INFO 616 Enrichment Paper
Reflections on CSCL 2005 – The Next 10 Years

Murat Cakir
June 12, 2005

1. Introduction

In this article I will attempt to reflect on my recent experience at the Computer Supported Collaborative Learning (CSCL) conference in Taipei, Taiwan. Unfortunately it is impossible for any single participant to provide a complete picture of what exactly happened during the conference due to the vast number of workshops and paper presentations conducted within such a short period of time. Therefore, this paper is not intended to provide a comprehensive review of the conference. The content of this paper will be limited to what I was able observe as a student volunteer during the conference.

CSCL is a relatively new field having only 16 years of history. Since the NATO workshop in 1989 that marked the birth of CSCL as a new branch of Instructional Technology (Koschmann, 1996), numerous researchers from different academic backgrounds have contributed to this field. These contributions were documented in a series of 6 CSCL conferences that were held in between 1995 and 2003. The main agenda of the most recent conference in 2005 was to reflect on the accomplishments of the existing CSCL community and to determine where the field needs to move in the next 10 years. Among the 100 accepted papers some considerable number of them focused on the future of CSCL in the next ten years (Hoadley, 2005; Jones, 2005; Kienle, 2005; Koschmann, 1996; Shaffer, 2005; Stahl, 2005; Suthers, 2005; Wegerif, 2005).

As it is documented in the bibliometric studies of Hoadley and Kienle, researchers from North America and Europe have dominated the field in the past ten years (Hoadley, 2005; Kienle, 2005). Thus, in addition to discussing the next ten years, one of the main goals of this year’s conference was to expand the CSCL community to the Asia/Pacific region. Indeed this was probably the main rationale underlying the CSCL community’s decision to hold the 10th CSCL conference in Taiwan.

The rest of this paper is organized in the following way. Section 2 describes my role as a student volunteer at the conference. Subsequent 2 sections provide detailed summaries of the two workshops I attended. Section 4 is a reflection on the paper presentation sessions and keynotes that I followed. The paper will conclude with my reflections on the closing workshop in which prominent researchers in the field discussed the future of CSCL in the next 10 years.

2. My Role at the Conference

During the conference I worked as a student volunteer to help the organizing committee with monitoring and assisting various activities. In particular, I was responsible for taking notes during the workshops and assisting chairs of paper sessions with timing of presentations and technical problems. In addition to general presentations like keynotes and award ceremonies, I attended two workshops and 4 paper sessions as a student volunteer. An army of student volunteers from the National Central University were working with us as well, and they took care of all technical needs of the participants. Moreover, we were assigned to sessions that were parallel to our research interests as PhD students. Therefore, foreign student volunteers like me had a very good opportunity for focusing on the presentations and discussions without being distracted by mechanical details when we were at duty.

Another factor that made this experience a fruitful one for me was the doctoral consortium. This was an excellent opportunity for me to meet with many students around the world having similar research interests and concerns. Moreover, during this event some of the doctoral students who were ahead of me in terms of their research had a chance to present their recent work. Each presentation got intensive feedback from a
committee of professors including Dr. Clayton Lewis from University of Colorado at Boulder, Dr. Chris Quintana from University of Michigan, and Dr. Fu-Yun Yu from National Cheng-Kung University. The feedback provided by the committee was extremely useful for my dissertation work as well, since many of my colleagues were struggling with similar problems as I currently have; such as narrowing down the scope of research, identifying a set of doable research questions, choosing the right methodology etc.

In addition to my role as a student volunteer I also had a chance to do a poster presentation during the conference. My poster was a part of 3 other posters describing our recent work at the Virtual Math Teams project. I had to describe my work in front of a demanding crowd who challenged me with their questions and concerns. Besides giving me hard time with their questions they were also kind enough to give me some supporting comments about my work. Thus, as far as my ongoing research is concerned, this poster session was probably the most fruitful part of my experience at this conference.

3. The Workshop on Micro-Analytic Studies

In this workshop the main goal was to develop a sense of meaning making practices from the participant’s point of view. The units of analysis were the group and their social interaction. A micro-analytic approach based on ethnomethodology relies on the assumption that social action is meaningful. Thus, analyzing how the meaning is achieved through interaction was the main focus of interest during the workshop. Another important aspect of this type of analytic work is that the meaning should be located in the data. In other words, all inferences need to be grounded on the data. Participants were asked to follow this principle when they would like to make observations during the data session.

