

OPTIMIZING LEARNING IN TEAMWORK

Like any other pedagogical tool, teamwork can be part of the solution needed to provide meaningful experiences to students looking for challenges of substance in college.



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Learning together means engaging a process where learners are called upon to share their knowledge, discuss their different conceptions of new elements, build knowledge together and master the competencies resulting from their interactions. Here, in-depth learning (Bélanger, Auger, 1996) replaces surface learning: no longer satisfied to simply do what is needed to pass the exam, students want to understand, to grasp the facts and the phenomena that are presented to them. Learning together also means centering the approach on the students and the possible interactions between them that will lead to mastering the competencies. This learner centered approach is based on constructivism and socio-constructivism, two pillars of Quebec's new educational program (pedagogical renewal).

In a socio-constructivist perspective of learning, it is important to distinguish the cooperative approach from the collaborative approach and to understand the advantages and limitations of each. The teacher can use both approaches together to combine the benefits of distributing the expertise with those of negotiation. Regardless of the selected approach, teamwork tends to be twice as demanding: one must consider the evaluation of learning linked to the object of study as well as that linked to the methodology.

► BUILDING TOGETHER

The idea behind the socio-constructivist learning approach is to engage students in the construction of their knowledge in a social context. The approach places students in interaction so they can learn with and through others. "In this context, the partner is seen as a resource. Cognitive progress results from the dynamics between the object, the support provided by others and the individual's capacity to take advantage of the situation." (Tact, 2007) The partners, be they peers, teachers or content experts, are involved in the process of learning. The teacher and the content experts supply the information to the students who, in turn, must involve themselves in the process of acquisition, appropriation and integration of the information supplied. "Confrontations between individuals (students) are a source of development. Knowledge is born of this exchange and it is shared. Participation is crucial because the individual is then seen as a player seeking to adapt to a culture." (Tact, 2007)

Students placed in a situation where they must teach others will inevitably become involved in an organized learning process. In addition to understanding the content, they will need to structure, contextualize and communicate their acquisitions.

Learning together in a socio-constructivist perspective means giving students the opportunity to access the knowledge and learning that their peers have agreed to share. It means accepting to become part of a collective learning process, where individual knowledge is shared and where the exchange of information also serves to build a collective product.

► COOPERATION OR COLLABORATION

There are different ways of bringing learners to construct their knowledge together. Among these, there is cooperation (sharing of tasks between group members) and collaboration (each member uses his/her resources to help the group reach a common goal).

The following example illustrates the differences between learning through cooperation and collaboration:

For the final exam in a course, a teacher proposes that students create a summary on the learning linked to the competencies to be mastered. The teacher explains that the exam will be completed individually but that the students will be allowed to use the document produced for the exam and that they will have the opportunity to do this work in teams.

COOPERATIVE APPROACH

Cooperative work offers the group the opportunity to benefit from expertise that is "distributed" to form a complete and integrated representation of a problematic. In other words, the group is made up of "expert" members who intervene in their respective fields.



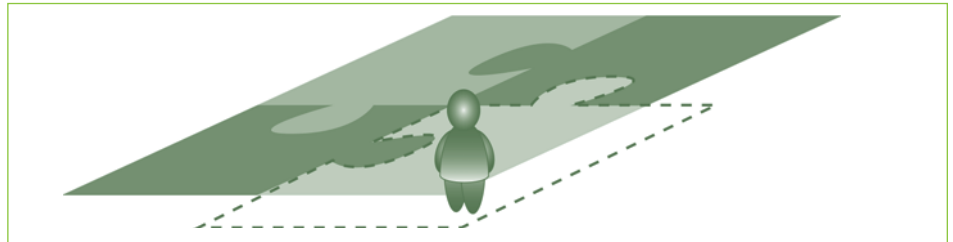
We could take the “puzzle” principle for example, where each student on the team is responsible for becoming an “expert” in one aspect of the task, then applying this expertise to the production of an overall revision of the material covered in the session.

Team members must first distribute among themselves the different sections of the course. Each person works individually to summarize the contents for which they are responsible (Conway, 1997) without intervening in the work of other members. Team members then combine the individual results of their respective work and the ensuing result is a document that covers the overall course. This is a relatively common practice that has its advantage (notably the impression of progressing faster) but where the results have shown certain weaknesses. It is quite probable that some sections assigned to different team members will be repetitive or have major interconnecting aspects. More often than not, it is the teacher that provides a pedagogical structure for cooperative teamwork.

