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THE APPLICATION OF COOPERATIVE LEARNING BY JUNIOR HIGH SCHOOL TEACHERS IN EAST PRAJA, CENTRAL LOMBOK, WEST NUSA TENGGARA-INDONESIA

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ABSTRACT

Cooperative learning is an old idea in education, which has experienced a substantial revival in educational research and practice in the past few years. Cooperative learning involves pupils working together in groups to accomplish shared goals. This study discusses the application of cooperative learning, conducted by junior high school teachers, where students work in small groups, and receive awards or recognition based on their group performance, while the method of applying cooperative learning is done directly by junior high school teachers, in the learning process every day, research findings patterns support the use of cooperative learning methods in general, to improve student achievement, positive relationships in integrated schools, mutual attention among students, self-esteem, and other positive results.

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INTRODUCTION

Cooperative learning is an old idea in education, which has experienced a substantial revival in educational research and practice in the past few years. The term refers to classroom techniques in which students work on learning activities in small groups and receive rewards or recognition based on their group's performance. Laboratory research on the effects of cooperation on performance and other variables was already under way in the 1920's (see Maller, 1929), but only recently have the principles of cooperation been made into practical programs for use in schools and evaluated as such.

Cooperative learning involves pupils working together in groups to accomplish shared goals. It requires careful structuring by teachers to ensure that each member of the group makes a contribution to the group's goal and in this way it differs from the common term 'group work'. The underlying theory that helps explain its effectiveness is 'social interdependence' (Johnson and Johnson 1975, in press). This theory identifies factors that are crucial in cooperative learning,

in particular, the need for pupils to be mutually dependent and each pupil accountable for his or her share of the work. Extensive research has demonstrated the benefits of working together cooperatively (Jenkins *et al.* 2003; Johnson and Johnson 1989; Kyndt *et al.* 2013; Sharan 1990; Slavin 1995); yet the use of cooperative learning in classrooms worldwide is limited (Fernández-Lozano, González-Ballesteros, and De-Juanas 2012; Ruys, Van Keer, and Alterman 2012; Veenman *et al.* 2002). Large-scale studies by Galton *et al.* in 1980, repeated in 1999, and by Baines, Rubie-Davies, and Blatchford 2009; suggest that within the majority of primary classrooms, children sit in groups but rarely work together as groups. One of the reasons for this lack of use of cooperative learning is the need for sustained professional development for teachers. As Fernández-Lozano, González-Ballesteros, and De-Juanas (2012) also note, without learning about cooperative learning and experiencing it during their initial teacher education, teachers will be less likely to later adopt cooperative learning in their teaching or, if they do, they will abandon it if they encounter difficulties. Developing effective programmes for

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teachers is therefore a key factor if cooperative learning is to become more widely used.

Cooperative learning refers to teaching methods in which students work together in small groups to help each other learn academic content. In one form or another, cooperative learning has been used and studied in every major subject, with students from preschool to college, and in all types of schools. However, they have been particularly popular in the elementary grades, where greater flexibility in daily schedules make it easier to do cooperative work.

There have been many studies of cooperative learning focusing on a wide variety of outcomes, including academic achievement in many subjects, second language learning, attendance, behavior, intergroup relations, social cohesion, acceptance of classmates with handicaps, attitudes toward subjects, and more (see Slavin, 1995, 2010, 2013; Johnson & Johnson, 1998; Johnson, Johnson, & Holubec, 2008; Rohrbeck *et al.*, 2003). This article focuses on research on achievement outcomes of cooperative learning in elementary schools, and on the evidence supporting various theories to account for effects of cooperative learning on achievement.

Cooperative Learning Techniques

The research on practical cooperative learning techniques has focused on four major models: Teams-Games-Tournament (DeVries & Slavin, 1978b); Student Teams-Achievement Divisions (Slavin, 1978b); Jigsaw (Aronson, 1978); and Small-Group Teaching (Sharan & Sharan, 1976). These techniques are emphasized in this review both because they have been well researched in field settings and because they are well-defined teaching strategies that are in use in many classrooms. All four have books or manuals written about them so that teachers can easily implement them.

