

# **Critical elements of learning groups**

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## Introduction

Small learning groups have become a widely applied style of learning in higher education as well as in other forms of education. Probably the most well known practices of small group teaching and learning are those developed within the co-operative learning movement. Although its relatively high degree of prevalence, we argue that too little attention has been given to the critical elements that are required in order that productive learning can be achieved in such learning groups.

In this paper we first trace some factors that may contribute to the popularity of co-operative learning in various educational settings today. Three of the key factors are: first, co-operative learning offers an intellectual and social environment in which multiple educational goals may be achieved simultaneously. Second, the emergence of new learning paradigms and the shift of epistemological orientations within the traditional knowledge domains, have appealed for a stronger emphasis on learner-centred and interaction-intensive teaching methods in higher education. Finally, the messages from the extensive research literature on the effects of co-operative learning methods suggest that both academic and non-academic learning achievement tends to improve in co-operative learning settings, including the potential for accommodating the individual differences between students.

Small learning groups are only able to create productive learning among its members if there is a challenging, emotionally safe and intellectually meaningful climate for working. Similarly, the four critical elements of co-operative learning should exist in learning situations simultaneously. They are: sufficient *positive social interdependence* between all group members; a sense of being *responsible* for one's personal learning and at the same time being *accountable* for the whole group's achievement; identification, utilisation and development of essential *social skills*; and *interactive tasks* that promote co-operation. We argue that the level of co-operation and individual involvement increases, as the existence of these four critical elements of learning groups becomes stronger.

## 1. Prevalence of co-operative learning: some personal observations

The common dilemma of any teaching practice from kindergarden to higher education is the dominant role of the teacher as almost the sole source of information. The higher one moves up the educational ladder the more obvious this observation becomes. Upper secondary schools and university level teaching has traditionally been characterised by lectures to large classes and groups of students. Along with the so called constructivist paradigm of teaching and learning alternative pedagogical approaches started to emerge first in the lower levels of formal education, and also gradually also in secondary and higher education. One of the most widely spread practical responses to the presentation-recitation mode of teaching has been small group learning in which a teaching group is divided into groups of three or four students and particular methods of work are then applied. In this paper co-operative learning refers to a wide variety of methods and techniques within which students interact in small groups in order to achieve common learning goals (see for example Sharan & Sharan 1992, or Cohen 1994). Thus, co-operative learning is a form of learning, however, it is fluently used to mean specific teaching and learning methods.

A review of the literature on teaching indicates that co-operative learning is probably the best example of a contemporary teaching practice that originates from the

work of several schools of social scientists. Although the term 'co-operative learning' only appeared around 1975, co-operative learning is the result of a remarkable amount of applied and theoretical research dating back to the first half of the 20<sup>th</sup> century, such as group dynamics, cognitive psychology, constructivist theories of learning, and research on instruction (Johnson & Johnson 1992). Recently, the frequency of references to co-operative learning in the strategy papers of the faculties of universities indicates that this pedagogical approach to instruction is a central theme in the educational discourse of today. The idea of learning in groups is interwoven in such contemporary instructional innovations in higher education as problem-based learning, project work, and learning on-the-job. However, there are simple educational reasons for the popularity of co-operative learning among teachers and trainers. The following is a brief discussion on the three most commonly agreed factors that contribute to the wide prevalence of and awareness about co-operative learning.

First, co-operative learning has attracted many teachers' attention due to its potential for achieving multiple educational goals simultaneously. Despite the dominant role of academic goals particularly in higher education, more and more teachers and especially employers are becoming concerned about students' social and personal development. Second, co-operative learning is in coherence with the emerging ideas on the nature of human learning and constructivist perspective on instruction. The hegemony of classical learning conceptions in which teaching is speaking and learning is listening has begun to yield to a fundamentally different paradigm that is based on the social construction of knowledge (see Vygotsky 1978), and personal creation of meanings out of experiences. This new educational paradigm has promoted increased communication between the students, more emphasis on reflective practices of each learner and new roles of teachers and students in terms of power relations, locus of control and responsibilities. Third, it is becoming evident according to research that co-operative learning has potential for producing higher learning outcomes compared to traditional teacher-centred methods (Slavin 1990; Sharan & Sahlberg in print). However, it is not straightforward to say that using small groups will improve learning results for all students. In co-operative learning individual differences of students are seen as a resource and are expected to promote learning rather than being something to be controlled through individual instruction.