We looked at the videos and transcripts of 4 fragments. The fragments were obtained from Dr. Koschman’s, Jakob & Ylva’s, Oskar’s and Dr. Nishizaka’s datasets. We spent roughly 90 minutes on each dataset, and analyzed what the participants were doing in each case. Notes from the discussion about the first two data sets and some conclusive remarks about the underlying methodology are outlined below.

3.1 Data Session 1:

The first dataset involved 4 participants in the context of a surgery. On the transcript the participants appear as A, R, C, and T where:

- A: Attendee senior faculty member (person who is responsible for the legal outcome of the surgery)
- R: surgeon in training (using the cutter)
- C: medical student (visitor, watching the surgery)
- T: person video-taping the session (appears once in the transcript)

This transcript was a part of the diexis corpus of Dr. Koschman’s main dataset. (e.g. now, then, there are some typical deictic words). This fragment was indeed an episode of on-site instruction in a medical setting. Through such activities students learn how to be a surgeon.

Discussion on the tools used by the participants:

- The tool that looks like a white pen (the buzz): This is the dissection device to cut through tissues. It is electrified; it burns as it cuts tissues to avoid bleeding on minor veins. It does not work when the tissue is covered with too much water or blood.
- They use two tools to suck up the water and blood (they call it the sucker). One is a sponge like device which is used for dealing with relatively less amount of liquid. The other works like a vacuum cleaner and it can suck more liquid out of the surgery area.
- Right angle clamp tool: This is an L-shaped pair of tongs made by steel. This is used for holding a tissue to facilitate a cut. It also protects the tissues that lie under the clamp (i.e. the buzz won’t effect such tissues)
Some important questions regarding the activities of participant R:

- How does R know it is the time to cut?
- How does R know where he should cut?
- When is it a good time to do the cut?

A uses either right angle clamp tool or her fingers to make explicit where R should cut. They usually cut thin tissues, which are almost transparent. Such tissues are easier to deal with for surgeons since no vein passes through it, and thus the cut won’t cause bleeding (surgeons want to avoid bleeding since it blurs their vision). Sometimes they need to cut very thick tissues. In these cases the surgeon who is running the operation has to make a decision before cutting that part. The danger is cutting a big vessel there, which results in bleeding and make hard for surgeons to see where they are cutting (this is usually not a lethal mistake).

A is engaged in two conversations. First of all, she is engaged in the procedural job; that is guiding the actions of R. In the mean time, she talks to the student as an instructor to describe the details about the surgery.

3.2 Data Session 2:

**Background Information:**
In this session we watched the video-clip of a collaborative session in which a group of 10 year old kids from Sweden were playing with an interactive simulation system. We observed an episode where the kids were doing very basic collaborative programming via cards projected over a special display. The goal of this activity is to teach kids the basics of object oriented programming. Jakob and Ylva’s main interest is to analyze how their technological artifacts have shaped the discussion of this group.

Jakob and Ylva distributed handouts to facilitate the data session. The transcript had the original utterances in Swedish as well as snapshots from the video. Two types of translations were made for each utterance. The first one was a word by word translation, whereas the other one was a smoothed version for providing better English equivalents.

The simulation system is composed of a projector, a white screen, and a back-end program that displays the behavior of objects based on a simple ontology. The ontology involves objects and a set of actions based on the colors assigned to each object. The objects were created by the kids in an earlier muddling play session. Jakob and Ylva took the pictures of these characters and produced plastic cards for each of them. The cards were then used by the kids to project their characters on the screen.

In addition to such characters the ontology also includes colors like blue, green, and red. By assigning colors to objects kids can determine whether an object is evil/friendly, which character can eat another object, and how a character can move on the screen (e.g. jump slowly/fast). For instance, in this transcript blue was chosen to be friendly, and there was a rule stating that blue can eat green. Based on the assignments made by the kids the program animates the encoded behavior on the screen. For example, if the group makes a sausage blue and a character is defined to be green, and if there is a rule saying that green can eat blue, then that character can eat the sausage (which is displayed as an animation).

In this activity the selection of objects and their colors (i.e. objects behavior) need to be collaboratively decided by the group of kids. Thus the negotiation is usually centered on what color they should use for each object. By doing that the kids are collaboratively negotiating the contents of the ontology in their programming environment. The objects are created by the kids, and they discuss what these objects mean during the activity. The programming environment generates a couple of questions for the kids to answer: they have to choose a color; they have to choose what eats what, etc. In other words, the ontology is socially constructed by the kids, but mediated by the technology and the mentors.
Discussion on the transcript:
The first proposal was to assign blue to the baby (Niki/Ivan), but this was refuted by Niki shortly after. Then as a response to the moderator's (Jakob) question (“what should it be?”) Seb proposed to use green. (Note that Seb was controlling the mouse in this episode). Carl mentioned that green was friendly. Then Seb supported his proposal by reminding that red were devil.

