- Keep camera on and mic off (unless you talk) all the time
- Test the connection: audio, video
- Participate as in the classroom (ask, answer questions, chat with peers, do activities)
- Join group activities when needed
- Indicate your engagement

Poll Everywhere

NIE
NATIONAL INSTITUTE OF EDUCATION SINGAPORE

Computer Supported Collaborative Learning (CSCL)

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www.nie.edu.sg

Contents

- Concept of collaborative learning
- Educational benefits of collaborative learning
- Key concepts and challenges in collaborative learning
- Cognitive tools for collaborative learning
- Computer supported collaborative learning (CSCL)

- Self-directed learning
- Collaborative learning

http://ictconnection.edumall.sg/cos/o.x?c=/ictconnection/pagetree&func=view&rid=744

The Self-directed Learning Spectrum

Low degree

Incidental self-directed learning

Teaching students to think independently

Self-managed learning

Self-planned learning

Self-directed learning

High degree

Learning outcomes, activities, guides

http://www.selfdirectedlearning.com/SDLProgram.html

- Individual cognition → group cognition
  - Think together → Shared meaning, common ground
- Individual cognitive tools → collaborative cognitive tools
  - E.g., Google Docs; CMap: CMapper
- Research shifts to:
  - Using cognitive tools for collaborative learning
  - Social cognitive tools

Collaborative learning

- Collaborative learning is "a *situation* in which *two or more* people learn or attempt to *learn something together*" (Dillenbourg, 1999)
  - Situation: learners with similar background, learning objectives
  - 2 or more: Small group, a class, or a community
  - Learn something: study a course, perform learning activity
  - Together: interactive
- Focus on: co-construction or knowledge & Mutual engagement of participants

Cooperative learning

- Cooperative learning is the instructional use of small groups so that students work together to maximize their own and each other's learning (Johnson, Johnson, & Smith, 2013)
- Competitive learning (work against the others) & individualistic learning (unrelated to others)

Collaborative? Cooperative?

Cooperative Learning   Collaborative Learning
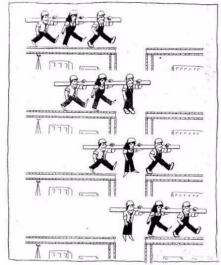
Importance of cooperation/collaboration

- Knowledge society
- The complexity of work, tasks
- The division of work becomes more precise
- Students start to learn how to work cooperatively/collaboratively

- E.g. the aerospace project: rocket, fuel, camera, solar battery, monitoring

Cooperation/collaboration

Cooperation/collaboration

Educational benefits of collaborative learning

- Collaboration does not guarantee improved learning, then
- What are the educational benefits of CL?

http://tep.uoregon.edu/resources/librarylinks/articles/benefits.html
http://www.gdrc.org/kmgmt/c-learn/44.html

What are the educational benefits of collaborative learning?

Start the presentation to see live content. Still no live content? Install the app or get help at PollEv.com/app

Educational benefits of collaborative learning

- Collaboration does not guarantee improved learning, then
- What are the educational benefits of CL?

http://tep.uoregon.edu/resources/librarylinks/articles/benefits.html
http://www.gdrc.org/kmgmt/c-learn/44.html

Cooperative/collaborative learning strategies

http://www.gdrc.org/kmgmt/c-learn/strategies.html

Key pillars

- Individual accountability
  - Every member is accountable for his or her share of the work
  - Ownership
  - is the measurement of whether the contribution of a group member has helped to achieve the group's overall goals
  - Strategy: making learning task meaningful
- Positive interdependence
  - Only when a rain drop falls into the ocean will it never go dry
  - One cannot succeed unless all members succeed; they either sink or swim together
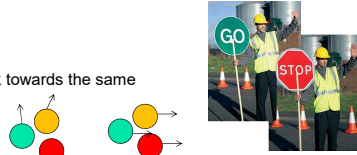 - Strategy: Friendship, a sense of community

Key pillars

- Promotive interaction
  - Mutual support: support and learn
- Social skills
  - Respect, trust
  - Manage conflicts
- Group processing
  - Monitor
  - Reflect

Slide 1: Challenges

- Coordination
  - All members work towards the same direction

  - External support
  - Collaboration script
- Monitoring
  - Track progress, right direction
  - Adjust the course immediately
  - Assess students fairly
  - External support
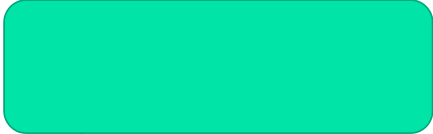   - http://youtube.googleapis.com/v/uVwThad2E5g

Slide 2

- Do we need a computer to support collaboration?