Thus, there is construction of a community knowledge that is much more than the sum of each individual's knowledge.

Progress, much like exploration, often takes place in a structured environment and with planned support. In a cooperative production, the goal and type of production expected can often be determined beforehand by the teacher, with the learners invited to participate in the various sections that will form a whole, somewhat like assembling a puzzle. The learners can however be involved at various levels and in varying degrees in choosing the problematic, the production mode and the evaluation.

Figure 1: Schematized product of cooperative approach



COLLABORATIVE APPROACH

Returning to the example of developing a synthesis document to review the overall knowledge acquired during a course, students could be asked to collaborate on the project. The collaborative approach requires concerted teamwork on the part of all group members. Each member plays a complementary role and all have a common objective, which in this case is to produce a synthesis document. Team members will need to find a common ground in order to produce the expected document: meeting in person, meeting via the use of technological communication systems, in real time or offline. Members' roles will alternate between learner and content expert. Negotiation will allow for a convergence toward a better understanding of the object of study. The synthesis document to be produced requires work in mediation, amalgamation and collaboration: it is no longer possible to disassociate the different sections of the work.

The collaborative approach supports the approach that knowledge is not constructed in an isolated manner. «It is [...] the result of complex transactions between knowledgeable subjects, where imitation and borrowing from others play a determining role and where reciprocal validation strategies intervene.» (Bibeau, 1997)

In a collaborative work process, each individual shares knowledge and benefits from the knowledge of others. Time, knowledge and the ideas shared are not the result of a simple subtraction: one does not lose what one shares and one does not gain another one's loss. Thus, there is a construction of community knowledge that is much more than the sum of each individual's knowledge. Knowledge is built on all levels, because collaboration involves the participants emotionally as well as on cognitive and social levels.

Certain conditions favour collaborative work. Among these is the need to obtain something in return from the group in exchange for the individual's investment. The different players involved in a collaborative exchange lean towards this social benefit (Homans, 1958) where everyone is vested and everyone benefits, thereby creating a balance and making the collaboration a success.

PLURAL APPROACH

The cooperative and collaborative approaches each have their advantages and limitations. There is more than one adequate formula and neither approach benefits from being used unilaterally.

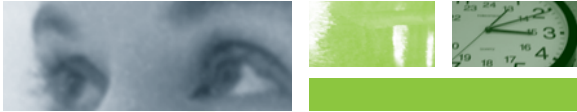
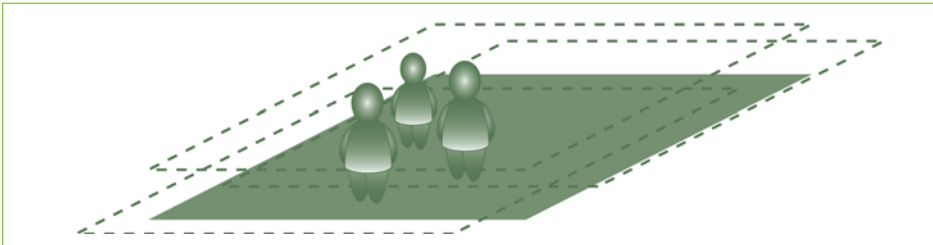
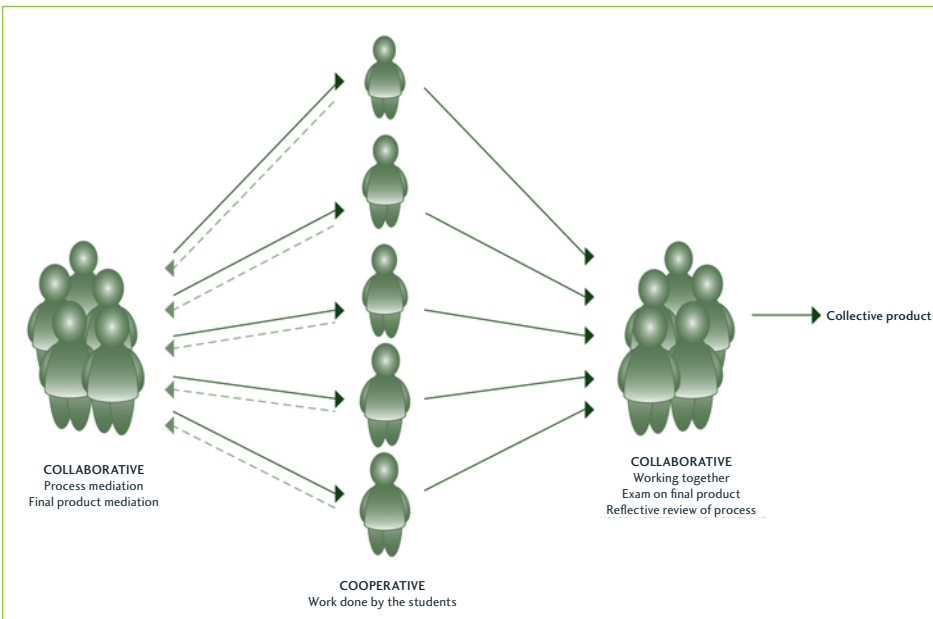


