# Collaborative strategies in on line communities of in-service teachers

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## Abstract

The present paper analyzes a learning experience run at University of Macerata, during a post degree course for in service teachers and mature students. The course was delivered entirely on line, using a dedicated on line learning environment and proposed active and collaborative learning strategies to perform tasks and related activities. The whole course lasted one academic year and most of the 161 graduated applicants who enrolled in the Master were already working as teachers. During the intermediate phase of the course, students were asked to build collaboratively a didactic project to teach Italian language in their schools. The task focused on the final product, leaving the students free to choose how to design, organize and schedule their works. This paper aims to show how the ten groups, sharing both the path and the objectives, have negotiated their working modalities, in order to analyze different positioning in role setting, connections with the delivered materials, strategies implemented in decision making and during the design of the final projects. This research aims to inquire if there is a connection among groups' different working modalities and results obtained at the end of the course.

**Keywords:** collaboration, teacher, on line learning environment, project based learning.

## 1. Introduction

Collaborative strategies used in group activities have been the focus of a number of research areas in learning and didactics. Even a definition of collaboration is difficult to provide (Calvani 2005) and it is rich because of its complex factors and critical elements. According to Dillembourg (1999) it is possible to define collaborative learning as "a *situation* in which *two or more* people *learn* or attempt to learn something *together"*. From this definition a collaborative learning path is made of four elements: *situation, interactions, processes and effects*.

A *situation* is the context where the learning experience is proposed. There are situations that foster collaboration (e.g. discussion among peers and colleagues with a similar status) and something else that make collaboration more difficult. The *interactions* are the communicative relationships which take place among the group members. Different patterns of communication can have more or less collaborative meaning. Giving information or instruction is less "collaborative" than asking for advice or negotiating meaning. In the same way, some *processes* seems to be more intrinsically collaborative (e.g. grounding has a stronger collaborative flavour than induction) Dillenbourg, 1999). The *effects* of collaborative learning is the last element to analyze. It is quite difficult to define how to measure the effects in terms of learning, achievements and social skills and to relate these effects to the path or to the pattern used.

All the four elements are strictly linked (Dillembourg, 1999) as "the situation generates interactions patterns, these interactions trigger cognitive mechanisms which in turn generate cognitive effects", but they do not stand in such a linear connection. In fact most relations are reciprocal, so cognitive effects can impact on cognitive mechanism, that module interactions an so on.

Salomon (1992) states that effective collaboration is possible if there is genuine interdependence among the members of the group. Positive interdependence means that team members need each other to succeed. Salomon's description focuses on three points:

1. the necessity of *sharing information*, meanings, concepts and conclusions;
2. the necessity for *division of labour* into complementary roles
3. the necessity for *joint thinking* in explicit terms.

These three levels of collaboration represent a progressive shifting from a simple "sharing approach"(Rossi, 2005), which is the first level of group activity, through a cooperative work, to collaborative learning.

A similar approach is proposed by Rodden (1993). He suggests that collaborative activities often are managed by the group, as the teacher avoids to impose rules or strategies, which are created by the students during the activities. Strategies and work patterns must be shared and recognised by all the members engaged in the activity. Different activities require different levels of collaboration: Rodden (1993) calls *division of labour* and *shared mind* the two extreme polarities.

*Division of labour* is the simplest way to organize a group work: each member of the group works to complete a single part of the whole task. In this situation every student is directly responsible for a part of the product, and, at the end of the work, all the parts are collected to compose the complete artefact. The final collection is made directly by the group, or could be done by a coordinator, who leads the group and collects the various individual works in order to give coherence and cohesion to the whole project. Diaper and Sanger (1993) suggest to call this way of work *parallel strategy*, to outline that all the members work in the same time to different part of the work.

On the other side, *Shared mind*, is a strictly collaborative approach where each member of the group contributes to the creation of each single part of the final work. All the members of the group share positive interdependence and give each other continuous feedback related to the hypothesis and the proposals discussed by the group. Diaper and Sanger (1993) call this strategy *reciprocity strategy,* and point out that this strategy is linked to the most elevated interaction frequency. In fact it requires a remarkable degree of synchronism between the participants and a remarkable ability to debate and promptly resolve possible controversies and divergences with respect to the realization of the assigned task. These strategies are not mutually incompatible and often, according to the circumstances and the requirements, the collaborative work can adopt one or more strategies during the same project (Trentin, 1996; Manca e Trentin, 1996; Slavin, 1990).

## 2. Research Hypothesis

The present experience shows how working patterns used by the groups seem to define three main patterns of collaboration: 1. guided division of labour. 2. parallel strategy 3. reciprocity strategy. This paper aims to analyze how different strategies of collaboration could be related to results. Evaluation of result is provided by two evaluators: the first evaluator is the tutor who knows how the groups worked and how they managed to build the project; the second evaluator is a content expert, a university professor who did not focus on the learning path but only on the content and on the coherence of the product.