When Niki said “it eats blue” to remark the relationship that “green eats blue”, the discussion shifted from the friendliness of the baby to whether the baby could actually eat something. Based on the group’s comments one can say that the group initially thought that the baby shouldn’t eat anything.

This discussion was shifted by Nawar’s suggestion that the baby should eat either kebap or sausage. At that point the group oriented to whether they had a kebap or not. There was a disagreement about the name kebap and the actual card referred by kebap. It turned out that sausage and kebap referred to the same object, and this confusion was resolved in this episode. Based on this discussion and the color of water (blue), the group concluded that all food should be colored with blue.

Some observations:
- Was it clear to the kids what they were doing? From the researcher’s point of view understanding what they are doing is difficult. The kids were engaged in some activity here, but it is hard to conclude whether the kids actually know what they were doing as a group with the system.
- The kids don’t come to this situation as agents starting totally from scratch. They already have some resources for conducting this sort of argumentative activity. Much of what they are doing is drawing on what they do in other contexts, which is brought into the current context.
- Sense making is a retrospective action. We do things first, then we make sense of it. The perspectives are emerging, continuously modified and negotiated. When you interview kids after such activities, they usually have several different interpretations about what happened. So retrospective sense making of individuals might not be the same as what we are observing.
- Our job as researchers is not to evaluate the kids’ activity in terms of appropriateness or correctness. We should focus on what participants are doing without making premature assessments.
- A criticism to CA: Most CA work is highly English based. How do you make an analysis done in other languages accessible to the international community? Reporting an analysis and conducting analysis are not the same. Reading a report and looking at the real data do not give us the same sense about the phenomenon that is being analyzed. However, by looking at the available data one can still observe gestures, gaze, body orientations etc. But the use of language as an interactive resource is very important in CA work, and translation into other languages inevitably filters out some of the interactive aspects of the original language (which may not be transferable to other languages).
- A question raised from the instructional designer’s point of view: How would you design this environment to support kids to solve problems through dialogue?

3.3. Closure:
The main goal of the workshop was to give people who have not done this sort of analysis a taste of microanalytic study of collaborative interactions. During these small data sessions we tried to articulate different perspectives on the presenter’s data. Such sessions are very useful for improving the analysts’ understanding of the data that they analyze, and thus they are systematically conducted as a part of conversation analytic studies.

Discussion on the relationship between CA approach and coding based content analysis:
One of the participants remarked that some researchers such as John Heritage attempt to design coding schemes based on conversation analytic work (the main goal in this bottom up approach is to generalize CA based observations in a quantitative manner). Then he asked whether this was an acceptable approach to combine qualitative ethnomethodological analysis with quantitative studies. The following statements are highlights from this thread of discussion (each bullet was a statement from a person):
• Coding type of analysis is not done in CA work. Counting is not prohibited, but no structure should be imposed over the data in a premature way. The theory has to emerge from the data.
• You are looking at mechanisms in CA work, whereas you look at correlations between categories in coding. This does not mean that these two approaches are totally incompatible.
• Different kind of questions and analysis are involved in both approaches. The bottom up requirement is important in order not to violate the fundamental aspect of CA work. The categories need to be based on what is established by participants during interaction.
• CA and coding methods start from very different assumptions. Thus, the offspring obtained from such roots could produce problems due to such incompatibilities.
• Note that ethnomethodological approaches reject earlier methods by claiming that there is no other approach than common sense to deal with interactional phenomena. Anything that involves natural language is considered as a subject of this methodology.

Discussion on CA methodology and its implications on design:
• Conversation analysis is about the sequential organization of talk. It addresses basic questions such as “how do you do repairs” and “how do you manage turns”, which are somehow independent of context. Understanding the meaning making process by using CA might be problematic in that sense, especially if there is an interest for devising design guidelines based on CA work.
• Recording and transcription of data constitutes a big part of conversation analytic studies. However, recording and transcription is not necessarily a methodology, it is just a way of capturing material in an organized way. What you do with the material indeed makes up the methodology.
• Sequential organization of talk may not be enough to address certain questions (e.g. how to design a system to support interaction)
• CA descriptions could be useful in getting insights about a particular design. Understanding how things are organized and done is part of CA, and this can be useful for addressing design issues. Conversation analytic studies can be used as a resource for devising design guidelines, but the methodology itself does not claim to provide guidelines or a theory of design.

