Cooperative Learning Effectiveness with Undergraduate Hispanic Students

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ABSTRACT

Two Art Appreciation classes of first semester undergraduate Hispanic students assigned to a Liberal Arts professor were selected to experience cooperative learning over a full semester. Pre-semester and post-semester surveys were completed by each of the undergraduate students. Strategies used in the class included Think-Pair-Share, Ticket to Get Out the Door, and being a member of a base group. This study is based upon theories of social interdependence, cognitive development, and behavioral learning. The surveys were completed by the university students to compare and contrast knowledge about their experiences in: 1) individual learning, and 2) learning with a partner. Reflections about their experiences were collected.

Keywords: cooperative learning, undergraduate education, minority population

The purpose of the research is to share results regarding first semester Hispanic students and their experiences with individual learning and cooperative learning. Survey results are shared. The convenient sample consisted of undergraduates enrolled in two sections of Art Survey, a core curriculum required course for freshmen. Both sections were taught by the same professor. Forty-six students completed both pre- and post- surveys. Participants were primarily first and second-generation immigrants from Mexico, South America, and Cuba and often the first in their family to attend an institution of higher learning. This institution, with a 94% Hispanic population, is located on the south Texas-Mexican border.

Theory

The theoretical framework for this paper centers on cooperative learning. Cooperative learning has its roots in the theories of social interdependence, cognitive development, and behavioral learning. Some research provides exceptionally strong evidence that cooperative learning results in greater effort to achieve, more positive relationships, and greater psychological health than competitive or individualistic learning efforts (Johnson, Johnson, & Holubec, 1994).

Social interdependence theory views cooperation as resulting from positive links of individuals to accomplish a common goal. The Gestalt psychologist Kurt Koffka proposed in the early 1900's that although groups are dynamic wholes the interdependence among members is variable. Kurt Lewin (1948) stated that interdependence from common goals provides the essential essence of a group. This interdependence creates groups that are dynamic wholes.

Within cognitive development theory, cooperation must precede cognitive growth. Cognitive growth springs from the alignment of various perspectives as individuals work to attain common goals. Both Piaget and Vygotsky saw cooperative learning with more able peers and instructors as resulting in cognitive development and intellectual growth (Johnson, Johnson, & Smith, 1998).

The assumption of behavioral learning theory is that students will work hard on tasks that provide a reward and that students will fail to work on tasks that provide no reward or punishment. Cooperative learning is one strategy that rewards individuals for participation in the group's effort.

The Johnson and Johnson model of Cooperative Learning includes the following five elements:

Positive Interdependence—creating the feeling that the group "sinks or swims together."

Face-to-Face Interaction—each team needs to sit in close proximity, eye-to-eye and knee-to-knee.

Individual Accountability—each person must know the material.

Social Skills—each student must work at implementing the selected social skill and the instructor must monitor for its use.

Processing—the opportunity to reflect on how well they functioned as a team and what they can do next time to be even better.

From their review of the research on collaborative learning in higher education, Elizabeth Barkley, Patricia Cross, and Claire Major (2005) have found abundant evidence that collaborative learning is an effective and motivating format for non-traditional underrepresented racial and ethnic groups, working-adult students, commuters, and re-entry students. Collaborative learning reframes the student role by requiring students to shift from a

passive, privatized, and competitive learning to active, public, and cooperative ways of working (National Learning Communities Project, 2003).

The widespread use of cooperative learning is due to multiple factors. According to Johnson and Johnson (2002) three of the most important factors are that cooperative learning is clearly based on theory, validated by research, and operationalized into clear procedures educators can use.

There are over 900 research studies validating the effectiveness of cooperative learning over competitive and individualistic efforts. This body of research has considerable generalizability for more than 110 years the research has been conducted by a wide range of researchers with markedly different orientations working in various settings and countries. The research participants have varied widely as to cultural background, economic class, age, and gender. Further more, a wide variety of research tasks and measures of the dependent variables have been used (Johnson and Johnson, 2002).

Methods and Data Sources

Data collection for the mixed methods study occurred over one academic semester with students attending a community university. Forty-six undergraduate Hispanic students completed pre- and post-surveys. The surveys included two types of questions and were adapted with permission from a Johnson and Johnson survey. The students were asked to rate their knowledge of cooperative learning on a scale of one to five with one being lowest and five being highest. Students were asked to indicate their experiences with cooperative learning in both the pre- and post survey. The consistency of questions and possible response options on the pre- and post-surveys allowed researchers to make comparisons about students' knowledge of cooperative learning and perceptions of expertise before and after the course (Fraenkel & Wallen, 1996). The paired pre- and post paired samples test for t provided results for analysis.

