EUROPEAN SCIENCE FOUNDATION
SETTING SCIENCE AGENDAS FOR EUROPE

Exploratory Workshop Scheme

Standing Committee for Social Sciences (SCSS)

ESF Exploratory Workshop on

SOCIAL, COGNITIVE AND AFFECTIVE DIMENSIONS OF COLLABORATIVE LEARNING INTERACTIONS: TOWARDS AN INTEGRATED ANALYSIS

Paris (France), 25-27 May 2009

ABSTRACTS

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ABSTRACTS

Abstracts are presented in the order of presentations in the preliminary programme.

"Contextual nature of collaborative knowledge construction"

Maarit Arvaja, Päivi Häkkinen (Finnish Institute for Educational Research, Jyväskylä, Finland)

While much of the work of analyzing collaboration in the online contexts has concentrated on structures or nature of talk from a 'productive discussion' perspective (e.g. Weinberger & Fischer, 2006), less attention has been paid to discourse and the purposes it serves to accomplish in its specific context. This means that in order to analyze collaborative learning we need to go beyond analyzing structures of talk separated from their contexts in order to also explore how physical and socio-cultural aspects are manifested in students' activity (e.g. Black, 2007). Subsequently, this presentation will focus on the core theoretical and methodological foundations for our long-term research on collaborative learning. The particular aim in our analyses approaches has been to better understand why some collaborative situations are more productive than others.

As a core of this presentation, we will present a multidimensional coding scheme developed for analyzing contextualized process of collaborative knowledge construction during an asynchronous web-based discussion (e.g. Arvaja, 2007). The overall analytical approach to be presented can be regarded to be based on 'sociocultural' discourse analysis, as the methods aim to explore how different cultural tools mediate shared meaning making and, thus, how discourse is embedded in its specific context (Mercer, Littleton & Wegerif, 2009). One focus of the developed analysis is on the functional analysis of communication (Kumpulainen & Mutanen, 1999), which gives knowledge on the purpose and the 'quality' of discussion. The developed method focuses also on the thematic content of the discussion as well as on the contextual resources (Linell, 1998) used for knowledge construction. Content analysis of the messages explores the thematic network of the messages, whereas contextual resources for their part are used as an analytical tool in studying what immediate and mediated resources students use and reflect in the process of shared meaning making. Contextual resources refer to those aspects of the potential context that the participants make relevant in the on-going activity. In addition to the analysis of the functions, resources and themes of discussion, discursive features (Gee & Green, 1998) of the discussions are analyzed to deepen the interpretations made based on the coding category. Quantifying the analysis of communicative functions and resources can offer valuable first-hand knowledge on the general similarities and differences in collaborative activity between different groups. However, only a detailed qualitative analysis of the relations between specific thematic content, communicative functions and contextual resources as well as discursive features of discussion makes it possible to gain deeper understanding about the reasons behind these similarities and differences. From collaboration point of view the focus of this interpretative analysis is both on the dynamic and historical aspect of discourse (Mercer, 2008). Thus, it opens up the "dialogicality" of the situation (Grossen, 2009). It shows how in collaborative situation there is always "here-and-now" and "there-and-then" dimension (Grossen, 2009).

References

Arvaja, M. (2007). Contextual perspective in analysing collaborative knowledge construction of two small groups in web-based discussion. International Journal of Computer-Supported Collaborative Learning, 2(2/3), 133-158.

Black, L. (2007). Analysing cultural models in socio-cultural discourse analysis. International Journal of Educational Research, 46(1-2), 20-30.

Gee, J. P. & Green, J. L. (1998). Discourse analysis, learning and social practice: A methodological study. Review of Research in Education, 23, 119-169.

Grossen, M. (2009). Social interaction, discourse and learning. Methodological challenges of an emergent transdisciplinary field. In K. Kumpulainen, C. Hmelo-Silver & M. César (Eds.), Investigating classroom interaction (pp. 263-275). Sense Publishers.

Kumpulainen, K., & Mutanen, M. (1999). The situated dynamics of peer group interaction: An introduction to an analytic framework. Learning and Instruction, 9(5), 449-473.

Linell, P. (1998). Approaching dialogue. Talk, interaction and contexts in dialogical perspectives. Amsterdam: John Benjamins.

Mercer, N. (2008). The seeds of time: Why classroom dialogue needs a temporal analysis. The Journal of the Learning Sciences, 17(1), 33-59.

