USE AND PERCEPTION OF COOPERATIVE LEARNING BY COLLEGE FACULTY

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Abstract

This study examined the use and perceptions of cooperative learning by college faculty members of a two year college. The study used the survey method to collect information as part of a quantitative, descriptive research. Participants for the research were 148 faculty members who taught students in traditional face-to-face classes at the college.

Cooperative learning is an instructional method that allows students to work in small groups to promote their learning and the learning of their peers. This instructional method is identified as a pedagogical and andragogical strategy that increases academic and social skills of students. There is limited evidence of substantial use of cooperative learning, as an instructional strategy, in undergraduate learning environments of higher education. However, the diverse student population in many undergraduate programs suggests that cooperative learning could be an effective instructional strategy for this level of education.

The research findings indicated that only 17% of participating faculty members used cooperative learning on regular bases. However, for the faculty who used cooperative learning, the quality in their use was considerable higher, with a reported 50% “largely” structuring classes on regular bases to allow students to work actively together. Sixty seven percent of the faculty reported that their students were at least “largely” engaged in their learning groups, utilizing positive interdependence, one of the key principles of cooperative learning. Sixty seven percent of faculty also reported that their students at least “largely” completed their required share of work, thus demonstrating individual accountability, another key cooperative learning principle.

For the study, faculty perceptions were grouped in categories of perceived value of cooperative learning, cost of implementation, and expectancy of success. The study indicated that the faculty members perceived cooperative learning as a valued teaching strategy that was not costly to implement. Therefore, faculty had high expectancy for success of cooperative learning as an instructional strategy.

Keywords: Cooperative learning, team learning, instructional strategy.

1 INTRODUCTION

Cooperative learning is an instructional strategy that is extensively accepted to have positive impact on academic achievement and social skills of students (Johnson, Johnson, & Stanne, 2000; Siegel, 2005; Yamark, 2007). This instructional strategy allows students to work together in small groups to promote their own learning and the learning of their teammates. Students work toward mutual goals and to maximize the learning of all (Kanthan & Mills, 2007; Buchs, Gilles, Dutrevis & Butera, 2011).

There are very strong theoretical foundations for cooperative learning. Biggs (1999) indicated that constructivist learning theory requires students to actively construct their knowledge. Ransdell (2005) reported that cooperative learning is governed by constructivist concepts. Johnson, Johnson and Smith (2013) announced that cooperative learning is grounded in social interdependence theory. Well-developed theories support research and practice; cooperative learning theory has extensive research bases that testify to its strength and validity (Johnson et al., 2000; Johnson et al., 2013). Research on the effectiveness of cooperative learning extends back to the 1800’s (Armstrong, Chang, & Brickman, 2007). Johnson et al. (2000), in a meta-analysis study on the use of modern cooperative learning, reported that for the last three decades cooperative learning has been effectively utilized in all levels of education.

It is well established that cooperative learning instructional groups differ distinctly from other learning groups. Grounded in social interdependence theory, cooperative learning includes five specific interrelated elements (Johnson et al., 2013). The elements are positive interdependence, individual accountability, productive interaction, social skills, and group processing (Ahern, 2007; Hanson &
Researchers suggest that for a teaching technique to be highly cooperative, it must be structured to allow group members to perform these basic elements of cooperative learning (Felder & Brent, 2007; Kanthan & Mills, 2007).

**Positive interdependence.** Cooperative learning group members are expected to be linked together so that one member cannot acquire maximum benefit unless all members benefit. Team members work cooperatively to learn from one another and promote the success of all. Positive interdependence fosters positive relationship and mutual success of every team member. Each member is expected to push for success and help to facilitate the success of all team members (Carroll & Williams, 2007; Mills, 2009). It supports the idea of all-for-one and one-for-all.

