

Cooperative and collaborative learning: considering four dimensions of learning in groups

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Abstract

In this special issue, four contributions have been bundled about effective learning in groups. The focus herein lies on processes that occur during group-based learning, such as the level of interaction and the deployment of metacognition, as well as influences on this process such as perceptions on the learning activity and the structure of the learning activity. In this introductory editorial, we focus on what is meant by collaborative learning and cooperative learning in order to create a framework for the four contributions of this special issue, and beyond. We put forward four dimensions to distinguish cooperative learning and collaborative learning: 1) structure of the tasks and activities, 2) student or teacher centeredness, 3) type of knowledge, and 4) students' age and/or educational level. Subsequently, we align the contributions of this special issue with these four dimensions, in order to see whether the dimensions are concretely usable to distinguish between cooperative and collaborative learning.

1. Cooperative and collaborative learning

Research on group-based learning activities goes back for decades, starting in the 1970s (e.g., Johnson & Johnson, 1974; Slavin, 1977). During the 1970s and 1980s *cooperative learning* dominated as the generic term for group-based learning activities in the research literature, but since the beginning of the 1990s *collaborative learning* gained ground (Strijbos, 2000). Although attempts have been made to differentiate between the two terms, there is no strict agreement on this distinction, if any can be made at all based on definitions used thus far (McWhaw,

Schnackenberg, Sclater, & Abrami, 2003; Strijbos, 2016). While many would agree that what distinguishes cooperative learning from collaborative learning is the degree of structure used (Abrami, Chamber, Poulsen, De Simone, d'Appolonia & Howden, 1995; Panitz, 1999), others propose that cooperative and collaborative learning also seem to differ on other aspects (Bruffee, 1995; McWhaw et al., 2003).

In this introductory editorial, we put forward four dimensions upon which cooperative and collaborative learning seem to differ: 1) structure of the tasks and activities, 2) student or teacher centeredness, 3) type of knowledge, and 4) students' age and/or educational level. We align the papers in this special issue to these four dimensions, in order to see whether the dimensions are concretely usable to distinguish between cooperative and collaborative learning.

1.1 Structure of tasks and activities

Cooperative learning typically involves highly structured, widely ranging programs of activities in which often an array of highly structured goals and techniques for learning are included (Sharan, 1980; Tolmie et al., 2010). Kagan (1989) stated that the structural approach to cooperative learning is based on systematic application of structures. These structures should be filled with academic content into cooperative activities, but in essence, these structures are content-free ways of organizing social interaction in the classroom and proscribe behavior for each step of the cooperative learning process.

Collaborative learning refers to a jointly activity (Dillenbourg, 1999; Lehtinen, Hakkarainen, Lipponen, Rahikainen & Muukkonen, 1999; Tolmie et al., 2010). Thus, unlike in cooperative learning, where the focus is on working together, or interdependence, in col-

laborative learning, the focus is on working with each other but not necessarily interdependently. Some researchers described collaborative learning as more philosophically oriented with the goal to socialize students into the existing cultures of communities and the wider world (Oxford, 1997; Panitz, 1999). Panitz (1999) stated that, in contrast to cooperative learning which is a classroom technique, collaborative learning is a personal philosophy: practitioners apply the collaborative learning philosophy not only to the classroom, but also at for instance committee meetings, and generally as a way of living and dealing with other people. In this sense, collaborative learning is a much broader concept with less structure in its execution compared to cooperative learning.

1.2 Student or teacher centeredness

Cooperative learning has been described as more directive and closely controlled by the teacher (Jacobs, 2015; McInerney & Roberts, 2004; Panitz, 1999). In cooperative learning within the classroom, teachers set goals for groups of students to work on. The group-based learning activity is carefully organized to promote the participation and learning of (ideally) all group members in a shared undertaking; decisions about what to study, which group compositions, which group activities, and how to evaluate and assess, are predominantly made by the teacher (or some other external agent, including digital means, but in this special issue we limit ourselves to teachers). Teachers take an active role, monitoring groups, providing guidance and support, and asking thought-provoking questions as needed (Davidson & Worsham, 1992). In some cooperative learning approaches, group interaction skills are taught explicitly (Davidson & Major, 2014). In general, cooperative learning can be considered to be more prescriptive in activities and more directive to students about how to work together in groups (Matthews, Cooper, Davidson, & Hawkes, 1995; Oxford, 1997).