Mercer, N., Littleton, K. & Wegerif, R. (2009). Methods for studying the processes of interaction and collaborative activity in computer-based educational settings. In K. Kumpulainen, C. Hmelo-Silver & M. César (Eds.), Investigating classroom interaction (pp. 27-42). Sense Publishers.

Weinberger, A. & Fischer, F. (2006). A framework to analyze argumentative knowledge construction in computer-supported collaborative learning. Computers & Education,46, 71-95

"Dimensions of the quality of collaborative learning interactions"

Anne Meier, Hans Spada (Institut für Psychologie, Abteilung Allgemeine Psychologie, Freiburg, Germany)

We propose a descriptive framework for structuring the assessment and promotion of collaborative learning interactions. The quality of collaborative learning interactions is conceptualized on a set of collaboration dimensions addressing central communicative, cognitive, coordinative, interpersonal, and motivational factors involved in collaborative learning. We have employed this framework to assess the quality of collaboration in different computer-supported collaborative learning environments. For this purpose, we have developed an adaptable rating scheme that allows an economic assessment of collaboration quality by quantitatively rating nine qualitatively defined dimensions: sustaining mutual understanding, dialogue management, information pooling, reaching consensus, task division, time management, technical coordination, reciprocal interaction, and individual task orientation (Meier, Spada, & Rummel, 2007). Meanwhile, the rating scheme has been employed in a variety of CSCL settings, e.g. in a laboratory study in which students of psychology and medicine collaborated over a desktop videoconference system to solve complicated patient cases (Rummel, Spada, & Hauser, 2009) as well as in a classroom setting in which computer science students collaboratively designed a graphical representation of a computer algorithm (Voyiatzaki et al., 2008). Further, this scheme was used to promote collaboration quality by giving adaptive feedback based on an assessment of collaboration quality (Meier et al., 2008). Finally, the proposed framework can be used as a starting point for "zooming in" on specific collaboration processes underlying its dimensions, for example the cognitive and communicative processes involved in collaborative inferences (Meier & Spada, 2008).

Meier, A., Spada, H., & Rummel, N. (2007). Evaluating collaboration: a rating scheme for assessing the quality of collaborative process. International Journal of Computer-Supported Collaborative Learning, 2, 63–86.

Meier, A., & Spada, H. (2008). Promoting the drawing of inferences in collaboration: insights from two experimental studies. Proceedings of the ICLS 2008, Utrecht, June 2008.

Meier, A., Voyiatzaki A., Kahrimanis G., Rummel, N., Spada, H., & Avouris, N. (2008). Teaching students how to improve their collaboration: Assessing collaboration quality and providing adaptive feedback in a CSCL setting. Paper presented as part of the symposium "New Challenges in CSCL: Towards adaptive script support" (N. Rummel and A. Weinberger). Proceedings of the ICLS 2008, Utrecht, June 2008.

Rummel, N., Spada, H., & Hauser, S. (2009). Learning to collaborate while being scripted or by observing a model. . International Journal of Computer-Supported Collaborative Learning,4, 69-92.

Voyiatzaki, E., Kahrimanis, G., Avouris, N., Meier, A., Rummel, N., & Spada, H. (2008). Rating the quality of collaboration during networked problem solving activities. Paper presented at the 6th International Conference on Networked Learning. 5&6th May 2008, Halkidiki, Greece.

"Critical Care Teams Analyzing their Collaborative Work Using Video"

Klas Karlgren (Karolinska Institutet, Stockholm, Sweden)

The dynamic nature of critical care contexts places high requirements on medical teams. Improving teamwork and communication may help reduce and manage errors (Thomas, Sexton, & Helmreich, 2004) and studies have shown that more than half of the deaths that occur have been judged avoidable under conditions of better teamwork (Risser et al., 1999). One of the most frequently practiced forms of acute resuscitation is neonatal resuscitation (Carbine, Finer, Knodel, & Rich, 2000) which is especially challenging. Firstly, the medical teams are engaged in a demanding cognitive problem-solving and decision-making task of coming up with a diagnosis and giving treatment under extreme time-pressure. They may be faced with a patient who requires vigorous resuscitation immediately at birth but without the benefit of having a sedated or anesthetized well-monitored patient as found in routine operating room cases (Halamek et al., 2000). Secondly, to be successful, the team needs to have team members which collaborate efficiently so that all possible resources are utilized thereby putting emphasis on the social aspects. Moreover, neonatal resuscitation teams are interdisciplinary and typically loosely formed since resuscitation may be needed on a short and unexpected notice: all team members are typically not present from the beginning (e.g., pediatricians, anesthesiologists and other specialists may be summoned) and do not arrive at the same time making information sharing (e.g., assessment of the patient's status) even more complicated. Furthermore, the team members have not necessarily worked and trained with each other before and do not have explicitly assigned roles as, e.g., members of an emergency room team do