Four techniques are used to ensure positive interdependence. They are goal interdependence, resource interdependence, role interdependence, and reward interdependence (Colbeck, Campbell, & Bjorklund, 2000; Johnson et al., 2000). Goal interdependence requires the establishment of mutual learning goals. Resource interdependence requires team members to be resource for each other, sharing information and other resources to gain understanding and complete assignments. Role interdependence require group members to perform varying roles such as time keeper, note taker and reporter, for the efficiency of the group. This is of importance especially when group members are working on routine tasks and it is essential to stimulate their interaction. Reward interdependence deals with group regards provided based on group success (Buchs, Gilles, Dutevis & Butera, 2011;)

**Individual accountability.** This promotes group members personal responsibility for their work. Educators may provide for individual accountability through individual examinations or randomly selection of member's work to represent group effort. Individual accountability pushes students to work together to perform better individually (Johnson, Johnson, & Smith 1998; Kanthan & Mills, 2007).

**Promotive interaction.** Promotive interaction dictates that students should positively interact with one another while working. Although group members may at times work individually, there should be group discussions and interaction to challenge each other’s reasoning, and to promote learning. Interaction should involve questioning for critical thinking, giving feedback, and providing clarification (Felder & Brent, 2007; Johnson & Johnson, 1999).

**Social skills.** The use of appropriate social skills by group members is essential for cooperative learning. Group learning is not always cooperative, and college students sometimes react negatively when working in groups. Even at the college level, students should be provided activities that promote practice of interpersonal skills. Colbeck et al., (2000) warned that "without specific guidance from instructors about how to share leadership and process management roles among group members, students with high motivation levels become leaders and those with low motivation levels become slackers” (p.78).

**Group processing.** Finally, students should regularly participate in group processing to reflect and discuss how the group functions and provide feedback to each other. Ransdell (2005) pointed out that group processing can allow students to confidentially share concerns with instructors. They should be encouraged to reflect on the group process as well as their learning, noting what is helpful and what is not. Students should identify problems as well as victories and, where needed, bring about resolution (Ahern, 2007; Kanthan & Mills, 2007).

**Cooperative Learning in Higher Education.** Despite the enormous volume of research supporting the positive gains at all levels of education by the use of cooperative learning, it is an underutilized instructional strategy in higher education (Jones & Jones, 2008; Kanthan & Mills, 2007; Johnson et al, 2013). According to Weimer (2008), 76% of college professors reported the use of lecture as their main teaching methodology. However, research indicates that cooperative learning out performs individual instruction such as lecture in producing higher levels of academic achievement and psychological well-being in students (Kanthan & Mills, 2007). Johnson et al. (2013) pointed out that higher education instructors fail "to apply the same scientific rigor to their teaching as they do to their research” (p. 2). This could be because most higher education instructors are experts in their subject matter fields and not necessarily in educational theories and teaching strategies.

Prior to 1970, however, most of the cooperative learning work was tied to college classrooms. Between the 1970’s and 1990’s, educators in elementary to high school began utilizing cooperative learning and significantly increased the research and use (Johnson et al., 2013). Since the 1990’s cooperative learning has been revived in higher education (Johnson et al., 1998; Johnson et al., 2013). Johnson et al. (1998) reported 305 studies comparing the effectiveness of individualistic, competitive, and cooperative learning on college students and adult learners. Sixty-eight percent of
those studies were conducted after 1970. Cooperative learning as an instructional method is, unfortunately, still underutilized in the college classroom (Jones & Jones, 2008; Johnson et al., 2013; Kanthan & Mills, 2007). Reports suggest that there is still resistance to integrate cooperative learning by college faculty because the use is often approached as an all or nothing methodology (Jones & Jones, 2008). Many faculty members view cooperative learning as the alternative to lecture, not as a welcomed enhancement.

Tinto (1975) and Pascarella, Smart, and Ethington (1986) have highlighted two important variables that are linked to college retention: academic integration and social integration. These variables are also linked to cooperative learning. Passarella et al. (1986) postulated that the retention of college students may be enhanced through practices which promote academic and social integration like cooperative learning. Edington (2000) suggested that social interaction and engagement with other students in the classroom add meaning for students and influence their development. Cooperative learning is structured to offer social and academic integration.

2 METHODOLOGY

This research study examined the use and perceptions of cooperative learning by college faculty, at a two year college, who taught on campus instruction classes (not online courses). The study utilized the survey method and collected information from 148 faculty members who taught on campus instruction classes. A quantitative, descriptive research approach was used. Three research questions were addressed by the study. (1) To what extent do college faculty members who teach face-to-face classes use cooperative learning? (2) What are the perceptions of college faculty regarding cooperative learning? (3) To what extent do college faculty understand the key elements of cooperative learning?

