Chapter 14
Requirements–Based Design of Serious Games and Learning Software:
An Introduction to the Vegas Effect

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ABSTRACT

A serious game can be entertaining and enjoyable, but it is designed to facilitate the acquisition of skills and knowledge performance in the workplace, classroom, or therapeutic context. Claims of improvement can be validated through assessments of successful, measurable practice beyond the game experience, the targeted context of the workplace, classroom, or clinical using the same tools as multiple traits and multiple measure (MTMM) models. This chapter provides a post-mortem describing the development of the initial design and development of a measurable model to inform the design requirements for validation for a serious game. In this chapter, the reader will gain insight into the implementation of lean process, design thinking, and field observations for generative research. This data informs the assessments and measurement of performance, validated through the MTMM model criteria for requirements. The emphasis examines the role of research insights for onboarding and professional development of newly hired certified nursing assistants in a long-term care facility.

INTRODUCTION

This article provides a post mortem for developing serious games to answer the question:

How do you know your serious game had the intended impact?

This chapter builds upon this theme to emphasize the importance of a Lean Process approach, when integrated with Design Thinking, User Experience Research, traditional psychology and psychometrics, and Agile Development. These approaches to product design potentially provide a synthesis to reduce uncertainty, facilitate action, increase transparency, flexibility, velocity, and learning.

BACKGROUND

In the case study presented here as a post-mortem, the five different fields are presented and synthesized to present an approach to developing a video game to train inexperienced care-givers to become effective certified nursing assistants.

One of the foundations of serious games is that they deliver on a claim. If a claim is made that performance, training, or a health outcome is improved, it must be observable inside the game—the activity is the assessment in a serious game (Dubbels, 2016; 2017)—and that the improvement from playing in the game transfers to improvement in the wild of the non-digital world, and measurable with the same models from the game. This makes a case for having evidence-supported requirements. Although this is not always possible initially, research techniques can be used to generate and test insights as part of an iterative process, culminating incremental improvement of requirements, models, and testing as part of a build, measure, learn process(Ries, 2011, 2013) If we do not have a clear understanding of the activities and how to model and measure the behavior we want out users to learn, we are essentially throwing the dice, hoping we guessed correctly. This does not have to be the case, as there is a history of user research to reduce risk and uncertainty in developing and designing games.

History of Game User Research

What is odd is that game user research is not new. In his keynote address at the Games User Research Summit, Michael Medlock (Medlock, 2014) provided a history of games research, going back to 1972, when Atari hired Carol Kanter. She shared that:

It all started on a bet. I met Gene Lipkin VP of Atari. I asked him how he could tell if his games were good or not. I bet him that in 6 months I could tell which game will do better in the market than the others, and if I could then he needed to hire me full time. I did, and then he did.

Although Kanter is listed as the first in a tradition of game user research, the early games user researchers focused on marketing—showing which games would be successful and why. This approach focused on generative research techniques such as focus group work and field methods. These techniques culminated in the creation of teams at Nintendo, and the creation of guides for usability (Al-Awar, Chapanis, & Ford, 1981).

Recently, more companies are creating new positions in user experience research, user experience design, and even behavioral economics. The intent is to generate insights that guide game development to improve the game experience, and to examine new ways to generate income. However, few game development companies have begun to integrate the field of psychometrics from psychology, and examine whether games can provide services like training, diagnosis, performance enhancement, and skill and

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