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Full Length Article

Scripts, individual preparation and group awareness support in the service of learning in Facebook: How does CSCL compare to social networking sites?

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ABSTRACT

This article investigates the influence of scripts, individual preparation and group awareness support on argumentative learning in Facebook, three instructional approaches known from standard CSCL, but yet quite unexplored for learning in social networks. Social networks already afford a social component that is beneficial for interaction, which can be enhanced in a subtle way by group awareness support. However, a missing element in social networks that might be necessary for learning is structure. Individual preparation and argumentation scripts may offer structure to improve argumentation quality and complement group awareness support. We investigate the potential interactions of scripts, individual preparation and group awareness support in social networking sites on individual and group learning outcomes. We present the combined results of three studies. Contrary to previous CSCL results, we present negative results of individual preparation and group awareness support in this socially defined platform. Positive effects are found for argumentation scripts, which however cannot counterbalance the negative effects of group awareness support or individual preparation when combined with either of them. We discuss the results and their implications for leveraging Facebook's social impact and 'native' interactions for learning and point out benefits and risks of using CSCL instructions in this context.

1. Learning and argumentative knowledge construction in social networking sites

SNS[1], and Facebook in particular, are uniquely popular communication platforms. Facebook's popularity spans genders, ages, social and academic backgrounds, in a way that is not comparable to special purpose learning collaborative software, which serve specific learning goals. It thus offers a unique opportunity for users to get involved in social rapport and share information. Because of these activities SNS can be considered as an authentic context for social forms of learning. Learning scientists have drawn the community's attention to the potential value of SNS as informal learning platforms (Greenhow, 2008; Greenhow & Robelia, 2009). Empirical studies have also found promising results of SNS for information sharing and learning (Dabner, 2011; Laru, Näykki, & Järvelä, 2011). Substantial emphasis is also put on social affordances of SNS and Facebook connected to learning; SNS, including Facebook, may foster social aspects of academic life including actual friendships (Bennett, 2010; Pempek, Yermolayeva, & Calvert, 2009; Ryan, Magro, & Sharp, 2011; Selwyn, 2009), there is a connection between social interaction and the exchange of study-related knowledge in SNS (Wodzicki, Schwämmlein, & Moskaliuk, 2012), as well as a relation between active information seeking and bridging social capital, that is the connectedness with possible cooperation partners who can be used as human resources in the future (Lampe, Vitak, Gray, & Ellison, 2012). However, it is not yet clear if SNS, where learning is self-organized and informal, can be leveraged for academic knowledge construction. There are contradictory results regarding the effects of SNS for academic performance in the classroom or on campus. Kirschner and Karpinski (2010) and Karpinski, Kirschner, Ozer, Mellott, and Ochwo (2013) point out that Facebook can be a distractor for learning based on multi-tasking effects. Yet, Junco (2012) found that it depends on how students use Facebook: students who post links and are interested in status updates have higher grades. Since SNS are platforms designed for dialogic exchange and at the same time combine social characteristics that are considered

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[1] SNS: social networking sites.

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important for learning they may be especially interesting for collaborative learning and argumentative knowledge construction (AKC[2]; Weinberger, Stegmann, Fischer, & Mandl, 2007). Still, argumentation in SNS is of low quality, conflicting opinions and inconsistencies tend to be dismissed rather than critically assessed, and the quality of the emergent knowledge in that context is questionable (Kanuka & Anderson, 1998). While conflicts and inconsistencies may well emerge in SNS, they might not regularly be resolved in a way that would promote knowledge co-construction. Potentially, the quality of argumentation can be additionally scaffolded as a way to ripe the possibilities of informal social learning.

In CSCL[3], scripts are commonly used to guide and structure discussions in order to help discussants clarify their own ideas for themselves and consider new ideas by others through argumentation, thus enhancing knowledge co-construction (Andriessen, 2006; Andriessen, Baker, & Suthers, 2003; Fischer, Kollar, Stegmann, & Wecker, 2013; Kollar, Fischer, & Hesse, 2006; Weinberger et al., 2007). Scripts can activate existing internal scripts or help create new scripts by organizing disperse internally represented elements of knowledge (Fischer et al., 2013). Scripts may be an appropriate and efficient way of structuring and enhancing learning processes and outcomes in classic technologically enhanced learning settings, but they may be too directive for the context of social networks. Therefore, the question arises, are scripts also appropriate to promote argumentative learning opportunities for special purpose learning in the informal and social context of Facebook? To answer this question, the chances and risks of using scripts in Facebook and their potential interactions with standard SNS affordances have to be clarified. The studies presented here, explore two kinds of CSCL scripts to leverage Facebook for learning, *argumentation script* and *individual preparation*. At the same time, group awareness support is a non-directive instruction, but may fail because of this to structure SNS interactions to promote special purpose learning. We investigate the interaction of scripts with *group awareness support* to simulate this social affordance of SNS as relevant to learning.