Slide 3: Activity: Real time word editing (on the same document)

- https://beta.etherpad.org/p/mlt803

- Type as many as possible words starting with 'v'

Slide 4: Potential benefits of computer support

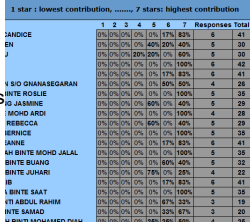- Computer: power of networking, fast speed, and huge storage…

Slide 5: Computer-supported collaborative learning (CSCL)

- CSCL is an interdisciplinary research field focused on how collaborative learning, supported by technology, can enhance peer interaction and work in groups, and how collaboration and technology facilitate sharing and distributing knowledge and expertise among community members (Lipponen, Hakkarainen & Paavola, 2004)

- A field of study centrally concerned with meaning and the practices of meaning-making in the context of joint activity, and the ways in which these practices are mediated through designed artifacts (Stahl, Koschmann, & Suthers, 2006).

Slide 6: Challenges: Assessment in CSCL

- How to support collaborative learning and fairly assess group members' contribution?
  - Using online workspaces to support their collaboration and automatically record their collaborative processes
  - Writing weekly progress report
  - Peer evaluation
    - A sample

Challenges in learning process

- How to coordinate and monitor the collaborative learning process?
  - Using online workspaces to support their collaboration and automatically record their collaborative processes
  - Writing weekly progress report
    - What have I (we) done?
    - What are we going to do?
    - Why?
    - A template

      Microsoft Word Document

  - A sample in Google Spreadsheet

Tracking collaborative processes

- Using online workspaces
  - Wiki
  - Facebook group
  - …
- Using cognitive (e.g. visualization) tools
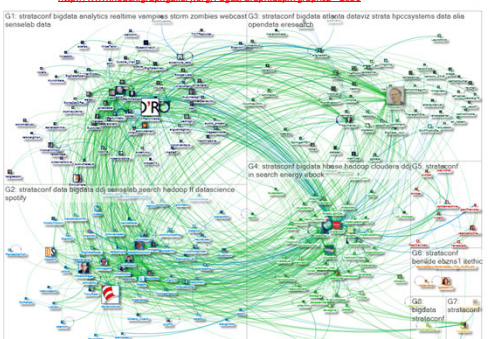
- What to track? How to analyse?

CSCL

Dimensions for tracking and analyzing collaborative processes

- 5 dimensions (Pozzi, et al., 2007):
  - Participative
    - Active participation
    - Passive participation
    - Continuity
  - Interactive
    - Passive participation before posting
    - References to others' messages
  - Social
    - Build positive relationship
    - Expression of emotions, intimacy
  - Cognitive & meta-cognitive
    - Levels of knowledge construction: recognize problems, explore, integrate, resolve, reflect
  - Teaching
    - Direct instruction
    - Facilitating discourse
    - Organizational matters

Collaboration analysis: NodeXL (Quantitative level)

http://www.nodexlgraphgallery.org/Pages/Graph.aspx?graphID=2831

https://nodexl.codeplex.com/
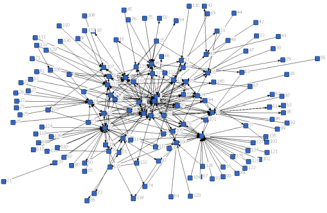
Collaboration analysis: (Quantitative level)

- Social Network Analysis: UCINet
- https://sites.google.com/site/ucinetsoftware/home

Collaboration analysis (Qualitative level)

Table 1 □ Interaction analysis model (IAM) phase definitions (Gunawardena et al., 1997)

Phase I. Sharing and comparing of information: statement of observation or opinion; statement of agreement between participants.

Phase II. Discovery and exploration of dissonance or inconsistency among participants: identifying areas of disagreement; asking and answering questions to clarify disagreement.

Phase III. Negotiation of meaning or knowledge co-construction: negotiating meaning of terms and negotiation of the relative weight to be used for various arguments.

Phase IV. Testing and modification: testing the proposed new knowledge against existing cognitive schema, personal experience or other sources.

Phase V. Phrasing of agreement and applications of newly constructed meaning: summarizing agreement and metacognitive statements that show new knowledge construction.

- Knowledge construction

Collaboration analysis (Qualitative level)

- Critical thinking

Table 2 □ Newman, Webb, and Cochrane model codes as taken from Newman et al. (1996).