In addition to the pre- and post-survey students were asked on eight occasions to write a summary with their assigned cooperative partner for the semester to indicate what they had learned that day. The "Ticket to Get Out the Door" strategy provided students with practice of reassembling their memories and the opportunity to complete the "articulatory loop" by discussing the material covered (Zadina, 2008). The cooperative assignment of one summary for each pair of students provided them a partner to clarify information and complete their "Ticket to Get Out the Door". The professor collected the "Tickets" from each team as they left the room. Their summaries were reviewed for content and feedback about the class.

The use of standardized open-ended questions allowed the researchers to focus the students' attention on certain topics of interest without limiting the possible responses. It also allowed the researchers to gather data from the perspective of the undergraduate …students (Patton, 1990). The reflections and responses summarizing what the cooperative pairs of students had shared were analyzed using an inductive approach. The researchers searched for patterns in the data and then categorized the data according to the patterns that emerged (Krathwohl, 1993). This was done by searching for patterns separately. The researchers then shared the categories that they had found in the data and further refined their categories, thus providing a peer check of the analysis (Carspecken, 1996). Multiple data sources and peer

checks were used to triangulate the emerging findings and to contribute to the credibility of the study (Patton, 1990).

Results

The first section of the pre- and post survey asked undergraduate Hispanic students to share their experiences with cooperative learning. This was indicated by marking all statements that applied from a list of four statements. The results are summarized in Table 1: Experience with Cooperative Learning.

Table 1

Experiences with Cooperative Learning

Statement	Pre-Survey Respondents	Pre-Survey Percent	Post Survey Respondents	Post Survey Percent
I have talked to other classmates about cooperative learning.	18	39%	26	57%
I have read articles about cooperative learning.	13	28%	15	33%
I have discussed cooperative learning with other classmates and tried some of the ideas.	14	30%	23	50%
I have participated in cooperative learning activities in this class.	25	54%	45	98%

n = 46

The pre- and post-semester survey results, that included Likert-type responses on a scale of 5 = high and 1 = low, were summarized for all 31 questions. Data of the 46 students were reviewed for levels of significance using a Paired Samples Test for t and $p<.05$ for pre- and post-survey results. The t value needed for rejection of the null hypothesis at the .05 level with 45 degrees of difference (df) is 1.680. Table 2 shows the results obtained using SPSS, Version 17 software.

Table 2

Student Pre- and Post-Survey Results

Item #	Five point Likert scale used, 5=Highest and 1=Lowest. Note: t(45) = 1.680, p< .05	t
1.	I believe that cooperative learning is an effective instructional technique in most content areas.	4.407
2.	I believe that cooperative learning increases student participation in learning activities.	2.988
3.	I believe that cooperative learning improves student communication and decision-making skills.	1.746
4.	I believe that cooperative learning encourages and improves the performance of high ability students.	3.597
5.	I believe that cooperative learning encourages and improves the performance of average ability students.	4.189
6.	I believe that cooperative learning encourages and improves the performance of low ability students.	2.154
7.	I believe that using cooperative learning is an efficient teaching technique.	3.528
8.	I plan to increase my use of cooperative learning by organizing a cooperative study group.	.662
9.	Rewarding individual performance based on group success is an equitable method of grading.	.868
10.	I plan to make use of future opportunities for additional training in cooperative learning.	1.445
11.	How would you rate your theoretical knowledge regarding cooperative learning?	4.748
12.	How would you rate your knowledge regarding the effective implementation of cooperative learning as a model of teaching?	4.142
13.	When we work together in small groups, we try to make sure that everyone in our group learns all of the assigned material.	3.012
14.	When we work together in small groups, we cannot complete an assignment unless everyone contributes.	.816
15.	When we work together in small groups, our job is not done until everyone in our group has finished the assignment.	.000
16.	When we work together in small groups, the instructor divides up the material so that everyone has a part and everyone has to share.	2.868
17.	When we work together in small groups, everyone's ideas are needed if we are going to be successful.	1.957
18.	In this class, I like to share my ideas and materials with other students.	3.250
19.	In this class, I can learn important things from the other students.	1.918
20.	In this class it is a good idea to help each other learn.	.534
21.	In this class students learn lots of important things from each other.	1.243
22.	Sometimes I think the scoring system in this class is not fair.	-2.582
23.	I find it hard to speak my thoughts clearly in class.	-1.831
24.	Whenever I take a test I am afraid I will fail.	-4.436
25.	I have a lot of questions I never get a chance to ask in class.	-3.297
26.	I usually like to work better in groups than I like to work alone.	2.453
27.	I like to participate in cooperative activities.	4.501
28.	Working in a jigsaw helps me learn assigned material.	4.070
29.	As an "expert" for part of the material we need to learn, makes me prepare more carefully.	2.227
30.	In a jigsaw activity I listen carefully to my peers to learn the material they are "experts" in.	2.533
31.	In a jigsaw activity I gain an understanding of the material through discussion with my peers.	2.052

