and make more money, so aquaculture caught with hook-and-line fishing may actually be better for all involved.

Depending on goals, timing, and product-based feasibility, the process may end here or continue through a comparative exercise focused on the role viewpoints have in each narrative. The sequence above, for example, focuses on the positives of aquaculture while ignoring the threats to ecosystems if farm-raised fish mix with wild populations. A group with a member whose family has a fishing background could lead her group in a different direction which would remain perfectly valid while using the same images in a different sequence.

Keys to Success

As educators consider their role in the Poster Book process, it is important to remember that they are intended to be less a conveyor of knowledge and more a guide of learning in this and other cooperative learning techniques (Manning & Lucking, 1991). As always, it is important for educators to monitor group progress and to encourage high levels of engagement for all students. With that said, experience has shown that students readily engage in the cooperative Poster Book process, in part because there are opportunities to discuss ideas both in isolation and in a fuller context, and because there are unique opportunities for analytical and creative thinkers.

If implemented as designed, the Poster Book method presents some new information to each individual/group, though some individuals/groups may have more background information on related topics. Heterogeneous grouping is encouraged, and educators are likewise encouraged to review their social-emotional learning standards in order to best direct the experience. In the State of Illinois, for example, Social Emotional Learning Standards 2A (recognizing feelings and perspectives), 2B (recognizing similarities and differences), and 2C (using social communication skills) can be addressed across all grade levels using the Poster Book experience (Illinois State Board of Education, 2016).

Within and even between groups, cooperation should be emphasized over any sense of competition. The 'best' version of the story is relative, and it is going to be different for each group given their unique perspective on the subject. Competitions which create winners and losers can be motivating to a small part of the student population, but everyone can be motivated by gains through cooperation (Manning & Lucking, 1991).

Discussion

The Jigsaw Method, one of the first major forms of cooperative learning, was developed for a specific reason. Professor Aronson was consulted when Austin, TX schools were desegregated and youth from different racial groups found themselves in the same classroom for the first time (Aronson & Patnoe, 2011). Fear, distrust, and suspicion between the groups resulted in physical fights, and competition for classroom achievement was not improving the situation. By changing the structure of the classroom, even for only a small part of the school day, students learned that they must (and could!) rely on one another to succeed. Students expressed fewer stereotypes, higher levels of self-confidence, and a better liking of school as confirmed by both surveys and a drop in absenteeism. These types of cooperative working relationships often turned into friendships, and studies of jigsaw-related classes "documented substantially more cross-ethnic friendships than in the control groups" (Manning & Lucking, 1991, p. 155).

The Role of Diverse Learners

The Jigsaw Method encourages heterogeneous grouping, like most cooperative learning strategies. While Aronson saw these groups as being essential to encouraging trust between different racial groups, other cooperative learning strategies embrace heterogeneous grouping for the benefits inherent in varied backgrounds and viewpoints (Aronson & Patneo, 2011; Awang, 2006). Diversity need not be a problem; it can be a resource (Smolcic & Arends, 2017). The Photovoice concept, for example, relies on the many choices of individual photographers to tell a unique story which would never be possible through traditional photojournalism's individual voice (Wang & Burris, 1997). What photographers choose to photograph and how they choose to frame the subject can be significant in bringing new perspective to the final, collaborative product. The Poster Book method has similar

goals; voices and viewpoints of each individual can bring value to the image, sentence, and story products.

Other researchers have focused on cooperative learning as a way to raise student achievement. "Overall, most studies show that high, average, and low achievers gain equally from cooperative learning experiences; however, some studies have shown greater gains for low achievers and others have shown the greatest gains for high achievers" (Manning & Lucking, 1991, p. 154). Where heterogeneous groupings were determined by primary language, gender, and ability, Awang (2006) demonstrated that cooperative learning allowed more students to gain technical skills than would be typical in a traditional course. Even those students who were unable to fully grasp technical skills were much better-prepared to recognize patterns based on technical information. Jones & Sterling (2011) suggest that cooperative learning can be especially valuable in inclusive classrooms. While achievement has not been measured, the Poster Book method has been implemented in inclusive classrooms, and students with learning disabilities have been equally involved in discussions, even if their participation was more often as an artist than as an author.

"Research has suggested that working cooperatively seems to have particularly strong effects for Hispanic and black students, regardless of achievement levels" (Manning & Lucking, 1991, p. 155). These are populations which are often marginalized in part because of a diminished socioeconomic status. During large-group instruction, research has shown that students are more likely to be thinking about something off-task, and this is particularly true of underprivileged students who are thinking of their next meal or of unsupervised siblings at home (Peterson & Miller, 2004). Off-task thinking is diminished in cooperative learning structures like the Poster Book method where each individual is more likely to be directly involved in conversation.

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