4. The Workshop on Smart Tasks

The main goal of this workshop was to exchange ideas about designing smart tasks for collaborative learning environments. In this setting smart tasks refer to activities that work well in collaborative environments in terms of inducing a natural and productive interaction among learners. In particular we looked at several examples of such tasks implemented in real-world scenarios. We also discussed possible ways of expanding the use of these examples in other collaborative contexts. Moreover, by looking at the commonalities among these examples, we tried to collaboratively extract some design guidelines for developing smart tasks.

In the first part of the workshop Dr. Miyake and Dr. Shirouzu presented 5 example smart tasks. In the second part the participants were organized into 2 groups and they were asked to share their opinions about the presented material as well as their experience with similar tasks. Finally, each group shared their reflections with the larger group. Some of the participants also briefly presented the activities they used in their own institutions.

4.1 Example Smart Tasks

4.1.1. The WISE Project

This activity was designed by Marcia Linn’s group at UC Berkeley for a middle school science class. The class was about basic thermodynamics, including various topics such as heat, temperature, and light. In this example students were asked to work in pairs with their computers to answer the question “how far does the light go?” Being motivated by the way research communities are engaged in scientific inquiry, this project emphasizes learning through argumentation. Thus two controversial theories, namely ‘light dies out
as you move farther from a light source’ versus ‘light goes forever until it is absorbed’, were provided to the students to motivate the discussion. Then, students were asked to generate a simple web page by using the provided tools to document their theories and the evidence supporting their views. Finally, they presented their arguments in class and discussed the alternatives at the class level.

**Figure 1: The evidence presented by one of the students**

The students were said to be very engaged with the activity and produced a lot of content both for both views. For instance, a picture where the projector light fades gradually away was used by one of the students to support the claim that light gradually dies out. According to another student one could also turn this evidence around to support that light gets dimmer but not dies out, because the projector’s light can be visible from a great distance (or one could also say that some of the light is absorbed by the atmosphere).

### 4.1.2. Learning by design project

This smart task was designed by Janet Kolodner’s group at Georgia Institute of Technology. In their research project Dr. Kolodner and her colleagues follow a project-based inquiry approach to middle school science education where students learn science content and skills in the context of achieving design challenges. In these activities kids initially work on these design challenges in small groups first, and then re-iterate the process once again after having a look at what other groups have accomplished.

We looked at one particular activity designed by this group, namely the book support challenge. The following is the description of this task:

> You’ve just taken a typing job to earn extra money. The boss needs the job completed immediately! But, a problem arises that you forgot your glasses and can’t read the textbook on a low table. In the desk drawer, you find index cards, rubber bands and paper clips. How can you quickly construct a book stand that will raise the book 3 inches closer to your nearsighted eyes?

In this activity students were asked to design a stand to level a book 3 inches up by using index cards, rubber bands and paper clips. In the first phase students spent 10 minutes to come up with a solution in small groups. The second phase involved a gallery walk in which students had a look at the solutions of other groups for the same problem. Then the teacher asked each group to do another iteration based on what they observed. After the second round it turned out that some of the groups borrowed some ideas from the other groups. Most of the ideas picked up by other groups were relatively simple ideas like using a rubber band to hold the current page of the book, yet creative enough to be noticed by others (and not that easy to come up with in the first place). The original inventors of those ideas complained about this first, but they also acknowledged that they would feel better if they were given credit for their idea.
This simple activity seems to encourage kids to think about what it means to come up with an idea and to share it with others. Sharing such ideas across groups might be useful for replicating a small scale model of scientific communities in a classroom setting. A teacher might take this opportunity to let the students know that scientists also use each other’s ideas by giving credit to each other’s work as they are building knowledge together.

4.1.3. Day arithmetic problem
In this activity the students were given a set of questions like:

If Wednesday + Tuesday = Friday, then what about Tuesday + Friday = ? (The answer is Sunday)

Each group was given 72 similar questions in order to encourage them to infer a general pattern instead of using mechanical ways for solving such questions. Some of the groups came up with a table showing the relationship between the days, so the problem boiled down to a table lookup problem. Two of these tables are shown in the picture below. Some groups developed some heuristics to solve the problems, such as:

- Adding x to Monday: add one day to x,
- Adding x to Tuesday: add two days to x…

After this session the students were asked how they would approach the problem “how do we solve m+b=?”. The pattern that students inferred from the previous activity was transferred to this question. At this point Dr, Miyake wanted to stress the point that our minds do not work in a rote way. She claimed that we abstract the things we learn in a format that can be used in the future in comparable cases; we do not just memorize things and use them again and again in a mechanical way.
The effect of this activity was also assessed via individually administered exams. Students who participated in these sessions were able to demonstrate a more abstract understanding of the activity according to the students in the control group.