Not all groups are learning groups, nor does all group work produce good learning. Probably one of the most frequently observed misconceptions among teachers and trainers who use small-group teaching is that having the whole class divided into groups of four will automatically promote better results. Co-operative learning is a far more complex issue than that. The complexity arises from the mismatch between the assumptions and principles of co-operative social systems, and traditional cultures of teaching in particular and school in general. In order to be productive in terms of intentional learning, co-operation has to be based on certain interpersonal, psychological and educational conditions that have to be promoted and exist during the co-operative learning sessions. The main aim of this paper is to clarify these conditions conceptually and also from a practical perspective. Before getting into that discussion, let us consider some issues related to the prevalence of co-operative learning in education and training.

Co-operative learning is probably the most widely known single pedagogical approach among teachers as well as trainers. According to some studies, when teachers are asked whether they use co-operative learning in their teaching, more than nine out of ten elementary school teachers indicate that they do so (Antil et al. 1998). My personal observations and those of many colleagues who are involved in teacher in-service training provide support to this finding. However, when we take a closer look at what actually goes on in co-operative teaching and learning sessions, we see another side of the coin. For example, in the study of Antil and his colleagues, only a few teachers employed co-

operative learning methods that fulfilled the criteria for co-operative learning derived from the research literature (Antil et al. 1998). If this is more generally true among teachers and educators, it means that most teachers are unlikely to see improved learning outcomes or receive positive feedback from their students, as they should according to the research base on co-operative learning. Therefore, I argue that unless certain critical elements of interaction between the learners in a small group exist, productive co-operative learning in terms of academic, social and interpersonal achievement is not likely to occur. Thus, the level of co-operation and mutual interaction becomes a critical factor in predicting how effective co-operative learning actually is going to become.

## **2. From group work to co-operative learning: critical elements**

Sometimes teachers wonder what are the differences between traditional group work methods and co-operative learning. As said earlier, productive co-operative learning requires more than just organising large-group instruction around team or pair work activities, and furthermore, not all peer-mediated instruction qualifies as co-operative learning (see also Johnson & Johnson 1994). On the other hand, there is no one definition or set of criteria that makes small groups work co-operative learning. Most teachers and trainers seemingly apply their own constructed versions of co-operative learning that suit their own teaching styles, students characteristics and beliefs on learning and teaching. As Antil and his colleagues (1998) say, “whether these personal adaptations of co-operative learning qualify as the real thing depends on the presence of certain critical features that transform group work arrangements into authentic co-operative learning”. Formulation of these critical elements of co-operative learning is not, however, a simple analytical exercise. There are at least four major schools of thought within the co-operative learning umbrella and they all have their own points of view characterised with certain philosophical and theoretical assumptions upon which the methods of co-operative learning have been designed (see Sharan 1994 for comparison). In this paper I propose a four-element standard in order to agree the level of co-operation in small group learning situations. This is the combination of the psychologically oriented five-element standard of Johnson’s methods (Johnson & Johnson 1994), Cohen’s sociological two-element standard (Cohen 1994), and problem solving standards as group investigation method of Sharan (1992).

### *A. Sufficient positive interdependence*

The presence of positive interdependence among the members of a group is the common feature in all co-operative learning methods. Following Johnson’s thinking, positive social interdependence exists when “students perceive that they can reach their learning goals if and only if the other students in their learning group also reach their goals” (Johnson & Johnson 1994). In traditional learning environments competitive and individualistic interaction patterns between the group members are dominant. When individualistic study arrangements are emphasised, co-operation is not favoured or promoted. In competitive situations interaction is characterised by negative interdependence. In such cases the success of a few is considered as a loss for the rest.

