



High-structure versus low-structure cooperative learning in introductory psychology classes for student teachers: Effects on conceptual knowledge, self-perceived competence, and subjective task values



Marina Supanc^{*}, Vanessa A. Völlinger, Joachim C. Brunstein

Department of Psychology, Justus-Liebig-University, Otto-Behaghel-Strasse 10F, D-35394 Giessen, Germany

ARTICLE INFO

Article history:

Received 9 August 2016
Received in revised form
15 March 2017
Accepted 31 March 2017
Available online 8 April 2017

Keywords:

Cooperative learning
Structured cooperation
Higher education
Student teachers

ABSTRACT

Using group presentation classes as a control condition, in nine introductory psychology classes we examined the impact of high-structure versus low-structure cooperative learning on $N = 259$ student teachers' conceptual knowledge, on their self-perceived competence, and on their appraisals of task values. To vary the structure, we first created a lesson plan built upon core principles of cooperative learning, and then eliminated from this plan critical elements structuring students' shared learning. Two-level analyses revealed that students in the two cooperative conditions (a) did better on three knowledge tests administered throughout the course of this one-semester project, (b) developed a more favorable view of their subject-specific competence, and (c) appraised the utility and intrinsic value of task assignments more positively than did the control students. In each of the three knowledge tests, students in high-structure groups outperformed students in low-structure groups. These findings support the hypothesis that structuring procedures enhance the efficaciousness of cooperative learning methods in college classes.

© 2017 Elsevier Ltd. All rights reserved.

1. Introduction

In the literature on teaching strategies for college education, cooperative learning (CL) is generally assessed to be a theoretically sound and empirically backed instructional approach that enhances students' learning and performance (Johnson, Johnson, & Smith, 2014; Millis, 2010; Springer, Stanne, & Donovan, 1999). In a cooperative situation, learners work together in small groups to accomplish common goals (Slavin, 1995). In doing so, their cooperative behavior is guided by two principles (see Johnson & Johnson, 1999; Johnson et al., 2014): (a) No member can succeed unless the other group members do (positive interdependence). (b) Each member's contribution counts when a team's achievement is assessed against certain criteria (individual accountability).

Although early evidence suggested that learning groups are most successful when their cooperation is structured in accordance with these principles (see Slavin, 1983), recent meta-analytic

reviews (see Section 1.1) failed to show that degree of structure moderates the efficaciousness of small-group learning methods. Yet these results were drawn from a limited database integrating evidence from quite different instructional experiments. Thus, our primary aim was to analyze, within a single investigation, the effects of high-structure versus low-structure cooperation on college students' knowledge acquisition, self-perceived competence, and subjective task values.

Our secondary aim was to demonstrate that CL can successfully be implemented in a college education system previously dominated by traditional forms of instruction and learning. In this situation, the implementation of CL is often met with skepticism by both students and lecturers (Phipps, Phipps, Kask, & Higgins, 2001; Renkl, Gruber, & Mandl, 1996). Accordingly, in this study we examined the general efficaciousness of two newly implemented cooperative programs (high-structure CL and low-structure CL) relative to an active control condition representing the traditional teaching style (group presentations).

Both researchers and practitioners (e.g., Cohen, 2010; Niemi, 2002; Ruys, van Keer, & Aeltermann, 2010), working in the field of teacher education, have persuasively argued that future teachers

^{*} Corresponding author.

E-mail address: Marina.Supanc@psychol.uni-giessen.de (M. Supanc).

should, over the course of their own education, gain extensive experience in practicing the use of CL methods. We thus addressed the two above issues in a one-semester project, with student teachers in introductory psychology classes as participants.

1.1. The role of structure in cooperative learning

CL denotes a family of teaching methods whose common denominator is that small interactive groups are used to enhance students' learning and interpersonal behavior (Johnson & Johnson, 1989; Slavin, 1995). Relative to the broadly defined concept of collaboration (see Davidson & Major, 2014; Panitz, 1999), the term CL is more strictly used to emphasize that (a) positive interdependence between group members and (b) individual accountability for one's own learning constitute two cornerstones for building effective teams of learners.

To translate these principles into a set of more concrete teaching practices, instructors are advised to build their lesson plans either on cooperative task structures or on cooperative reward systems, or on any specific combination thereof (Slavin, 1983, 1995). A cooperative task structure exists when the information required to complete an assignment is divided up into multiple segments. Each member is accountable for one specific segment but takes responsibility for ensuring that the other members will also understand the relevant aspect of the multifaceted task. To implement cooperative incentives, rewards for good learning are assigned to whole groups of learners but group performance is measured as the average (or sum) of the members' individual accomplishments.