Teams-Games-Tournament

Teams-Games-Tournament is built around two major components: 5-to 6-member student teams, and instructional tournaments. The teams are the cooperative element of Teams-Games-Tournament. Students are assigned to teams according to a procedure that maximizes heterogeneity of ability levels, sex, and race. The primary function of the team is to prepare its members to do well in the tournament. Following an initial class presentation by the teacher, the teams are given worksheets covering academic material similar to that to be included in the tournament. Teammates study together and quiz each other to be sure that all team members are prepared. After the team practice session, team members must demonstrate their learning in the tournament, which is usually held once each week. For the tournament, students are assigned to three person "tournament tables." The assignment is done so that competition at each table will be fair-the highest three students in past performance are assigned to Table 1, the next three to Table 2, and so on. At the tables, the students compete at simple academic games covering content that has been presented in class by the teacher and on the worksheets. Students at the tournament tables are competing as representatives of their teams, and the score each student earns at his or her tournament table is added into an overall team score. Because students are assigned to ability-homogeneous tournament tables, each student has an equal chance of contributing a maximum score to his or her team, as the first

place scorer at every table brings the same number of points to his or her team. Following the tournament, the teacher prepares a newsletter which recognizes successful teams and first place scorers. While team assignments always remain the same, tournament table assignments are changed for every tournament according to a system that maintains equality of past performance at each table.

Student Teams-Achievement Divisions

Student Teams-Achievement Divisions uses the same 5-to 6-member heterogeneous teams used in Teams-Games-Tournament, but replaces the games and tournaments with simple, 15-minute quizzes, which students take after studying in their teams. The quiz scores are translated into team scores using a system called "achievement divisions." The quiz scores of the highest six students in past performance are compared, and the top scorer in this group (the achievement division) earns eight points for his or her team, the second scorer earns six points, and so forth. Then the quiz scores of the next highest six students in past performance are compared, and so on. In this way, student scores are compared only with those of an ability-homogeneous reference group instead of the entire class..

Jigsaw

In Jigsaw, students are assigned to small heterogeneous teams, as in Teams-Games-Tournament and Student Teams-Achievement Divisions. subject matter is broken into as many sections as there are team members. For example, a biography might be broken into "early years," "schooling," "first accomplishments," and so forth. The students study their sections with members of other teams who have the same sections. Then they return to their teams and teach their sections to the other team members. Finally, all team members are quizzed on the entire unit. The quiz scores contribute to individual grades, not to a team score as in Teams-Games-Tournament and Student Teams-Achievement Divisions. In this sense, the Jigsaw technique may be seen as high in task interdependence but low in reward interdependence, as individual performances do not contribute directly to a group goal. In the Jigsaw technique, individual performances contribute to others' individual goals only; since the group is not rewarded as a group, there is no formal group goal. However, because the positive behavior of each team member (learning the sections) helps the other group members to be rewarded (because they need each other's information), the essential dynamics of the cooperative reward structure are present. Slavin (1978a) constructed a modification of Jigsaw called Jigsaw II. In Jigsaw II, students all read the same material but focus on separate topics. The students from different teams who have the same topics meet to discuss their topics, and then return to teach them to their teammates. The team members then take a quiz, and the quiz scores are used to form team scores as in Student Teams-Achievement Divisions. Thus, Jigsaw II involves less task interdependence and more reward interdependence than Jigsaw.

Small-Group Teaching

Small-Group Teaching is a general classroom organizational plan in which learning takes place through cooperative group inquiry, discussion, and data gathering by students. Students

select subtopics within a general area selected by the teacher, and then organize themselves into small groups of two to six members. These groups further subdivide their topic into individual tasks to be performed by group members in preparation for a group presentation to the total class. This group presentation is then evaluated by the other students and by the teacher. Thus, Small-Group Teaching is very high in student autonomy and involves a high degree of task interdependence because of the assignment of students to special tasks within the group, but it is relatively low in group reward interdependence (group rewards are not well-defined) and individual accountability.

Cooperative Learning Techniques

Classroom cooperative learning techniques differ primarily along five dimensions: reward interdependence, task interdependence, individual accountability, teacher-imposed structure, and use or nonuse of group competition. High reward interdependence means that there is an explicit group reward based on the group's performance. Low reward interdependence describes a situation in which students are asked to work with one another and are praised as a group, but group performance does not lead to a concrete goal in any systematic way. Jigsaw represents a special case of low reward interdependence; there is no formal group goal, but the task interdependence is so extreme that reward interdependence is indirectly created. Students cannot do well on their quizzes unless their teammates teach them well, as each group member has unique information. High task interdependence refers to a situation in which students must rely on one another to do their group tasks. In low task interdependence, individual students could opt to work alone without disrupting the group activity. Of course, "high" and "low" task interdependence are relative terms among cooperative learning techniques; even a technique very low in task interdependence would be high in comparison to a traditional, individual task structure.

High individual accountability means that team members' contributions to their team scores are separately quantifiable. For example, in Teams-Games-Tournament and Student Teams-Achievement Divisions the team scores are made up of the sum of individual, quantifiable scores. This is in contrast to the Johnson techniques, where a single paper is handed in by the group and individual contributions are impossible to quantify. Individual accountability is a particularly important feature, as without it, it is possible for group members to let others do most of the work in meeting the group goal. The opposite of individual accountability is substitutability, the condition in which all group members have the same task and can substitute for one another in performing the task. Teacher-imposed structure refers to the degree to which tasks, rewards, and schedules are imposed by the teacher (or by the technique). The opposite of teacher-imposed structure is high student autonomy and student participation in classroom decision-making. The use of group competition means that a prize or recognition is given to the highest scoring groups in the class.

