

Gender difference in abductive reasoning game playing

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Abstract: Using games not only can provide the mechanism for learning domain knowledge but also discipline players thinking ability. To integrate abductive reasoning skills into domain knowledge, this study designed a game, name V-aquarium, in which students can choose different domain knowledge, such as nature science or history to practice abductive reasoning to get bonus for buying ocean organs and storying in Virtual aquarium. For example, three cues were presented on screen: Chinese food, amphibian, bulging belly, then the answer is frog. To understand how gender difference in playing this game and affect players' cognitive and affective states, this study took 7th grade students from Taipei junior high schools to examine cognitive load, epistemic curiosity and perceived the benefits for learning that particular domain knowledge. Data of 307 were usefully collected and subjected to independent t-test. The results revealed that the level of cognitive load in playing this game, male students were lower than female students; the levels of I type epistemic curiosity and D type epistemic curiosity to play better in this game, male students were higher than female students; and the level of perceived usefulness of learning domain knowledge, male students were also higher than female students. The results implied that by practice abductive reasoning and learning domain knowledge, V-aquarium is a suitable game for male students rather than females.

Keywords: Abductive reasoning, gamification, science learning, history learning, learning effect