

# Collaborative Learning in Three STEPs

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## Executive Summary

Although face-to-face lecturing provides exposure to content, it is a passive teaching method in which students do not actively engage in the creation of knowledge. One of the teaching methods that initiate active learning is engaging the students in group work with collaborative learning activities. This method activates the students to become independent learners and problem solvers. In this STEP project, I investigate the concept of collaborative learning of group work and shed some light using theories and practices from higher education. The closure of this essay is a practical guide with recipes for improving the efficacy of group work.

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## 1. Outline

### 1.1. Background

Traditional classroom lectures continue to be the norm in higher education. Although face-to-face lecturing provides great exposure to content, it is a passive teaching method in which students do not actively engage in the creation of knowledge. Active learning occurs when the students act as the prime constructor of knowledge rather than passively absorbing knowledge (Anthony, 1996). One of the teaching methods that initiate active learning is engaging the students in collaborative learning activities, e.g. through group works (Kuwabara et al., 2020). This active learning method initiates life-long learning as it activates the students to become *independent learners and problem solvers* (Lujan and DiCarlo, 2006).

### 1.2. Scope

In this essay, I investigate the concept of collaborative learning of group work and shed some light on intra/inter-group relationships. In doing so I will use examples from my observations during my teaching activities in ITC and try to support these observations with theories from learning in higher education. In the end, I will summarize the main ingredients underlying effective collaborative learning and provide recipes to attain a high-quality learning experience from group work.

## 2. Collaborative Learning

### 2.1. What is collaborative learning?

Collaborative learning entails that students work in groups to learn together and from each other (Barkley et al., 2014). According to (Kuwabara et al., 2020), collaborative learning covers three aspects of good education practices (Chickering and Gamson, 1991):

- engaging active learning: learning by doing and self-reflection and placing the students in charge of their learning;
- elevating students' academic performance and satisfaction due to a higher degree of interaction with other students and staff members (Astin, 1999);
- facilitating peer-to-peer cooperation.

It is vital to differentiate between collaborative and cooperative learning methods. Although these methods share common aspects, they are distinct from each other and hereafter I provide a table on the similarities and differences, please consult, (Bruffee, 1995; Davidson and Major, 2014; Oxford, 1997). Table 1 shows a detailed analysis of similarities and differences between collaborative and cooperative learning methods.

Table 1: similarities and differences between cooperative and collaborative learning

	Cooperative learning	Collaborative learning
<i>Problem definition and objective</i>	Teacher's structured and well-defined tasks with clear objectives and questions. The students have a shared goal.	Groups receive a challenge and they structure themselves to define the research questions and the objectives. The students should have a shared vision to define the goals and the strategy to achieve them.
<i>Methodology and data</i>	The teacher supplies the methods and the data to carry out the tasks.	The students research and define appropriate methods and data.
<i>Expected results</i>	Focused on teamwork to complete all the tasks, and learn from each other.	Focused on the team's deep thinking and problem-solving of the challenge.
<i>Autonym</i>	Students should carry out the assigned tasks on time. The teacher frame most of the internal communications. The students are dependent on the teacher and each other but they are independent during the "homework" tasks.	Project management skill is the responsibility of the group. Internal communication is up to the group. The students are in a constant state of interdependence.
<i>Cognition</i>	Addresses cognitive competency and is suited for the lower levels of bloom's taxonomy. Sharing ideas as a group.	Address cognitive and meta-cognitive competencies suited for the upper levels of bloom's taxonomy. Create new ideas.
<i>Social aspect</i>	Both methods stimulate social interaction and social skills.	
<i>Assessment</i>	Individual assessment suffice.	Assessment of the group as a unity. With the possibility of peer2peer assessment. Weak performance from a member could pass undetected.

## 2.2. Method and techniques

### 2.2.1. Method

Collaborative learning is based on the social cognitive theory of (Bandura, 1986). The theory encompasses two main concepts (Kuwabara et al., 2020): i-) knowledge is gained through interactions and communications with peers (Vygotsky, 1978); ii-) learning happens when observing and replicating models' behaviour (Bandura, 1977).

These two concepts are grouped into three interacting components, namely student, behaviour and environment, see Figure 1. In this system, the students are both products and producers of their learning.

