PROMOTING SELF-REGULATED LEARNING APPROACHES IN A SCIENCE ONLINE INQUIRY LEARNING CONTEXT

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THEME

Engaging students in STEM education

AIMS AND BACKGROUND

Web-based scientific inquiry learning environments possess advantages different to those offered by traditional classroom contexts. For instance, they can emphasize students' autonomous inquiry learning rather than teachers' lecturing, provide students with more technological support and flexibility to conduct explorations independently (Ren, 2004), facilitate students' engagement and communication during the learning process (Kim & Lim, 2019), and improve students' science competency (Chiu, 2010; Chiu & Linn, 2008; Clark & Sampson, 2008; Raes, Schellens, & De Wever, 2014). However, students will be faced with new challenges in such environments. Online inquiry learning demands students not only have domain-specific background content knowledge, but also possess the competency to self-regulate their learning efficiently (Azevedo & Witherspoon, 2009). A number of studies have focused on how to improve self-regulated online learning (Albelbisi & Yusop, 2019; Hadwin & Winne, 2001; Lin, Lai, & Chang, 2015). It has been discovered that providing supportive guidance, such as diverse scaffolding strategies (Lim & Kim, 2019; Lin et al., 2015) or supportive formative assessment (Al-Smadi & Guetl, 2011), was an effective way to minimize the difficulties and challenges in an online learning environment (Al-Smadi & Guetl, 2011; Kim & Lim, 2019).

METHODOLOGY

Grounded on self-determination theory, two quasi-experimental studies with pre and post measurements were conducted to address two questions. First, how can autonomy– and structured– support be used to improve students' inquiry learning in autonomous web-based inquiry learning environments? Second, how does teachers' affective-support feedback influence student inquiry engagement?

RESULTS AND CONCLUSIONS

The results shed light on the positive impacts of integrating both autonomy and structured support and emphasize the critical role of teachers in web-based inquiry learning environments. They also highlight the importance of teacher's emotional support on students' behavioural engagement in web-based learning.

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