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Bobbette M. Morgan

The University of Texas Rio Grande Valley

Ruth A. Keitz

Lori Wells

The University of Texas Rio Grande Valley

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Quantitative And Qualitative Results: Cooperative Learning Implementation With Hispanic Community College Freshmen

Bobbette M. Morgan, University of Texas at Brownsville, USA

Ruth A. Keitz, South Texas College, USA

Lori Wells, IDEA Schools, USA

ABSTRACT

Five classes of Art Appreciation first semester undergraduate Hispanic students assigned to one professor were selected to experience cooperative learning over a full semester. Pre-semester surveys and post-semester surveys were completed by 104 Hispanic freshmen college students. Strategies used in the classes included Think-Pair-Share, Ticket Out the Door, Jigsaw and being a member of base groups of two. This study is based upon theories of social interdependence, cognitive development, and behavioral learning. The surveys were completed by the first time college freshmen to compare and contrast knowledge about their experiences in: 1) individual learning, and 2) learning with a partner.

Keywords: Cooperative Learning; Hispanic Education; Instructional Strategies

INTRODUCTION

The purpose of the study is to report results regarding first semester Hispanic students and their experiences with cooperative learning. Adult learners are more likely to participate in learning when they are “members of a community” (LeNoue, Hall & Eighmy, 2011). Survey results are shared. The convenient sample consisted of undergraduates enrolled in five sections of Art Appreciation, a required course for freshmen. All sections were taught by the same professor. One hundred and four 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 border. Recent research has shown that cooperative learning is highly valued especially among adult or non-traditional students (Barkley, 2005 in Rowland, 2006:328; Efthymios, Ioanna, & Iosif, 2009).

THEORY/PERSPECTIVES

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.

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.

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: 1) cooperative learning is clearly based on theory, 2) validated by research, and 3) 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 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. Furthermore, 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 freshmen students attending a community college. One hundred and four undergraduate Hispanic students completed pre- and post-surveys. The surveys included 15 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 pre- and post paired samples test for t provided results for analysis. Effect sizes of significance are also reported for each item.

Students were asked to write a summary to indicate what they had learned. The "Ticket 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). Their summaries were reviewed for content and feedback about the class. The open-ended questions included the following: Didn't understand....., One new thing I learned...., and Most enjoyed....

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 allowed the researchers to gather data from the perspective of the undergraduate...students (Patton, 1990). The reflections and responses summarizing what the cooperative groups 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).

QUANTITATIVE RESULTS

The pre- and post-semester survey results were summarized for all questions. Data of the 104 students was reviewed for levels of significance using a Paired Samples Test for t and $p < .05$ for pre- and post-survey results. Table 1 shows the results obtained using SPSS, Version 17 software. Effect sizes have been calculated to provide additional information about significance.

Table 1: Student Pre- and Post-Survey Results

Item #	Five point Likert scale used, 5=Highest and 1=Lowest. Note: , $p < .05$	t	df	Effect Size of Significance
1.	I believe that cooperative learning is an effective instructional technique in most content areas.	5.858	103	.69 medium positive effect
2.	I believe that cooperative learning increases student participation in learning activities.	4.319	103	.56 medium positive effect
3.	I believe that cooperative learning improves student communication and decision-making skills.	3.913	103	.48 small positive effect
4.	I believe that cooperative learning encourages and improves the performance of high ability students.	2.967	103	.35 small positive effect
5.	I believe that cooperative learning encourages and improves the performance of average ability students.	4.496	103	.55 medium positive effect
6.	I believe that cooperative learning encourages and improves the performance of low ability students.	5.391	102	.70 medium positive effect
7.	I believe that using cooperative learning is an efficient teaching technique.	5.353	102	.83 large positive effect
8.	I plan to increase my use of cooperative learning by organizing a cooperative study group.	3.305	102	.36 small positive effect
9.	Rewarding individual performance based on group success is an equitable method of grading.	3.761	99	.46 small positive effect
10.	I plan to make use of future opportunities for additional training in cooperative learning.	4.835	101	.67 medium positive effect
11.	How would you rate your theoretical knowledge regarding cooperative learning?	7.491	102	-.83 large negative effect
12.	How would you rate your knowledge regarding the effective implementation of cooperative learning as a model of teaching?	7.722	102	.96 large positive effect
13.	When we work together in small groups, we try to make sure that everyone in our group learns all of the assigned material.	7.857	96	.94 large positive effect
14.	When we work together in small groups, we cannot complete an assignment unless everyone contributes.	1.297	103	.09 no effect
15.	When we work together in small groups, our job is not done until everyone in our group has finished the assignment.	3.652	103	.31 small positive effect

Weimer (2013) identifies five things students can learn through group work:

1. They can learn content, as in master the material.

When students work with content in a group they are figuring things out for themselves rather than having the instructor tell them what they need to know.

Items 1, 2, and 13 of the pre- and post- survey support that students learn content in terms of mastering the material.

2. They can learn content at those deeper levels we equate with understanding.

When students are trying to explain things to each other, to argue for an answer, or to justify a conclusion, that interaction clarifies their own thinking and often it clarifies the thinking of other students.

Items 4, 5, 6, and 7 of the results reinforce that students felt that they learned content at deeper levels that we equate with understanding when they are positive about improving the performance of low, average, and high ability students and that it is an efficient teaching technique.

3. They can learn how groups function productively.

Productive group members contribute to the group interaction, they support each other, and they deliver good work on time. In order for individuals to function productively in groups, they have the right to expect the group to value their individual contributions, to address behaviors that compromise group productivity, and to divide the work equitably among members.