The sample for the study came from a population of 640 faculty members who taught on campus classes at the college. Of this group, 217 faculty members were full-time employees of the college and 423 worked part-time with the college. A convenience sample design was used in the study. Faculty members were contacted via email to complete the online survey. The instruction for completing the survey contained informed consent material, including purpose, procedure, benefits, and risks of the survey. The survey was completed by 148 faculty members who formed the sample for the study. Participants were informed that the link to the survey ensured confidentiality and were requested not to identify themselves.

The purpose of the study was to examine the use and perceptions of cooperative learning by the faculty members. The dependent variables were the use of cooperative learning and the perceptions of faculty members toward cooperative learning. Demographical factors relating to the faculty members served as independent variables. These factors were faculty status (part-time, full-time), teaching position (instructor, professor, etc.), length of time teaching, the department in which the faculty taught (education, social science, etc.), faculty's gender (male or female), average class size taught, the time the faculty taught (day or night), experience using cooperative learning, and training in cooperative learning.

The survey used for the study was a modified version of Cooperative Learning Implementation Questionnaire (CLIQ) (Abram, Poulson & Chambers, 2004). Permission to use the survey instrument was obtained from Dr. Philip Abram. This researcher modified the survey by making a few changes to the demographic items to accommodate the characteristics of the faculty. Item 14 of the survey was modified by replacing "parents' goals" with "students' goals." The survey explores several factors that may interfere with the use of cooperative learning by teachers.

The survey has three sections. Section one, "professional views on cooperative learning," contains 48 multiple-choice items dealing with the attitude of educators regarding cooperative learning. Section two, "tell us about yourselves," has 11 demographic items on the original survey and 12 items when modified for this study. Section three, "current teaching practices," has 9 items relating to the use of cooperative learning by educators. The survey required approximately 12 to 15 minutes to complete.

Abram et al. (2004) identified factors relating to the perceptions of educators concerning cooperative learning, as falling into categories of cost, value, and expectancy. Items addressing cost assessed the perceived demand on teachers by cooperative learning. Value items addressed perceptions of teachers relating to usefulness and benefit of cooperative learning. Expectancy items looked at the perceptions of teachers in regards to expected outcomes of cooperative learning (Abram et al., 2004).
To ensure a common understanding of cooperative learning, a definition of the term is presented at the beginning of the survey.

For this research, a pilot study was done with five faculty members to field test the modified instrument. The faculty members were chosen from different teaching disciplines. They were asked to complete the original CLIQ and the modified version. They were then questioned concerning their opinion of the modifications. They agreed with the modifications. Tests for reliability and validity were ascertained for the original survey (Abram et al., 2004).

3 RESULTS

Of the college’s 640 faculty members who were eligible for the study, 148 completed the survey and formed the sample for the study, N=148. The response rate of participants was 35.5% of eligible faculty. Participants were not required to complete all of the questions on the survey. Those who did not use cooperative learning in their classes were asked to stop at item 62. Items 63 through 69 asked about the use of cooperative learning. The completers of the questionnaire completed over 80% of the questions and worked to the end of the instrument. This group, comprised of 79 full-time and 69 part-time faculty members, consisted of 92 females and 56 males; 13 of the group members held the rank of professor, 34 associate professors, 28 assistant professors, and 73 instructors. The group had an average of 14 years of teaching experience. All of the 148 participants in the sample answered all items up to number 61, and 147 answered up to number 62. Sixty-nine participants completed between 99 and 102 items. Participants who responded to fewer than 50% of the items were not included in the study.

3.1 Research Questions

Research question 1 dealt with the extent to which faculty members used cooperative learning in their face-to-face classes. Using this research question, participants were classified as users or non-users of cooperative learning based on their answers to item 61 of the modified CLIQ which asked respondents to rate the degree to which cooperative learning was a part of their classroom routine. Non-users reported no use of cooperative learning. Users responded entirely, largely, somewhat, or slightly.

