

Collaborative Learning: A Model of Strategies to Apply in University Teaching

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Abstract

Collaborative learning is a construct that identifies a strong field nowadays, both traditional on-site and virtual education. The article aims to present a model of strategies that teachers can implement to develop socio-cognitive collaboration. These strategies are classified according to the socio-cognitive aspect they aim at. It must be taken into account that all the strategies are thought to be applied in on-site classes, but it is possible to adjust them to be virtually applied, using the different communicational technologies. Each strategy is specifically described. These strategies refer to six areas: encouragement of dialogue, listening to others and reciprocal/mutual evaluation; collaboration for negotiation and consensus building; activity organization; study and appropriation of bibliographic information; conceptual development; collective writing. Finally, conclusions and recommendations for the implementation of these strategies are discussed.

Keywords: Collaborative learning, Cooperative learning, Teaching, Constructivism, Team work

1. What Are the Strategies for the Development of Socio-Cognitive Collaboration?

The contemporary apex of socio-constructivist tendencies in education, and more specifically of collaborative learning, is sometimes more rhetorical than real, which gives rise to naïve, spontaneous and abstract positions of what it means to work cognitively in groups. It is thought that the social condition is a primary and a natural fact of human development, and that, therefore, students are spontaneously willing to socialize. The *habitus* of individuality, which is deeply rooted in educational establishments, is not taken into account, especially regarding academic learning and acquiring knowledge. Acting in coordination with others, creating consensus, and taking benefit from other's points of view, are considered valuable social skills that are highly related to the development of the sociability and the coexistence, but not so much to acquiring knowledge. The subject of academic learning is the individual; it is hard to understand that it is possible to conceive the idea of a collective cognitive subject.

When breaking the individualist teaching-learning inertia is intended, it is common to naively believe that creating situations horizontal connectivity among students is enough for this to carry out efficient learning. This idea is mistaken. The socio-cognitive collaboration can and must be developed as an ability itself (Roselli, 1999). The teacher must teach to work efficiently in a collaborative environment, and must do so using specific strategies intentionally planned and scheduled (Roselli, 2016). An integrated model of strategies that the teacher can use in the different instances of the teaching process is presented below. These strategies refer to the different aspects that are normally involved in every knowledge teaching-learning process. However, these are not the only one possible; each teacher can build their own repertoire from this guiding references. Moreover, they must not be introduced abruptly and as a unit. Progressive implementation is more desirable, without losing sight of the final aim, which is the implementation of an integral collaborative didactic model, not sticking to the occasional use of certain collaborative strategies. Collaborative learning implies a general transformation of the didactic attitude, that is, the modification of teaching and learning actual basis. Therefore, it is preferable to speak of strategies for the development of collaboration, and not merely of techniques, as generally referred to in Anglo-Saxon environments (Barkley, Cross & Major, 2007; Exley & Dennick, 2007).

2. Introduction to a Model of Strategies to Apply in University Settings

The strategies presented in the model below are classified according to the socio-cognitive aspect they are aimed at. It must be taken into account that all the strategies are thought to be applied in on-site classes, but it is possible to adjust them to be virtually applied, using the different communicational technologies. In fact, there have been major developments in IT programs thought specifically for socio-cognitive education.

As a matter of fact, in the past few years a new field of study has gained momentum: Computer Supported Collaborative Learning (CSCL). Several papers have aimed at the systematization of this new field (Dillenbourg, Baker, Blaye & O'Malley, 1995; Dillenbourg & Schneider, 1995; Rodríguez Illera, 2001; Valcke & Martens, 2006; Weinberger, Stegmann & Fischer, 2007; Beers, Boshuizen, Kirschner & Gijssels, 2007). There is general agreement that using ICT in education strengthens the collaborative learning approach (Gros Salvat, 2002; Kanselaar, Erkens, Jaspers & Schijf, 2001; Kirschner, 2001; Koschmann, 1996).

Nevertheless, the development of socio-cognitive collaboration does not necessarily require the use of technology. As any human process, socio-cognitive collaboration can manifest itself in any social situation, given the appropriate conditions. Moreover, collaboration should be achieved in face-to-face social situations. Thus generates an interactive pattern which is later transposed to computer-mediated communication. Collaboration is learnt in direct, non-mediated relations.

