

Applying computer supported collaborative learning (CSCL) principles and practices to telecollaboration

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Overview

- Background of CSCL
- CSCL platforms
 - FLE3
- Adding CSCL functionality to your platform
- Discuss possible telecollaboration program with CSCL-type activity

CSCL and Telecollaboration

- Strong theoretical parallels between principles of CSCL and telecollaboration
- CSCL research focuses largely on group learning via CMC, making it particularly relevant to telecollaboration
- CSCL platforms include enhanced CMC tools that may be useful in telecollaboration

In short:

- CSCL tools and principles may provide a framework for increasing dialogue and collaboration among telecollaborative partners

Collaboration means...

“In cooperation, partners split the work, solve sub-tasks individually and then assemble the partial results into the final output. In collaboration, partners do the work 'together'.”

(Dillenbourg, 1999 p8)

“...a process of shared meaning construction”

(Stahl, Koschmann, & Suthers, 2006 p8)

Collaboration is a process of shared meaning construction in the context of solving a problem (question, need, task, etc.) together.

Projects preceding CSCL

Early projects (roughly early to mid 80's)^[1]:

- ENFI, computer-aided writing, early chat-type functionality, Gallaudet U.
- CSILE, knowledge building communities, joint writing, U. of Toronto, later to become the Knowledge Forum
- 5thD Project, peer supported reading and problem solving, Rockefeller U., later USCD

(Koschmann, 1996; Stahl, Koschmann, & Suthers, 2006).

Pre-CSCL

These projects:

- recognized the value of meaning making and connected, group learning,
- differed from the behaviorist and computer-centered approaches of early CAI and CALL in that they were more constructivist, and
- viewed the computer as a means of supporting collaboration rather than a tool for providing instruction.

(Koschmann, 1996; Stahl, Koschmann, & Suthers, 2006).

Early CSCL

- 1983 workshop on “joint problem solving and microcomputers” held in San Diego.
- 1989, NATO-sponsored workshop first to use *computer-supported collaborative learning* in its title (Stahl, Koschmann, & Suthers, 2006).

And so it's interesting to note:

- The historical differences in approach between CSCL and CALL, which was (and arguably still is) behaviorist or otherwise computer-centered in nature.
- Telecollaboration is not computer-centered, and in many ways mirrors a CSCL approach, viewing networked computers as tools for communication and collaboration rather than instruction.

CSCAL and Telecollaboration: Parallels

- Negotiation of meaning
- Constructivist approaches to learning
- Social constructivism theory and zone of proximal development
- Iterative, continual process of learning
- Meaningful communication
- Progressive inquiry

(Furstenberg, Sabine, English, Maillet, 2001; Hakkarainen, Rahikainen, Lakkala, & Lipponen, 2001; Scardamalia, & Bereiter, 2003; Stahl, Koschmann, & Suthers, 2006; Warschauer, 1997)

CSCL concepts relevant to telecollaboration

In addition to the conceptual parallels discussed earlier, concepts central to CSCL include:

- Group meaning making - meaning is constructed by group activities
- Group knowledge - knowledge can exist independent of the individual
- Shared knowledge artifacts [2]
- Synergistic qualities of group meaning making

(Hakkarainen, Rahikainen, Lakkala, & Lipponen, 2001; Scardamalia, & Bereiter, 2003; Stahl, Koschmann, & Suthers, 2006;)

CSCL Platforms

- Linked, navigable individual and shared spaces
 - personal / group / course
 - flexible read and write permissions
- File sharing and versioning
- Consensus building - Ex: reach consensus on when a file is presentable to a larger group
- Emphasis on providing environment for collaborative construction of knowledge artifacts
- Other standard CMC tools such as Email, chat, etc.

(Dean & Leinonen, 2003; Stahl, 2005)

FLE3: Future Learning Environment

Designed as part of the ITCOLE Project:

- “ITCOLE project focuses on developing innovative pedagogical models, design principles and technology for collaborative knowledge building to be used in European education.”