## 3. Context

The collaborative work we are going to present involved 45 teachers, attending the post degree course "Progettazione didattica curricoli disciplinari e ricerca educativa" for in service teachers and mature students. All the teachers work in the Humanistic subject area disciplines, and most of them teach Italian language. They were organized in 10 groups of 4 people, and 1 group of 5.

Teachers were asked to analyse some learning paths dealing with linguistic education, to choose one of those paths and finally to develop a project designing a learning path congruent with linguistic aspects, learning tasks and provided activities.

In particular, each group had to fulfil the following tasks:

- build a learning design according to the given indications. Your task is to research and manage materials to run the class work. Outline the chosen strategies and the phases of the project.
- use the forum to organize the work and, if needed, to divide the whole task in parts. Each member could upload his/her work as an attachment.
- Copy and paste all the parts in one complete document, write down the name of the authors of the work and finally one member of the group has to upload the complete document in the proper folder.

The whole task was to be completed in four weeks.

All the groups started with an initial preparatory phase, in order to choose the learning path and to start developing the learning project. Within two or three days, each group chose the theme to develop. Their choice was mainly based on criteria related to the possibility to use the activities in their real classrooms, to the ease in finding materials, to the content similarity with regard to the content traditionally offered within their schools.

The second phase started at this point and was developed using three main types of collaborative strategies that can be described as follows:

1) All the participants decided to assign a coordinating role to a member of the group, letting him/her distribute tasks and than structure in a single project the contributions of each member. Such a transfer of individual autonomy occurred in 2 of 11 groups and in both had a similar development. After the first phase, inherent to the choice of the proposal to be developed, three teachers have gradually delegated the fourth all functions related to the managing of work, in particular those related to building consistent application of various parties from the standpoint of content, structure, graphic representation. The choice of the leader rose, in both groups, from an explicit recognition of the competence of the teacher who assumed the role of coordination. At the same time, that teacher has repeatedly demonstrated his/her willingness to play the role by proposing arrangements for scheduling times, for structuring individual contributions and organizing the final document to be delivered. As regards the tools of the on-line platform, the two groups used similar methods: the forum was indispensable both for the allocation of tasks and for the individual contribution that has been sent as an attachment during the discussion. The final document had, however, been drafted by the constituent coordinator and the coordinator himself placed the document in the folder used for this purpose.
2) Each component of the group developed a part of the work, chosen on the basis of his/her needs and interests. Individual contributions are collected and placed without a further reflection, simply in a sequential order, to compose the final document. Three of the eleven groups have operated in this way, but this strategy does not seem to be the result of an explicit choice, but only a casual opportunity, due to individual needs and to the difficulty of finding shared meeting times to work in a different way. In one of the three groups the choices in terms of strategies and contents proposed have created some discrepancies among the members of the

group. This impasse has not been solved, and each teacher has left unchanged his way of thinking and his personal contribution. In the other two groups each component has posted in the forum the content of his individual contribution. At the end all the individual contributions were juxtaposed in a final document, approved and accepted by everyone in the group.

3) All the members of the group worked on a single document that was built in stages. They continually asked the others for feedback on the contribution they posted. Everyone can intervene and make changes or additions. This third way of working was adopted by 6 groups of 11.

   The specific characteristics can be summarised as follows:

   a) any decision is subject to review by all the members of the group, this implies a shared management of presence in the online learning environment and willingness to share and discuss their work;
   b) the construction of the document is made by interpolation, that is, starting with a first draft, everyone can make changes and additions;
   c) to distinguish individual contributions the groups adopted various strategies: Each member chooses a colour, or a particular font, or, starting from a single document, additions are posted in the forum, where everyone can attach the new document that is being built.

   The division of labour in a similar strategy is not a problem, because each teacher may seek materials, develop strategies, shape stages of work. Very important is the search for coherence that all members of the group undertake to ensure, through a mutual monitoring, especially passing through respect of individual contributions, which do not exclude a proposal of possible changes.

   One of these groups experienced contrasts linked to different ways of conceiving cohesion and consistency of work. In all these groups, on the other hand, there has been a mutual recognition through positive feedback and continued compliance of each proposal.

The first evaluator of the project was the tutor, who knew how the groups worked and how they managed to build the project. A second evaluation was made by a university professor who did not follow the discussion forums and the organizational modalities with which the final products were drawn. His opinions were based solely on the quality of products.

