NAPLeS Webinar Series

Group awareness tools

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To discuss the research area of group awareness, group awareness tools, coordination theory, and computer-supported collaborative learning and to advance participants understanding of this research area.

Overview

1. Origins of the research on group awareness
2. Research on effects of group awareness tools
3. Methodological and research issues

Origins (For me, anyway)

- Master's thesis on cooperative learning: Effects of training programme on students' use of elaborative help giving during cooperative learning.
- Ph.D. project on computer-supported collaborative learning (2004-2008).
- Starting point: CSCL, what can and does go wrong…
  - (CS) collaborative learning: promising, effective, etc. (e.g., Roseth, Johnson & Johnson, 2008)
  - However many problems during (CS)CL…

CSCL: What can and does go wrong…

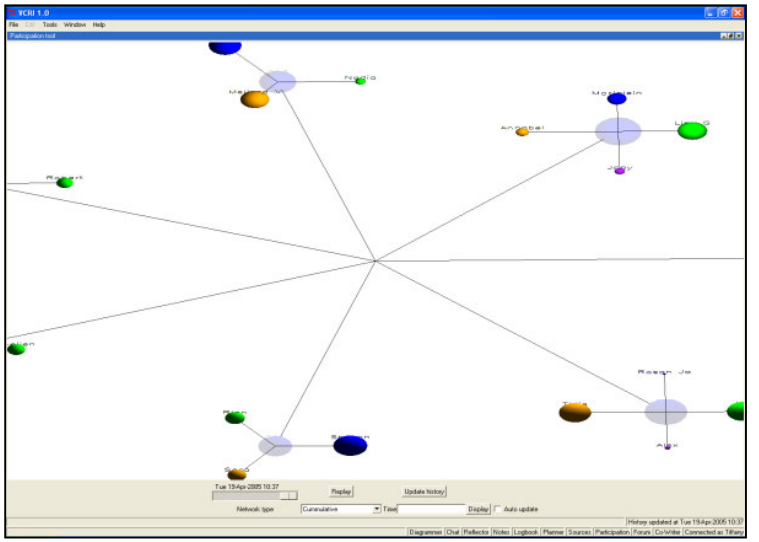
- Conflicts between group members.
- Free riding behavior, unequal participation.
- Discussions low in quality of argumentation and discussion.
- Communication problems
- Coordination problems
- …

QUESTION 1

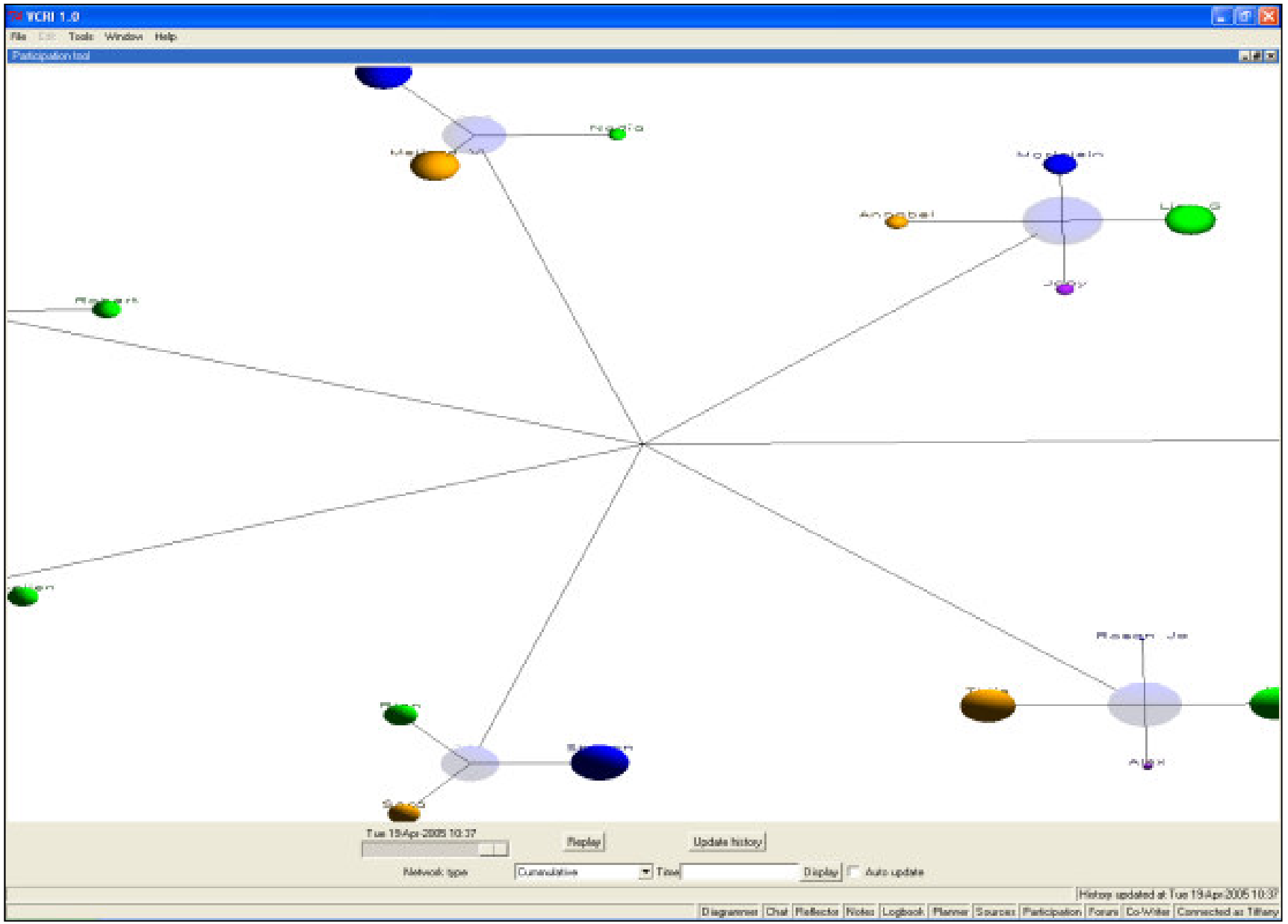
- Discuss and share: Which is the most severe problem students encounter during (computer-supported) collaborative learning?