Collaborative learning experiences allow delegation of decision-making to students – giving students more power than in traditional whole-class instruction. Most collabora-

tive learning activities center on the students' exploration or application of the course material, in contrast to a presentation of explication of it by the teacher (Smith & MacGregor, 1992). As there is less interdependence in collaborative learning compared to cooperative learning, it is a pedagogy that has at its center the assumption that people make meaning together and that the process enriches them. Similarly, in collaborative learning approaches group interaction skills are mostly not taught explicitly (Davidson & Major, 2014).

1.3 Type of knowledge

Cooperative learning is seen as more appropriate for knowledge that is foundational, while collaborative learning is seen as being better suited for learning non-foundational higher order knowledge (Bruffee, 1995). Bruffee (1995) defines foundational knowledge as the basic knowledge represented by socially justified beliefs, such as correct spelling and grammar. Bruffee contends that these are best learned using cooperative learning structures in the early grades, as more complex materials in later grades build upon this foundation. It follows that, because cooperative learning approaches deal with foundational knowledge, tasks should not be divided into subtasks distributed amongst students, as all students need to develop these foundational knowledge and skills (Davidson & Major, 2014).

In contrast, non-foundational knowledge is defined as that which is derived through reasoning and questioning and requires a critical approach to learning (Bruffee, 1995). This type of information can be divided amongst group members; groups with heterogeneous compositions might actually tackle specific tasks relevant to their expertise, after which individual contributions are combined (Davidson & Major, 2014). Hence, it can be stated that students learn basic information and processes for interacting socially by cooperative learning activities. Thereafter, they extend their critical thinking and reasoning skills as they become more involved and take control of the learning process through collaborative activities.

1.4 Students' age and/or educational level

Practitioners at all levels use the terminology of both cooperative learning as well as collaborative learning regardless of specific setups and contexts (Panitz, 1999). Cooperative learning seems to be, generally, more targeted to primary education, whereas collaborative learning seems to happen more in secondary and higher education (Bruffee, 1995; Tolmie et al., 2010). Cooperative learning's goal is to increase student achievement by helping children to learn to work together, and in doing so, an attempt to make education more efficient and effective. This goal does not differ from that of collaborative learning, as there the goal is also to make education more efficient and effective and help people to work together successfully on substantive issues. However, in collaborative learning it is assumed that the students already have the necessary skills and motivation to reach their joint learning goals, with less structure and guidance given (Matthews, Cooper, Davidson, & Hawkes, 1995; McWhaw, Schnackenberg, Sclater, & Abrami, 2003). As a result, we could say, collaborative learning is more suited for students in colleges and universities and complements the cooperative learning that children experienced in primary school: although theoretical emphasis may change, the main principle of applying it into practice remains substantially the same (Bruffee, 1995).

2. The studies of this special issue on effective learning in groups

The first contribution to this special issue was written by *Veldman et al.* in which the term cooperative learning was used. In this study, grade-1 students of primary education performed tasks in small groups of four, in order to investigate the level of talk students demonstrated whilst working together. Two groups were compared; a control group and a group that had been part of a large-scale intervention called Success for All. Success for All-lessons involves language and reading instruction in which highly structured learning techniques and activities are used.

Compared to the four dimensions – structure of tasks and activities, student or teacher centeredness, type of knowledge, and students' age and/or educational level – as described above, in Success for All lessons, the level of structure is high and teachers predetermine what students should do, which would each lean towards cooperative learning according to the framework. Furthermore, the students were the youngest out of the four studies included. Finally, the domain also leans strongly towards cooperative learning, as it entailed foundational knowledge of language comprehension. In all, this study seems to be the clearest example of cooperative learning.

The focus of the study of *Mouw et al.*, in which the term cooperative learning was used, was to gain insight into student- and task-related sources of variability in students' perceptions of a cooperative learning activity. Therefore, Mouw et al. examined if cognitive and social perspective-taking ability, instructional mode, and individual and group level-learning outcomes can predict students' perceptions of relatively easy and more complex cooperative learning activities.

In this study, fifth grade primary education students participated, so the term cooperative learning suits the age of the students and the level of education in this study. The domain was relatively foundational, namely history, but should not be considered as foundational as reading or mathematics. The researchers determined all of the tasks' content, leaning towards cooperative learning according to the framework, as a prescriptive approach was used. Although the structure of the task lent itself for more choice, thereby leaning more towards collaborative learning, the general focus seems to be on cooperative learning.

