Assessing Student Attitudes Toward an Argument Visualization Tool

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Abstract

Argumentation is a foundational competency for critical thinking, and argument visualization (also known as argument mapping) has been recognized as fostering argument construction ability. The widespread use of argument essays and other forms of argumentation across the undergraduate curriculum presents an opportunity for deploying an argument visualization tool to scaffold student argumentation in a variety of university courses. Our research group developed a web-based argument visualization tool called DMap and deployed it in undergraduate courses across several faculties of our university. We constructed a 28-item questionnaire and gathered questionnaire data from 170 students to assess student attitudes toward the tool. An Exploratory Factor Analysis identified four factors: 1. Effects of DMapping on Learning and Motivation (8 items, Cronbach's $\alpha = 0.893$), 2. Preference for DMapping as a Mode of Instruction (4 items, Cronbach's $\alpha = 0.839$), 3. Self-Efficacy for DMapping (4 items, Cronbach's $\alpha = 0.754$) and 4. Usability of the DMap Interface (3 items, Cronbach's $\alpha = 0.789$). Students demonstrated positive attitudes to the use of the DMap tool on all four factors. These results are part of an ongoing effort to construct a reliable and valid instrument for assessing a specific cognitive tool for supporting learning in postsecondary education. We propose that instruments assessing student attitudes to other cognitive tools (e.g., asynchronous discussion tools, peer feedback tools) may show a parallel four-factor structure.

Keywords*: Argumentation map; visualization tool; factor analysis; exploratory factor analysis; instrument reliability and validity