CSCL 2005 Panel
CS in CSCL

Cognitive Science Perspective

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Roles of C in CSCL

- C plays an essential role for creating collaborative learning situations
- in addition, C can play vital roles in there additional areas in CSCL
  - ∗**evaluation**
  - ∗**microgenetic research**
  - ∗**communication among projects**
- they all involve large, multi-media data

Challenging problems

- Data collection
- Retrieval
  - Just right amount at a right timing
- Version control
- Annotating
- Sharing

Research context

- Teach cognitive science to undergraduates so that they become
  - better solve problems,
  - better learners,
  - better citizens who can make intellectual judgments.
- Not only in school, but in everyday life

Learning activities

- Experiential learning with heavy emphasis on collaborative reflection
  - Hands-on demos
  - Collective pattern finding
  - Variations of jigsaw for constructive interaction
  - Concpet mapping
  - Iteration

Scaffolding tools

- Reflective Collaborative Note
- Commentable Movie Sheet
- CMSonBBS
- MultiMedia Document System

- For collaboration support
- For record keeping (data collection)

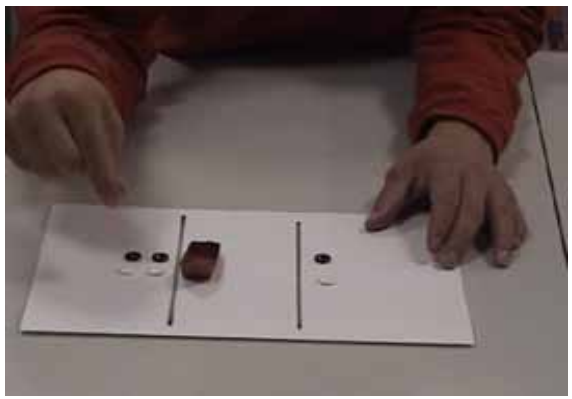
Scale of our study

- Two year/ four semester set for the first two years of college
- One to two 90 min. class(es) per semester

- Seventy students per year on average
- Serious data collection since 2000

First semester, 1st year:
finding problem solving heuristics through collaborative reflection