Theoretical Perspectives on Cooperative Learning

While there is a fair consensus among researchers about the positive effects of cooperative learning on student achievement (Rohrbeck *et al.*, 2003; Roseth, Johnson, & Johnson, 2008; Sharan, 2002; Slavin, 2010, 2013; Webb, 2008), there remains

a controversy about why and how cooperative learning methods affect achievement and, most importantly, under what conditions cooperative learning has these effects. Different groups of researchers investigating cooperative learning effects on achievement begin with different assumptions and conclude by explaining the achievement effects of cooperative learning in terms that are substantially unrelated or contradictory. In earlier work, Slavin (1995, 2010, 2013) identified motivationalist, social cohesion, cognitive-developmental and cognitive-elaboration as the four major theoretical perspectives on the achievement effects of cooperative learning.

The motivationalist perspective presumes that task motivation is the single most impactful part of the learning process, asserting that the other processes such as planning and helping are driven by individuals' motivated self interest. Motivationalist-oriented scholars focus more on the reward or goal structure under which students operate. By contrast, the social cohesion perspective (also called social interdependence theory) suggests that the effects of cooperative learning are largely dependent on the cohesiveness of the group. This perspective holds that students help each other learn because they care about the group and its members and come to derive self-identity benefits from group membership (Johnson & Johnson, 1989, 1999, 2008). Within this perspective there is a special case, task specialization methods, in which students take responsibility for unique portions of a team assignment (Aronson *et al.*, 1978; Sharan & Sharan, 1992). The two cognitive perspectives focus on the interactions among groups of students, holding that in themselves, these interactions lead to better learning and thus better achievement. Within the general cognitive heading, developmentalists attribute these effects to processes outlined by scholars such as Piaget and Vygotsky. Work from the cognitive elaboration perspective asserts that learners must engage in some manner of cognitive restructuring (elaboration) of new materials in order to learn them. Cooperative learning is said to facilitate that process.

Professional Development For Cooperative Learning

Studies into implementing cooperative learning indicate some dominant themes for professional development to be effective. First, the need to ensure a depth of understanding of cooperative learning, (Brody and Davidson 1998; Johnson and Johnson 1989; Sharan 2010) and to provide opportunities for teachers to relate these underlying theoretical perspectives to their own conceptions about learning (Brody 1998). Second, the need to ensure cooperative learning is experienced first-hand in training (Delli Carpini 2009; Lyman and Davidson 2004; Veenman *et al.* 2002), together with modelling of the use of cooperative learning, particularly in initial teacher education programmes (Loughran and Berry 2005; McAlister 2012). When these factors are combined with a phased programme alongside peer support, the understanding and use of cooperative learning has been shown to be more effective (Harris and Hanley 2004). Ruys, Van Keer, and Alterman study (2011) shows that the most important factor in the successful adoption of cooperative learning by student-teachers is their general feeling of self-efficacy. Buchs *et al.* (in press) also explore the link between teacher beliefs and cooperative learning implementation. In summary, professional development for cooperative learning requires sustained support and the need for recursive opportunities to enhance

understanding and support application in the classroom. Johnson and Johnson (in press) describe this as a process of 'master, retain and transfer'. Such a process could help student-teachers to gain confidence and competence, and thereby nurture self-efficacy.

Attitudes To Cooperative Learning

Students were very positive in their attitudes to cooperative learning, in questionnaires: over 90% of each cohort rating it as a very effective, or effective, learning and teaching strategy and they valued experiencing cooperative learning first-hand in sessions. When asked to cite one thing cooperative learning made them think deeply about, they talked about the importance of helping children to 'grow life skills' and its potential 'to empower all children'. Over 90% of students, with a mean of 70 students each year, stated that they intended to use cooperative learning in their teaching and between 90 and 100% of students later reported using it in classrooms. Analysis found that students relied on simple paired strategies such as 'think, pair, share,' with students reporting levels of confidence of between 85 and 90% at using these strategies. Questionnaires indicated less than 6% reported the use of teams that are established for a period of time, although those interviewed cited some examples of pupils working cooperatively in groups.

Barriers Cooperative Learning

Studies into barriers in using cooperative learning found that one of the inhibiting factors in students applying it in classrooms was the use of differing approaches in schools, with the demands of high-stakes testing often leading to teacher-dominated practices (Foote *et al.* 2004). Student-teachers also found that the planning time required for this strategy often overwhelmed them (McAlister 2012). A further recurrent problem relates to classroom management, particularly, how to handle an increase in noise levels and to keep pupils on task and avoid domination by certain students (Slostad, Baloché, and Darigan 2004).