Proposed solution: Visualizations

- Can aforementioned problems be addressed using visualizations?



- Why visualizations?
  - Make complex information easier to interpret
  - Decrease cognitive demands group members
  - Give feedback about activities in content and relational space of collaboration
  - Facilitate coordination
  - Motivational incentive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Findings

- Feedback provided by visualizations used by students to coordinate activities in content and relational space.
  - E.g., more attention for coordinating relational space (i.e., discussing functioning of the group).
- Effects on collaborative activities:
  - E.g., more equal levels of participation
- Limited effects on group performance and individual achievement.

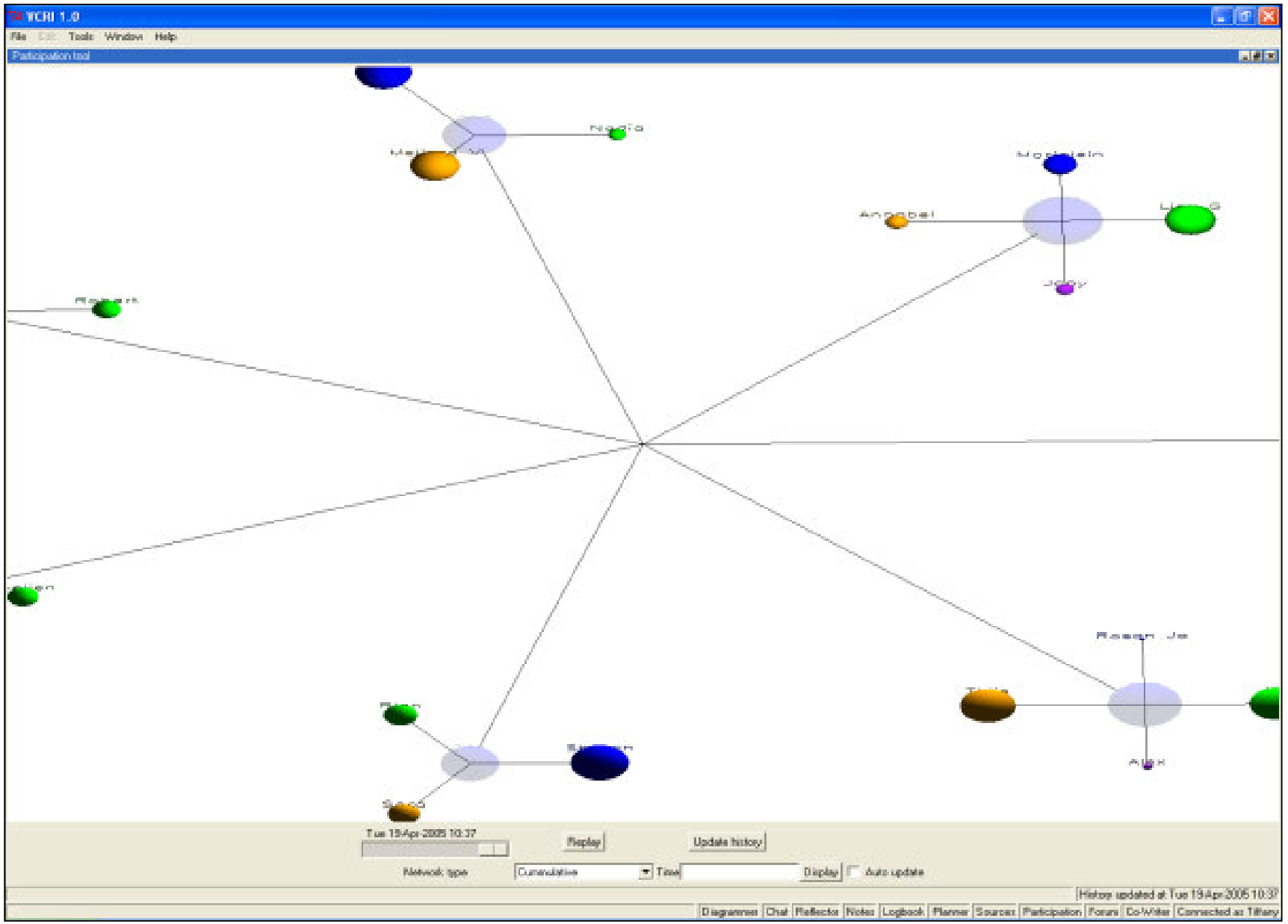
(Janssen, Erkens, Kanselaar, & Jaspers, 2007; Janssen, Erkens, Kanselaar, 2007; Janssen, Erkens, Kanselaar, & Kirschner, 2010)