Positive social interdependence needs to be structured in the groups – it does not appear automatically. That is why the teacher needs to pay close attention to the rules and principles that will promote positive social interdependence in all groups in her class. The key difference that distinguishes traditional group work in schools from co-operative learning is the degree of positive social interdependence within the group members in small learning groups. The stronger is the positive interdependence then the more effective the co-operative learning process is likely to be. However, it is important to note that positive interdependence alone is not able to make group learning productive unless the

other critical elements exist at least to a certain level. There are several practical techniques and rules that a teacher can use in group building and promoting positive interdependence in small groups in teaching. The most often used are the emphasis on common goals, using shared rewards or assessment structures for the group, facilitating interaction through resources, and redesigning the learning environment to promote closer interaction of students.

Time is a good way to strengthen the team spirit and, thus, promote positive interdependence in small groups. It is necessary to reserve enough time for explaining the purposes and training of the key techniques before the actual co-operative learning session. This is particularly true with those pupils who have less experienced in learning and working together but it appears to be true in many adult training settings as well. In order to have successful experiences of belonging to a group, being a member of a productive team and being able to be involved in co-operative learning, students need to be simulated by some of the key rules and principles of positive interdependence through exercises and simulations. Becoming positively interdependent in a learning group is a social skill that both students and teachers need to practice.

#### *B. Individual accountability and personal responsibility*

The issue of being accountable for the progress of one's own group and responsible for personal development and learning are the two elements that can be found in all co-operative learning methods. Individual accountability in a group is more of a social phenomenon. In brief, it means that each member of a group is in charge of the performance and behaviour of her peers. It exists, according to Johnsons (1994), when "the performance of each individual is assessed and the results given back to the group and the individual". The meaning of feedback about each other's performance and learning during group work is to enable group members to help each other to achieve the group goals. Several co-operative learning methods emphasise making this account visible (for example Cohen's Complex instruction) in order to discourage group members from dropping out from group work and relying on others to do the learning. Therefore, it is paramount that the teacher has skills and knowledge how to address supportive feedback and righteous encouragement particularly to those students who have lower self-esteem and less ability to participate actively in group work.

Feedback on how the group is managing during the small group learning process may be gathered through various ways. In most cases it is based on observations done by the teacher or the tutor, or it may be collected through written or oral tests or questions during the course of the co-operative learning process. Successful learning requires awareness within the group of the strengths and weaknesses of the group and its individuals in order to identify the areas where help and encouragement are needed. In addition, it is necessary to secure that pupils understand and concretely experience that they cannot escape the responsibility of work by handing their individual task to somebody else in the group.

One of the commonly used practical means of strengthening individual accountability in small group learning is to have students teach what they have learnt to other members of the group. The Jigsaw methods are examples of the teaching methods that use this principle (see Aronson et al. 1978; Sharan 1994). Many argue that to prepare to teach others is one of the most powerful ways to learn the topic in question properly (Tucker & Codding 1998). Explaining ideas, telling about conceptions and sharing opinions are some of the core processes during the productive co-operative learning sessions. Another means for promoting individual accountability and personal responsibility is assessing through tests - both written and oral - what students have actually learnt. For example, after the learning assignment has been completed students are assessed in a writ-

ten test and each group member receives the same score that is a mean of their individual test scores. Another possibility is to choose randomly one student from each group to take the test and her score will be the one all her group mates receive. An essential way of collecting feedback and analysing the experiences during learning is joint group processing during and after the assignment has been completed. Group self-assessment and processing of what has happened is also called *group reflection* that is an integral part of most co-operative learning methods. Whatever assessment is used in small group learning situations, the teacher should emphasise individual accountability and personal responsibility through assessment methods. It is important, however, that the assessment arrangements are carefully explained to students prior to their implementation.

