

Discovering the Value of Digital Game-based Learning from the New Perspective of Transfer

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Digital game-based learning is recently becoming a popular trend in e-learning. However, the effectiveness of game-based learning is still uncertain. This study develops two e-learning environments, web-page e-learning and online game-based e-learning, to facilitate 28 sixth graders' learning in saving electricity and energy. We seek to find the hidden value of game-based e-learning by comparing the learning performance on knowledge acquisition and problem solving transfer between the group who received game-based treatment and those who received web-page e-learning treatment.

The findings revealed that there were no significant difference in the performance of knowledge acquisition and problem solving transfer from the traditional viewpoints between the two treatment conditions. On the other hand, there was significant difference in the performance of problem solving transfer from the new perspective between the two treatment conditions. It demonstrates the value of game-based learning by enhancing the students' ability to learn and their problem solving transfer when encountering novel problem. At the same time, based on the analysis of learning behaviors, the findings revealed that the learning tasks and interactivity had a key impact on learning behaviors and learning effectiveness. This also demonstrates the value of game-based e-learning.

Keywords: e-learning, digital game-based learning, learning effectiveness, transfer of learning

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