4.1.4. Rolling a dice
In this case the activity was performed at an undergraduate statistics class. The law of large numbers is a difficult concept to comprehend for most students at that level. This activity was designed to help students develop a better understanding of statements like ‘the probability of getting one pip when you roll a die is one-sixth’. The common misconception here is that students tend to look at the 6 possibilities and directly conclude that when a dice is rolled the probability of getting 1 in a single trial is 1/6. However the distribution can be very different when the dice is not fair.

In this activity each student rolled a die 100 times and tallied their individual results on a table (this took less than 5 minutes). Then, the class tallied the results to yield a histogram of over 3000 trials. There are usually 50-60 students in a typical Japanese classroom, so it was easy in this case to quickly get a big sample of trials. In the second part of the activity students used a deformed, rectangular prism shaped die (4 sides were 1.5 times longer than the others), and tallied the results in the same way.

![Figure 3: Aggregated results for “probability of getting 1 with a fair die” and “probability of getting 2 with an unfair die” with increasing number of trials.](image)

In this activity the students gained statistical confidence in a collaborative way since they combined their answers to get a better aggregation of their trials. In the mid-term exam these students were able to exhibit a better understanding of the law of large numbers as compared to a class that received teacher centered instruction only.

4.1.5. The normal curve and the central theorem
This was an activity conducted in the same classroom setting. The normal distribution is also one of the difficult concepts for most students in an introductory statistics class. This activity involves a very similar experiment as compared to case 4. Students were shown a rod of length 10 cm first, and then they were given tapes. They were asked to cut 100 chunks each having length 10 cm without using a ruler. Then they were given a sheet of paper to measure and record the lengths of their pieces. Each student individually tallied the 100 tape lengths to create their own histograms first. As it is seen below each of these graphs had unique shapes.
As it can be seen on the next figure, the 6000 chunks produced by the whole class gave them a much better approximation of the normal curve.

By reflecting on these graphs, the students formed a robust understanding of the concept. Based on the results of the exams, half of the students were able to appreciate the significance of a large number of trials for probabilistic decision-making, and one-third of the students were able to show a spontaneous understanding of the concept of the central theory of extremity.

4.2. Part 2

In the final part of the workshop we were organized into 2 small groups and reflected on the presented activities. The following remarks were made after this discussion:

- Motivating students to participate is a great challenge for designing smart tasks. Thus, the development of engaging activities is a critical issue in this context. The examples we saw hint that motivation may not be achieved independent of the context. The successful activities were all embedded in a relevant classroom context.
- The activities should be both fun to participate and yet capable of motivating higher level understanding of certain concepts. Due to their pedagogical concerns practitioners may not be the
best candidates for designing smart tasks. Collaboration with professionals like scientists, mathematicians might be a good idea to design successful smart tasks.

- Another important aspect of a smart task is that it can solicit different interpretations of the shared concept or problem. This was especially the case in the design based activity where different perspectives were externalized into the designed prototypes. This made it relatively easier for the students to get different perspectives on the same problem.
- The production of different perspectives also depends on a critical mass of participants. For instance, the gallery walk part of the design based activity influenced the second iteration for most groups. This wouldn’t be possible if there were not enough number of participating groups. Note that each group’s initial model was also a product of intertwined perspectives of the individuals making up the group.
- The book support problem had a holistic nature. When human-beings are faced with holistic problems they tend to fix something and try to reach a solution from that starting point. This might limit the way the task is interpreted by an individual. However, looking at other alternatives might help participants to develop a better understanding of the task through intertwining of different perspectives.
- Each group’s interpretation of the task is reflected on their solution. The mapping between what is externalized in these solutions might be important for understanding the way different externalized perspectives are intertwined in the second iteration. If the task has this sort of variability for soliciting different answers, then it might be a good point for collaboration. However, such activities are very hard to support for teachers.
- Especially in the case of statistical tasks it is important to involve enough number of students, since the success of the experiment rely on the number of trials.
- The tasks used in the statistics class were criticized to be less collaborative as compared to other cases since it does not involve co-construction of ideas within groups. However, it is still a form of collective activity which contributed to the higher level understanding of the students.
- Reiteration of the activity is also an important feature of a smart task since it might provide an opportunity to go beyond the canonical answer. Reiteration encourages participants to reflect on their collaborative outcomes and reformulate important concepts/ideas. However, the reiteration of the activity should not be boring for the participants. A dull repetition of the same activity may not necessarily produce these desired results. Tasks that involve ill-defined problems or open to many creative approaches would probably be good candidates for smart tasks.
- Time frame was also mentioned as an important factor. Smart tasks should allow some time for participants to digest what they did as a group, especially if we want to encourage them to reflect on their work.
- The final remark was about the pace of these activities. One idea was to employ gradual introduction of higher levels of collaboration into smart tasks. This would allow participants some room to socialize and get used to the activity. In addition to the standard activity the participants might be encouraged to create their own problems to carry the discussion to higher levels. These ideas will potentially motivate more fruitful discourse among group members.

