

Investigating Fifth Graders' Multiple-Text Comprehension About Ecosystems Within A Game-Based Learning Environment

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Introduction

Game-based learning can be broadly defined as a challenging yet motivating, rule-based system for learners to engage and accomplish specific learning goals (Mayer, 2014; Plass et al., 2020). We were interested in targeting students' multiple-text comprehension within a game-based learning environment. Under a large-scale funded project, we designed an educational game, Missions with Monty, that provided fifth-grade students explicit instructions for comprehending individual texts and assessed both their individual-text and multiple-text comprehension.

Research Questions

1. Does the single-text comprehension training improve students' performance in highlighting, summarizing, monitoring, and integration tasks, respectively, in the game when controlling for students' prior knowledge?
2. Do students' self-efficacy for science learning and prior knowledge predict their performance on the integration task?
3. Are students' single-text and multiple-text comprehension correlated?

Results

- **Finding 1:** There were no differences between the experimental and control conditions in students' performance on the integration task and the single-text tasks.
- **Finding 2:** Students with high prior knowledge in science and high self-efficacy for learning science concepts tended to perform better on the multiple-text integration task.
- **Finding 3:** Students' performance on the single-text challenges was positively related to their performance in the multiple-text integration task.

Conclusion

Findings from this study suggested the importance of internal resources for fifth graders' multiple-text comprehension while in a game. Findings also indicated and reinforced the importance of students' knowledge and self-efficacy when engaged in multiple-text integration tasks.



In the game-based learning environment, **Missions with Monty**, fifth graders' single-text comprehension positively predicted their multiple-text comprehension. Students' prior knowledge and self-efficacy for science learning affected their game performance.



Check out the Missions with Monty website!



Scan to read the full conference paper.

Method

Participants included 144 fifth-graders across multiple elementary schools. See Figure 1 for demographic information. The study included four steps:

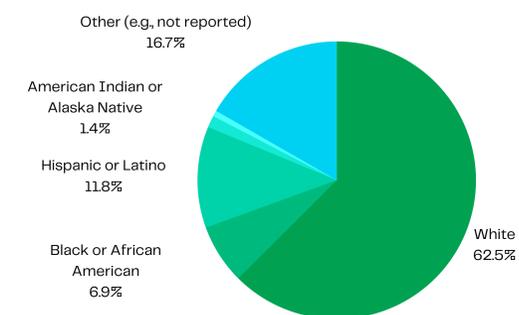
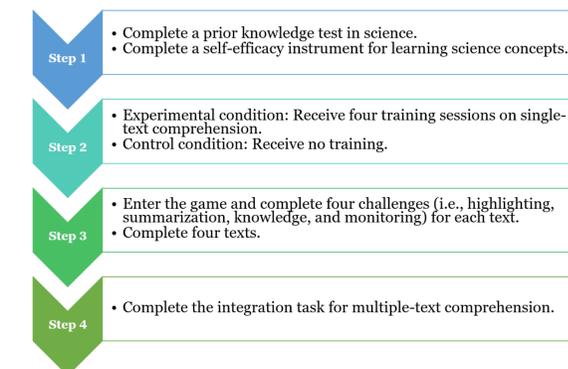


Figure 1. Students' demographic information.

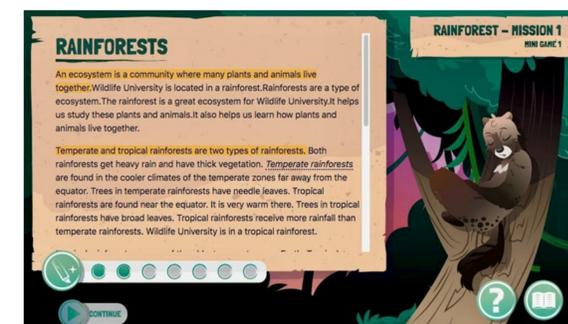


Figure 2. Sample text in Missions with Monty.



Figure 3. Multiple-text integration task.