Based on descriptive statistics, of the 148 participants, 76% (N=113) reported to use cooperative learning in their classes at least slightly. Of these 113 users, none reported to use cooperative learning entirely. Seventeen percent (N=25) reported to use it largely, 26% (N=38) reported to use it somewhat and 34% (N=50) reported to use it slightly as part of their routine. Non-users made up 23% (N=35) of the sample.

Research question number 2 dealt with the perceptions of the college faculty regarding cooperative learning. Based on the previous research of Abram et al. (2004), this researcher placed the first 48 questions of the CLIQ into perception categories based on perceived cost (C), perceived value (V), and perceived expectancy of success (E). The researcher calculated the percentages of the participants whose response fell into these categories.

The higher the faculty percentage scores for the cost category, the lower the perceived cost of implementation of cooperative learning. The higher the faculty percentage scores for the value category, the greater value faculty members were perceived to place on cooperative learning. The higher the faculty percentage scores for the expectancy category, the greater the perceived expectancy of success the faculty had for use of cooperative learning.

Cost Perception. Seven questions on the CLIQ dealt with perceptions regarding the cost of implementation of cooperative learning. After an item analysis of these seven questions, the questions were placed into categories of time and physical costs. The time cost items included questions 27, 38, and 45; the physical cost category contained questions 3, 20, 32, and 36.

Time-cost. Item 27 of the survey indicated that faculty had too little time to prepare students effectively for group work. Fifty-six percent (N=83) of the participants disagreed to strongly disagree with the statement. Question 38 indicated that cooperative learning used too much class time. Fifty-eight percent (N=86) of participants reported to disagree to strongly disagree. Question 45 indicated that cooperative learning needed too much preparation time. To this question, 65% (N=96) of the participants disagreed to strongly disagreed.
Physical-cost. Sixty-two percent (N=92) of the participants reported to disagree to strongly disagree with question 3, which indicated that the cost of implementation of cooperative learning is great. Sixty-five percent (N=97) of participants disagreed to strongly disagree with question 20 which indicated that cooperative learning needs the use of specialized material for implementation. Forty-one percent (N=61) of participants agreed to strongly agreed with question 32, which indicated that significant effort is needed to use cooperative learning. Sixty-five percent (N=96) of the participants agreed to strongly agreed with question 36, which indicated that cooperative learning is an efficient teaching strategy.

Perception of value. Twenty-one of the survey questions are value related. The researcher conducted an item analysis of these items and divided them into categories of value regarding students and value regarding educators.

Student-related value: CLIQ questions 4, 6, 14, 16, 22, 25, 26, 29, 31, 34, 39, and 47 deal with values regarding students. Forty-nine percent (N=73) of participants reported to agree to strongly agree with question 4, which indicates that students are best prepared for the real world through competition. Additionally, 71% (N=105) of participants reported to disagree to strongly disagree with question 6, which indicates that bright students are held back by cooperative learning. Sixty-six percent (N=98) of participants disagreed to strongly disagreed with question 14, which indicates that students goals are contradicted by cooperative learning. In addition, 84% (N=124) of participants agreed to strongly agreed with question 16 that students interacting with each other provide for deeper understanding of material. Also, 64% (N=95) of the participants disagreed to strongly disagreed with question 22, that cooperative learning places too much emphasis on the development of students’ social skills, while 74% (N=110) of participants agreed to strongly agreed with question 25, that social skills of students are enhanced by cooperative learning.

Fifty-seven percent of the participants (N=84) disagreed to strongly disagreed with question 26 which states that it is impossible to evaluate students fairly with cooperative learning strategies. Seventy-two percent (N=107) of participants agreed to strongly agreed with question 29 that cooperative learning promotes student friendship. Also, 75% (N=111) of the participants disagreed to strongly disagreed with question 31, that cooperative learning interferes with students’ academic success. Sixty-five percent (N=96) of participants agreed to strongly agreed with question 34 that cooperative learning enhances the learning of students with lower ability. Sixty one percent (N=90) of the participants agreed to strongly agreed with question 39 that cooperative learning fosters positive student learning attitudes. Finally, 73% (N=108) of participants disagreed to strongly disagreed that cooperative learning gives students too much responsibility.