Analysis of barriers showed cooperative learning was much more difficult for students in schools where it is not commonly used and those interviewed noted a lack of understanding by teachers of what they were trying to achieve. One student found teachers 'quite sceptical about it because they see it as being soft skills'. The student reported that the teacher who observed her lesson asked this student 'what are they doing? There's a lot of noise going on but what are they actually doing?' The student-led focus group also reported that they were concerned about how cooperative learning appeared to teachers who lacked understanding of it. Many reported issues related to behaviour management when using cooperative learning, particularly ensuring children remained on task and attempting to ensure equal participation, with comments such as 'some children tend to lead learning while others just listen'. The student-led focus group identified student views on the importance of structuring cooperative learning, including giving pupils a role in order to ensure that they 'learn something from the group work'. This focus group also identified time as one of the main barriers in the implementation of cooperative learning.

Findings

Three key areas are highlighted: first students' attitudes to cooperative learning; and second, the barriers they found in actually using it; and third, further support required. Results identified students' positive attitudes to cooperative learning with some reports of success in practice. The main difficulties in implementing it were due to limited use in schools and some evidence of insufficient understanding and confidence by the students. In order to explore any lasting impact, the next step was to examine the practices of teachers in their first year of teaching.

The evidence for the success of cooperative learning as a pedagogical practice that promotes both socialization and learning is overwhelmingly supported with meta-analyses by Johns on *et al.* (1981), Johnson and Johnson (2002), Roseth *et al.* (2008), and Slavin (1989) attesting to the benefits students derive when they cooperate with others. Working together to achieve a common goal produces higher achievement and greater productivity than working alone. Johnson and Johnson (2009) maintain that this is so well confirmed by the large volume of research that has been published that it stands as one of the strongest principles in social and organizational psychology. In fact, Johnson *et al.* (2014) suggest that organisations that wish to maximize the motivation and achievement of their members would be well advised to structure positive interdependence among members while minimizing negative or no independence. In schools, opportunities for students to work in situations where they experience positive interdependence would seem to be a better choice than situations based on negative or no independence. This suggestion is particularly pertinent to secondary schools where there tends to be a significant decrease in motivation after the transition from elementary schools and the opportunity to work closely with others may help to ameliorate this trend.

It is well recognized that students do not necessarily cooperate during group work and that groups need to be structured so that the five key components that mediate successful cooperation are evident. These include: establishing positive interdependence among group members; facilitating promotive interaction; encouraging individual accountability; explicitly teaching the appropriate social skills; and, encouraging groups to reflect on both the processes involved in managing the task and interacting with their peers. When these key components are embedded in groups, students are more likely to: feel motivated to work together to achieve both their own and the group's goals; accept personal responsibility for their contributions to the group and their behaviours towards group members; respect others' contributions: commit to resolving disagreements democratically: and, work constructively towards managing the task and maintaining effective working relationships.

Teachers not only play a key role in structuring groups so that the key components likely to facilitate successful cooperation are evident but they also have a role in promoting interaction among students because research indicates that students rarely provide quality explanations or engage in high-level discourse unless they are taught to do so (King, 2002). However, students can be taught to talk and reason and problem-solve together which, in turn, has been shown to contribute to the

development of individual reasoning, problem-solving and learning (Gillies, 2004, 2006, 2008; Mercer *et al.*, 2004). Furthermore, teachers can mediate students' learning by engaging in dialogic teaching or teaching talk where they model how to engage in reciprocal dialogues to resolve problems, ask questions that challenge current understandings, build on the ideas of others so they are linked cogently together, and reflect and evaluate on outcomes achieved (Alexander, 2008a,b). When teachers model these ways of talking, students, in turn, learn how to talk or use talk to ask questions, to explain their thinking, to analyse and solve problems, explore and evaluate ideas, argue, reason and justify. In short, they learn to develop stratagems for talking, thinking, and learning.

CONCLUSION

This paper has set out the challenges of developing cooperative learning for teachers Junior High School in East Praya, Central Lombok, West Nusa Tenggara, Indonesia. Giving students a grounding in cooperative learning has had mixed results. Whilst they are positive about cooperative learning and show a desire to use it, many appear to have had limited opportunities or success. The limitations of this study: it represents findings from a study and would require tracking far more teachers in their early years of teaching to demonstrate factors that impact on implementation of cooperative learning. As this article has shown in a school-led teacher education system, encouraging student-teachers to use a pedagogy that is uncommon can be problematic. However, it does show that early experiences of success can have a lasting impact and help build self-efficacy.

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