### *C. Recognition and practising of social skills*

Working and learning in small groups requires different attitudes and interpersonal skills than individualistic learning. Traditionally, teachers assume that most students are able to develop the social skills that are needed in group work during the course of formal education. In most cases, however, this is a belief without a solid foundation. Many students, even in the higher grades in school as well as in higher education, lack sufficient habits of mind in general and co-operative skills in particular in order to be successful members in small learning groups. Therefore, the third critical element of the co-operative learning group is the recognition of the necessary social skills, and furthermore, emphasis on practising these skills prior and during co-operative learning sessions.

Each group learning situation requires different social and co-operative skills. Some of these skills are more conditional for the success than the others. For example, skills related to communication are essential to any co-operative learning method. Students have to be good listeners and skilled speakers in effective small groups. Students who have never been taught how to work effectively with other students cannot be expected to do so (Johnson & Johnson 1994). This implies that teaching co-operative skills and enhancing the habits of mind becomes a necessary precondition for academic learning, because student achievement will improve as they become more effective in working and learning with each other.

According to David and Roger Johnson (1994) there are two reasons that co-operative skills are directly taught wherever teachers are serious about using co-operative learning. The first is that “interpersonal and small-group skills are the engine that powers co-operative learning groups”. In order to become a productive group, the students have to be able to engage in the required social skills. Second, following what Johnsons have said, “collaborative skills in themselves are important instructional outcomes that relate to future career and life success”. It is evident today that employers typically value those experts who are able to demonstrate good verbal communication, responsibility of her work, interpersonal, conflict resolution and decision-making skills.

### *D. Interactive tasks*

Productive co-operative learning is possible only when the task that the group is working on is designed in such way that requires a team effort. According to many scholars, for example Sharan (1994) and Cohen (1994), in most of the situations when groups do not seem to work well, the reason is an inappropriate learning task, or curriculum design. First and foremost, the teacher needs to understand that not all tasks are suitable for co-operative learning purposes because they do not promote interaction within the groups. For example, solving simple equations in mathematics as such does not require a group to complete the assignment successfully. On the other hand, preparing a speech or investigating the events of history provide fruitful opportunities for real co-operation to flourish in most, if not in all the groups.

What are the features of a learning task that is stimulating, promotes co-operation, activates all pupils to participate, and leads to productive learning? When designing appropriate tasks for co-operative learning sessions, a teacher may follow three key conditions that the task has to fulfil. According to Sharan and Sharan (1992) they are: 1) all members of the group have reasons to participate; 2) the task provides all group members opportunities to talk; and 3) group members need to make choices and decisions. These three conditions of designing tasks that facilitate interactive learning are discussed in the following paragraphs.

Firstly, the most important guideline in designing an interactive learning task is that every group member can easily participate. It is obvious that any good learning task should be interesting to students and relevant to their life situations. Furthermore, a good interactive task normally requires different points of view, opinions, and ideas to complete. In addition, co-operative learning tasks seldom have only one right answer or solution but they may lead to various results depending on the methods used and choices made by the group.

Secondly, research has shown that the amount of productive talk positively correlates with the quality of learning, i.e. the more pupils talk and communicate about what they are studying the more they are about to learn about it (Cohen 1994; Sharan & Sahlberg in print). Therefore an essential feature of an interactive task is that it provides the students with a forum for informal talk and direct communication about the issues they are learning. The task should pose a problem or question that invites more than one solution or answer. That is why open questions or complex problems are particularly suitable for co-operative learning purposes. A task that promotes interactive talk is one that engages students in sharing their ideas, exchanging of information, making choices and decisions.

Thirdly, as soon as students encounter a situation in which there is no one way forward they need to plan and decide what is the best thing to do. Making choices and decisions helps pupils relate what they study and how they can be made in one or more aspects of the assignment. A well-designed co-operative task invites pupils to choose which books to use, how to divide the work, how to summarise and present their findings, and how to assess the quality of their own work. A simple rule-of-thumb in designing an interactive group task is, "Everybody knows something about the task in hand but nobody knows everything about it". When this rule applies it is more likely that all group members in each group participate and feel that they have something to contribute. When designing the task it is also important to make sure that most of the pupils find the task interesting and meaningful to them. Furthermore, the task should provide something to do and say for all, including those who might not be able to complete the entire task. Teachers should always try to find tasks that truly challenge the entire group to think what they should do in order to complete the task.