5. Paper Sessions and Keynotes

During the conference I attended 3 keynote talks, 2 lecture paper sessions and 2 interactive paper sessions. At each corresponding subsection below I will briefly summarize what happened during these events.

5.1. Lecture Paper Sessions

Lecture paper sessions included presentations of 3 papers on a specific theme, where each presenter was given 20 minutes for their talk followed by a 10 minute question/answer session. In addition to a session chair, a discussant was assigned to each session, who was responsible for wrapping up the discussion with conclusive comments.
The two lecture sessions that I attended had titles ‘Argumentation’ and ‘Sense Making’ respectively. The argumentation session involved Donmez et al.’s paper about the application of automated corpus analysis techniques on argumentative discourse data (Donmez, 2005), Weinberger et al.’s paper on the use of scripts for scaffolding argumentative knowledge construction (Weinberger, 2005), and Clark & Sampson’s work on analyzing the quality of argumentation that is initiated by personal seeds (Clark, 2005).

The first paper demonstrated the potential of machine learning algorithms for performing semi-automated content analysis of argumentative discourse (Donmez, 2005). Since I am also interested in a similar approach for automatically processing chat data, this presentation was particularly interesting for me. The authors seemed to benefit from a rich corpus of hand-coded data to design good classifiers. Moreover, they were classifying email and asynchronous discussion board messages, which have relatively richer keyword content as compared to chat postings. Richness of context seemed to contribute to the accuracy of their keyword based statistical classifiers. However, the authors did not propose a method for automating the segmentation of their data into the units they were classifying. The proposed approach assumed that segmentation was done manually in advance, yet the accuracy of their scheme was promising.

I was not familiar with the context of the other two papers presented in this session. However, both papers were relying on content analysis schemes that are similar to what we have been using in our research project. The way authors presented their results based on their coding schemes gave me some insights about possible ways of interpreting the information captured by code assignments. In addition to this, both papers used interesting activity structures to fuel the argumentative discourse mediated by discussion boards (through scripts and personal seeds respectively), which can be used in encouraging knowledge building activities in many computer supported classroom environments.

Some of the papers presented at the Sense Making session covered very similar topics as compared to the micro-analytic studies workshop. In particular, papers from Zemel and Lindwall & Lymer employed conversation analytic techniques to study interactions in a chat environment and to design a curriculum in a medical school setting based on ethnomethodological insights respectively (Lindwall, 2005; Zemel, 2005). The paper from Muhlpfordt and Wessner investigating the effect of explicit referencing in a chat environment called ConcertChat was particularly interesting for me since we are using the same chat environment in our research project (Muhlpfordt, 2005). The authors studied the effects of a combination of turn control and enforced referencing in their study. They concluded that structuring the chat interaction by using explicit references (i.e. via a threaded chat interface) resulted in more homogenous discourse behavior and better grounding.

5.2. Interactive Sessions

The interactive paper session involved short presentations of 6 papers that did not share a specific theme as in the case of lecture sessions. Each presenter was given 5 minutes to briefly talk about their paper. The remainder of the session was organized like a mini poster session where the audience was free to interact with any of the presenters about their work. In every 20 minutes the session chair reminded the audience to visit other presenter’s work to make sure that each work got fair amount of attention.

Two papers from the interactive event were particularly interesting for me. The first paper was from Schummer et al. which involved a neat mathematical formula for measuring the level of interactivity within a group’s activities in a CSCL system (Schummer, 2005). The current model measures the level of interactivity within a group depending on the participants’ actions on shared files only. I believe this model can be further extended to take into discourse relationships between participants. Such metrics can be useful for teachers to moderate many student groups at the same time.