Results of Cooperative Activities

Students were asked to provide written summaries of what they had learned on eight occasions during the semester. The summaries were prepared by the students with a partner that they worked with for the entire semester. Three formats were used:

1. Ticket to Get Out the Door: This was used on five different days. Each group of two students jointly summarized what they had learned that day. The pair could not leave until they wrote their ticket providing feedback on what they learned.
2. Think-Pair-Share: Twice during the semester the pairs of students were asked to think about what was presented that day, discuss it with their partner, and share it in a detailed written summary. This was a more lengthy response for the team to develop, requiring more time to complete than the "Ticket" strategy.
3. Group Review: Once during the semester students were asked to summarize what they had learned. Students were, with their partners, asked to review their notes and write a response in class. Each pair of students had a different question and reported out orally as well as turning in their written response to the professor. This provided a review of major topics addressed.

Table 3 summarizes the cooperative activities, number of students involved, and number of class sections responding.

Table 3

Written Input from Students and Their Cooperative Learning Partner

Activity	Date	Number of Teams Responding	Total of Respondents for Date
Ticket Out the Door	7-9-08	25	50
Ticket Out the Door	7-15-08	14	28
Ticket Out the Door	7-18-08	23	46
Ticket Out the Door	7-30-08	25	50
Ticket Out the Door	8-6-08	12	24
Think-Pair-Share	7-9-08	23	46
Think-Pair-Share	7-21-08	25	50
Group Question	7-11-08	25	50
			Total = 344

n = 50

In reading all of the teams' responses from the above activities the researchers found that student groups reported content, which is what was asked for and one additional cluster referring to the cooperative learning experience. These comments were not solicited from students, but were shared after addressing the content summary of information. These randomly appeared throughout the semester provided by the teams of students. Following are samples of the comments:

a. Enjoyed working in groups.
b. We like the classroom activity.
c. We most enjoyed working cooperatively.
d. I enjoyed working with a partner.
e. I most enjoyed meeting my partner.
f. This was new to me. We liked talking to one another.
g. Working with my partner is what I enjoyed.
h. Interactive assignments were the best part.
i. We liked helping each other to understand what we didn't understand.
j. We decided to help each other on what we didn't understand.
k. This class was a new experience for me. And we are here for each other.

Discussion

The results of this study add to the body of knowledge about use of cooperative learning strategies with Hispanic undergraduate students. Pre- and post surveys, summaries about their learning written with partners and self-reporting about their experiences in a classroom where cooperative learning strategies were utilized provides information about undergraduate Hispanic students in an Art Appreciation course. The undergraduate Hispanic students were involved in the project over the period of a full semester.

No hypotheses are stated, but the clearly implied directional hypothesis is: undergraduate Hispanic students experiencing cooperative learning over one full semester show significant changes in pre- and post survey results including that they enjoy the interaction with peers, that cooperative learning encourages and improves the performance of all students, that when they work in small groups they make sure that everyone learns the material, everyone's ideas are needed to be successful in the small groups, and working in a jigsaw helps them learn the material.

References

Barkley, E. F., Cross, K. P., & Major, C. H. (2005). *Collaborative learning techniques: A handbook for college faculty.* San Francisco, CA: Jossey-Bass.

Carspecken, P. F. (1996). *Critical ethnography in educational research: A theoretical and practical guide.* New York, NY: Routledge.

Fraenkel, J. R., & Wallen, N. E. (1996). *How to design and evaluate research in education* (3rd ed.). New York, NY: McGraw-Hill.

Johnson, R. T., & Johnson, D. W. (1994). *An overview of cooperative learning* [on-line]. Retrieved from http://www.co-operation.org

Johnson, D., Johnson, R., & Holubec, E. (1994). *Cooperative learning in the classroom.* Alexandria, VA: Association for Supervision and Curriculum Development.

Johnson, D., Johnson R., & Smith, K. (1998). Cooperative learning returns to college. *Change, 30*(4), 26-35.

Krathwohl, D. R. (1993). *Methods of educational and social science research: An integrated approach.* New York, NY: Longman.

Lewin, K. (1948). *Resolving social conflicts.* New York, NY: Harper.

National Learning Communities Project (2003). *The pedagogy of possibilities: Developmental education, college-level studies, and learning communities* [Monograph Series].The Washington Center for Improving the Quality of Undergraduate Education at Evergreen State College: Olympia, WA.