Theoretical concepts (1)

- Content vs. relational space (Barron, 2003):
  - Content space: Cognitive, task-related, aimed at completing group task
  - Relational space: Shared understanding, social presence, group cohesion
  - Activities in relational space enable meaningful interaction in content space (Beers et al., 2007)
- Coordination:
  - "an activity in itself, as a necessary overhead when several parties are performing a task" (Ellis et al. 1992)
  - Activities aimed at preventing conflicting or repetitive activities (Malone & Crowston, 1992)
  - Content space: Metacognitive activities such as planning, monitoring, evaluating, etc.
  - Relation space: Discussing collaborative process, monitoring collaboration, etc.

Theoretical concepts (2)

- Group awareness:
  - Awareness information: Information about group members' behavior, knowledge and skills
  - Cognitive group awareness: information about group members' knowledge; used to coordinate activities in the content space of collaboration.
  - Social group awareness: awareness of the social situation of the rest of the group ; used to coordinate activities in the relational space of collaboration.
- Group awareness tools:
  - Designed to enhance cognitive and/or social group awareness by providing information.
  - Which information to provide? (i.e., partner information or knowledge, levels of participation)
  - How to provide information?
  - How to gather information? (i.e., system collects data, students provide information)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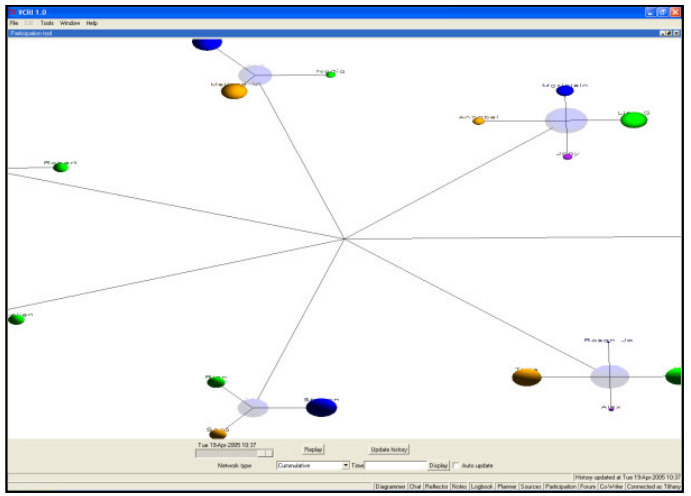
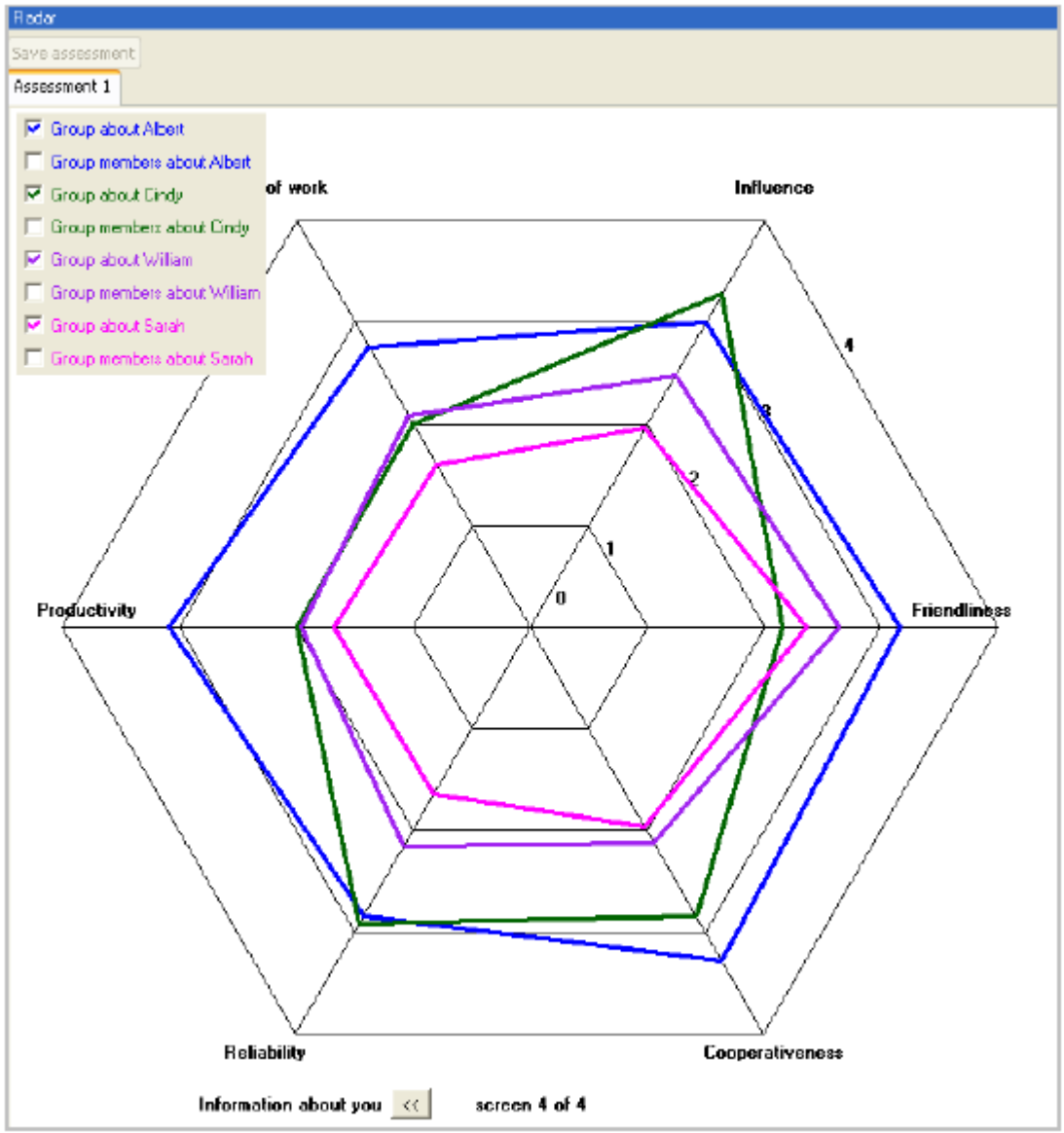