The other paper was from McLaren et al., which was investigating a method for combining a CSCL system called Cool Modes with cognitive tutor authoring tools (McLaren, 2005). The ultimate goal of the authors was to design a cognitive tutor agent that can coach students in a collaborative software development environment. They were still in the process of collecting data about student collaborative behavior to design a tutor. From my point of view the way they collect and represent the collaborative interactions in their system was more interesting than the idea of automated tutoring. When a student performed an action
on the interface (e.g. linking a class with another via an inheritance relation) a program running at the back end was reflecting this action on an activity tree. The authors were using the shapes and contents of these trees to identify patterns in collaborative problem solving activities of students using the Cool Modes system.

5.3. Keynotes

The keynote talks were given by Hiroshi Ishi from the Media Lab at MIT, Giyoo Hatano from Keio University, and Graham Button from Xerox Research Center from Europe.

Hiroshi Ishi’s talk mainly focused on his group’s vision of HCI and its potential implications for supporting collaborative learning activities. Nowadays, many features are embedded in computers through general purpose GUIs. The Tangible Media Group at MIT attempts to go to the other direction by designing digital devices that are embedded in a certain context to achieve a set of relevant tasks. The main idea here is to give digital information a physical form which is more suitable for collaborative interactions. Dr. Ishi also presented some of their exciting tangible devices during his talk.

Giyoo Hatano presented his view towards collaborative learning in his keynote speech. After giving credit to Vygotsky for establishing the relationship between intramental and intermental aspects of learning in a social setting, he proposed a dynamic, constructivist extension to Vygotsky’s approach. He criticized theories about distributed cognition and situated action for putting too much emphasis on situatedness of learning (i.e. intralevel processes). He claimed that although people influence each other during collaboration, they never form a collective understanding as a product of a series of negotiations. Thus, he advocated for a focus on individual’s learning as the unit of analysis, and rejected collective accounts of cognition. In my humble opinion, Dr. Hatano’s characterization of Vygotsky’s theories is more in sync with Piaget’s view towards learning and development.

Graham Button’s keynote speech was about using ethnomethodological studies as a resource for guiding the design of collaborative systems. As an alternate discipline in sociology, ethnomethodology emphasizes the common sense knowledge embedded in social practice. According to this view scientific and rational approaches cannot describe the accounts of social interaction. In other words, practical reasoning and understanding are the only means of studying social actions. Early ethnomethodological studies (e.g. Lucy Suchman’s work at Xerox) of computer systems were indeed a critique of the way such systems were designed (especially the use of AI concepts like planning etc.). The basic position of these studies was that situated practices of work should inform the design process rather than the prematurely rationalized models of such practices. Dr. Button also talked about how they were using ethnomethodology to guide their system design process at Xerox. Their approach basically involves a study of how people reason about the products Xerox is designing for them. First of all he mentioned the difference in between the technical world view of designers and the common sense behavior of users. Most users are not willing to learn technical details of the system; they are mainly interested in situating the system in their existing practice. In most cases troubleshooters are situated in between these two camps as mediators to establish bridges across these 2 different views towards the very same system. The research group at Xerox is currently conducting an ethnomethodological study of the way troubleshooters interact with the users in an effort to provide further insights for system development.

6. The Workshop on the Next Ten Years of CSCL

CSCL is a relatively new field that brings together researchers from various disciplines with similar aims and concerns. The bibliometric studies presented in the conference document the interdisciplinary nature of the field (Hoadley, 2005; Kienle, 2005). According to these papers, some of the fields represented in the CSCL community are Cognitive Psychology, Educational Psychology, Computer and Information Science, Sociology, Learning Sciences, and so on. Since most of the researchers are coming from different academic

---

1 [http://tangible.media.mit.edu/projects](http://tangible.media.mit.edu/projects) contains further information about the presented devices:
backgrounds, there does not seem to be a consensus within the community regarding methodologies and theoretical issues.

Due to its interdisciplinary nature, CSCL is a field that does not represent a single idea towards learning. Thus, it has not yet established itself as a discipline with concrete conceptual definitions, research questions and methods. During this workshop some of the prominent researchers in the field reasoned about addressing this variety in the field.

One idea regarding the separation between different methodological orientations was to encourage studies that specialize on investigating possible merging points. There are examples of such undertakings in other disciplines. For instance, as Dr. Lewis pointed out during the workshop, the emergence of the optimality theorem in the field of linguistics was indeed the outcome of a study conducted by a pair of linguists who were supporting incommensurably contentious views.