The third contribution to this special issue, the study of *Kostons*, moves from cooperative learning to collaborative learning. In this study, students in sixth grade of primary education, had to either read two texts by themselves or in groups of four, with the latter condition split up in either a group that received no further instruction, and a group in which each group member received specific roles.

Three aspects remain fairly aligned with cooperative learning; the researchers determined what students needed to do, the domain was fairly foundational (comprehensive reading), and the students were fairly young. With regard to the dimension of structure, students received a large number of possible learning strategies that could be applied, lending to various ways in which the reading task could be solved. Overall, this study also seems to fall more in line with cooperative than collaborative learning, which led the author to change the terminology within this paper from a prior draft.

In the final study, the study of *Schuitema et al.*, the term collaborative learning was used. This was the only study to include somewhat older students: students that were in 11th grade of secondary education. Students worked in small groups on low- or moderately structured tasks. In the study the effects of task structure and group composition on the elaborative and metacognitive contributions of students during the task were investigated. The authors furthermore looked at differential effects of students' cognitive abilities.

In the study, the task structure was manipulated and divided into relatively moderately or lowly structured, leaning towards collaborative learning. Students were older, also lending support for a denomination of collaborative learning. Although the researchers determined what students had to study, which fits a more prescription approach of cooperative learning, the type of knowledge, which was about political parties in the 1900's, was far from the more foundational subjects in the other three studies and fits a collaborative approach. Out of the four, this study seems to be the only one that merits the terminology of collaborative learning according to the four dimensions structure of tasks and activities, student or teacher centeredness, type of knowledge, and students' age and educational level.

3. Conclusion: Considering four dimensions of learning in groups

When separating cooperative learning from collaborative learning, mostly a unidi-

mensional approach is used, i.e., the concepts are separated based on one dimension, such as structure of the task or dividing labour. What should become evident from the four examples provided above is that making a decision for cooperative or collaborative learning is not clear-cut. The different dimensions on which the concepts have been separated may come in different combinations when implementing group-based learning activities in practice, for example, a structured task can go together with a closely controlled teacher approach as well as with a less directive and controlling role of the teacher. Moreover, it is often stressed that there are more similarities than differences between the two concepts, and despite the stated differences, cooperative and collaborative learning are the subjects of similar claims regarding their goals across the range of primary, secondary, and higher education (Tolmie et al., 2010). They have in common that students need to work together in order to attain more involvement of those students in the learning experience and to achieve more learning benefits compared to working alone.

Although finding a common language benefits research and teaching practice, it seems, considering the prior discussion, not most important whether the term cooperative learning or collaborative learning is used. We would suggest a broad underlying definition for cooperative as well as collaborative learning, as used terms in this special issue, stated by Dillenbourg (1999, p. 1): "*it is a situation in which two or more people learn or attempt to learn something together*". Rather, what matters are the ways teachers and students shape their learning environments in order to best facilitate the cognitive and social-emotional benefits that group work offers. This requires a consensus on what important dimensions are for designing effective learning environments for students when implementing group-based learning activities in practice. Therefore, following Jacobs (2015), we suggest that differences between cooperative learning and collaborative learning can be seen as dimensions that provide options for teachers and students for consideration in designing effective interac-

tion and learning in groups in the classroom and beyond. When applying group-based learning to educational practice, practitioners should take into consideration how tasks and activities can be structured and to what level this can be student or teacher centered, whilst also taken into account the type of knowledge and the age of students and educational level.

Note

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de leerlingen. Vervolgens stemmen we de bijdragen van dit themanummer af op deze vier dimensies, om te zien of de dimensies concreet bruikbaar zijn om onderscheid te maken tussen coöperatief en collaboratief leren.

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Samenvatting

Coöperatief en collaboratief leren: het overwegen van vier dimensies van leren in groepen.

In dit themanummer zijn vier bijdragen gebundeld over effectief leren in groepen. De focus ligt op processen die zich voordoen tijdens leren in groepen, zoals het niveau van interacties en de inzet van metacognitie, evenals invloeden op dit proces, zoals percepties op de leeractiviteit en de structuur van de leeractiviteit. In deze inleiding richten we ons op wat wordt bedoeld met coöperatief leren en collaboratief leren (collaborative and cooperative learning) om een kader te creëren voor de vier bijdragen aan dit themanummer. We benoemen vier dimensies om coöperatief leren en collaboratief leren te onderscheiden: 1) structuur van de taken en activiteiten, 2) leerkracht of leerling gecentreerd, 3) type kennis, en 4) leeftijd en/of opleidingsniveau