Table 1. Levels of co-operation as an effect of critical elements

Level of co-operation	<i>Positive interdependence</i>	<i>Individual accountability</i>	<i>Social skills</i>	<i>Interactive tasks</i>
<i>High</i>	Students experience that they can not succeed without each other's support and contribution. Interdependence is created through shared goals, materials, and rewards.	Each student is accountable for the progress of entire group. Simultaneously, each member experience that she is ready to represent the learning results on behalf of the group.	Skills that are needed during the assignment have been practiced and students trained to participate effectively in group-activities.	There is no one right answer to the task, or at least it is not obvious. "Everyone knows something about the task, but nobody knows everything about it."

<i>Moderate</i>	Students need each other during the process of learning either through material or expertise. Interaction is not driven by shared goals but rather individual motives.	Each student is responsible for her own sub-task. Mutual accountability is based on sharing resources, space and dividing assignments.	Skills that are needed are recognised and practised during the learning process. Training of social skills is not systematic prior to study session.	Learning task has open components but is directed by the teacher or the material to be covered. There are students who have little or no personal contribution to the task.
<i>Low</i>	Students can succeed without each other's contributions. Individual goals overrule group's shared goals. Interaction is random and often stimulated by competitive patterns.	No structured accountability. There may be one or few in the group who are in charge of the progress and presentation of results. Accountability is promoted by personal sanctions.	Social skills and respective attitudes are weakly recognised and not practised. Students are not encouraged to change their patterns of social behaviour.	Learning task is closed and doesn't require different viewpoints. Learning aims at acquisition of information and knowledge. Not much space for individual ideas or values.

### 3. Promoting social interaction among students

The effectiveness of co-operative learning in various settings has been confirmed by both theoretical and classroom research. Our own review of ERIC yielded 2002 items during the last decade of the 20<sup>th</sup> century alone in which co-operative learning was the object of scientific inquiry. One of the most interesting areas of research has been the quality of student interactions. A study by Battistich, Solomon and Delucchi (1993) found that the effects of co-operative learning on students depend on the quality of their interaction. The authors stress that none of the co-operative learning methods assume that simply having students work together in small groups will have beneficial effects and that “many explicitly incorporate procedures for improving students’ group interaction and management skills” (Battistich et al. 1993).

If we accept what was said above to be true in most educational situations, especially in higher education, there are immediate implications for both teachers’ work and pupils’ behaviour. I have identified three important issues that have to be considered when teachers aim at productive small group learning in their teaching. This is not a comprehensive list of issues but rather a tentative one.

1. *Students need to be trained to learn together.* Learning co-operatively is psychologically and socially different from learning individually. Most of the students rarely attend educational situations within their formal schooling where specific social skills were trained. Therefore, it is a common to ask students to perform tasks and use skills that they have never done before. Studies that have investigated the impact of training of social skills on co-operative learning performances indicate that all students are likely to derive greater benefit from their learning in small groups if, before they are asked to work together, they have been trained how to function in that setting and if they learn what are the teachers’ expectations (Asham & Gilles 1997; Gilles 1997).
2. *New roles of teachers and students.* Moving towards active learning requires that teachers talk less during the time reserved for face-to-face teaching. Rather than deliver curriculum and transfer information to students, teachers should become facilitators of the learning process, and promoters of social interaction of their students. In co-operative learning the key condition of productivity is participation of all students in the working of the group. The teachers’ role is to design such environments and healthy psychological climates that encourage all students to participate and bring their contributions to the efforts of their groups. Respectively, students need to be-

come responsible for their learning and behaviour more than they do in traditional teaching contexts.