Thirdly, the time pressure and the seriousness of the task put extraordinary emotional stress on the team members. Hospitals are traditionally very hierarchical work place contexts while medical teams are trained during critical care to create an atmosphere which allows for all team members to take part in decision making and evaluation as well questioning decisions of seniors. This abstract reports on analyses on special simulation training courses of medical teams. An emotional aspect added by these courses is that the teams are video recorded and then analyzed together with instructors and peers or colleagues.

In this study medical teams' analyses of their own performance in simulated cases by investigating the teams in debriefings following medical teamwork. The debriefings are video recorded for analysis. Focus is on the team members' talk and analyzing of among each other and with instructors and how it is carried out with respect to the video recordings of their own performance as well as to a conceptual tool which is introduced to support their analyzing. Particular interest is on the quality of the teams' analyzing and how the quality of this analyzing develops.

"Self-regulation and motivation in collaborative learning: a process analysis"

Sanna Järvelä, Hanna Järvenoja, Tarja-Riitta Hurme (Department of Educational Sciences and Teacher Education, University of Oulu, Finland)

Effective regulation of emotion, motivation and cognition in social interaction has been shown to be crucial in achieving problem-solving goals (Boekarts, Pintrich & Zeidner, 2000). For example, regulating emotions deriving from social challenges have shown to increase the group engagement among the collaborative partners (Järvenoja & Järvelä, 2009), maintaining motivation to learn within the group requires adaptive use of regulation strategies (Järvelä, Järvenoja, & Veermans, 2008), and making metacognition visible increases possibilities for joint regulation in computer supported collaborative learning tasks (Hurme & Järvelä, 2005). Thus, different social factors in collaborative learning relate to motivation and metacognition, to the extent that many students are not be able to apply effective learning strategies in the face of difficulties, and may thus become dispirited and 'give up' if they don't engage in self-regulation (Winne & Jamieson-Noel, 2002).

In our research we have approached self-regulated learning from situated perspective and identified motivation and metacognition as essential parts of regulation process in different types of learning contexts (Järvelä, Volet & Järvenoja, 2009). Compared to more conventional learning contexts, social learning situations are specific in that an individual group member's regulation is not enough but effective regulation is required from all group members. Especially in collaborative learning, it is necessary to regulate both group members' individual and groups' joint engagement and learning process. That is, in successful collaboration regulation processes are twofold; they are composed of parallel, individual and socially shared processes (Järvenoja, Volet & Järvelä, 2009).

The conceptual discussion of interpersonal regulation of motivation and metacognition is active, but the empirical evidencing of phenomenon is still rare – probably because of methodological challenges to tackle "self-regulation in action". In our empirical studies on social learning situations (e.g. Hurme, Merenluoto, Salonen & Järvelä, 2009; Järvelä, Järvenoja & Veermans, 2008; Järvenoja & Järvelä, 2009) general level decontextualised information on core processes of self-regulation is combined with contextualised micro-level and process-oriented data from different groups of students.

In this presentation we review the different types of data and methods of analyses from our empirical studies on self-regulation in social learning situations. We elaborate and explain our reasoning for methodological solutions by using illustrative examples on collecting and analyzing the data of motivation and metacognition as a social process within a group with individual accounts and interpretations of their individual and group processes.

References

Boekaerts M., Pintrich, P. R. & M. Zeidner (2000), Handbook of self-regulation: Theory, research and applications. San Diego, CA: Academic Press.

Hurme, T. & Järvelä, S. (2005). Students' activity in computer supported collaborative problem solving in mathematics. International Journal of Computers for mathematical learning, 10, 49–73.

Hurme, T., Merenluoto, K., Salonen, P. & Järvelä, S. (2009, submitted). Regulation of group's problem solving – a case for socially shared metacognition?