2.1 Strategies to Encourage Dialogue, Listening to Others and Reciprocal Evaluation

2.1.1 Chain Brainstorming

Aim: To stimulate expressiveness, spontaneous communication and participation.

Description:

- Groups of 8 students.
- The teacher suggests a topic of empirical significance related to the subject.
- Each student, sitting in circle, writes a brief phrase and sequentially adds it to the group's blackboard.
- Each student in the circle repeats the process three times.
- Each group's blackboard is collectively compared.

2.1.2 Communication of Opinions through an Intermediary.

Aim: To reliably transmit the information.

Description:

- Groups of 4 students.
- In each group of students, S1 gives an opinion to S2 about a fact or problem suggested by the teacher, and S2 does the same with S1. In turn, S3 gives an opinion to S4, and S4 does the same with S3.
- Then, the other's opinions are communicated throughout the group between S1 and S3, and S2 and S4, and then between S1 and S2, and S3 and S4.
- Finally, each student writes the opinion of the others according to what it was communicated to them.
- Joint evaluation in each group and group-class evaluation.

2.1.3 Reciprocal Evaluation in Pairs

Aim: To stimulate reciprocal evaluation.

Description:

- In pairs.
- Each student corrects and evaluates the written answers (to an exercise) of the other student according to his/her own discretion.
- In accordance with the correct model presented by the teacher, each one is corrected by a member of other pair, or by both members.

2.1.4 Evaluation Committee

Aim: To promote collective evaluation criteria and stimulate inter subjective control.

Description:

- Groups of four students.

- The work of each group is evaluated by a committee of pairs (members of other groups), who give a written opinion.
- The four evaluated students compare and discuss the written opinions given to them.
- Each student argues or answers to the opinion received.
- The teacher expresses his/her general expert criteria, and then settles the individual conflicts.

2.1.5 Symmetric Participation

a. Obligatory Alternation of Participation

Aim: To maintain equal participation.

Description:

- Groups of four students.
- The participation of group performance is stipulated, so that each student must, following an obligatory sequence, contribute or solve an item.
- The contributions are recorded in a group blackboard.
- The technique can be complemented with the evaluation of each contribution, also following an obligatory sequential order.

b. Share of Participation

Aim: To measure equal participation.

Description:

- Group of four students.
- Each student has a certain share of participation, which can be freely managed, but which at the end of the task must have been used up.
- If, by any chance, during the development of the task, a student did not finish the share of participation, he/she shall have a remaining share of obligatory use for the following task.

2.2 Strategies for Collaboration for Negotiation and Consensus Building

2.2.1 Guided Critical Debate

Aim: To stimulate exchange and opposition of ideas.

Description:

- Groups of four students.
- In relation to a given problem, each student prepares his/her own argument and, upon his/her turn, presents it to the group.
- The other members support it or refute it.
- The student exercises the right to reply.
- In the end, all the students together order or classify the four arguments.

2.2.2 Critical Debate with Alternation of Positions

Aim: To develop the capacity to put oneself in the place of the other.

Description:

- In pairs.
- Regarding the debate topic (e.g. experiments with stem cells), each student of the group-class spontaneously supports or refutes a position (orally or in writing).
- According to the results, the teacher puts together students with different opinions and requests them to change roles, so each student has to seek arguments opposite to his/her spontaneous opinion.
- The other student comments and expands on the argument.

VARIANT: The pairs are formed according to their similar opinions and they have to coordinate a common argument.

2.2.3 Collective Consideration of Alternatives in a Decision-Making Situation

Aim: To develop group analytical capacity.

Description:

- Groups of four students.
- In view of a decision-making situation suggested by the teacher, list all the possible alternatives, ordering them hierarchically.
- Select the first alternatives of the list and list pros and cons of each one.

2.2.4 Round Table with Moderators and Elaboration of Consensus Conclusions

Aim: To develop the capacity to bring positions closer and create consensus.

Description:

- Groups of four students plus an additional student.
- According to a topic suggested by the teacher, each student makes a brief presentation for the group-class.
- A moderator brings positions closer and seeks the elaboration of consensus conclusions, which he/she writes and reads to the group for approval.
- Each student must be a moderator in other groups.

2.2.5 Commented Conference

Aim: To stimulate criticism and broaden perspectives.