<http://www.euro-cscl.org/site/itcole/>

Three primary spaces:

- Webtop - personal
- Knowledge building - group, sharing ideas
- Jamming - group, applying ideas, file versioning

(Dean & Leinonen, 2003; Stahl, 2005)

FLE3: Webtop screen

The screenshot displays the FLE3 Webtop interface. At the top, there are three tabs: "WebTop" (green), "Knowledge Building" (green), and "Jamming" (blue). The user is logged in as "demo" (User information). A search bar for "Search Web Tops" is visible in the top right. Below the tabs, there are four action buttons: "Add folder", "Add document", "Add link", and "Create memo". The main content area is divided into two sections. On the left is a table of files and folders, and on the right is a "Courses" section.

<input checked="" type="checkbox"/>	Type	Title	Size	Date
<input type="checkbox"/>		test	5.0 kB	Today
<input type="checkbox"/>		kamel-cover	33.5 kB	2009-08-18
<input type="checkbox"/>		kamel-link	1 kB	2009-08-18
<input type="checkbox"/>		Kamel-Folder	1 kB	2009-08-18
<input type="checkbox"/>		kamel	1 kB	2009-08-18
<input type="checkbox"/>		vikas	1 kB	2009-08-18
<input type="checkbox"/>		otgroup	101.5 kB	2009-08-03
<input type="checkbox"/>		testies	1 kB	2009-08-03
<input type="checkbox"/>		ທຸດສ໌ອບ	1 kB	2009-07-23
<input type="checkbox"/>		as	1 kB	2009-07-09

Courses

- Crafts and design
Notes: 0 new / 58 total
Artefacts: 0 new / 34 total
Announcements: 17:45 2005-05-06
- Our environment
Notes: 0 new / 67 total
Artefacts: 0 new / 22 total
Announcements: 14:58 2005-05-13
- Kosteikot demo
Notes: 0 new / 20 total
Announcements: 17:00 2005-11-28

Logout

- Store files, links
- Items in the WebTops are shareable and searchable with others in the same course or project
- Users can visit group members' WebTops
- Only the owner of a WebTop may create, edit and remove items in their WebTop, but visitors may read and copy the items

FLE3 Knowledge Building screen

The screenshot displays the FLE3 Knowledge Building interface. At the top, there are navigation tabs for 'Web Top', 'Knowledge Building', and 'Jamming'. The 'Knowledge Building' tab is active. Below the tabs, there is a header area with 'Our environment' (Course information) and a search bar. The main content area shows a problem post titled 'What is so dangerous about climate change?' by 'demo' on 15:09 2005-04-24. The post content reads: 'I would like to find out what is the danger that climate change brings to our environment and Finnish nature. It is so cold here in Helsinki, that I wouldn't mind if the temperature rises few degrees, in fact I would like the weather to get warmer. Especially in summers.' Below the post, there is a 'Select knowledge type' dropdown menu and an 'Add note' button. At the bottom, there is a navigation bar with options: 'Show notes', 'as thread', 'by knowledge type', 'by person', and 'by date'. A list of notes is shown below the navigation bar, including the current problem and several related notes with their respective knowledge types and dates.

Web Top Knowledge Building Jamming

Select course Our environment Change

Our environment Course information Search Knowledge Building

demo Anna Giedre Hans Jiri Kati Lare Pasi Teemul fleadmin lasse

You are in: Knowledge Building: [Our environment](#) / context [Climate change](#) / thread [What is so dangerous about climate change?](#) Create link on WebTop

Problem demo 15:09 2005-04-24

What is so dangerous about climate change?

I would like to find out what is the danger that climate change brings to our environment and Finnish nature.

It is so cold here in Helsinki, that I wouldn't mind if the temperature rises few degrees, in fact I would like the weather to get warmer. Especially in summers.

Select knowledge type Add note ?

