Peer Tutoring

How to design adaptive support to have a positive effect on interaction and learning in peer tutoring activity
Agenda

1. What is peer tutoring?
2. Reasons for support
3. Forms of support
4. Design of adaptive support
5. Adaptive vs. fixed assistance
What is Peer Tutoring?

- instructional teaching method
- working in pairs or groups with people from similar social groupings
- reinforcing own learning by teaching
- well-organized collaborative learning
Reasons for Support

- socially constructing knowledge through participation in collaborative activities
- positive collaboration behavior → help-giving
- students usually do not do so without assistance
- improving help-giving benefits help-giver as well as help-receiver
Forms of Support

- human facilitation
- pre-collaborative training
- employing reciprocal schema
- computer supported scripting of interactions
  - conventional vs. formative
  - fixed vs. adaptive
Design of Adaptive Support

Walker, Rummel, Koedinger (2011)

1. social design process → design principles
2. design of adaptive peer tutor assistance (APTA)
3. comparison with fixed assistance in classroom
4. future research
Design Principles for Adaptive Support

- Accountability
  Design Principle
- Efficacy
  Design Principle
- Relevance
  Design Principle

Peer Tutoring
Adaptive Peer Tutor System

APTA additionally to Cognitive Tutor Algebra (CTA)

➤ hints-on-demand

➤ adaptive resources

➤ adaptive reflective prompts

➤ domain hints and feedback

Tutor Interface
Fixed Peer Tutor System

- domain hints and feedback
- hints-on-demand
- Conceptual resources
- Reflective prompts

Tutor Interface
Adaptive Peer Tutor Assistance (APTA)

Tutee Interface

(1) Chat Window
(2) Menu-Based Solving
(3) Peer Feedback
(4) Sentence Classifiers
(5) Problem Steps
(6) Semantic Labels
(7) Skill Display
Adaptive vs. Fixed Assistance

- improvement of conceptual content of student help
- improvement of use of interface features (sentence classifiers)
- accountability increases when relevant and publicly support given to tutors
- no significant learning differences between conditions (short-term study)

→ More research needed to prove learning effect
→ is adaptivity important or just perceived adaptivity?
Learning and Perceived Adaptivity

Walker, Rummel, Koedinger 2013

➢ real adaptive – told adaptive – real non-adaptive

➢ perception of adaptivity directly linked to actual adaptivity

➢ more relevant support

➢ improves student learning

➢ as amount of support increases → difference between conditions becomes more apparent
Lessons Learned

- peer tutoring = structured collaborative learning approach with need of assistance
- adaptive assistance effects motivation positively by increasing accountability → public and relevant support
- it effects interaction positively → better tutoring → increase in learning
- research is getting closer to implementing an adaptive collaborative support system that provides students with long-term adaptive support

Thank you!