River crossing problem

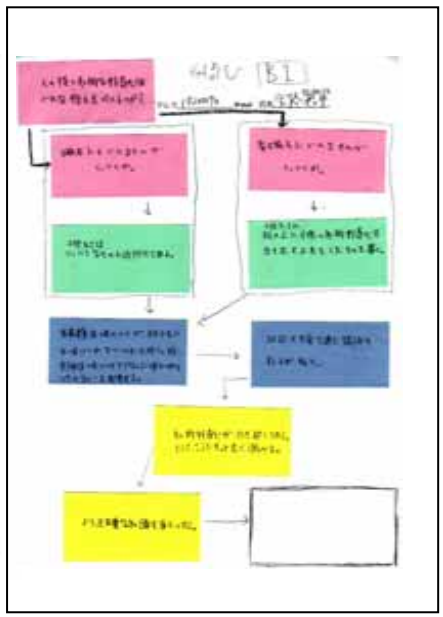


Tower of Hanoi

Second semester, 1st year

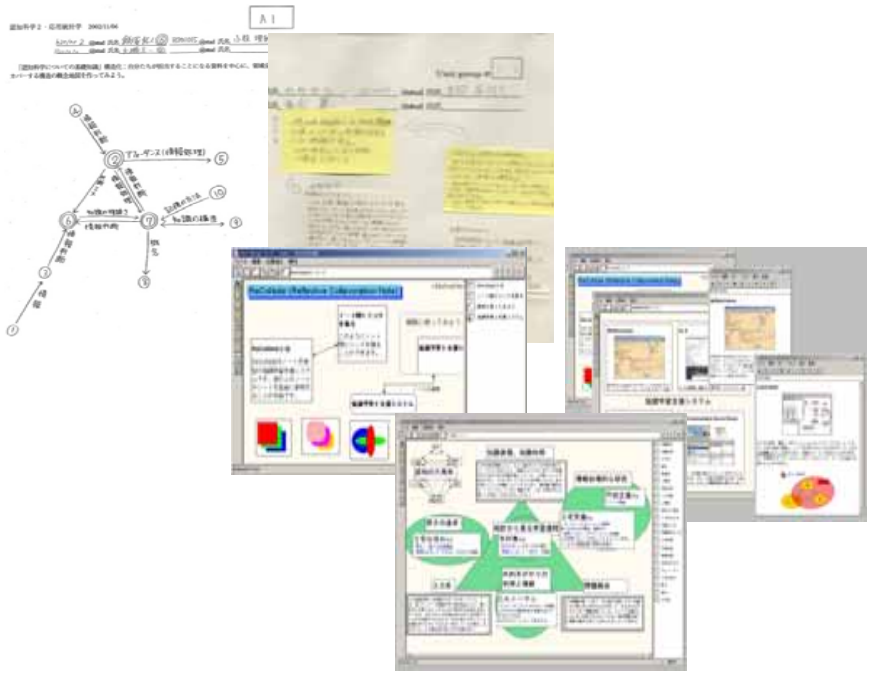
Linking experiences with literature

Aggressive reading and Concept mapping of basic ideas



Jigsaw on two to three materials

2nd year
collaborative literature survey



Integrating 8-10 (3rd) to 30 plus (4th) literature pieces

Getting lectures from other faculty members

Teaching portfolio

Teaching plan

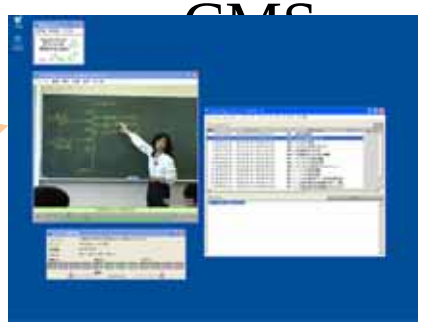
Class

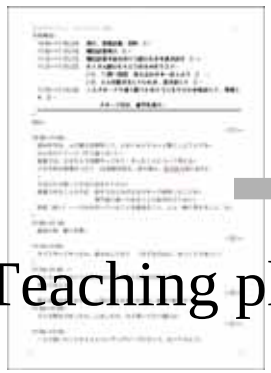
Observation notes

ReCoNote

System log

Video records of class activities



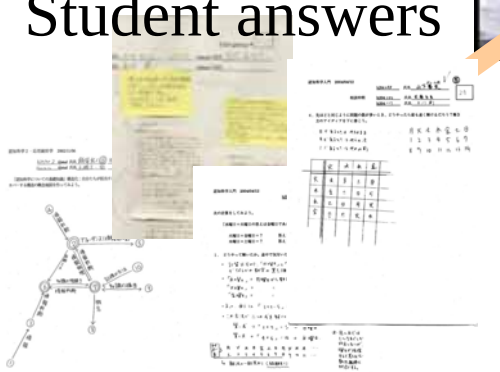


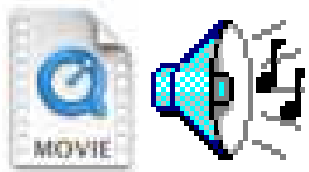
Teaching plan

Class

Observation notes

Student answers





Audio data of group activities

Target classes

	Admitted in 2001	Admitted in 2002	Admitted in 2003	Admitted in 2004
Spring 2001	Orientation to CogSci			
Fall 2001	CogSci Method 1			
Spring 2002	CogSci Method 2	Orientation to CogSci		
Fall 2002	CogSci 2	CogSci Method 1		
Spring 2003		CogSci Method 2	Orientation to CogSci A/B	
Fall 2003		Cogsci 2	Introduction to CogSci A/B	
Spring 2004			Medium CogSci CogSci Method 1	Orientation to CogSci A/B
Fall 2004			Advanced CogSci CogSci Method 2	Introduction to CogSci A/B

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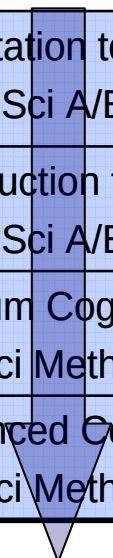