**Table 1 – Evaluation**

| Group | Strategy | Evaluation1 (tutor) | | | | Evaluation 2 (professor) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Individual participation | Group climate | Collective participation | Coherence | Relevance to the task: | Coherence and cohesion of the final product. | Richness of materials: | Originality of their use |
| Primary School 1 | 1 | 4 of 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Primary School 2 | 3 | 3 of 4 | 5 | 5 | 5 | 5 | 4 | 5 | 5 |
| Primary School 3 | 3 | 4 of 4 | 5 | 5 | 4 | 5 | 4 | 4 | 4 |
| Primary School 4 | 3 | 4 of 4 | 5 | 5 | 5 | 4 | 5 | 5 | 5 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Primary .chool 5 | 3 | 4 of 4 | 5 | 5 | 4 | 5 | 5 | 4 | 4 |
| Primary School 6 | 2 | 4 of 4 | 5 | 5 | 3 | 4 | 2 | 5 | 5 |
| Sec. .School 1 | 3 | 2 of 4 | 4 | 4 | 5 | 5 | 5 | 4 | 4 |
| Sec. School 2 | 2 | 4 of 4 | 2 | 2 | 2 | 4 | 1 | 3 | 3 |
| Sec. School 3 | 3 | 5 of 5 | 5 | 5 | 4 | 5 | 3 | 5 | 4 |
| Sec. School 4 | 2 | 3 of 4 | 4 | 4 | 3 | 4 | 2 | 3 | 4 |
| Sec. School 5 | 1 | 4 of 4 | 5 | 3 | 2 | 3 | 2 | 1 | 2 |

## 4. Discussion and conclusion

How can we read the correspondence between these marks and the collaborative strategies adopted? At first we can outline the positive evaluation of works carried out through reciprocity strategies (type 3). These projects have been appreciated for the choice of materials, and because the structure of the various parties is so cohesive.

We can also focus on the problems in projects developed using the strategy n.2. As shown in table 1 the three groups have lower marks, due to the lack of a strict consistency between the various parts that are not directly resulting from each other.

Finally we can try to explain the difference between the evaluation of the group who have adopted the strategy 1. One of the two group received an excellent grade (5), while the other group got the worst mark in terms of content quality and general issues.

It is possible to explain this difference reflecting on the role of the coordinator. In this kind of strategy the coordinator has the greatest responsibility for the final work, so the real relational competences of the leader, in disciplinary fields, professional questions and relational skills heavily influence the final product.

In conclusion we can suggest that there is a relationship between collaboration strategies and quality of the result obtained by the group, but it is not a causal relation. Collaboration, especially inside a reciprocal pattern, is a necessary condition to develop a coherent project, but it is not sufficient. In this particular context personal knowledge and professional skills have a great importance and affect heavily the quality of the product. In this course we find that groups who had a higher number of interaction had the better result in building the project, but it is difficult to generalize because there are a lot of factor that could affect the results. Of course a constant and participative interaction leads to greater reciprocal control and better guarantee of a harmonic and organic development of the final product.

## References

Calvani A. (2005). *Rete comunità, conoscenza. Costruire e gestire dinamiche collaborative*. Erickson.

Collaborative-learning: Cognitive and Computational Approaches. (pp.1-19). Oxford: Elsevier

Davie L. (1989) Facilitation techniques for the online tutor, in Mason, R, Kaye, A., (eds.), *Mindweave: Communication, Computer and Distance Education*, Oxford, Pergamon Press.

Diaper, D. and Sanger, C. (eds) (1993): *CSCW in Practice: an Introduction and Case Studies*, Springer-Verlag.

Dillenbourg P. (1999). What do you mean by collaborative leaning?. In P. Dillenbourg (Ed)

Manca S., Trentin G. (1996) *Desktop Conferencing e Didattica Collaborativa*, in Trentin G. (1996) *Didattica in rete. Internet, telematica e cooperazione educativa*, Garamond, Roma.

Rodden, T. (1993), Technological support for cooperation, in Diaper, D. e Sanger, C. (eds), *CSCW in practice: an introduction and case studie*, Springer-Verlag, London.

Rossi P. G., Toppano E., Magnoler P. (2005) *Negoziazione e reificazione di artefatti nella comunità on line. Un modello teorico e i dati sperimentali*, paper presented in **II Congresso** Nazionale della Società Italiana E-Learning (**SIEL**) Firenze 9-11 novembre 2005.

Salomon G. (1992). What does the design of effective CSCL require and how do we study its effects? *SIGCUE Outlook*, 21 (3), 62-68.

Slavin, R. (1990) *Cooperative learning: Theory, research and practice,* Englewood Cliffs, NJ: Prentice Hall.

Sommerville, I. and Rodden, T. (1993) Environments for Cooperative Systems Development. *Proc. Conf. on Software Engineering Environments*, Reading, 144-155, IEEE Press, 1993, pp. 144 - 155.

Trentin G. (1996), *Didattica in rete. Internet, telematica e cooperazione educativa*, Roma, Garamond.

Trentin G. (1999) Che cosa significa usare Internet nella didattica? in Rivoltella P. C. (a cura di) *La scuola in rete*, GS Editrice, Santhià.

Trentin G. (2001) *Dalla formazione a distanza all'apprendimento in rete*, Franco Angeli.