Educator-related value. CLIQ questions 7, 8, 15, 21, 35, 37, 42, and 46 deal with educator-related values regarding cooperative learning. From this group of questions, 46% (N=68) of participants disagreed to strongly disagreed with question 7, which identifies education as having too many demands for change. In addition, 57% (N=84) of participants agreed to strongly agreed with question 8 which indicates that cooperative learning is congruent with their philosophy of teaching. Seventy-five percent (N=111) of participants indicated that they agreed to strongly agreed with question 15. They consider cooperative learning a valuable teaching approach. Eighty-two percent (N=121) of the participants disagreed to strongly disagreed with question 21, which indicates that participants feel pressured by their administration to use cooperative learning. Also, 86% of participants (N=127) disagreed to strongly disagreed with question 35 that they feel pressured to use cooperative learning by other educators.

Forty-nine percent (N=73) of faculty members agreed to strongly agreed with question 37, that the goals of their college are promoted by cooperative learning. Also, 65% (N=96) of the faculty disagreed to strongly disagreed with question 42 that suggests that faculty members prefer to use familiar teaching methods. Lastly, 40% (N=59) of faculty members agreed to strongly agreed with question 46, that they feel personally committed to using cooperative learning.

Expectancy of success. Twenty of the survey questions deal with expectancy toward success with use of cooperative learning. Item analysis was conducted, and these 20 questions were placed into three categories: expectancy with regard to students, expectancy in regard to knowledge of teachers, and expectancy in regard to training and support.

Expectancy regarding students. Questions 1, 9, 11, 18, 19, 28, 30, 41, and 43 of the CLIQ deal with faculty expectancy regarding students. Fifty percent (N=74) of faculty disagreed to strongly disagreed with question 1, which indicates that students display a tendency to veer off task when using cooperative learning. For question 9, 52% (N=77) of participants disagreed to strongly disagreed...
that their students do not have the skills to effectively work cooperatively in groups. Similarly, 74% (N=110) of the faculty disagreed to strongly disagree with question 11, which indicates that cooperative learning results in too many disciplinary problems.

For question 18, 75% of the participants agreed to strongly agree that cooperative learning is appropriate for their classes. In addition, 45% (N=67) of participants agreed to strongly agree with question 19 that in using cooperative learning too many students want team members to do their work. Seventy-one percent (N=105) of participants disagreed to strongly disagree with question 28, that they have too many students to make appropriate use of cooperative learning. For question 30, 57% (N=84) of the participants disagreed to strongly disagree that their students resist working cooperatively in groups. Also, 70% (N=104) of faculty disagreed to strongly disagree with question 41, that cooperative learning would not work appropriately with their students. Similarly, 70% (N=104) of participants disagreed to strongly disagree with question 43, that cooperative learning is too noisy.

**Expectancy regarding knowledge of educators.** Concerning the perception of expectancy in relationship to the knowledge of educators, items 2, 23, 24, 33, 40, 44, and 48 were addressed. Sixty-two percent (N=92) of the faculty agreed to strongly agree with item 2 of the survey, which indicates that they understood cooperative learning to use it successfully. Seventy-one percent (N=105) of participants agreed to strongly agreed that they can implement cooperative learning successfully, as stated by survey question 23. Also, 78% (N=115) of participants disagreed to strongly disagree with question 24, which indicates that faculty members do not have sufficient experience teaching to successfully use cooperative learning. Similarly, 71% (N=105) of participants disagreed to strongly disagree with question 33, which suggests that cooperative learning is not appropriate for the courses they teach.

Additionally, 64% (N=95) of the participants disagreed to strongly disagree with question 40, that cooperative learning is too difficult for successful implementation. In regards to item 44, 92% (N=136) of the participants agreed to strongly agreed that they were effective teachers. Fifty-six percent (N=82) of participants reported to disagree to strongly disagree with item 48, that the physical outlay of their classroom poses hindrance to cooperative learning.

**Expectancy regarding training and support.** Concerning the perception of expectancy of success relating to faculty training and support, the following items are addressed: 5, 10, 13, 17, 41, and 43. Thirty eight percent (N= 57) of participants disagreed to strongly disagree with question 5 that their training prepared them for success in the use of cooperative learning. Additionally, 57% (N= 84) of participants disagreed to strongly disagree with question 10, that they need the support of their colleagues to successfully use cooperative learning. Also, 44% (N= 64 ) of faculty members answering question 13, disagreed to strongly disagree that to be successful with cooperative learning, they need the support of the administration. Concerning question 17, forty-five percent (N=67) of participants, disagreed to strongly disagreed that their training in cooperative learning was not practical enough for them to successfully implement the strategy.