Järvelä, S., Järvenoja, H., Veermans, M. (2008). Understanding dynamics of motivation in socially shared learning. International Journal of Educational Research, 47(1), 122-135.

Järvelä, S., Veermans, M. & Leinonen, P. (2008). Investigating students' engagement in a computer-supported inquiry - a process-oriented analysis. Social Psychology in Education, 11, 299–322.

Järvelä, S. & Volet, S. (2004). Motivation in real-life, dynamic and interactive learning environments: Stretching constructs and methodologies. European Psychologist, 9, 4, 193-197.

Järvelä, S., Järvenoja, H. & Volet, S. (2009, submitted). Motivation in collaborative learning: new concepts and methods for studying social processes of motivation.

Järvenoja, H., & Järvelä, S. (2005). How students describe the sources of their emotional and motivational experiences during the learning process: A qualitative approach. Learning and Instruction 15(5), 465-480.

Järvenoja, H., & Järvelä, S. (2009, in press). Emotion control in collaborative learning situations - Do students regulate emotions evoked from social challenges? British Journal of Educational Psychology.

Järvenoja, H., Volet, S. & Järvelä, S., (submitted). Regulation of emotions in socially challenging learning situations: An instrument to measure the adaptive and social nature of the regulation process.

Winne, P.H. & Jamieson-Noel, D. (2002). Exploring students' calibration of self reports about study tactics and achievement. Contemporary Educational Psychology, 27, 4, 551-572.

"Group Self-regulation during Collaborative Problem Solving"

Pierre Dillenbourg, Khaled Bachour (CRAFT-EPFL, Lausanne, Switzerland)

In face-to-face collaborative learning, unbalanced participation often leads to the undersirable result of some participants experiencing lower learning outcomes than others. Providing feedback to the participants on the level of their participation could have a positive effect on their ability to self-regulate, leading to a more balanced collaboration. We propose a new approach for providing this feedback that takes the shape of a meeting table with a reactive visualization displayed on its surface. The meeting table monitors the collaborative interaction taking place around it using embedded microphones and displays a real-time feedback to the participants on an array of LEDs, inviting them to balance their collaboration.

"Re-thinking the collaborative experience of learning in a Web2.0 ecology"

Charles Crook (School of Education, University of Nottingham, United Kingdom)

Research into collaborative learning has tended to concentrate on understanding a particular sort of learning situation. Typically, it is episodic (rather than open ended), it takes place at circumscribed sites, it is socially egalitarian and, within it, participation tends to be more orchestrated than improvised. Moreover, research analysis has been preoccupied with vocal or textual items that are extracted from a flow of conversational exchange. Finally, the outcome of any such analysis, as applied to such situations, tends to stress impacts that are cognitive (rather than affective).

Yet outside of educational contexts, collaboration is often far more messy. Moreover, inside of educational contexts collaborative learning is increasingly becoming messy - as a result of new technologies that support new modes of social coordination. These technologies go beyond digital containers for conversation (email, listservs, chat etc.). Consequently, the management of intersubjectivity within these collaborative environments becomes more challenging. This may apply in particular to protecting the affect often associated with the intimacy of more traditional (and more researched) scenarios for collaborating. On the other hand, these new modes of mediating joint activity may be more generous in how they allow for shifting in and out of intersubjectivity. The significance of these developments will be explored with a case study of authentic collaborative learning experienced in a more open-ended, distributed and loosely-coupled social configuration.

"Affects and subjective appraisal in collaborative interactions"

Béatrice Cahour (CNRS-Telecom ParisTech, Paris, France)

In a collaborative situation, the relation to the other participants (e.g. in terms of positionings) is an important factor of the affective individual and collective dynamic, and studies indicate how positive or negative affects may have an impact on decision making, negotiation and cooperation (e.g. Isen 1993, 2004).

Affects are highly subjective and contextual; they emerge from a very personal construction of the meaning of a specific situation, a constructive process which is called "appraisal" by Scherer & al (2001) and which consists for the subject in interpreting and evaluating the situation, more or less consciously, in relation to his/her own concerns (goals, values, interests,…) and past experiences.

As stated by Vygotsky, the behaviour is oriented by these internal movements (like affects and motives) but they cannot be observed directly and they are often hidden to the social scene. Observable cues in the interactions are not sufficient to infer the complex affective movements developed by the participants during an interaction ; we then need "re-situating" interviews (based on traces and/or specific techniques of questioning) to approach them and enrich our extrinsic (and often projective) observer point of view.

