

The Effectiveness of Student-Chosen Pairs for Cooperative Learning

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Cooperative learning is a well-established technique for improving student learning. A large number of studies have shown that cooperative learning improves learning, understanding and remembering. It also helps students feel better about themselves, the class and their classmates. (Johnson, Johnson and Holubec 1993; Slavin 1991). My own experience as a Junior High science teacher leads me to agree with studies indicating the value of cooperative learning.

This study, however, deals not with the value of cooperative learning, but with establishing the best grouping for cooperative learning. Research on grouping has not shown clear-cut results. Heterogeneous and homogeneous groups both seem to have merit in particular situations (Slavin 1990; Kulik and Kulik 1982). The question addressed in this study is whether allowing students to choose their own partners for cooperative learning pairs can be effective for learning and attitudes of eighth grade science students.

Context

The study was conducted in a small rural school in northern Missouri. One school building houses around 300 PreK-12 students in two wings separated by a commons area. PreK-6 occupies one wing while 7-12 occupies the second wing. The school building sits on 40 acres and is five miles from the nearest small town. Students come from four small towns, the largest with a population around 300, and the surrounding countryside. Socio-economically, the student population is drawn primarily from middle-class to lower middle-class families with some families at or near the poverty level. Over 50% of the student population qualify for free and reduced lunches. The eighth grade class in this study is representative of the school population. Ethnically the class is homogeneous with no minority students. The students also tend to be fairly homogeneous in terms of ability with no very low or very high ability students. In the remainder of this article when pairs are spoken of as being homogeneous or heterogeneous it refers to gender since students are basically homogeneous in other aspects. Most of the students have known each other since kindergarten and have been in one classroom the majority of the time. Because of this they have worked in many different cooperative groups through the years. It is likely that each student has had the opportunity to work with every other student at some time in their school career.

Method

The study was conducted during a three week period using an earthquake unit. The unit was divided into four modules for which pairs of students conducted book and Internet research to gain knowledge and complete activities on concepts about earthquakes. The entire class came together periodically to work on lab activities, have large group discussions, and view video material.

Since there are two sections of eighth grade science, one fifth hour and one sixth hour, partners were randomly assigned fifth hour while sixth hour students were allowed to choose their own partners. Because of an odd number of students sixth hour there was one group of three.

The randomly chosen group included seven pairs of students. Four pairs were homogeneous in terms of gender while three pairs were heterogeneous. Sixth hour in which students chose their own partners included five pairs and one group of three. All pairs were homogeneous.

Results

A variety of data was collected over the three-week period. This included pre- and post-tests, an attitude survey and field notes about student behaviors. Artifacts were also collected. Pre-test/post-test data showed essentially no difference in academic growth between the two groups. The scores are shown in the table below.

	Pre-Test Mean Score	Post-Test Mean Score
5th Hour	26.4/55	36.7/55
6th Hour	25.9/55	37.5/55

Artifacts collected included many "foldables" or paper graphic organizers that required understanding and organization of certain earthquake concepts. These concepts included types of plate boundaries and their resulting land features, connected the Richter Scale to the amount of damage and loss of life from an earthquake, and types and locations of faults. There was no discernible difference in the quality of work on the organizers between the two classes.

Field notes taken gave more indication of differences between the two classes. The randomly chosen pairs were "off-task" an average of 2.1 times per day. On one representative day half-way through the unit, one homogeneous pair wasted most of the hour before achieving anything. In one heterogeneous pair, one member kept drifting away from his partner and conversing with another pair. Two other groups, one heterogeneous and one homogeneous, did most of their work independently rather than cooperatively even after being encouraged a number of times to work together. In still another heterogeneous group, one member worked consistently while the other partner did very little.

These behaviors were typical during the unit and seemed to increase as the unit progressed. When directed, the students focused on their work for a time but easily lost focus again and needed further reminders.

The student-chosen pairs averaged 0.19 times of being "off-task" per day. Very little reminder by the instructor was necessary to keep students focused. Interestingly, the group most often "off-task" was the one group with three students. However, both groups finished all four modules as well the graphic organizers in a timely manner. It may be beneficial to note here that the school involved in the study has a ZAP, or Zeros Aren't Permitted, program which highly encourages students to get classwork and homework in on time.

The attitude survey given at the conclusion of the unit revealed some variations between groups. In the random-chosen group all students had a positive attitude about what they had learned about earthquakes and indicated they were more now interested in earthquakes. Those in the student-chosen group were also positive about their learning about earthquakes but indicated a slightly less positive attitude about their interest in earthquakes.

All students in the student-chosen group were satisfied with their working relationship with their partner and the amount of work each person accomplished. All students in this group preferred to work with a partner even though three students felt they could accomplish more by themselves.

The students in the random-chosen group were less satisfied with their working relationship with their partners. Three students felt they did not always get along with their partner and half the students felt their partner did not do their share of the work. Half felt they could accomplish more by themselves. Interestingly, even given these attitudes, all students indicated they preferred to work with a partner rather than by themselves.

Discussion

Most of what I've read in the past about student grouping has discouraged the practice of allowing students to choose their own groups. However, in this study done with eighth graders in the context of a small rural school it appears student-chosen grouping can be effective. Testing and artifacts revealed very little difference academically between student-chosen pairs and random-chosen pairs. Assignments were turned in on time in both groups. Students in the student-chosen pairs indicated a more positive attitude toward their partners while all students preferred to work in pairs rather than alone. Attitudes toward the subject matter (earthquakes) was similarly positive in both groups.

There were some fairly significant differences in the behavior of the two groups with the random-chosen group requiring much more teacher intervention. The fact that pairs chosen randomly included several mixed gender pairs while the student-chosen groups were homogeneous may have affected student behavior and is a probable topic of further study. Given the age of the students (eighth grade, 14-15 years old) it may be reasonable to assume that mixing genders may impact student behavior more than other factors. Overall I found very little difference in the effectiveness of the student-chosen pairs and the random-chosen pairs. Both methods of grouping were effective in the context in which they were applied.

References

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