Down Next

Show notes as thread by knowledge type by person by date

Show bodies of all notes

- (problem) What is so dangerous about climate change? / demo / 2005-04-24
 - (my_expl) [Its not only the heat](#) / lasse / 2005-04-25
 - (evaluation) [what should we really do here?](#) / demo / 2005-04-26
 - (evaluation) [Just a demo - not a "real course"](#) / Teemul / 2005-04-26
 - (summary) [it is up to the community](#) / demo / 2006-09-07

- Forum can be organized by thread, or by **knowledge types**
 - Progressive inquiry: Problem; My Explanation; Scientific Explanation; Evaluation of the Process, and Summary
 - Design thinking: Design Context; Design Challenge; My Design Idea; New Information; Evaluating an Idea; Organizing the Process, and Summary

FLE3 Jamming screen

Web Top Knowledge Building Jamming

Select course Our environment Change

Our environment Course information

demo Anna Giedre Hans Jiri Kati Lare Pasi Teemul fleadmin lasse

You are in: Jamming: Our environment / jam session Flag for the new Europe Create link on WebTop

Flag for the new Europe

Europe is famous of being environment friendly and dynamic continent :-). Maybe it is time to redesign - and show how dynamic we are - a new flag for EU that represents how seriously the European nations and their Union takes the environmental issues.

- original (6 annotations)
 - we are red (0 annotations)
 - sun flower (0 annotations)
 - 00000 (0 annotations)
 - European F (0 annotations)
 - rainbow (2 annotations)
 - test only (1 annotations)
 - test (0 annotations)
 - mio (0 annotations)
 - flipasen c (1 annotations)
 - the best (3 annotations)
 - flag 1 (0 annotations)

- Shared space for collaborative construction of digital artifacts
- Versions are tracked automatically and different versions are displayed graphically
- Users may also annotate artifacts

Adding CSCL functionality to a telecollaborative environment

Custom platform

- Wiki + read/write permissions (versioning, personal/group spaces)
- FTP, (personal/group spaces)
- Forum with personal space (enhanced profile page)
- Interactive white board

Moodle

- Ouwiki, personal and group wiki pages
- File manager, flexible permissions for file sharing
- ForumPlus allows for knowledge types
- Flexible permissions and roles
- Attention to 'class' design

Telecollaborative tasks with CSCL qualities

Aren't people doing this already?

Yes, there already are CSCL-type activities in established telecollaboration models, including:

- Students working in groups on whiteboard to make connections and recognize patterns, as discussed by Furstenberg (2004)
 - Students make connections as a group that none of them may have made individually.
- Web page essay as discussed by Belz (2002)

But what if we...

- Put a greater emphasis on existing CSCL-type activity
- Give a more integral role to the production of a shared knowledge artifact so that the goal of its creation is at least a peripheral element of most steps of the telecollaboration
- Enhance CMC tools to provide scaffolding for CSCL

Possible activity

- Using existing telecollaborative models as foundation
 - questionnaires
 - preliminary observations
 - asynchronous dialogue with partner class
 - continued exploration and discussion using expanded set of materials

Plus...

(Furstenberg et al, 2001)

Sample activity: Tools

- CMC tools to support CSCL-type collaboration
 - file sharing and versioning
 - personal and group spaces with flexible permissions
 - a scheme or tool (e.g., polls) for reaching consensus on artifact status

Sample activity: Process

- Learners form bi-cultural working groups relatively early in the program (halfway?)
- Each group decides on which previous activity, interaction or concept to focus, perhaps from:
 - questionnaire item
 - overall telecollaboration process
 - media file or other artifact(s) used
- Each group must produce a bilingual shared knowledge artifact, with scaffolding yet flexibility for format and content [3]

Process, cont.

- Groups not pressed to reach conclusions, might focus on:
 - areas of agreement, disagreement, or conflict
 - the collaboration process itself
 - unresolved issues

More process

- Deliverable in third-person singular and/or first, second, and third person plural perspectives
 - use of first and second person singular probably inappropriate unless in a quotation
 - Movement from I to we, from you to Alice
 - Negotiation of meaning, metacognition

Process, some thoughts

- The shared knowledge artifact would most likely be text-based, but may include multimedia
- Artifact could be deliverable in any reasonable format (html, doc, ppt, wiki page, etc.)