There is good evidence to suggest that relative to competitive and individualistic learning, CL furthers primary, secondary, and tertiary students' motivational engagement, their attitudes toward learning, and their academic accomplishments (Johnson & Johnson, 1989; Kyndt et al., 2013; Slavin, 1995). In comparison, little is known about the effects that structuring procedures have on the outcomes of students' cooperative efforts.

As Slavin stated (1983, 1995), instructional interventions that combine group goals (interdependence) with measures of individual task performance (accountability) are most likely to produce beneficial effects on students' learning. For instance, Archer-Kath, Johnson, and Johnson (1994) reported that the impact of CL on eighth-grade students' attitudes, achievements, and behavior was most substantial when the team members' individual accountability was stressed through the provision of individualized feedback. In a similar vein, Ortiz, Johnson, and Johnson (1996) ran a CL program in social studies for fifth-graders and found this program to be most effective if it combined goal interdependence with resource interdependence to promote students' shared learning. Remarkably, this beneficial effect of structuring procedures on students' individual achievements was significant only after group members had worked together as a team for several weeks.

These results support the idea that a certain degree of structure is required to make students' teamwork successful. Yet more recent meta-analytic reviews did not confirm this view. Integrating studies from 1995 onwards on CL in primary, secondary, and tertiary education, Kyndt et al. (2013) found that, relative to studies using only individual rewards (7 studies), studies using group rewards for individual learning (12 studies) did *not* produce superior learning outcomes. In a review of small-group learning among SMET undergraduates, Springer et al. (1999) compared studies using structured CL methods (8 studies) with studies using less structured collaborative methods (7 studies). An analysis of achievement outcomes revealed no substantial difference between these two approaches ($ES = 0.56$ vs. 0.52). Similarly, using measures of learning transfer as outcome criteria, Pai, Sears, and Maeda (2015) failed to identify any significant difference in the

efficaciousness of structured (10 studies) versus unstructured (15 studies) small-group work ($ES = 0.20$ vs. 0.36).

Yet these meta-analytic results deserve some cautionary remarks: (a) Because the number of studies was relatively small, it was difficult to draw reliable conclusions about the strength of moderator effects associated with structuring methods. (b) For the same reason (i.e., the limited database), it was not possible to examine potential differences in the impact of structuring procedures for different outcome variables (e.g., performance measures and attitudinal measures) and for learners representing different educational levels (e.g., primary, secondary, and college students). (c) Studies that used multiple procedures to enhance small-group learning were grouped together with studies using only a single structure-building technique, resulting in a high degree of heterogeneity within the category of structured small-group learning. (d) To determine the overall effect of structured cooperation, short-term studies were mixed up with long-term interventions. (e) Comparisons across studies are no substitute for investigations that systematically vary, within the same setting, the presence (or absence) of certain kinds of structuring elements in otherwise comparable small-group programs.

1.2. Cooperative learning in college classes

Meta-analytic results (see Johnson et al., 2014; Springer et al., 1999) support the idea that CL generally improves the achievements of college students. From a review of research on the teaching of psychology, Tomcho and Foels (2012) concluded that beneficial effects of group activities are most substantial when episodes of shared learning involve a high degree of participant interdependence and thereby guarantee that all participants "are actively engaged in the learning of all material" (p. 166).

Most studies on CL at the college level were conducted in science classes at U.S. universities. For the impact of small-group learning on statistics achievements, Kalaian and Kasim (2014) reported that the magnitude of the observed effects was much higher in primary studies conducted in the USA ($ES = 0.56$) than in studies conducted outside the USA ($ES = 0.13$).

Studies investigating the efficaciousness of CL at German colleges were mostly conducted with teacher training students as participants. Overall, these studies yielded mixed results. For instance, in a one-session small-group study, Jurkowski and Hänze (2010) observed that participants working together in teams with high goal and task interdependence did better on a conceptual knowledge test than students working in teams with a low level of interdependence. In a semester-long project with student teachers, Jürgen-Lohmann, Borsch, and Giesen (2001) contrasted CL seminars with traditionally organized group presentation classes. Although CL students felt more involved in their learning activities, they did not acquire more knowledge than control students. The authors explained this null result by arguing that, in addition to the lack of sensitivity of the test administered, the degree of goal interdependence had been too weak to guarantee optimal results in the cooperative teams.

1.3. This study

To sum up, across a broad range of academic domains and for different groups of learners, the beneficial effects of CL are well documented in the literature. Yet, little is known about the role structuring procedures play in making cooperative methods successful. Because only a few studies have systematically varied degree of structure as an instructional variable, meta-analytic results computed across a number of quite different studies are not sufficient to clarify this issue. Furthermore, although CL has often been

Download English Version:

<https://daneshyari.com/en/article/4940240>

Download Persian Version:

<https://daneshyari.com/article/4940240>

[Daneshyari.com](https://daneshyari.com)