

# Chapter 5

## Digital Divide: Comparing the Impact of Digital and Non-Digital Platforms on Player Behaviors and Game Impact

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### **ABSTRACT**

*With a growing body of work demonstrating the power of games to transform players' attitudes, behaviors, and cognitions, it is crucial to understand the potentially divergent experiences and outcomes afforded by digital and non-digital platforms. In a recent study, we found that transferring a public health game from a non-digital to a digital format profoundly impacted players' behaviors and the game's impact. Specifically, players of the digital version of the game, despite it being a nearly identical translation, exhibited a more rapid play pace and discussed strategies and consequences less frequently and with less depth. As a result of this discrepancy, players of the non-digital version of the game exhibited significantly higher post-game systems thinking performance and more positive valuations of vaccination, whereas players of the digital game did not. We propose several explanations for this finding, including follow-up work demonstrating the impact of platform on basic cognitive processes, that elucidate critical distinctions between digital and non-digital experiences.*

### **INTRODUCTION: GAMES AS TOOLS FOR STIMULATING SIGNIFICANT LEARNING AND ATTITUDE CHANGE**

There has been growing enthusiasm among members of both learning science and game studies communities surrounding the notion that games can encourage a significant shift in players' thinking and empower them with a plethora of new cognitive skills. One perspective that has gained particular traction in this regard is the argument that games can effectively facilitate a 'systems thinking' approach to

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real-life issues: that is, games can equip players with a greater understanding of, and appreciation for, the interrelationships that exist between the individual elements of a system. To illustrate, Zimmerman (2007) has suggested that games have the capacity to instill a more advanced “systems literacy,” one that “stresses the importance of dynamic relationships, not fixed facts.” Similarly, Bogost (2007) claimed that games help players “learn to reflect on the natural or artificial design of systems in the material world,” and Gee (2004) designated well-designed games as “learning machines,” in part because they can facilitate systems thinking. Thus, in the games and learning literature, the argument that games can improve players’ systems thinking aptitude has inspired noteworthy levels of consensus and empirical support.

Likewise, work done over the past decade has demonstrated that games can change players’ attitudes and behaviors on important social issues. For example, Kato and colleagues’ study of the video game *Re-Mission* showed that playing the game inspired higher levels of adherence to treatment plans among adolescent cancer patients (Kato, Cole, Bradlyn, & Pollock, 2008). Gustafsson and colleagues (2009) showed that a digital game that aimed to teach players about energy use inspired a significant long-term drop in household energy consumption among players of the game. In their meta-analysis of studies investigating the effects of playing games with pro-health content, Baranowski and colleagues (2008) showed that out of the 27 studies they reviewed, a majority demonstrated evidence of significant changes in players’ pro-health attitudes and behaviors as a result of playing the focal games.

Prior work on the impact of games on cognition and behavior has been provocative, arguably even paradigm-shifting, but there is still much to learn about how designers can effectively model new ways of thinking or acting through their games or systems. One major unresolved issue is the basic distinction between digital and non-digital platforms – and the potentially divergent experiences and learning outcomes they offer players. As part of a recently completed empirical study testing the efficacy of a public health game, called *POX: Save the People*, created by our design laboratory (Kaufman & Flanagan, 2016a), we sought to answer the fundamental question: does translating the same game from a non-digital to digital format influence players’ perceptions of the game and/or impact the effectiveness of the game as a tool for inspiring changes to attitudes and cognition? And, if such cross-platforms differences were to emerge, to what could we attribute them? In this paper, we present the design of the digital and non-digital versions of *POX* and an overview of the research approach we employed to address these provocative questions. We then offer a set of explanations (and empirical validation supporting one particular explanation) for the unexpected finding that the *digital* version of the game, despite being a nearly identical translation of the non-digital version, proved significantly less effective at facilitating learning and belief change.

### The History and Design of *POX: Save the People*

In 2010, the Tiltfactor game design and research laboratory was asked by the Mascoma Valley Health Initiative, a New Hampshire public health organization, to create a board game demonstrating the role vaccines play in preventing the spread of disease, for use in classrooms and health fairs. The first game produced from this charge, *POX: Save the People* (2010), is played on a game board of 81 (9x9) spaces, with each space representing one person in a community in which disease has just begun to spread. At the start of the game, two people are infected with a disease; they are represented by red spaces near the center of the board. Six yellow spaces on the board represent people with susceptible immune systems (e.g. pregnant women, babies, individuals with HIV or AIDS, and people with cancer), who cannot be vaccinated and, thus, are especially vulnerable (see Figure 1).

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