Examine Help-seeking Effectiveness in Scientific Problem-solving with an Educational Video Game

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Help seeking is a goal-directed action that mediates the relationship between academic difficulty and successful task completion (Newman, 2008). In educational video games, students have more ways of interacting with various help modalities to improve their learning gains (Aleven et al. 2006; Baker et al. 2013). This study aimed to assess the effectiveness of two types of help-seeking behaviours (i.e., executive vs. instrumental help seeking) in scientific problem-solving with an educational video game. We also examined the interplay of student attributes (e.g., prior knowledge, motivation, and goal-orientation) and help-seeking behaviors to further understand student learning behavior and achievement performance.

Both computer log data and survey data (N = 61) were applied for the data analysis. The results showed that students, who demonstrated instructional help-seeking behaviors such as activating in-game explanation hints and instruction prompts, appeared to solve problems successfully, compared to students with executive help-seeking behaviors like asking for a direct answer to complete the task. Our results also showed that students with performance goal-orientation were likely to demonstrate executive help-seeking behaviours, whereas students with high task value were likely to exhibit instructional help-seeking behaviours more often. Students’ prior knowledge also significantly correlated with help-seeking behavior.

Students’ ability to use help resources efficiently is an important learning skill in any achievement settings. We hope this study can help us better understand the underlying mechanism of help-seeking, so that we can design learning systems to purposefully cultivate learners’ optimal engagement via the use of tailored instruction and feedback.