Effects of Cooperative Learning on Students’ Sociality in Elementary Physical Education Classes

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Most activities in physical education classes have been played with a partner or peers in a group, which results in creating positive relationships among students in a class. If a teacher could build these relationships they would expect to facilitate the development of his/her students’ sociality. It is also important to improve non-participant’s behavior which will include isolated students in a class. Recently, the cooperative learning model has been introduced by a few researchers (Metzler, 2005; Rink, 2002) to modify students’ social behaviors in physical education settings. The asserted cooperative learning structures promote higher levels of social and academic learning than competitive or individualistic learning structures. Cooperative learning models have to be designed to promote increased levels of student achievement mediated by small-group interactions and social skills. According to Metzler (2005), grouping is one of the most important processes to successfully implement this model. The affective domain, such as peer teaching, verbal support for teammates, cooperation, leadership, attitude, self-efficacy, confidence, and competence, has been of interest in the cooperative learning model. However, limited studies have focused on students’ affective domain such as social status using ‘sociometry’ toward the relationship between classmates in PE classes. Moreno (1934, 1953) coined the term ‘sociometry’ and conducted the first long-range sociometric study from 1932-38 on the Training School for Girls. Moreno defined sociometry as “the mathematical study of psychological properties of populations, the experimental technique of and the results obtained by application of quantitative methods” (Moreno, 1953). His questionnaire has been a useful measurement of examining improvement of social status within a group. It has also been frequently applied to find out the effects of children’s social behavior in other fields (i.e., clinical, organizational, and developmental psychology). The number of sociometric choices tends to predict such performance criteria as learning effectiveness (Mcconnell & Odom, 1986).

Methods

The purposes of the present study were to examine the effectiveness of cooperative programs on the improvement of students’ sociality in an elementary physical education classes, and to analyze isolated non-participants’ responses in class, comparing the result with that of the traditional approach. Eighty-six 4th grade students (45 males and 41 females) randomly selected in Korea participated in this study. Participants were then randomly divided into experimental (n=43) and control group (n=43). The study was implemented in physical education classes for 21 lessons over 10 weeks in 2006. The cooperative learning-based play program was introduced and implemented to the experimental group; whereas the traditional play program based on the school’s regular curriculum was applied to the control group. Both groups were taught by one male physical education specialist, having 11 years of teaching in elementary physical education. The teacher separated students who could not work together productively and regrouped them for productive social relationships. Partners were assigned by the teacher to three neglected (isolated) students. Each of the three isolated students was partnered with one student who showed better social learning skills and good relationships with most of students in class. The criteria for grouping was followed by Metzler’s (2005) suggestions that include five factors, social compatibility, gender, tendency, leadership or follower-ship, and student behaviors. The group members and structures of each group composition were assigned by the teacher and then posted on a bulletin board to be announced each time in class when reorganization was performed. The measure used for sociality in this study was “peer nomination” based on Moreno’s questionnaire (Mcconnell, & Odom, 1986). In addition, non-participants’ sociability was also measured to investigate the effectiveness of the two approaches, using “Personal Distance Score” obtained and calculated by the Cowell Personal Distance Ballot (Howe, 1971; Jackson, & Suggs, 1980; Walters, 1955). Group size was classified according to the activity, which included partners (2 students), small groups (3-6 students), middle (7-10), large group (11 or more), and whole class activities. 17 different types of modified activities were used to cooperative learning group in this study. Some examples of the activities for the experimental group included: ball balance and passing in the square (with a partner or within a small group), twister and passing in the square (within a small group), blind flight and nine-person skip (within a middle group), modified musical chairs (no one eliminated), and tag activity (within a middle group). The teacher’s strategies for each of the three isolated students in the experimental group were monitoring students’ performance, providing positive feedback, questioning, providing small tasks (i.e., arranging and retrieving the equipment before and after class, and reporting team information and performance to the teacher) to facilitate their class participation. To analyze and compare effects of cooperative learning model on the improvement of sociality using the sociometry indexes (i.e., Choice Status, Group Expansiveness, and Group Cohesiveness), independent t-tests were used to examine the improvement of sociality. In addition, to further analyze the gender difference, t-tests on gender for each of the indexes were examined between groups. Each of the indexes was first calculated by a mathematical equation suggested by Moreno’s sociometry. First, choice status (CS) was analyzed by

\[ CS = \frac{C}{N-1} \]

where \( C \) represents “choices received from classmates” and \( N \) represents the total cases. Second, group expansiveness (GE) was equated by

\[ GE = \frac{GE}{N} \]

where \( GE \) represents the total number of all students selecting. Last, group cohesiveness (GC) was the number of mutual selections (MC) by students that can be mathematically illustrated as

\[ GC = \frac{MC}{N(N-1)/2} \]

In addition, the Cowell Personal Distance Ballot was obtained that was a peer
rating method in which all the students were graded from 7 to 1 by their peers. It is a 7-point scale, ranging from 7 (feeling closest to the peer) to 1 (feeling farthest to the peer). When all the students in a class are graded and personal distance is judged, it is often given a score that indicates how close they are to individuals. In this study, an analysis of the score of the Cowell Personal Distance Ballot was implemented only on 6 isolated students from both groups who were selected based on post-test results of sociometry scores.

Results
The pre t-test results demonstrated no differences on the each of the 3 sociometry scores (i.e., CS, GC, and GE) between the experimental and the control groups. However, post t-test results between two groups on all the 3 indexes showed statistically significant differences, showing that the experimental group (i.e., cooperative learning program group) had significantly higher scores ($p<.01$) than the control group (i.e., traditional play programs). Moreover, t-tests on pre and post scores on sociometry showed that the experimental group significantly ($p<.01$) improved on sociality over the 10 weeks. Both males and females in the experimental group demonstrated higher scores on CS, GC, and GE that of the control group. Interestingly, the pretest score on CS and GC for all 6 isolated students (experimental group 3, control group 3) was zero, meaning that no one was chosen by other classmates. However, the post-test score mean of 3 students in the experimental group showed 6.60; whereas the control group showed 4.0. The experimental group showed significant improvement on the Cowell Personal Distance Score and students’ behaviors, compared to the control group.

Conclusions
In conclusion, this study indicated that cooperative play programs can be invaluable in the process of promoting students’ sociability in elementary school physical education classes. The findings of the current study also advocate and reemphasize the importance of physical education teacher’s responsibilities in class to facilitate and promote students sociality and positive behaviors.

References
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