We will give two examples of short sequences of collaborative interactions where complex affects arise and the lived experience of one of the participants, and we will see how they impact their reaction and the collaborative interaction. Also the complementarities of intrinsic/extrinsic views will be highlighted.

"Changes in narrative and argumentative writing by students discussing 'hot' historical issues"

Baruch Schwarz, Tsafrir Goldberg (Hebrew University, Jerusalem, Israel)

Growing attention is given to students' encounter with multiple historical perspectives and sources, especially in the context of socially and emotionally charged historical issues such as inter-ethnic relations. However, little empirical research has been devoted to emergent learning processes while engaging in collective argumentation on such issues and on its effects on students' historical narratives and understanding. 65 Israeli 12th grade students (32 oriental, 33 western) participated in a study in which they first expressed their standpoint concerning a hot issue in Israeli history (the 'meting pot policy' which is hot with regard to ethnicity) through an individual essay about the impact of the Israeli 'melting pot' policy on the immigrants of the 1950's immigration waves and on the state. The students then studied multiple sources that provided different and controversial perspectives on the issue: they first evaluated the sources and then discussed the issue in small groups. The students were then invited to write a new essay on the hot issue. Small group discussions were recorded. Students' essays were analyzed according to narrative, attitudinal and argumentative characteristics (plot, agency, stand and argumentative writing level). Findings reveal significant changes in narratives and attitudes following the study of multiple sources, changes which were partly influenced by ethnic identity. Western students, which began as more critical towards the melting pot policy and the (western) founding fathers than oriental students, ended as more apologetic. Contrary to persuasion theory assumptions, students holding more determined and confident views tended more to change their views and diminish their certainty. Narrative - attitudinal change was accompanied by improvement in level of argumentative writing, and was mediated by use of historical source information. These results suggest the influence of collective memory and social identity on students' learning and appropriation of historical knowledge. Students' narratives were used for repositioning within a dominant (counter) narrative, argumentative writing serving to back up the narrative-attitudinal moves. In the workshop, we will trace how one student who participated in the four phases of the study (preliminary essay, evaluation of historical texts, participation in a small group discussion, final essay) modified her narrative. In particular we will analyze the role of the small group discussion in this change.

"Drawing upon cultural-historical approaches to depict mechanisms of tension resolution in interdisciplinary knowledge work"

Patrick Sins (Research centre Learning in Interaction, Utrecht University, The Netherlands)

A central interest in developing professionalism resides in the potential for practitioners to learn from and with one another in ways that support transformations in their knowledge practices. Learning collaboratively involves an orchestration of cognitive-epistemic aspects that are intertwined with socio-relational as well affective aspects involving negotiation between multiple perspectives, interests, practices and traditions. Indistinct roles, diverging agendas, different practices or routines and mismatched time lines risk leading to problems of tension or disturbances which in a group can easily disable learning but which can be viewed as significant sources for change and development.

A central premise of the socio-historical approach to learning views historically accumulating structural tensions or contradictions as significant sources for change and development. For instance, in his adaptation of cultural-historical activity theory, Engeström (1987) advocates that tensions serve as a springboard for changing practices of working communities. Rather than seeing tensions as having adverse consequences, Engeström conceptualizes them as the potential driving force for innovation and improvement of practices. As the contradictions of a particular activity system are aggravated, some individual participants begin to question and deviate from its established norms. Learning is accomplished when contradictions lead to a reconceptualization of the object and motive of a particular activity to embrace a more diverse horizon of possibilities than in the previous activity.

Similarly, Barab et al. (2004) argue that the investigation of how contradictions are approached and resolved as key to understanding the process of learning and change. Thus, the identification of tensions and their resolution helps to identify the dynamic forces of change as well as to illustrate how transformation can be tracked. The examination of change is facilitated by the investigation of how tensions are approached and resolved. Still, the ways in which cognitive-epistemic, socio-relational as well affective aspects interact to orchestrate the longitudinal process of tension resolution has sparsely been touched upon in empirical endeavors.