As it was discussed during the workshop, there are also similar research efforts within the CSCL community that attempt to put together different approaches, such as the Virtual Math Teams project at Drexel University, and the Kaleidoscope project in the European Union. In the case of VMT, conversation analysis and quantitative content analysis techniques are used together in an effort to study collaborative math problem solving activities of small groups. The goal of this project is to combine the findings of these different approaches to design a synchronous communication system that will support such collaborative learning activities. Similarly, the Kaleidoscope project brings together 74 CSCL project groups across Europe. However, since the scope of this project is much larger than the VMT project, it has not really contributed to the separation issue yet. Projects having a smaller scope of research activity will probably give more room for a close interaction between different methodological orientations.

Different methodologies seem to focus on different aspects of collaborative learning. Micro-analytic approaches focus on the micro details of the learning process in an effort to better understand how learning actually works as an interactive practice. The position of this camp is that we need to be able to understand the processes involved in learning first, so that we can come up with pedagogical interventions to meet the existing expectations regarding learning outcomes.

Micro-analytic studies usually rely on Conversation Analysis (CA) which can be considered as a branch of Ethnomethodology. CA is a qualitative analysis approach that focuses on the activities of the participants. CA is usually criticized for its heavy orientation towards talk without considering the embodying aspects of language and tool use during interaction. When engaged in collaboration participants also bring their common sense abilities to benefit from external resources, which may not be explicitly visible in talk. However, this view is not shared by everyone in the field and it is still an ongoing debate within the discipline whether the CA approach is capable of addressing this limitation or not. Finally, qualitative studies are usually criticized for their lack of generalizability. This is a rather philosophical problem since one might also argue that statistical aggregations of social phenomena yield premature generalizations.

In contrast to the micro-level approach most traditional psychological and educational efforts involve classical experimental studies using control groups, pre and post tests. In this camp the focus is rather on the effects of the activities in terms of learning outcomes. However, what can be measured by such experimental studies is questionable since the collaborative nature of the activities makes it very difficult to operationalize and control certain variables.

Most quantitative studies also involve coding schemes that are used to analyze recorded interactions in an effort to address the limitations of survey and test based approaches. The correlations between the assigned codes and the tests are usually considered for relating collaborative activities to their corresponding learning outcomes. On the one hand, such efforts are criticized for emphasizing a premature structure over the observed activity and for ruling out a lot of useful data by narrowing the whole interaction into a set of categories. On the other hand, with appropriate sampling the correlations revealed by these methods can be generalizable by statistical means.
Since coding based quantitative content analysis approaches are also micro-level in nature it might be possible to combine such efforts with conversation analytic approaches. CA based analysis provides us useful insights about the data that we are looking at. This level of understanding could be very useful for developing better coding schemes that are grounded on real data. Another advantage of this combination would be the possibility of achieving generalized results through statistical means.

Micro level analysis is indeed one aspect of CSCL research. There are also other areas that require a macro level analysis to address larger level issues. Designing appropriate activities, embedding collaborative activities in existing classrooms, analyzing cohort data that span a larger period of time can be considered as examples of other perspectives. At the end the results obtained from studies at different levels need to be combined together in order to get a larger perspective over the field.

Some of the participants with computer science background complained about the over emphasis in empirical evaluations in CSCL publications. They argued that the high expectations on the empirical side forces software engineers to design simple systems and spend more time on the evaluation of learning outcomes. This seems to be an obstacle for people who want to design innovative CSCL systems.

Another complaint about the existing methodological and empirical emphasis in the field came from the camp of design based researchers. The basic argument was that existing theories on collaborative learning do not transform into design principles for aiding CSCL system development. Thus, transforming the findings of the field into computer systems and educational practices should be given priority due to the existing educational demands.

Lack of a common language across different perspectives was also mentioned as an important issue. This also results in a lack of coordination in between different camps following different agendas. Again this might be the subject of a new focal point for the special interest group mentioned earlier. Articulation of open problems across disciplines and setting milestones for addressing these problems is also a necessity. Finally, the impact of other relevant concepts such as gender and politics has not been emphasized well in the field.

7. Conclusion

In this article I attempted to document my observations on the recent CSCL conference. It has been almost two years since I started working in this field. Since then I have been struggling with understanding various concepts and issues related to designing computer systems for supporting collaborative learning activities. Before the conference I was thinking that this struggle was largely a consequence of my lack of knowledge and inexperience. However, this conference showed me that most of my concerns were shared by the global CSCL community as well. This observation at least soothed some of the discouraging effects of these issues on my ongoing work towards a dissertation in CSCL. Hopefully my increased level of consciousness regarding the key issues in CSCL will contribute to my ongoing work as a PhD student.

References:


