

About collaborative e-learning

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By definition, collaborative e-learning activities imply that participants perform their work together with other individuals, i.e., other participants, tutors, and teachers. Although there is significant empirical evidence that the cognitive processes that are necessary for learning and knowledge construction occur in social interaction, and that “collaborative learning” is the “royal road” to knowledge acquisition, putting two or more people in the same context is not a warranty neither that they will be able to collaborate, nor that they will be able to learn.

From the very beginning of research in social psychology (Triplett, 1897) it is well established that the mere presence of another is enough to modify the way an individual works, and a huge amount of empirical results have been collected: facilitation, competition, collaboration, group dynamics are only few examples of notions put forward for understanding the variety of phenomena documented; some of them in favor of beneficial effects, other against naïve interpretations that *two people are better than one*. As in many other phenomena both in everyday life and science, on-off interpretations are misleading if not wrong.

At the same time of the beginning of 20 century, the cultural historical approach to development and learning was proposed. It is not room today for discussing the vicissitudes the how and why this approach became for decades a part of what I propose to mention as the *underground psychology*, like the geological phenomenon of karst for rivers.

Puzzling enough since the seventies, psychology blossoms with a huge amount of notions and metaphors, referring to cognition and learning as a construction, social construction, participation, situated, collaborative. At the same time, computer becomes not only a metaphor for cool /cold cognition, but also a partner, a mediator, artifact, tool, and so on.

One could wonder whether the mirror effect between computer/mind (or cognition) in computer science and artificial intelligence and between computer /human being in other domains of psychology is a way of exemplifying the effort scholars witness for trying to operationalize the study of influence of various artifacts on learning.

Both computer/internet and a peer (a tutor, a teacher) should be conceived as partners, as the Other: Thus the presence of other people in the same situation, even in absence of any kind of communication, is per se a factor that leads to focalization of the subject (student) on the interpretation of situation (the meaning of situation), i.e. on the content (the task) and the relation to the partner (be it human or computer or internet devices). What kind of information/interpretation becomes salient, relevant? What kind of task and goal individuals should approach?

I propose two main theoretical tools for empirically cope with these questions: the theory of conflict elaboration and the performance/ learning goals approach.

Summing up a complex body of results, genuine learning is more suitable when the architecture of situation allow partners to enter in a confrontation with different initial solutions, to avoid performance goals, and to solve the conflict between different solutions, focusing on the way to integrate them, instead of entering into a relational conflict with the partner (even it be a computer):

who is right? I am right, you are wrong. It is well documented that conflict of viewpoints may be solved in relational ways (i.e., individuals seek for a compromise, avoid deepening the discussion, or simply try to overrule the partner in order to defend their positive self image), and in this case no positive cognitive gain occur. Conversely, when conflicts are solved in an epistemic way (i.e., by means of in-depth negotiation of information and critical examination of both partners' contributions), social interaction becomes fruitful for progress in acquisition of cognitive tools. Research in social psychology has been describing some of the dynamics that effectively sustain cognitive activities in collaborative activities.

Let us briefly remind some major issues.

As for confrontation among students, an important pre-condition are the quality of their social skills, namely the ability to negotiate the use of different viewpoints as well as the willingness to give mutual support, as the result of the perceived quality of their social relations: it has been documented that friends are more open to deeply discuss about their divergent solutions without entering in competition dynamics.

Another major point is the partners' real or perceived status / role.

As an example of status reciprocal perceived expertise plays a major influence; research on identity threat is a case in point.

As for the partners' role it is important to underline the influence tutors /teachers play: if we take the Bronfenbrenner's ecological approach, concrete interaction between partners could be seen as a micro-system, while tutors/ teachers play their role as inserted in the eso-system of the learning activity. The reason I propose this theoretical framework (others of course are completely plausible!) is to suggest the opportunity to discuss and sharing, during this conference, the theoretical framework each of us is inspired by, besides the results of empirical research.

