Chapter 10
The Role of the Researcher in Making Serious Games for Health

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ABSTRACT

There has been increasing focus on serious games for health; however, there is very little evidence for the effectiveness of these games and the existing research often lacks scientific rigor. The aim of this chapter is to demystify the process of collaborating with researchers and outline how a researcher can contribute to making more effective games and start the process of evaluating it scientifically. Researchers should be engaged BEFORE serious games for health are developed in order to place serious games for health in the best position to have a measurable impact on health outcomes. The chapter covers issues of working with researchers to agree on problems to address, applying behavioral and learning theories to solve them, and finding optimal research designs to validate the serious game. Issues of safety and ethics in health research are also given considerable attention.

INTRODUCTION

There has been an exponential growth and interest in the area of serious games for health. This has resulted in a striking increase in the number of conferences, funding opportunities, research journals and articles specifically focused on serious games for health. Despite this, we still do not have adequate knowledge about the efficacy of games to improve health (De Freitas & Oliver, 2006; Kato, 2010; Peng & Liu, 2009). A handful of scientifically rigorous studies have been conducted and they have shown that patients who play the games under study show increased health-related knowledge, greater self-efficacy to engage in health-related behaviors, and improved adherence to medical recommendations and regimes. These cognitive and behavioral changes have been shown to be related to actual health outcomes. Research on serious games to train medical professionals have shown improvements in skills in emergency situations and there is even

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a suggestion that playing video games improves fine motor skills related to surgical operations among physicians (see Kato, 2010 for a review). While the findings are promising, there are far more games for health that HAVE NOT been evaluated scientifically than those that have. The guidelines described in this paper are an attempt to close this gap by providing knowledge about how to develop more effective games and how to conduct research on them.

In this chapter, we will discuss some barriers to pursuing validation research on serious games for health, describe some guidelines for engaging researchers in serious-game-for-health projects, and present a possible structure for engaging a researcher to evaluate the efficacy of a serious game for health to have an impact on health and well-being. This chapter has a bias to present the approach that a psychologist would take, focusing on the evaluation of cognitions and behaviors because that is their specialty. The approach is basic enough so that researchers and specialists in other disciplines such as communication scientists, anthropologists, and medical educators will find similarities. This approach should not be taken as a prescriptive approach because individual serious-game-for-health projects will differ widely in their scope, resources and goals. It should however provide some guidance to people interested in making serious games for health who may not have experience working with researchers. Finally, the focus of this chapter is on the importance of collaborating with researchers in order to validate the efficacy of a serious game for health to impact outcomes.

BACKGROUND

Validation research on a serious game for health is an attempt to evaluate whether or not the game intervention is able to have a measurable impact on an outcome. With a serious game for health, this outcome is assumed to be related to health. It is not about how satisfied the user is with the serious game for health, how much fun he or she has playing it, or whether or not the person understands how to use the game software and navigate it successfully. This type of research is usually considered to be usability research. Validation research is also not about how many copies of the game are distributed or bought although this certainly plays a part in how much of an impact the game can have on outcomes. Game usability and sales may have play a role in the ability of a serious game for health to impact health outcomes, but they do not represent validation research as we are using it here.

Addressing the current research gap regarding the efficacy of serious games for health would benefit a number of key stakeholders. Researchers who conduct sound research studies on the efficacy of serious games for health will be providing a significant contribution to the field of serious games and also health interventions. Game developers who are involved in the process of developing games that will be scientifically validated will develop unique expertise and knowledge about how to develop a game that "works" and thereby benefit from the interest and enthusiasm that their games garner. Funding agencies and investors will benefit from research on the efficacy of serious games because the knowledge will enhance their ability to make more informed decisions about where to focus their resources for the greatest financial and societal returns on their investment. Medical educators will be interested in serious games for health that have been shown to be efficacious in helping them reach their educational and training goals. Medical professionals who practice evidence-based medicine will appreciate scientifically valid research on tools that can uniquely address the problems they are trying to solve with their patients. These professionals will prefer to "prescribe" or recommend serious games for health that have been scientifically evaluated