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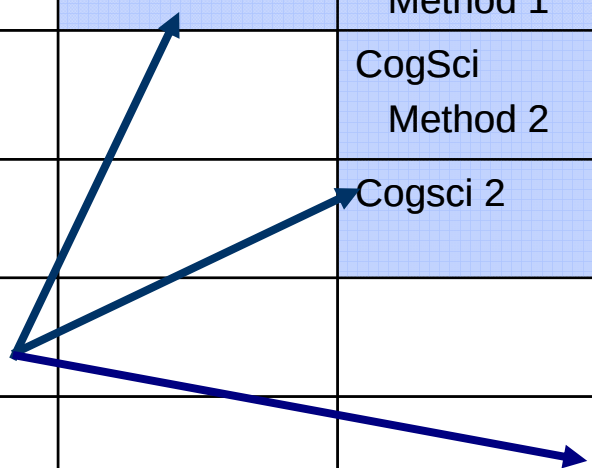
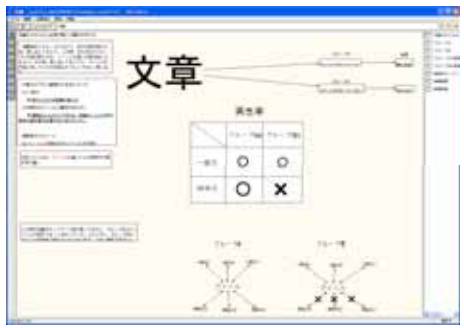


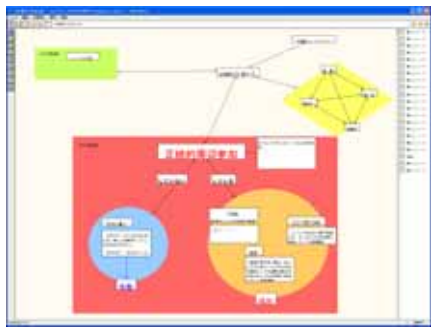
Evaluation

- Log data analysis
- Semantic analyses of worknotes, concept maps and term papers
- Interview data analyses

- All revile different types of learning outcomes, achieved by different students

Different assessment capturing different outcomes

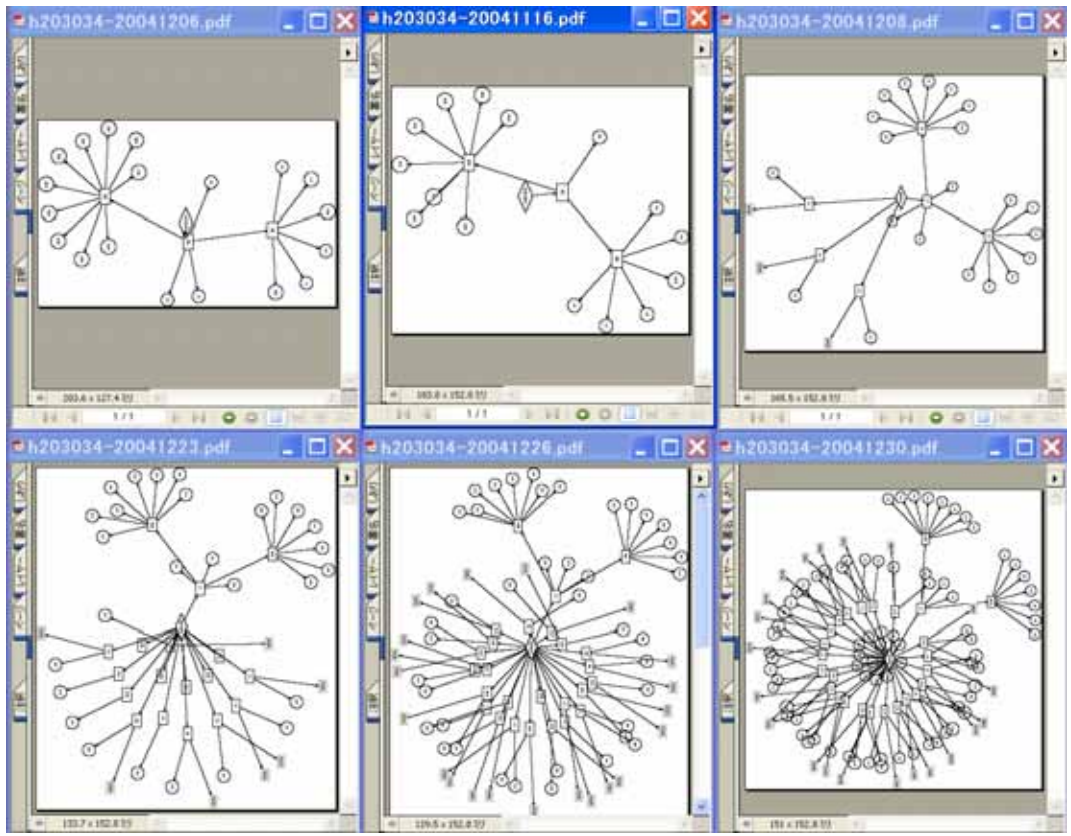




Structure of concept mapping	Solid comprehension of the learning materials
Conversation during the class	Integration of selected materials
Post-class interviews	Acquisition of question asking skills

