The impact of an educational game on participants' acculturation attitudes

Ivar Männamaa[a1], Aurika Komsaare[a], Äli Leijen[b]

[a] *University of Tartu, Viljandi Culture Academy*
[b] *University of Tartu, Institute of Education*

Summary

School-aged refugee children form a significant part of the educational system and pose many challenges for the recipient countries. Attitudes and acculturation preferences of peers from the majority population have been found to be an important factor in improving education for students from immigrant families (Isac et al., 2012; Kosic et al., 2005). Previous studies have demonstrated that game-based learning can have positive effects on students' motivation and attitudes. While several factors affecting the impact of games on cognitive learning outcomes have been identified, little research has addressed the possible impact on acculturation attitudes. However, it is known that learning transfer from source to target is rare. This paper investigates the impact of an experience acquired by playing the educational game FOUNTAINS (Männamaa, 2015) on the acculturation preferences/attitudes of game participants. FOUNTAINS has been translated into more than ten languages by Fall 2015.

The efficiency of game-based learning has been a topic of interest to many educationalists (Ruben, 1999; Wouters et al., 2013). No matter what forms of knowledge, skills or attitudes are intended to be acquired, game facilitators want the participants to apply what they have learned beyond the original play-session context. Such ability of the learner to extend what has been learned in one context to new contexts is known as learning transfer (Nokes-Malach & Mestre, 2013; Perkins & Salomon, 2012). Though learning transfer has been studied quite intensely, the question of when (and if at all) the far transfer occurs has not seen much progress.

In the current research, participants of the game were expected to understand a general principle by playing a metaphoric game and transfer the same principle to the acculturation attitudes. Before FOUNTAINS was launched two studies were conducted to identify its possible impact on participants' attitudes (Männamaa & Leijen, 2015; Väli, 2014). As the results were encouraging, we were curious to find out whether the difference

---

[1]   Viljandi Culture Academy, Posti 1, 71004 Viljandi, Estonia; ivarman@ut.ee

between the groups was accidental or if the game really worked. Doubts arouse for two major reasons. Firstly, the transfer of learning from one context to another seems to appear seldom. Secondly, the efficiency of game-based learning as experiential learning has been questioned on a broader basis (Kirschner et al., 2006).

Method and participants

To address the research question, a quasi-experiment (groups were not randomised) was conducted. The experiment consisted of a pre-test, an intervention (game-session), and a post-test. To assess the change in preferences, an identical 12-item Likert-scale questionnaire was filled out. In total 131 participants took part in the survey (age range 17–24). Two groups were formed: one participated in the FOUNTAINS game (test group, n=82), whereas the other did not (control group, n=49). Both groups completed the questionnaire twice; the test group shortly before the game and a re-test about ten days after that. Raw data gathered during a previous study (Väli, 2014) was included in the current study.

All participants completed a 12-item questionnaire, including both positively and negatively keyed items. A Likert scale from 1-10 was used (ranging from "I strongly disagree" to "I strongly agree"). The score is calculated by totalling the responses of all twelve items. One end of the scale indicated respondents' support for the idea of cultural integration, at the other end, rather to assimilation or marginalisation of immigrants. Statements were based on four general principles:

1) It is important both to stand by one's beliefs and find common ground with other parties.
2) Access to resources may improve even if the borderlines between groups remain intact.
3) In the case of integration, it is important to consider the agents' wish to participate in the decision-making processes.
4) The topic of integration is accompanied by controversies, for example between the wish to retain one's original qualities and to gain access to resources.

Game

The simulation-game FOUNTAINS was used as intervention. FOUNTAINS is a table-top simulation game designed as a study aid to enhance comprehension of cultural integration processes. Participants must find

ways to preserve their own comprehensive culture while providing other groups access to resources. A more explicit explanation of the model behind the game has been published previously (Männamaa & Leijen, 2015). A game-session takes approx. 100 minutes in total: briefing 10 minutes, simulation 50 minutes, and debriefing 40 minutes.

Results

Results indicate a shift in acculturation attitudes after the game. A significant difference in the scores of the pre- and post-tests of the test-group was found (t=-1.73, p =.043). This suggests that playing the FOUNTAINS does have an effect on acculturation attitudes. Our results suggest that after playing the game the preferences of the participants who attended the game agree more with the statements supporting the idea of cultural integration.

Conclusion

Although the process of learners' acquisition and application of knowledge has received much attention from educationalists and cognitive scientists, there is no agreement on when and if learning transfer takes place at all. Still, the efficiency of a simulation game is usually evaluated against just one criterion: Does the ability of the participants to perform better in a novel situation increase as a result of the tasks experienced during the game. Game-based learning is an instructional strategy of minimal guidance; therefore, both the strengths and weaknesses of such strategies should be considered. Though motivational aspects of game-based learning are well known, the participants could face the problem of cognitive overload. Two options were discussed that might help to overcome this: Firstly, focusing on threshold concepts (Barradell, 2013) that serve as node-points in the conceptual map, and secondly, including elements in the design that stimulate the formation of metaphors (Lakoff & Johnson, 1980). We do not claim that including these elements in game design is a sufficient condition for ensuring knowledge acquisition and transfer, but on theoretical grounds they can provide a valuable resource for further discussion. Though learning by playing may set some limits to the quantity of acquired knowledge, it seems to ease the further retrieval and implementation of the lessons learned.

Keywords: acculturation attitudes, change of attitudes, educational games, game-based learning, learning transfer, simulation/game Fountains