Description:

- Groups of four students.
- One student of the group prepares a presentation before the group-class.
- Other two students of the group, having previously read the presentation, criticize it in front of the class.
- A fourth student acts as a moderator and promotes consensus conclusions.
- Roles must be changed several times.
- The other groups briefly discuss and a representative of each group makes a supplementary comment or observation.

2.2.6 Discussion Group with Observers (“Fishtank”)

Aim: To stimulate social metacognition.

Description:

- Groups of four argumentative students and four observing students.
- The four argumentative students consider the topic suggested.
- The four students of another group act as observers.
- After the discussion, the four observing students analyze the socio-cognitive exchange.
- Afterwards, both groups exchange roles.

2.3 Strategies for the Activity Organization

2.3.1 Theoretical or Bibliographical Research

Aim: To develop the capacity to organize oneself and organize the joint carrying out of a task of certain complexity; to systematize the activity.

Description:

- Groups of four students.
- According to a topic suggested by the teacher, divide the task according to these functions, distributing them among the members: a) search on the Internet and websites; b) search in bookshops and libraries; c) interviews to specialists and experts; d) consult experts via e-mail.
- According to the partial reports produced by the members in charge, make a single report to be presented orally to the group-class.

2.3.2 Empirical Exploratory Research

Aim: To develop the capacity to organize oneself and organize the joint carrying out of a task of a higher complexity; to systematize the activity.

Description:

- Groups of four students.

- Regarding a topic approved by the teacher, divide the task according to these functions, distributing them among the members:
 - A. Second-hand and third-hand information: a) bibliographical search; b) interviews to specialist and qualified witnesses; c) search of statistics and documentation.
 - B. First-hand information: a) field work; b) use of surveys; c) carry out interviews.
 - C. Processing and assembling information.
 - D. Elaboration of a single report to be presented orally to the group-class.
- All members must participate (at least partially due to the division of tasks) in items A, B, C and D.

2.4 Strategies of Study and Bibliographic Information Appropriation

2.4.1 Reciprocal Teaching (“Jigsaw Classroom”)

Aim: To develop counseling.

Description:

- Groups of four students.
- The teacher summons one of the members (rotating role), creating an *ad hoc* group with all the chosen students from each group.
- The teacher works intensely with them a bibliographic piece of information.
- Afterwards, each student returns to his/her group and teaches said bibliographic material to his/her three other peers, through a lecture.
- The peer-counselor answers all the questions and ensures a correct understanding from his/her peer-students.
- Finally, with the counseling of a peer-expert, the other three peers make a conceptual synthesis answering to a questionnaire.
- The peer-counselor role changes according to the bibliographic sequence.

2.4.2 Home Studying

Aim: To systematize in class home-reading.

Description:

- Groups of four students.
- The teacher distributes in advance the bibliographic piece of information or a questionnaire, to be read at home individually.
- On the fixed day, the teacher assigns a certain period of time for the individual re-reading, and then implements a stage for revision in pairs, using the questionnaire as guide.
- Finally, both pairs of each group get together and make a conceptual synthesis, answering to a questionnaire given by the teacher.

2.4.3 Group Development of Reading Comprehension

Aim: To develop reading comprehension through intersubjective consensus and exchange of ideas.

Description:

- Groups of four students.
- Based on a conceptual-expository text, produce in groups:
 - a) A brief summary (variable extension).
 - b) Theme title (if any, alternative).
 - c) Recognition of main ideas, separating them from peripheric ideas.
 - d) Recognition of the parts of the text (parts, sub-themes, levels of analysis, argumentative sequence).

2.5 Strategies for Conceptual Elaboration

2.5.1 Note-Taking in Pairs

Aim: To improve retrospective comprehension through checking and comparing class records. To stimulate cognitive decentration.

Description:

- In pairs.
- It is expressly requested that all students take notes in class.
- Then, each student gets together with another student, comparing in pairs the notes taken.
- Thus, each pair creates an improved version.

- Some pairs present their conclusions before the group-class, commented by the teacher.

2.5.2 Conceptual Synthesis of Several Bibliographic Sources in Pairs

Aim: To develop the ability of conceptual integration.

Description:

- In pairs and groups of four students.
- Each pair is responsible of making the required thematic integration (according to several sources of information) using a questionnaire as a guide, producing a report afterwards.
- Then, each pair gets together with another one to jointly evaluate both reports, producing a new report.
- The teacher corrects the last report and gives it back for group consideration.