During the workshop, data will be presented which has been collected in a study which investigated transformations in teachers' coaching practices as a result of discursive activities reflecting tensions during a two-year lasting university-school partnership which aimed at the redesign and implementation of a learning module based on knowledge creation principles. Identification of tensions during meetings helped participants to focus their efforts on the root causes of problems or dilemmas identified in teachers' coaching practices. Development was accomplished when these tensions led to a reconceptualization of the current coaching practices which subsequently helped teachers to transform their practices fostering students' learning. Goal of this presentation will be to share and discuss patterns in the cognitive-epistemic consequences of tension resolution in the university-school partnership.

"Tension-relaxation patterns and uptake of information in educational dialogues"

Jerry Andriessen (Wise & Munro Learning Research, The Hague, The Netherlands), **Michael Baker** (CNRS-Telecom ParisTech, Paris, France), **Mirjiam Pardijs** (Utrecht University, Utrecht, The Netherlands)

One pedagogical goal of collaborative argumentation-based learning is to encourage students to broaden and deepen their understanding of a space of debate (Baker et al. 2003). Since deepening cognitive conflicts can create tension within interpersonal relations, students need to manage its release whilst preserving an effective collaborative working relation (Andriessen, Baker & van der Puil, in press). We present and compare data from three different situations of argumentative interactions. The first involves argumentation in distant CSCL, by dyads of secondary school students. The second involves 13-14 year old students engaged in a design project taking 16 weeks of 2-hour meetings; interactions are oral, with coaching by several teachers. The third situation involves secondary students debating in small groups in the classroom, using face-to-face networked collaboration. We analyse argumentative interactions in each situation in terms of patterns of tension/relaxation, in relation to the breadth/depth of the argumentation. This allows us to relate developments in the socio-emotional dimension of collaboration to the form and content of the argumentative interaction. We then present an analysis and comparison of (the absence of) the three argumentative practices in which the activities were embedded in order to propose a framework for understanding the relationship between argumentative practice and the management of social tension in collaborative learning tasks. Our analysis shows that interpersonal tensions resulting from one cognitive conflict can take time to subside, thus creating a higher threshold of tension for subsequent conflicts.

"Learning, inscriptions and knowing"

Roger Säljö (LinCS, Department of Education, Göteborg University, Sweden)

An important element of the development of knowledge and skills in society is the ability to document and communicate human experiences and insights. The prime mechanism for doing this is language and talk, but through history other systems have been invented. Committing experiences to text, images, diagrams or some other symbolic form implies transforming them into information by means of inscriptions. The advantages of such forms of mediation is that information can be stored and communicated; an external social memory of unlimited size can be built up. To make use of the resources stored in the external memory, the individual has to be familiar with the specific intellectual technologies and meaning-making practices which are relevant for codifying knowledge and 'unpacking' inscriptions . This includes mastery of written language, number systems, graphic representations and other symbolic sign systems as well as a range of conventions that concern how knowledge is mediated in different genres. However, every act of converting information into locally relevant knowledge is a creative act. There are generally several meaning-potentials, and inscriptions can never be complete with respect to how they mediate what they represent. There is always a problem of what Vygotsky refers to as the tension between lexical meaning and local sense. An interesting analytical problem in communication of knowledge is how people learn to master this tension between inscriptions and their situated sense, i.e. how they learn to convert information to knowing.

"On some forms of support for verbal expression during the development of complex language skills in children"

Christian Hudelot (CNRS-Université Paris Ouest La Défense, Paris, France)

On the basis of some examples from my own research, I propose to reflect upon the notion of scaffolding, as it was developed in the work of J. S. Bruner, on tutorial interactions.

If one accepts to consider that children do not acquire their languages independently of the circuit of communication in which they participate (Bakhtine; Halliday; Bruner; Tomasello), the notion of scaffolding can help us to show the impacts of conversation on the capacities of the child to put complex discursive genres into words, such as description, narration or explanation.

Beginning from an initial distinction between naïve and knowledgeable scaffolding, I propose to distinguish, on the basis of examples, between the main types of accompaniment for verbal expression, scaffolding, compensation, accompaniment, helping-out and teaching.

The examples will be drawn from adult-child dialogues in family or institutional contexts, and from an experience of verbal expression of a story based on a series of (unworded) images.

I shall conclude with reflexions on the fact that asymmetric conversation is, as Bruner notes, "capable of perhaps producing effects that go well beyond, for the person who is learning, the assisted accomplishment of the task".

