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Towards the Convergence of CSCL and Inquiry Learning: Scripting Collaborative Inquiry Learning

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> The use of the collaboration technology must be highly structured, with a systematic didactic approach, continuing teacher involvement and periodic face-to-face meetings to troubleshoot problems and reflect on the learning process. These suggestions [...] should only surprise people – if there still are any – who think that putting a computer box in a classroom will promote learning by itself.
>
> (Gerry Stahl, 2006, p. 221)

Inquiry Learning is regarded as a prominent approach to facilitate the construction of knowledge in science education. Educational psychology has devoted strong efforts to the development of web-based collaborative inquiry learning environments in recent years. Learners can explore scientific phenomena in these environments, they can gather and present data or set up hypotheses for example (see Schwartz, Lin, Brophy, & Bransford, 1999). According to Quintana and colleagues (2004), main processes of inquiry are posing questions and try to answer these questions with empirical data. Thereby, learners either conduct experiments their self or compare outcomes of already existing datasets. There are a number of examples for web-based collaborative inquiry learning environments: WISE (Slotta, 2004), CoLAB (van Joolingen et al., 2005), or BGuILE (Reiser et al., 2001), to name a few. Various scaffolds are implemented in these environments with the aim to stimulate substantial elaboration of the subject matter. Therefore, the attention of the learners has to be to channeled and focussed on relevant concepts and the mechanisms of the problem at hand (Pea, 2004). Current approaches try combine this approach with ideas stemming from research in computer-supported collaborative learning (see Kollar, Fischer, & Slotta, 2005). Parts of the inquiry cycle, e.g. the evaluation of empirical data, can be executed collaboratively. While the inquiry cycle is often scaffolded in order to facilitate essential inquiry processes, support of the collaborative activities is often lacking or even missing. Learners might get asked to discuss two conflicting hypotheses for example, but subsequently won't get supported to construct complete arguments and well-formed argumentation sequences. Computer-supported collaboration scripts based on the scripted cooperation approach (O'Donnell, 1999) can help facilitating collaborative processes like argumentation. An interface integrated in a computer-supported learning environment may suggest the construction of specific arguments by providing prompts that learners should use or respond to respectively (e.g., Nussbaum, Hartley, Sinatra, Reynolds, & Bendixen, 2002).

Furthermore, interfaces may be designed to specify, sequence and eventually allocate different learning activities to different learners. Empirical research suggests that computer-supported collaboration scripts can support specific processes and outcomes of argumentative knowledge construction, but they might have "side effects" on others (see Dillenbourg, 2002; Weinberger et al., in press). Kollar and his colleagues (2005) investigated computer-supported collaboration scripts that provided text spaces for claims and evidence learners had to fill in, as well as a specific sequence of arguments, counterarguments and integrations. Learners acquired domain-specific knowledge independently of the script support in this study. However, the computer-supported collaboration scripts facilitated the acquisition of knowledge on argumentation as an outcome of argumentative knowledge construction. These first results indicate the strong potential for a merger of research on collaboration scripts and inquiry learning.

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This full-day workshop aims at working out the synergies of computer-supported collaborative learning and Computer-Supported Inquiry Learning in an attempt to define a possible research agenda for Computer-Supported Collaborative Inquiry Learning and to identify demands on the future development of software tools supporting this joint approach. Hence, the workshop will address issues interesting for Computer Scientists, Educational Scientists, as well as Educational Psychologists. The workshop will be divided into three phases: The first phase consists of input talks from the fields of research, namely Computer-Supported Collaborative Learning and Computer-Supported Inquiry Learning, as well as the current state of the art of software development in these approaches. During the second phase, research will be presented that examines overlapping learning scenarios, e.g. scripted collaborative inquiry learning. Within the third phase, participants will work in small groups on the theoretical implications for a joint approach of "computer-supported collaborative inquiry learning", the demands on scripts resulting from this joint approach, and the demands for further software development for collaborative inquiry learning. There will be a special track for PhD students during this last phase. Senior researchers will discuss with the PhD-students their studies against the background of how to implement Computer-Supported Collaborative Inquiry Learning.

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