

The Effects of the Productive “Visible-Annotation Tool” (P-“VAT”) for Collaborative Knowledge Construction on Higher-Order Interaction and Collaborative Outcome

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Abstract: This abstract reports a design-based experimental study that evaluates the effects of the revised tool (P-“VAT”) on higher-order interaction and level of collaborative outcome. To achieve this purpose, research was carried out to revise the previous version of the VAT through comparison of the effects of two types of learning strategies in P-VAT. Results will lead to in-depth and systematic verification of the research questions.

Research background and vision

With the proliferation of network technologies, computer-supported collaborative learning (CSCL) is currently being implemented at all levels of education (Fu, Aalst, & Chan, 2016). In particular, an asynchronous online discussion tool is a valuable means of engaging students for the knowledge construction in the complex task. Many researchers have designed asynchronous discussion tools with various functions (Fransen, Weinberger, & Kirschner, 2013). Regrettably, however, the realization of the productive learning process from the precise sharing of ideas to the successful integration of diverse ideas has proven to be difficult in educational practice (Kirschner & Erkens, 2013). Despite the increase in research on various scaffolding strategies for CSCL, there is still a lack of effort in designing scaffolding, especially considering the sequential nature of the knowledge construction process (Rienties, Giesbers, Tempelaar, & Lygo-Baker, 2012; Shin et al., in press). In addition, given that the fundamental goal of CSCL is learner-centered reflective thinking, some strategies should be provided in a form that increases the autonomy of the learner (Ludvigsen, 2016). Toward these issues, this study suggested that the successful completion of complex tasks requires a productive CSCL environment that combines several scaffolding strategies implemented at different phases of knowledge construction (Resier, 2004). This study aims to improve the previously proposed VAT by providing a negotiation script during the opinion-sharing phase and combining peers’ feedback activities to enable learner-directed flexible interaction during the problem-solving phase, thereby fading internalized negotiation scripts (Bouyias & Demetriadis, 2012). In particular, productive VAT (P-VAT) as the improved tool focused on problem solving phase can promote a reflective discourse based on dynamic interaction and then can lead to a fruitful collaborative solution. Through these effects, P-VAT will help to realize productive knowledge construction from building exact common ground to describing the fruitful solution through the higher-order interaction. In addition, the study expects to contribute to the field of CSCL research by combining, within a series of productive knowledge construction processes, key scaffolding strategies that have been shown consistently to be important to CSCL.

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