Figure 2: Schematized product of collaborative approach



Achieving a task in collaborative mode can become tedious; at each stage, all intervenors must be present to take part in the negotiations and the realization of a final product. In cooperative mode, individuals can work in parallel, which can save time. However, using only the cooperative mode does not allow for the in-depth reflection or negotiation of meaning that the collaborative approach offers. We offer a plural approach that borrows from both cooperative and collaborative approaches. Figure 3 offers a general illustration of this solution.

Figure 3: Schema of proposed plural approach



Referring again to the example of a group production of a synthesis document in the context of an individual final exam, a plural approach allows for a three-part process that alternates between the collaborative and cooperative approaches:

In the first part, students benefit from negotiating the meaning of the work to be completed and the methods they will use to accomplish the task. Their initial mediation is designed to determine their expectations, both individual and collective,

with regard to the final product as well the collective process they will use. This would also be the time to identify the important elements to be included in the synthesis document, the links between these different contents, the format of the final document, etc. It would also be a good time to determine each team member's role as well as their corresponding responsibilities.

In the second part, the work is carried out in a cooperative manner. Individual students produce the section of work for which they are responsible. Then, given that the links between contents were established in the previous stage, the students responsible for content, who have become experts as regards their part of the work, know that they must interact with other experts in order to produce a coherent synthesis.

Afterwards, the work of each individual team member is reviewed. Here, the experts in each section explain their process and their results. In doing so, they expose their work to the judgment of others and each member becomes responsible for the final product.

While carrying out the assignment, some team members may realize that they have not anticipated everything or they may have underestimated a section of work. A return to the collaborative mode is then required as it is necessary to renegotiate the process as well as the final result.

EVALUATION

In a collaborative process, the reflective process takes place around the learning acquired (individual and collective) and the methodology used. It is therefore important to introduce activities that bring about reflection at different moments during the process



as this will allow students to assess by themselves their level of participation in the learning. The recommendations made here deal with the synthesis document produced by the students and not the individual exam: what interests us is the collective product.

Among the methodological aspects to be considered are:

A choice of methods for:

- Member communication and integration
- Conflict resolution
- The development of leadership and a feeling of belonging
- The decision making process

The students' choices with regard to:

- The processes through which activities are carried out
- The roles participants play, the associated responsibilities and tasks

By going through this exercise several times over the course of the work, students will become more and more aware of their learning process while they are learning.

Even though projects have pre-established schedules, the teacher has some latitude. It is therefore possible to review students' capacity to break the project down into activities and stages in order to attain the goals and objectives. It is also possible to allocate periods of time for each stage based on the overall time available. A reflective review is accomplished on three levels: individual, team and class-group. This review deals with the choice of teamwork strategies, notably: What benefits do students derive from this teamwork? What would they do differently the next time? What have they corrected since their last teamwork experience?

CONCLUSION

Learning together is an iterative process. In the reflective review and the meta-cognitive process, students reflect on their past and future experiences in teamwork. The combination of several teamwork experiences, along with the reflective review of these experiences, will allow them to develop methodological competencies. For its part, the iterative process provides students with an opportunity to make their knowledge evolve in the framework of a project. This work is a snapshot of an object of study. It may consist of a finished product or a step confirming an evolution that will be the object of future studies. The work performed by the students can also be an opportunity for knowledge in general to evolve. ●

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