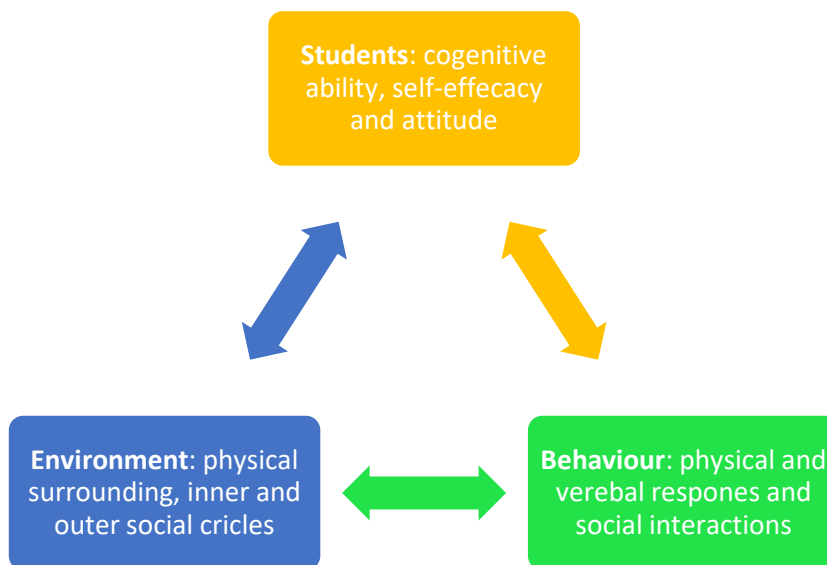


Figure 1: Reciprocal determinism of the social cognitive learning theory

**The students:** the ability to learn and function in a group is controlled by students' cognitive ability, self-efficacy and attitude. Students starting a master's study are deemed to possess the first aspect of cognitive ability. On the other hand, students' belief in their abilities to learn, self-efficacy, is a key to learning, without which ignorance will pervade. In addition, students' persistence and attitude toward learning from other students, largely improve self-efficacy and the learning process.

**Behaviour:** learning occurs through observation and modelling the behaviour of others (Horsburgh and Ippolito, 2018). It does not need the students to be actively engaged in practical exercises and tests. Therefore, when the students observe the teacher and peers, their learning experience will be amplified when learning and teaching each other. A known quote from Albert Einstein "*If you can't explain it simply, you don't understand it well enough*" summarise the fact that acquiring new information (learning) is crystallized when the students can demonstrate what has been learnt to peers. This "teaching" activity will improve students' self-regulation, self-observation and ultimately reflection on their learning progress.

**Environment:** I quote for the M-GEO accreditation report (2021): "*The ITC faculty offers a dedicated learning environment for MGEO students. This learning environment consists of three main pillars i-) physical: lecture rooms, auditorium, library, and labs; ii-) digital: technologies that facilitate learning;*

and iii-) institutional: a learning and teaching culture that fosters international and multicultural learning.”

This aspect is considered to fulfil the requirement for adequate social cognitive learning and therefore will not be discussed further.

### 2.2.2. Group's model

For collaborative learning to be successful, the students should eventually work in groups. Nonetheless, the groups should experience progressive development to achieve the intended learning outcomes. (Tuckman, 1965) pioneered the development of a conceptualized model that enables the description of the group's development stages. Tuckman's model identified four stages that are necessary for the group to organise itself towards achieving tasks and delivering results. For a good functioning group, at the end of these four stages, the group would achieve the learning objectives of the assignment. In education, as the assignment undergoes assessment, we can add a fifth stage recognising the completion of the assigned work, i.e. grading and providing feedback. Figure 2 shows Tuckman's stages for a good functioning group in addition to the adjourning stage.