1.1. Argumentation scripts

Argumentative knowledge construction (AKC; Weinberger & Fischer, 2006) is the deliberate practice of elaborating learning material by constructing formally and semantically sound arguments with the goal of gaining argumentative and domain knowledge. AKC has been investigated in the context of CSCL due to its theorized added value for individual but also group level learning outcomes in line with social theories of learning. Learners often need to be supported by interventions like scripts to induce productive AKC processes. Argumentation scripts are among the most prominent approaches to foster AKC in CSCL environments and effect individual and collaborative domain learning (Noroozi, Weinberger, Biemans, Mulder, & Chizari, 2012; Scheuer, Loll, Pinkwart, & McLaren, 2010). To measure AKC and its outcomes, group and individual processes and outcomes have been used. Learners elaborate their arguments, consider multiple perspectives at the individual and group level and gain individual argumentative knowledge, when guided by argumentation scripts that prompt them to provide support and evidence or counterarguments for claims (Weinberger, Stegmann, & Fischer, 2010). At the group level, productive argumentative processes can help learners to resolve conflicts productively (Andriessen, 2006; Baker, 2003; Belland, Glazewski, & Richardson, 2008). Argument elaboration can further facilitate knowledge co-construction as a process of learning (e.g. Baker & Lund, 1997; Fischer et al., 2013; Stegmann, Wecker, Weinberger, & Fischer, 2012; Weinberger et al., 2010). As an outcome, knowledge co-construction has been shown through measures of knowledge convergence, indicating the degree of overlap in gained knowledge between the learner partners (Weinberger, Stegmann, & Fischer, 2007). Beyond these typical CSCL processes and outcomes, opinion and attitude change (e.g. Eagly & Chaiken, 1995; Erber, Hodges, & Wilson, 1995) can also be measured as an outcome of argumentative knowledge co-construction that may take place when learners explore alternative perspectives and re-consider initial standpoints (Weinberger et al., 2010; Tsovaltzi, Puhl, Judele, & Weinberger, 2014). Attitude change can be caused by dissonance due to cognitive conflict, or conflict between cognitive and affective states or behavior (Eagly & Chaiken, 1995; Erber et al., 1995). Argumentation scripts could also be applied in individual learning scenarios (Weinberger et al., 2010), although with less success as in collaborative scenarios, possibly because of interactions with social aspects of learning like awareness of quality standards in the argumentation (Fischer et al., 2013; Weinberger, 2011). Collaboration and dialogue in social learning arrangements may bear additional benefits, such as engaging learners in joint learning interactions that scripting of individual learning may not produce; these interactions can be seen as one crucial component for learning (Chi & Wylie, 2014).

1.2. Individual preparation

In addition to highly intertwined social interaction, some SNS activities are individual, like preparing and posting an argument. Responses, such as comments or "likes" may or may not follow at any later moment in time. This is especially notable in the asynchronous SNS communication. Likewise, scripts can focus on structuring social interaction of collaborative learners, but may also comprise different individual and social learning arrangements. Hence, scripts may foresee phases of individual preparation, like the ones inherent SNS, to advance the quality of later social interaction for learning. Learners can prepare for the discussion, e.g. prepare their individual solutions or reflect on their standpoints and create their individual arguments in order to compare and combine them during collaboration (e.g., Asterhan & Schwarz, 2009; Baker, 2009; van Boxtel, van der Linden, & Kanselaar, 2000; van Dijk, Gijlers, & Weinberger, 2013). Combinations of individual and collaborative phases may motivate learners and allow them to prepare in their own pace and give rise to different processes of argumentation. This is especially the case when they are expected to assume the role of a peer-tutor in the collaborative phase (Marttunen & Laurinen, 2001). Individual preparation may enable learners to activate prior knowledge, revisit or create personal points of view (Baker, 2003) before indulging into social learning processes. They can thus foster argumentative and domain learning gains (Baker, 2003; Jermann & Dillenbourg, 2003; Rummel & Spada, 2005). Especially when learners consider counterarguments and alternative positions on their own first, they may be equipped to contribute to elaborated and multi-perspective discussion (Weinberger et al., 2010). Individual preparation might, however, also lead to knowledge solidification, in which learners acquire knowledge on their own and form their individual opinions and attitudes, but it may hinder co-construction of knowledge with its added value for learning.

1.3. Group awareness support

Social processes of learning presuppose that learners are aware of different aspects of group work that may help them regulate the learning process, individually and in groups. Several types of awareness that are often combined in research have been defined.

[2] AKC: argumentative knowledge construction.
[3] CSCL: Computer Supported Collaborative Learning.