Rationale

- Early emphasis put on eventual production of shared knowledge artifact
 - Learners view partners' output with this in mind
 - Increased emphasis on shared understanding, negotiating meaning for the purpose of solving a problem - to create a shared knowledge artifact

More Rationale

- Learners must take ownership in partners' output and use it to collaboratively create a shared knowledge artifact
 - Requires in-depth understanding of C2 and L2 output based on negotiated meaning attained through an iterative process of inquiry

Red flags

- Danger of degrading into an exercise in translation
 - Emphasize that the L1 and L2 versions of the artifact do not have to, perhaps should not, mirror one another?
- Team composition - how to form good working groups
- The fragility of groups
 - Intensified by bi-lingual, bi-cultural, asynchronous interaction
 - Danger of ‘putting too many eggs in one basket’ by placing too much emphasis on construction of shared knowledge artifact
 - What if a group crashes and burns?
- Above concerns must be addressed early by participating instructors

Summary

- Applying CSCL approaches and tools to telecollaboration is theoretically and intuitively attractive
- It could be done by building on existing telecollaborative environments and programs
- There are a number of practical concerns; an exceptional amount of planning would be required

Discussion

- Questions or comments?
- Has anybody participated in any CSCL-type telecollaborative activities?
- Are there any CSCL experts out there (I'm not one) who care to comment?

References

- Belz, J. (2002). Social dimensions of telecollaborative foreign language study. *Language Learning & Technology*, 6, (1) 60-81. Retrieved March 6, 2009 from <http://lt.msu.edu/vol6num1/pdf/belz.pdf>.
- Belz, J.. (2004). Telecollaborative language study: A personal overview of praxis and research. Paper presented at the 2004 NFLRC Symposium. Retrieved September 15, 2008 from <http://nflrc.hawaii.edu/NetWorks/NW44/belz.htm>.
- Dean, P. & Leinonen, T. (2003). ITCOLE Final Report. Retrieved September 10, 2008 from http://www.euro-cscl.org/site/itcole/ITCOLE_Final_Report.pdf.
- Furstenberg, G. , Sabine, L., English, K., Maillet, K. (2001, January). Giving a virtual voice to the silent language of culture: The Cultura Project. *Language Learning & Technology*, 5, 55-102. Retrieved September 15, 2008 from <http://lt.msu.edu/vol5num1/furstenberg/default.html>.
- Furstenberg, G., (2004). Using communication tools to foster cross-cultural understanding. Selected papers from the 2004 NFLRC symposium. Retrieved April 12, 2009 from <http://nflrc.hawaii.edu/NetWorks/NW44/furstenberg.htm>
- Future Learning Environment (FLE3), <http://fle3.uiah.fi/>.
- Innovative Technology for Collaborative Learning and Knowledge Building (ITCOLE) project, <http://www.euro-cscl.org/site/itcole/>.
- Stahl, G., (2005). Groupware goes to school. In *Group Cognition: Computer Support for Building Collaborative Knowledge* (chap. 7). Retrieved June 10, 2008, from <http://www.ischool.drexel.edu/faculty/gerry/mit/ch07.pdf>.
- Stahl, G., Koschmann, T., & Suthers, D. (2006). *Computer-supported Collaborative Learning: An Historical Perspective*. Cambridge University Press, Cambridge, UK. Retrieved December 12, 2007 from http://www.cis.drexel.edu/faculty/gerry/cscl/CSCL_English.pdf.
- Warschauer, M. (1997). Computer-mediated Collaborative Learning: Theory and Practice. *The Modern Language Journal*, 81, 470-481. Retrieved August 16, 2009 from http://www.gse.uci.edu/person/warschauer_m/docs/cmcl.pdf.

Notes

[1] It's interesting to note that these early projects were literacy oriented, yet later CSCL research has mostly been done in the context of math and science education.

[2] Can language be considered one large group knowledge artifact?

- Language as group knowledge
 - Negotiation of meaning in L1A and L2A - we are constantly calibrating our linguistic meaning and use with those around us.
 - Dynamic qualities of language - language change happens among people, not within individuals
 - Any one language is not entirely known by any one person, and yet every language is finite at any one moment; a language exists in its entirety among all speakers, not in any one speaker

These parallels between the nature of language and CSCL concepts seem to suggest that CSCL principles and practices might be of value to language learning, particularly telecollaboration programs.

[3] The requirement to produce a bilingual artifact is problematic and would require careful handling. There is a possibility that it could become an exercise in translation, which would be counterproductive.