Evidence Based Library and Information Practice

Libraries May Teach Some Skills through Mobile Application Games

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Volume 14, Number 3, 2019

URI: https://id.erudit.org/iderudit/1088945ar
DOI: https://doi.org/10.18438/eblip29587

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Publisher(s)

University of Alberta Library

ISSN

1715-720X (digital)

Explore this journal

Cite this review

Miller, R. (2019). Review of [Libraries May Teach Some Skills through Mobile Application Games / Kaneko, K., Saito, Y., Nohara, Y., Kudo, E., & Yamada, M. (2018). Does physical activity enhance learning performance? Learning effectiveness of game-based experiential learning for university library instruction. Journal of Academic Librarianship, 44(5), 569-581. https://doi.org/10.1016/j.acalib.2018.06.002]. *Evidence Based Library and Information Practice*, *14*(3), 150–152. https://doi.org/10.18438/eblip29587

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Evidence Summary

Libraries May Teach Some Skills through Mobile Application Games

A Review of:
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Received: 29 May 2019 **Accepted:** 14 July 2019

DOI: 10.18438/eblip29587

Abstract

Objective – To understand the impact of a mobile application game for library knowledge acquisition, task performance, and the process of learning.

Design – The main experiment included a pretest, learning experience, post-test, and a questionnaire. One month later, a post-experiment was conducted, including a test of "declarative knowledge" and a behavioural test.

Setting – Kyushu University in Fukuoka, Japan.

Subjects – 36 first-year undergraduate students, of which 25 were female and 11 were male. Students were divided into experimental and control groups. 32 students completed the study.

Methods – In the main experiment, students responded to the same 20 question pre-test on library use, and then both groups participated in learning experiences designed to convey knowledge about using the library. The control

group's learning setting was a web-based tutorial about the library. The experimental group's learning setting was "Library Adventures: Unveil the Hidden Mysteries!" a "game-based learning environment" developed by the researchers (Kaneko, Saito, Nohara, Kudo, & Yamada, 2015, p. 404), which required students to complete activities by physically moving through the library. For both groups, learning content related to local library procedures, like hours, arrangement of collections, and methods for locating books and articles. The game collected data that the authors analyzed using statistical methods in an attempt to validate quizzes that were embedded in the game. After finishing the learning experience, all students completed the 20-question post-test, and then responded to the Instructional Materials Motivation Survey (IMMS), a questionnaire designed to gauge learning motivation using the Attention, Relevance, Confidence, and Satisfaction (ARCS) model. One month following the main experiment, all students took a test of declarative knowledge and completed a skills test.

Main Results – Experimental and control group students gained about the same level of declarative knowledge. All students lost some knowledge in the one-month gap between the main and post-experiment. Students who had learned through Library Adventure were able to borrow a journal and locate a newspaper article more effectively than the control group. In contrast, tutorial users made study room reservations more quickly than the experimental group. More significantly, the IMMS instrument demonstrated that game-based learners scored higher in attention, relevance, and satisfaction than tutorial-based learners. Experimental and control group participants demonstrated the same level of confidence.

Conclusion – While inconclusive about the effectiveness of games versus tutorials for acquisition and retention of knowledge, the authors concluded that game-based instructional content may foster greater learner engagement, aiding some students in understanding how to use the library in a manner superior to web-based tutorials. Librarians and instructional designers developing game-based learning experiences for novice library users may find this research informative.

Commentary

The authors describe a multi-part experiment intended to demonstrate the extent of student learning from a game versus a tutorial. This study is notable in the library and information science literature because it compares the effectiveness of a game and a tutorial, rather than simply reporting the outcome of a single intervention. Furthermore, the Library Adventure game requires students to move around the library and complete physical tasks in order to play. As librarians implement instructional design principles in daily practice, this study is a practical example of how libraries can engage students in active learning even when instructional content is delivered digitally.

The critical appraisal tool developed by Glynn (2006) was used to evaluate this study. While 32 students completed the study, the authors do not describe informed consent procedures or recruitment methods, and, although participants were first-year students, the authors do not describe additional inclusion/exclusion criteria. Additionally, the research methodology and results are not always clearly stated, which may confuse some readers.

For librarians exploring "gamification," this research has potential to inform the efficacy of video game-based instruction. The authors applied a modified version of the Instructional Materials Motivation Survey (Keller, 2009), a validated tool that examines four elements of learning motivation: Attention, Relevance, Confidence, and Satisfaction (ARCS). Applying IMMS to library learning offers library practitioners method of formative assessment by focusing on student motivation to learn. While this concept is likely familiar to practitioners in the instructional design domain, instruction librarians may value gauging learner motivation through the

process of developing and refining educational content.

A substantial portion of the article is devoted to analysis of each game player's performance in Library Adventure. Using this data, the authors identified "stages" of the game that were easy or difficult. Instructional design practitioners may value data like this in order to understand where students failed or succeeded. Unfortunately, the authors did not report comparable data for the web-based tutorial, so the two learning modes cannot be compared on this point. In addition, the authors do not relate this analysis to the outcomes of the pre-/post-tests and IMMS instrument. The authors have an opportunity to expand on these points to extend their research in future publications.

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