3. *Teachers need new skills and restructured mindscapes.* Learning to teach co-operatively is not only technical issue. Most teachers do not learn to teach using small learning groups by receiving information about the methods and principles. The vast majority of teachers have been trained for teaching individuals, not to manage co-operative teams and facilitate social interaction among students. Therefore, teachers need to be trained to work with small learning groups. They also need to re-examine their belief systems related to teaching and learning in order to understand the foundations and assumptions of social learning systems.

#### 4. Concluding remarks

We know much about the benefits of small group teaching and co-operative learning, especially how it may effect in well-designed learning environments on student achievement and development. It is also widely accepted that learning groups may be used in almost any educational setting, in any age level and in all subjects. Naturally the forms and techniques vary from one context to another. Arguably, the shift from whole class teaching and its typical teaching methods of lecturing and transferring information to students toward small group teaching where pupils are taking more charge of their own learning, is the most fundamental change in the field of teaching and learning. There are several sources of evidence that support this statement. For example, small learning groups are becoming increasingly popular alternative to the traditional lectures to large audiences in our universities according to the self-evaluations of the 58 candidates for the nominees of high quality units in the Finnish universities in 1999.

The main argument in this paper is that despite the popularity and prevalence of co-operative learning within the education systems, there is some concerns and initial evidence as well that the level of use of actual methods of teaching is lower. There is a possibility that many if not most of the teachers who report that they use small groups for learning in they teaching regularly, do not necessarily incorporate the critical elements of co-operative learning as described by researcher-developers. This itself is important notion because the impact of small group learning may only be expected when the methods that are used include the same principles that were present during the experiments in which the effects were researched. Teachers who are familiar with using small learning groups in teaching may have appropriate pedagogical language to describe their teaching but majority of teachers are still using a form of co-operative learning and other small group learning techniques that is differs from those designed through research and development. Therefore, low gains or no gains in student learning in real learning situations may be due to inappropriate implementation of co-operative learning methods.

Based on the discussion above I make four concluding remarks.

1. **The discrepancy between prevalence and level of use of small group learning.** The prevalence of co-operative learning is high but it is commonly applied using personal methodological adaptations that are not necessarily in consistence with the methods and principles described in the literature. More specifically, there seems to be some serious discrepancies between teachers' and research-developers' ideas about co-operative learning. This argument is important because research promises gains in student learning only when sufficient conditions of student interaction exist.
2. **Emphasis on critical elements of learning groups.** The second conclusion is that learning together is more than sitting next to other students and working on the same assignments. The practical problems related to the use of co-operative learning methods often occur due to neglecting of or too little attention to the

critical elements of productive groupwork. Since there is no one standard for the critical elements, teachers need to analyse their own teaching styles and apply some of the available approaches to co-operative learning. In this paper I have presented a four-element standard of critical elements of learning groups. I have also argued that the quality of student interaction increases and, thus, the level of co-operation becomes higher when each of these elements have been properly emphasised.

3. **Lack of consensus among teachers and research-developers about the meaning of co-operative learning.** If this is generally a true statement, it has several consequences. First, actual prevalence of co-operative learning becomes very difficult. Teacher surveys have shown that practically all teachers use small groups sometimes for learning purposes. However, the quality of student interaction and group dynamics may vary considerably from one case to another, and hence the impact on student learning will differ remarkably. Second, training of teachers – being one of the first condition for incorporation of critical elements into the teaching methods – becomes complicated when the conceptions of co-operative learning and the specific methods within it are not consistent throughout the field of teaching.
4. **Both students and teachers need more training on learning groups.** It is a cross underestimation that students know how to learn together. In most cases, even in the higher levels of educational ladders, students do not possess necessary skills and habits of mind that are needed in learning with others. Productive co-operative learning requires that students receive preparation to learn successfully together. Similarly, most of our teachers have been trained to teach individuals, not groups. Thus, teachers need first hand personal experiences about co-operative learning, and only then training on the methods and techniques that will enable them to use small learning groups in their teaching effectively.

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