"Identity dimensions in argumentative learning interactions: methodological and theoretical discussion from the analysis of argumentative productions mediated by Digalo"

Nathalie Müller-Mirza (Institut de Psychologie, Université de Lausanne, Switzerland)

From a socio-constructivist and socio-cultural approach on learning, which claims the central role of language, social interactions, and socio-cognitive conflicts in thinking, argumentation is meant helping learners to elaborate scientific concepts: through the confrontation with other positions and decentration processes, participants are lead to explore and construct new knowledge.

If social interactions can be seen as a powerful tool for learning (where social dimensions are merely constitutive of the cognitive dimensions rather than a "factor" of learning [Grossen, 1988]) they also are the place where interpersonal conflicts and power relationships may occur. And particularly in an argumentative situation. It seems that participating into an argumentative communication can be understood as a "risky" situation in which the relationship and the friendship are in danger (Stein & Albro, 2001; Van der Puil, Andriessen & Kanselaar, 2004). When people take part in an argument they frequently seem to be less interested in "finding the truth" than in achieving social effects such as gaining respect or influence or marginalizing an opponent (Schwarz & Glassner, 2003): they "confront each other" rather than confronting about the object of discussion (Andriessen, Baker & Suthers, 2003). In this perspective, aiming at sustaining both the cognitive and the social effort in argumentation, some ICT tools, like Digalo environment, have been developed to support argumentative activities in classrooms (Muller Mirza & Perret-Clermont, 2008; Muller Mirza, Tartas, Perret-Clermont & de Pietro, 2007).

In this talk I shall present results from studies in educational contexts in which Digalo software has been used. The data I shall discuss come from argumentative designs in which we tried (with the teachers with whom we collaborated) to open a "space of confrontation" (Perret-Clermont, 1988), by, for instance, inviting participants to play the role of characters or perspectives which are at stake in the debate. In our perspective, it was a way to "work with" the identity processes that are embedded into the cognitive processes (the participants do not confront each other but with the characters they are playing).

The data will be analysed through methodological tools that take into account the dynamics of argumentation and of knowledge co-construction, focusing both on the product levels (contents, arguments, etc. that are produced by the participants) and on the process level (who is talking to whom, how do participants articulate their arguments toward others? How do they take into account arguments formulated by others? etc.). This "dialogical" methodology will lead us to discuss 1) the interdependency between technological, social and cognitive dimensions; and 2) the complex relationship between identity and learning processes in argumentation.

Andriessen, J., Baker, M. & Suthers, D. (Eds.) (2003). Arguing to learn: Confronting cognitions in computer-supported collaborative learning environments. London : Kluwer Academic.

Grossen, M. (1988). La construction de l'intersubjectivité en situation de test. Cousset (Fribourg): DelVal.

Muller Mirza, N., & Perret-Clermont, A.-N. (2008). Dynamiques interactives, apprentissages et médiations : analyses de constructions de sens autour d'un outil pour argumenter. [Interactive dynamics, learning and mediation : analyses of the construction of meaning around a tool for arguing] In L. Filliétaz, M.-L. Schubauer-Leoni (Eds.), Processus interactionnels et situations éducatives (pp. 231-254). Bruxelles: De Boek.

Muller Mirza, N., Tartas, V., Perret-Clermont, A.-N. & de Pietro, J.-F. (2007). Using graphical tools in a phased activity for enhancing dialogical skills: an example with Digalo. Computer-Supported Collaborative Learning, 2, 247-272 (issue coordinated by J. Andriessen & M. Baker)

Perret-Clermont, A.-N. (1988). Perspectives: la structuration des échanges symboliques. In A.-N. Perret-Clermont & M. Nicolet (sous la dir. de). Interagir et connaître (pp. 265-270). Fribourg: DelVal

Schwarz, B. & Glassner, A. (2003). The blind and the paralytic: supporting argumentation in everyday and scientific issues. In J. Andriessen, M. Baker & D. Suthers (Eds.), Arguing to Learn: Confronting Cognitions in Computer-Supported Collaborative Learning Environments (pp. 227-260). Dorbrecht : Kluwer Academic Publishers.

Stein, N.L. & Albro, E.R. (2001). The origins and nature of arguments: studies in conflict understanding, emotion, and negotiation. Discourse Processes, 32, 2-3, 113-133.

Van Der Puil, C., Andriessen, J., Kanselaar, G. (2004). Exploring relational regulation in computer-mediated (collaborative) learning interaction: a developmental perspective. Cyberpsychology & Behavior, 7(2), 183-195.