**Research question 3.** Research question 3, asked to what degree college faculty members, using cooperative learning do, understand the key principles? Two key principles of cooperative learning explored by the survey are positive interdependence and individual accountability (Johnson et al., 1998).

**Positive interdependence.** The principle of positive interdependence is utilized when group members work actively together to promote the success of each other (Johnson et al., 1991). CLIQ questions 63 and 64 deal with the principle of positive interdependence. CLIQ question 63 asks participants to rate the extent to which they structure activities to allow all students to work actively together. Question 64 asks participants to rate the extent to which their students actively participate in cooperative learning class activities.

Ninety three percent (N=95) of participants addressing question 63 reported to at least slightly structure class activities to enable all group members to actively work together. This demonstrated the use of positive interdependence. Thirteen percent (N=13) of participants reported entirely structuring cooperative learning activities to allow students to work actively together. Thirty-seven percent (N=38) of faculty largely structured learning activities to ensure all students in the groups work actively together. Also, 33% (N=34) of the participants reported that they somewhat structured activities to ensure that all group members actively work together, and 10% reported to slightly structured learning activities so that a group members can work actively together.
Results indicated that 99% \((N=99)\) of the participants in answering question 64 accounted for the principle of positive interdependence by indicating that their students at least slightly participate in group activities. Seventeen percent \((N=17)\) of the faculty members rated group participation as happening entirely during cooperative learning activities. Fifty percent \((N=50)\) of faculty members rated their cooperative group members as largely participating in activities; 31% \((N=31)\) of the faculty members rated the participation of group members as somewhat, and 1% \((N=1)\) indicated that their students only slightly participated in groups.

**Individual accountability.** Individual accountability is another essential principle of effective cooperative learning. The principle requires each team member to be a contributor in the learning process. CLIQ question 65 asks participants to rate the extent to which their students complete their share of group work in a typical cooperative activity, thus addressing the concept of individual accountability.

Ninety-seven percent \((N=97)\) of participants accounted for individual accountability by reporting a rating of at least slightly to question 65. Sixteen percent \((N=16)\) of the faculty reported that their students entirely completed their share of group work during a typical cooperative learning activity. Fifty-one percent \((N=50)\) of participants indicated that their students largely completed their share of group tasks. Twenty-six percent \((N=26)\) of faculty rated their students’ completion of their share of work during typical cooperative learning activities as somewhat, and 5% \((N=5)\) rated their students’ completion of their share of work as slightly.

4 CONCLUSION

Research studies of cooperative learning support its use at all levels of education. The positive effect of this teaching strategy on academic performance, social skills, self-esteem, and retention of students reinforce the importance of its use with college students. The diverse student population at most colleges make cooperative learning a viable teaching strategy.

This study indicated a high use of cooperative learning at the college surveyed. It also indicated appropriate use of cooperative learning and its key principles by faculty. However, the use of cooperative learning was noted to be inconsistent because the majority of the faculty did not use cooperative learning on a regular basis.

It must also be noted that there were limitations with the research as it focused only on faculty members who taught in face-to-face classes. Faculty teaching only online classes were excluded from the study and the number of faculty in this group is growing significantly. Further research that includes participants from more colleges and universities would also be valuable.

In addition, data for this study was obtained from volunteer respondents to the survey. Self-reports are subject to exaggeration, which may cause some bias in the research. Further research that examines the relationship between demographic variables of faculty members may also be of importance.

4.1 Suggestions for Further Research

This research warrants replication using faculty from more colleges and universities. This will increase the ability to generalize the results of the study and help researchers to determine the extent to which the findings of this research are applicable to higher education. A general and very important finding of this study is the need for more training and follow-up support on cooperative learning for faculty. Further research assessing training in cooperative learning for faculty is therefore relevant. Also, of importance for further research is the investigation of use of cooperative learning by faculty after training.

REFERENCES