2.5.3 Questions and Answers in Alternation

Aim: To develop the capacity to ask relevant and core questions related to the theme content.

Description:

- Groups of four students.
- Each group suggests the essential questions that should be asked to a student to know how much he/she knows about the topic.
- The questions of each group are answered by another one (random order).
- Each group author of the questions evaluated the answers of the other group.
- All groups must ask questions and give answers.
- Finally, the teacher evaluates group evaluations.

2.5.4 Group Elaboration of Conceptual Frameworks

Aim: To stimulate creativity and the ability to synthesize concepts.

Description:

- Groups of four students.
- After developing the theme, each group interactively elaborates:
 - a) Themed outlines and summary table.
 - b) Conceptual map.
- Each group compares its production with another group.

2.6 Strategies for Collective Writing

2.6.1 Division of Tasks to Write a Collective Report

Aim: To systematize the complex activity implied by collective drafting.

Description:

- Groups of four students.
- Settle the structure and the conceptual ideas and items to be included in the report, by making a brief list.
- Divide the roles in the drafting process: one student retrieves the main idea (about which everyone can give their opinion again), another student dictates it and another one writes it. The fourth student controls the process.
- The final text is read and corrected by everyone.
- The roles can be altered according to the type of information.

2.6.2 Production of a Collective Text by Combining Individual Texts

Aim: To develop the capacity to analyze and synthesize regarding the comparison of texts.

Description:

- In pairs.
- Settle the structure and the conceptual ideas and items to be included in the report, by making a brief list.
- Each student writes his/her own text.
- Individual writings are compared in pairs and a new consensual text is produced. One of the texts can be taken as basis.

3. Conclusions

The Theory on Collaborative Learning is the most representative expression of educational socio-constructivism.

It is not a single theory but a set of theoretical paths that highlight the constructivist value of social interaction and of coordination among students. Three of these tendencies deserve a special mention for being the main sources of the Theory of Collaborative Learning: neo-Piagetian socio-constructivism or theory of socio-cognitive conflict, the neo-Vygotskian approach on intersubjective and the distributed cognitive model or network thinking. These three tendencies can be situated in an “individual-group” axis, depending on whether the emphasis is placed on the individual interacting with other or acting collectively. The order in which these tendencies have been named expresses the relevance in the axis.

The socio-cognitive collaboration requires learning, that is, it can and must be taught. The teacher is responsible for the students’ learning to collaborate efficiently among them, transforming the class into a teaching-learning community. For this, he/she has available a wide spectrum of strategies available that can be implemented in different instances, according to the different types of tasks (Roselli, 2011). It is important to understand that they are not only unlinked pedagogical resources or mere techniques group motivation; it is a proposal of a new didactic model, that academically profits in an efficient way from the natural sociability of the institutional context of teaching, which is basically collective. This didactic model includes, but does not limit to, teamwork. The collaborative didactic framework is beyond mere collectivism (doing everything in groups); it includes and maintains individual instances, while connecting individual learning to others’ learning.

The model presented in this article is not the only one possible; it constitutes a reference from which each teacher builds his/her own one (according to the episteme, to his/her individualistic distinctive mark, the students’ characteristics, and the institutional framework). What is more enriching and motivating is that the teacher considers it as an action-research of pedagogical innovation, involving the participation of both teachers and students (Roselli, 2008). Accordingly, the teacher can even implement non-collaborative comparative control conditions and also instances of comparison between guided beforehand by the teacher and non-guided forms of teamwork, as a way to ensure an efficient organizational framework, since its lack is what generally impairs collective coordination.

Another important problem is change resistance, especially those undercover. This can come from the very teachers claiming to be involved in the collaborative didactic experience, as well as from students. The collaborative frameworks motivate both groups for its innovative distinctive mark and because recovering sociability creates a better working environment, even though they imply new and very rigorous working and acting demands (preparation of materials, compliance with tasks required, punctuality, individual adaptation to collective functioning), which not everyone can actually comply with. Nor do institutional regulations help much. The background of this change resistance is, without a doubt, the individualist culture, which, beyond statements, permeates the educational environments. Therefore, the implementation of collaborative strategies must be progressive, consensual and accompanied by critical analysis of the different outcomes.

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