Item 12, rating their knowledge regarding effective implementation of cooperation indicates their understanding and expectations about functioning as an effective group member.

4. They can learn why groups make better decisions than individuals.

Students can see how different perspectives, constructive deliberation, questioning, and critical analysis can result in better solutions and performance.

Items 3 and 10 identify that cooperative groups make better decisions. Item 3 specifically states “I believe that cooperative learning improves student communication and decision-making.”

5. They can learn how to work with others.

Group work helps students learn how to work with people outside their circle of friends, including those who have different backgrounds and experiences. They can even learn how to work with those who disagree with them, and others they might not “like” or want as friends.

Items 8 and 9 of the pre- and post- survey support actions about students being able to work well with others by organizing cooperative study groups and earning group grades.

QUALITATIVE RESULTS

In reading all of the responses from the Ticket Out the Door activity, the researchers found that student comments fit into three distinct areas. Comments reflected that the students gained a better understanding of the material, learned more and learned more easily, and were able to appreciate others perspectives and points of view. Following are samples of the comments for each cluster. Please note that comments are reproduced exactly as received.

Gained a Better Understanding of the Material:

- There were things I didn’t understand well, but thanks to my partners I do now.
- The cooperative learning experiences are helping me because I might not exactly understand what the topic is, but my partner may help me. We work well together.
- Cooperative learning helps a lot, and the work got done faster and it was fun.
- The cooperative learning experiences helped me better understand the different forms of artwork.
- In the cooperative learning activities I learn a lot by communicating on things I kind of didn’t understand & sometimes I learn a bit more.
- It helps me understand some things I don’t understand.
- I really enjoyed working w/other people because it helped me grasp some of their knowledge to better understand the material.
- Cooperative learning helps me by giving me a visual of what I am learning & gives me better photographic memory.
- Helps me to learn better when discussing material with other people.

Learned More and Learned More Easily:

- The hands-on activities help me learn better, also the quizzes help.
- Working together helps in a good way. The activities grab my attention so I learn a bit more.
- The cooperative learning in class experience for me is very good. I like to learn in a classroom where there is more than 1 student being cooperated with. It's a fun experience how I learn in this class.
- Working in a cooperative learning strategies are helping me to understand each concept and get a feel of what questions will be asked.
- The cooperative learning experiences allow what I'm learning to come out on paper. It is amazing to see what you come up with once you learn about different techniques. You could use feedback from your peers as a great way to appreciate what you've learned.
- Cooperative learning experiences are really helpful.
- The cooperative learning is very helpful. I understand mostly all of the material thanks to you!

Able to Appreciate Others Perspectives and Points of View:

- It is a great way to learn together and see things through others eyes, not just your own. Every time I come to class I learn something new.
- I truly enjoy cooperative learning experiences. We learn together and one sees something and another sees differences. But when its work its work, not kidding around.
- I get help by discussing with my partner what I think of the artwork or what he thinks. His answer only improves my vision of the artwork.
- I find that by studying and learning in a group I seem to retain more of what I take in. Additionally it is different and fun to hear others perspectives and thoughts.
- It's good because you get other people's opinions and makes it better to understand.
- How we all perceive the same thing differently. Some see more than others.
- Because I get different points of views and it gives me a better understanding of what we are learning.
- They are helping me by showing me different things and different point of view.
- We get to know others thoughts & opinions instead of our own.

DISCUSSION

The results of this study add to the body of knowledge about use of cooperative learning strategies with Hispanic freshmen college students. Pre- and post-survey, summaries about their learning with partners and self-reporting about their experiences with cooperative learning strategies indicates that the students gained a better understanding of the material, learned more and learned more easily, and were able to appreciate others perspectives and points of view. They learned how groups function productively, that groups made better decisions than individuals, and how to work with others. Undergraduate Hispanic students were involved for a full semester.

The implied directional hypothesis is: college freshmen Hispanic students experiencing cooperative learning over one full semester show significant positive changes in pre- and post-survey results. Students enjoyed working in cooperative groups, planned to organize cooperative study groups in the future, that cooperative learning could be used in many content areas, cooperative learning is an efficient teaching technique, cooperative learning increases student participation in learning activities, improves decision-making, promotes better understanding and more in-depth understanding of material and improves the performance of all students.

Future areas of research include review of retention and completion rates of students in courses where cooperative learning is used at least a third of the time.

AUTHOR INFORMATION

Bobbette M. Morgan, Ed. D., Professor, is a member of the College of Education in the Teaching, Learning and Innovation Department at The University of Texas at Brownsville. Her interests include cooperative learning, adult

learning strategies, brain-compatible learning and research-based models of teaching. She holds the title of Houston Endowed Chair in Education. E-mail: bobbette.morgan@utb.edu (Corresponding author)

Ruth A. Keitz, Ph. D., Senior Instructor, South Texas College, Mid-Valley Campus. Her interests include working with mixed media, collage, and teaching art history and art survey. She has received outstanding teaching awards from The University of Texas System and from South Texas College recently. E-mail: Rkeitz@southtexascollege.edu

Lori Wells recently completed her Doctor of Education in Curriculum and Instruction with a specialization in Bilingual Studies at The University of Texas at Brownsville and is now working for IDEA Schools across south Texas in the role of Diagnostician. She works as a Licensed Specialist in School Psychology and Licensed Psychological Associate in public schools, state rehabilitation agencies, and private practice. E-mail: Lori.Wells@rocketmail.com

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