- Social group awareness tool
- Levels of participation of individual students.
- System gathers information (words typed).
- Graphical representation:
  - Quantitative information
  - Members identifiable
  - Comparison facilitated
  - Nonnormative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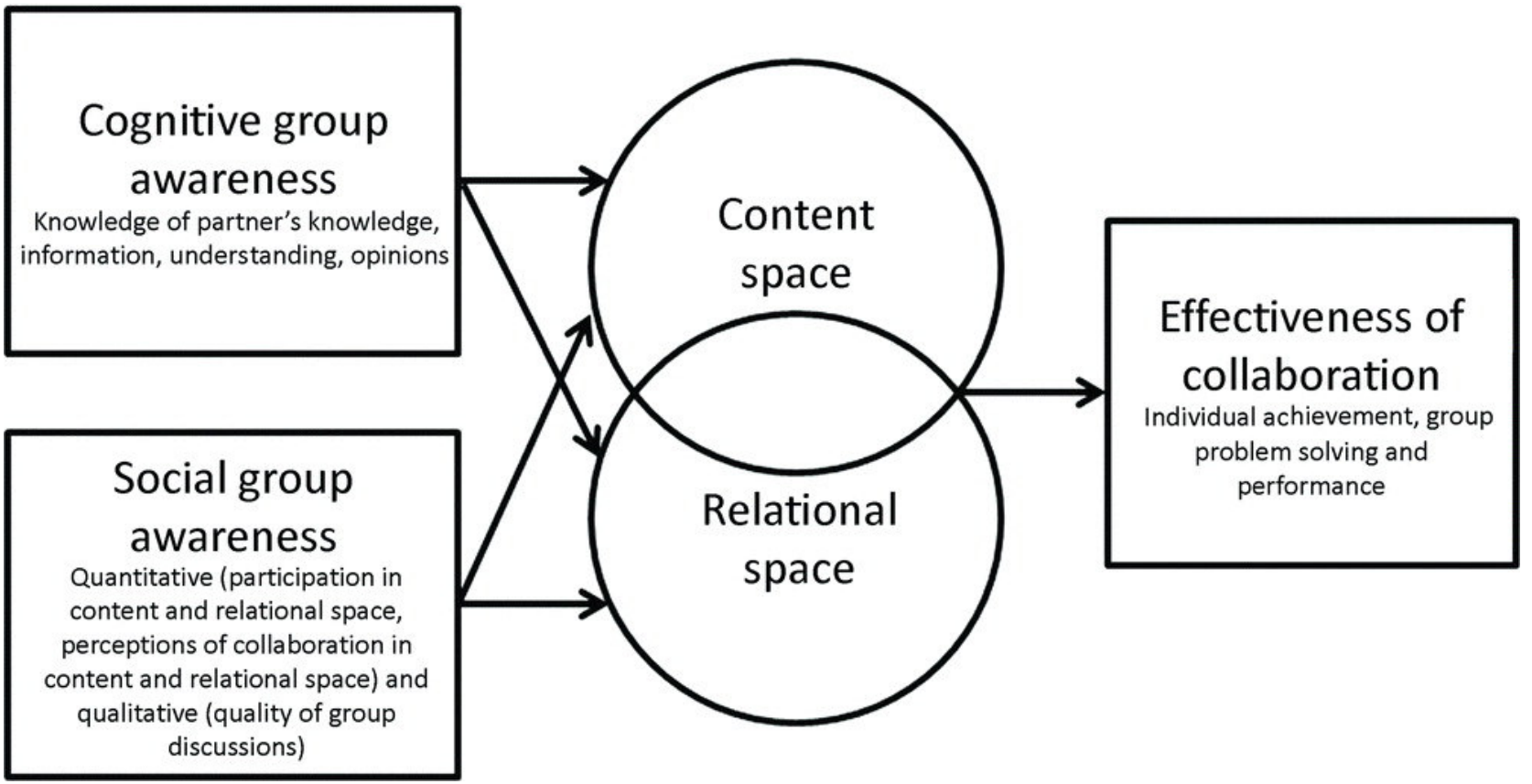
(Tentative) Conceptual model



QUESTION 2

- Discuss and share: Which strengths and weaknesses of group awareness tools for CSCL do you notice?

Cognitive group awareness tools

- Differences in awareness information that is provided (knowledge, information, opinions).
- Level of detail varies.
- Usually input of user is needed to gather information
- Comparison facilitated between own information, knowledge and partner(s)' information and knowledge.
- Effects found on collaborative process:
  - Sharing of information
  - More interactive behavior (questions, explanations)
- Effects found on performance:
  - Mostly effects on group performance
  - Some effects on individual achievement

Social group awareness tools

- Information provided about different activities in relational space:
  - Quantitative (i.e., participation levels)
  - Qualitative (i.e., conversation style)
- Usually, system gathers information.
- Comparison facilitated between own behavior and partners' behavior.
- Effects on collaborative process:
  - Participation levels
  - Equality of participation
- Effects on group performance and individual achievement limited.

QUESTION 3

- Discuss and share: Explanation for limited effect of social group awareness tools on individual and group performance?
- And: Is this a problem?

Methodological issues

- Most studies employ (quasi-)experimental setup with pre- and posttest.
- Relatively small studies (*N* = between 30-120).
- Quantitative analyses
- Dependent measures focus on performance:
  - Individual achievement
  - Group performance
- Dependent measures focus on collaborative process:
  - Coding and counting of student or group activities
  - Self-report through questionnaires

QUESTION 4

- Which opportunities do you see for research on group awareness tools?
- Are different, additional research designs needed?
- Are different, additional dependent variables needed?
- Other factors or theoretical concepts to take into account?