Another issue does concern the students' achievement goals. Moving from emphasis on motivation as an inner property of individuals, recent social conceptualizations about achievement goals (Dweck & Elliot, 1983; Elliot & Mc Gregor, 2001) have shed light on the positive/negative effects of goal pursuit in learning contexts. Briefly stated, goals have been differentiated between mastery/learning goals ("my aim is to improve as much as possible") vs. performance goals ("my aim is to perform well/better than others"). It appears that holding (or experimentally inducing in subjects) mastery goals positively influence persistence in effort, self-regulated learning, open-mindedness, as the goal is not simply to perform but rather to profit as much as possible from learning opportunities. The effects of performance goals are more complex. Holding "performance-avoidance" goals (trying to avoid failure) induces negative emotions and cognitions, low persistence in effort, withdrawal, and it is negative related to achievement; holding "performance-approach" goals (seeking for good performance and success) is related to high achievement when intermediate feed-backs are positive, but is related to negative emotions and withdrawal in case of ongoing negative feed-backs.

These results are important since it has been shown that goals are not only a property of individuals, but they are inserted in the educational policies of all school systems and stakeholders: I only quote today the emphasis in results of OCSE- PISA 2006 surveys and the inter-countries comparison, which sound like an amazing football European champions league: when some students will be awarded with a gold book, instead of a gold football?

it seems very clear and even trivial that in everyday academic systems performance goals not only are prevalent, but they are positively marked. In my opinion the issue of achievement goals could be adequately and theoretically conceived as a part of the macro-system of learning activities in Bronfenbrenner's terms, or put in another theoretical framework, as a constitutive component of social representations of education, which play a major role in inspiring both teachers and students, and permeate everyday life of school systems. Moreover achievement goals have been empirically manipulating with interesting results.

When interacting on a learning task, individuals may experience two different goals: Understanding the problem, or showing each other their competences. When a conflict (confrontation of divergent propositions) emerges from this interaction, it can be solved either in an epistemic way (focused on the task) or in a relational way (focused on the social comparison of competences). The latter is believed to be detrimental for learning. Moreover, research on collaborative learning shows that when they share identical information, partners are led to compare to each other, and are less encouraged to collaborate than when they share complementary information. I only quote an example of this research. An epistemic vs. relational conflict vs. no conflict was provoked in dyads composed by a participant and a confederate, working either on identical or on complementary information. Results show that, if relational and epistemic conflicts both entailed more perceived interactions and divergence than the control group, only relational conflict entailed more perceived comparison activities and a less positive relationship than the control group. Epistemic conflict resulted in a more positive perceived relationship than the control group. As far as performance is concerned, relational conflict led to a worse learning than epistemic conflict, and—after a delay—than the control group. An interaction between the two variables on delayed performance showed that epistemic and relational conflicts were different only when working with complementary information. Summing up, the importance of the quality of relationship when sharing information during cooperative learning, a crucial factor to be taken into account when planning educational settings.

Classical studies on socio-cognitive conflict (Carugati, 2004) have shown that interaction with peers (rather than with experts, adults, teachers, etc.) may be beneficial for acquiring more advanced cognitive skills. Moreover, a huge amount of studies has proposed that minority influence (i.e., being exposed to a source of influence that is minoritarian in our groups of reference) is more likely to promote deeper scrutiny of information, creative and divergent thinking, falsificatory approach to hypothesis testing in deductive reasoning, knowledge transfer and generalization of learning.

On the other hand, majority influence has been proved to stimulate convergent thinking, restriction of attention to elements already present in the cognitive field (focussing), confirmatory bias in formal and informal reasoning, tendency to protect one's own points of view rather than considering alternatives (either in formal reasoning or in argumentation. Anyhow, for minority influence, or peer-to-peer confrontations to be effective, it is necessary that all participants engage in the group activity, put forward their point of view, and are encourage to sustain their claims even if they are minoritarian in the group, and they appear to be incorrect at a first sight. On the one hand, because holding minoritarian or "loosing" position is not easy under group pressure, participants who find themselves in such situations may be likely to retire from group work, or to conform to the positions of the majority. On the other hand, the majorities may be likely to rule out participants with different points of view. In both cases, confrontation becomes a matter of relational power, and the beneficial effects of social interaction would be lost.

I should close, but let me quote a brief part of a paper I recently read whose title is

If Socrates had a PC:

If Socrates had a PC, there is no doubt that he would have mastered the nuances of the device without reluctance, as he once stated, 'Wisdom begins in wonder.' According to Socrates: There is only one good, knowledge, and one evil, ignorance.

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