"Gender, social comparison and stereotype threat in collaborative problem solving"

Richard Joiner (Department of Psychology, University of Bath, United Kingdom)

The aim of this paper is to discuss a series of studies concerned with gender differences in computer based collaborative problem solving. In study 1, children worked in either same or mixed gender pairs, but each child had his own computer and no interaction was allowed. Boys out performed girls overall with the sex difference being more polarised in the mixed gender pairs. Study 2 compared co-action pairs (as in study 1) with interaction pairs, where children worked together in pairs at a single computer and there were no restrictions on their interaction. The polarisation of sex differences in mixed gender pairs was found once again in the co-action condition but not the interaction condition. Study 3 compared the verbal and physical interactions of same gender pairs and mixed gender pairs when equivalent tasks were presented on a computer and on paper. Children were placed into either same gender or mixed gender pairs and worked on a computer based presentation and a paper presentation of the same English language task. The main finding was that the children's verbal interaction and manipulation of the physical material were mediated by the mode of presentation. There were no differences between mixed gender pairs and same gender pairs in the paper presentation of the task, however in the mixed gender computer based pairs, boys dominated both the amount and type of verbal interaction and the control of the mouse. These findings are interpreted in terms of processes of social comparison and also in terms of stereotype threat.

"Conversation analysis, accountability and situated knowing"

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In a sociocultural and dialogical perspective Learning to reason in institutional contexts, means learning how to make sense according to specific institutionalised forms of discourse. To learn how to reason in an institutional setting, participants must learn the relevant accounting practices, the authoritative ways of making sense of problems, of knowing how to frame tasks and take action. Certain ways of categorizing and reasoning accompany institutional activities and function as cues and justifications for normative actions in them.

From a research point of view, however, this does not imply that one can analyze participants' interaction against some pre-formulated standard of normative action. Instead learning, which involves a capacity to articulate ideas and arguments in contextually relevant manners, must always be viewed as a creative practice. This constitutive, perspective-setting aspect of language use is present in the immediate situation in the sense that:

[T]he task of understanding does not basically amount to recognizing the form used, but rather to understanding it in a particular, concrete context, to understanding its meaning in a particular utterance, i.e., it amounts to understanding its novelty and not to recognizing its identity. (Voloshinov 1973[1929]: 68)

Thus, if we want to ground our understanding of learning practices as accountable knowing, issues of what Bahktin (1986, p. 94) refers to as responsive understanding are central. In such a perspective, any utterance or claim is shaped by, and crafted in response to, other utterances. Situated knowing can in such instances of interaction be analysed as participants orientation to both social and institutional accountability.

"Appropriation of collaborative learning technologies as an institutional, social and cognitive process"

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This paper is concerned with results of analysis of data gathered from a longitudinal study of an attempt, of three years' duration, to introduce a particular pedagogical approach, based on computer-supported collaborative learning, into a traditional secondary school history-geography classroom, in a lycée on the southern perimeter of Paris. The specific tool considered (http://www.coffee-soft.org) comprises a set of tools (structured CHAT, argument diagrams, co-writing, …) for computer-mediated collaboration across an intranet, whilst students are working face-to-face together in the same room. It was developed within the EU-funded "LEAD" project (http://www.lead2learning.org).

The introduction of a technology, with its pedagogical intentions, into an educational situation does not of course simply render existing activities more or less efficient, it transforms them, within a process of appropriation within which an artefact becomes a cognitivo-technical hybrid entity called an instrument (Rabardel, 1995), synthesising technological affordances and socio-cognitive action schemas. In the first year of our study, we witnessed a transition from a 'traditional' teaching situation (teacher at the front speaking, students writing in own exercise books) to small group work in a computer-room. The transformation of the classroom activity favoured largely so-called negative aspects of groups (dominance, inhibition, violence) and transfer of undesired activities from everyday technological practices (use of sms language and social chat, rather than use of the school discourse genre in doing schoolwork). In subsequent years, with different children in the class, we studied appropriation of the tools across successive debates. Analysis of productions and interactions revealed that tool appropriation must be seen as a transformation of an integrated social system, involving school directors, teachers and students, as learning to use the tools to perform genuinely educational tasks within institutional stakes.

We conclude with reflexions on questions arising from this study, concerning the relations between social contexts and interpersonal relations in the classroom, and cognitive dimensions of tool appropriation.