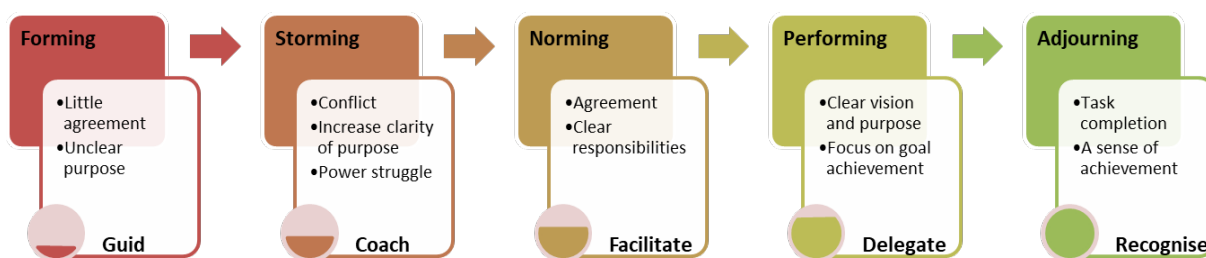


Figure 2: Tuckman's model of the group's development stages.

Of prime importance, is that the tutor should monitor the group and adjust the supervision style with the progress of the group. Following Tuckman's model, there is a duality in collaborative learning: i-) the intra-group dynamics and ii-) the role of the supervisor in directing the collaboration.

### 2.2.3. Techniques

In the literature (at least the ones I explored) there is no clear distinction between the techniques used for collaborative and cooperative learning classrooms. Therefore I will describe several prominent techniques and comment on the distinction.

#### a. Jigsaw

Developed by (Aronson, 1978), the jigsaw technique divides the content into several knowledge units. The students are divided into jigsaw groups and experts-groups, with each student making part of both and focusing on one knowledge unit. Students studying the same knowledge unit make part of the expert group. The expert students return to the jigsaw groups and present the learnt content to others. In this setup learning about a unit occurs in the expert group, whereas learning the full content occurs in the jigsaw groups, i.e. intragroup and intergroup learning. The traditional description of this technique fits the cooperative learning method (Moskowitz et al., 1985), nonetheless with some amendments it could also fit the collaborative method (Márquez et al., 2017). The jigsaw technique requires non-progressive learning content and supervision to guarantee good intragroup performance (Karacop and Diken, 2017).

#### *b. Think, Write, Pair, Share*

In this technique, all members of the group will individually form ideas of how to address the project/assignment. Then the students would work in pairs to solve the problem and share their findings with the class (Mutia, 2021).

#### *c. Round Table*

Round Table is an active learning technique that includes peer2peer discussion and debate on a specific topic (Lewis-Kipkulei et al., 2021). The peer2peer discussions expose the students to reflect upon prior knowledge, recall information and practice communication skills.

### 3. Conclusion

Active learning is an essential ingredient for students to learn. During each course, the students should be offered the opportunity to discuss the topic, write about it, relate it to past experiences and apply it to practical examples and reflect on what they have learnt (Chickering and Gamson, 1991).

#### 3.1. Online Group work, does it work?

During the COVID-19 pandemic, many higher education institutes witnessed a transition towards online teaching. From my experience, this transition (to online) has created a sense of alienation among a few students that followed my courses. Alienation is defined as a decreasing sense of belonging whereby the student does not feel involved in the learning process and does not engage in the discussion and group work (Hascher and Hadjar, 2018). With the COVID-19 pandemic, the core of the problem was social isolation, which has created more disorganization and less sense of influence and involvement in the class. Students especially feel that they have lost control over their work and the online work has added less value, they no longer saw the significance of their learning. The 'Zoom-fatigue' has also caused more stress and this stress has had a negative impact in the sense that students feel powerless, this is mainly due to the lack of feedback from teaching staff, but also group members. The feedback is essential to give a better understanding of the importance of group work. In my opinion, the phenomenon was exacerbated due to social isolation.

#### 3.2. Recipes for Effective Learning Experience from Group Work

- The assignment should be related to real-life challenges, and place the students in the right context
- The assignment should have clear goals, deliverable milestones and a timeline for delivery
- Provide frequent interaction with online discussions, contact hours, and providing personal feedback;
- Support peers' feedback and reflection;
- Promote a professional attitude towards managing priorities and time to meet deadlines;
- Increasing the appreciation of diversity in thoughts, culture and behaviour;
- Respond to online students quickly, for optimal results you should respond to students within 24 to 48 hours;
- Use the assessment matrix (rubric) and share it with the students;
- Expect more and you will get it.

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