Microgenetic research

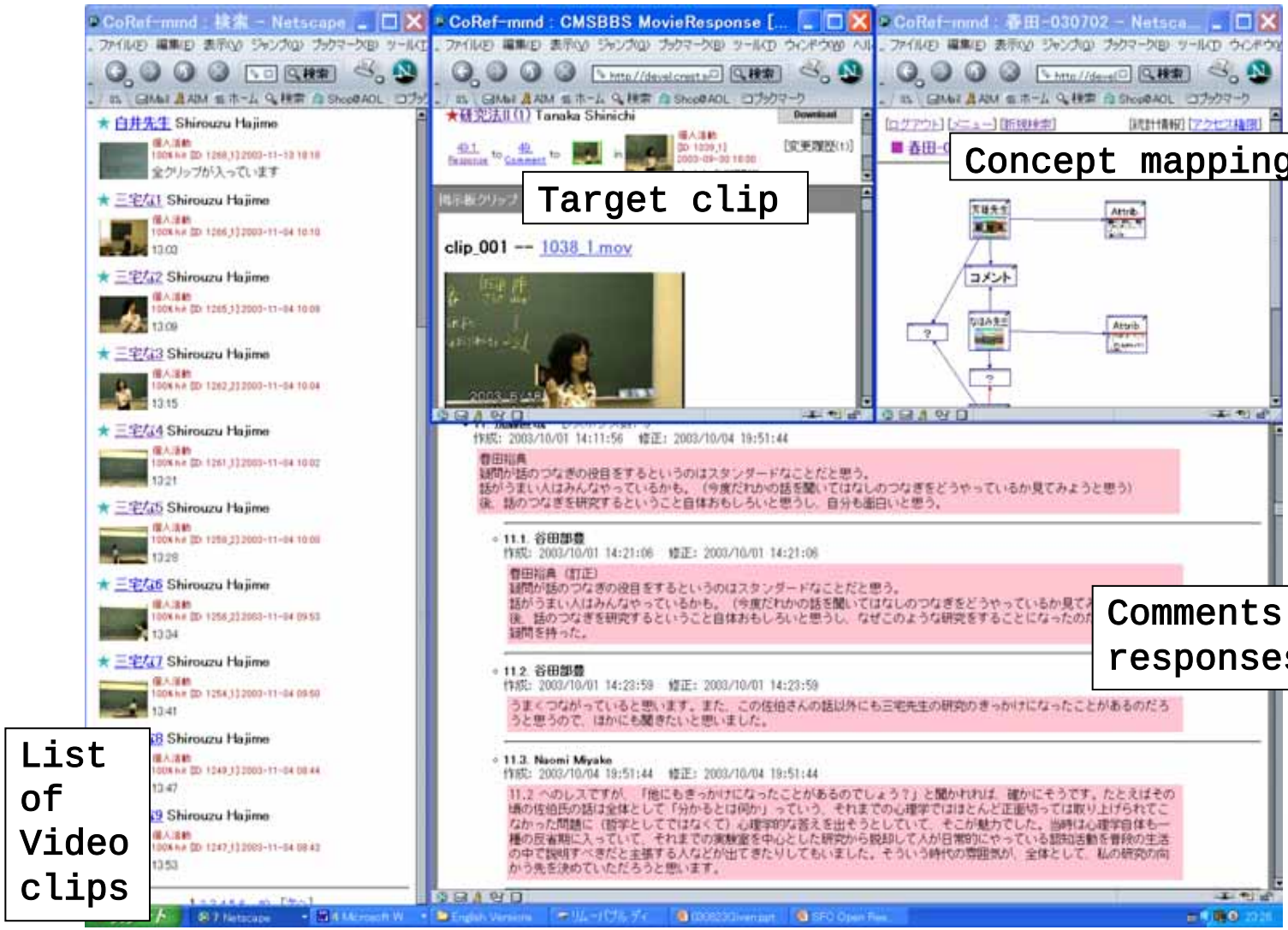
- We can analyze processes too (we should)



Communication among research projects

- New technology with which we can communicate what actually happens in classrooms
- Details of coding and coding schemes
- Emerging patterns of data

Sharing annotated video clips…



Innovative engineering is necessary to promote the entire CSCL.