Category		Positive Indicator		Negative Indicator	
R±	Relevance	R+	Relevant statements	R-	Irrelevant statements, diversions
I±	Importance	I+	Important points/issues	I-	Unimportant, trivial points/issues
N±	Novelty; new info, ideas, solutions	NP+	New problem-related information	NP-	Repeating what has been said
		ND+	New ideas for discussion	ND-	False or trivial leads
		NS+	New solutions to problems	NS-	Accepting first offered solution
		NQ+	Welcoming new ideas	NQ-	Squashing, putting down new idea
		NL+	Learner brings new things in	NL-	dragged in by tutor
O±	Bringing outside knowledge or experience to bear on problem	OB+	Drawing on personal experience	OQ-	Squashing attempts to bring in outside knowledge
		OC+	Refer to course material	O-	Sticking to prejudice or assumptions
		OM+	Use relevant outside material		
		OK+	Using previous knowledge		
		OP+	Course related problems brought in (e.g., students identify problems from lectures and texts)		
		OQ+	Welcoming outside knowledge		
A±	Ambiguity clarified or confused	AC+	Clear, unambiguous statements	AC-	Confused statements
		A+	Clear up ambiguities	A-	Continue to ignore ambiguities
L±	Linking ideas, interpretation	L+	Linking facts, ideas and notions	L-	Repeating information without making inferences or offering an interpretation
		L+	Generating new data from information reflected	L-	Stating that one shares the ideas or opinions stated, without taking these further or adding any personal comments.
J±	Justification	JP+	Providing proof or examples	JP-	Irrelevant or obscuring questions or examples
		JS+	Justifying solutions or judgments	JS-	Offering judgments or solutions without explanations or justification
		JS+	Discussing advantages and disadvantages of solution	JS-	Offering several solutions without suggesting which is the most appropriate.
C±	Critical assessment	C+	Critical assessment or evaluation of own or others' contributions	C-	Uncritical acceptance or unreasoned rejection
		CT+	Tutor prompts for critical evaluation	CT-	Tutor uncritically accepts
P±	Practical utility (grounding)	P+	Relate possible solutions to familiar situations	P-	Discuss in a vacuum (treat as if on Mars)
		P+	Discuss practical utility of new ideas	P-	Suggest impractical solutions
W±	Width of understanding (complete picture)	W+	Widen discussion (problem within a larger perspective. Intervention strategies within a wider framework.)	W-	Narrow discussion. (Address bits or fragments of situation. Suggest glib, partial, interventions)

Collaboration analysis: CoI (Qualitative level)

- http://communitiesofinquiry.com/ (Anderson, Rourke, Garrison, & Archer, 2001)

Community of Inquiry

CoI Coding Template

Table 1. Community of Inquiry Coding Template

Elements	Categories	Indicators (examples only)
Cognitive Presence	Triggering Event	Sense of puzzlement
	Exploration	Information exchange
	Integration	Connecting ideas
	Resolution	Apply new ideas
Social Presence	Emotional Expression	Emotions
	Open Communication	Risk-free expression
	Group Cohesion	Encouraging collaboration
Teaching Presence	Instructional Management	Defining and initiating discussion topics
	Building Understanding	Sharing personal meaning
	Direct Instruction	Focusing discussion

Strategies to promote the use of workspaces

- Effective collaboration may not naturally happen in a group and students may not use ICT spontaneously to support their collaboration either (Barron, 2003; Hämäläinen, 2008; Kreijns & Kirschner, 2004)

- How to promote?

Strategies to promote the use of workspaces

- Bigger group size
- Giving marks
- Must benefit them, make the collaborative process easier

Some other issues

- Grouping
  - Group size?
  - Heterogeneous or homogenous?
  - Friendship?
- leader
  - Need a leader?
- Communication: f2f, online, a/synchronous? Why?

Tools to support collaboration in a shared space

- Knowledge forum: (demo:
  http://www.knowledgeforum.com/Kforum/products.htm (not working now)
- Writing Pad:
- https://beta.etherpad.org/p/mlt803
- Facebook Group
- Trello
- Google Groups (no longer allowing to upload pages and files from Jan 2011)
- Google Docs (Drive)
- Wiki:
- Other groups

Share concept maps

- Asynchronous:
  - http://bubbl.us
    - Can share a concept map with others
  - http://www.mywebspiration.com/
    - Can also share a concept map with others
    - (not free now)
- Synchronous:
  - Mind Meister
  - https://coggle.it/

Share ideas

- Padlet:
  - https://padlet.com/qywang59/cogtools
- Lino sticky notes:
  - http://linoit.com/users/qywang/canvases/Cognitive tools
-

Group Assignment briefing

- Group size: <= 4
- Use the template

Reminder

- 2nd reflection
  - your understanding on the topic (5%); and
  - the application of the topic into your teaching practice (5%)
  - By the coming Wed (midnight)