Editorial Preface

Science is the New Black in Design

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The practice of using scientific methodology as a design process has made the subjectivity of user's personal preference manageable and begun to inform software, services, and game development. The use of scientific methods is now used to build audiences, retain users, inform developers of the emotional response of users, and provide return on investment analysis for work flow costs and consumer insights. The integration of scientific methods as user research and user experience design has provided new insights into user audiences. Data can open the door to opportunity, to explore undiscovered markets, and provide new goods and services in what may have been seemingly familiar populations.

Game companies are no longer targeting games for males between the ages of 13 and 35. This may be a result of new faces in digital content and delivery development, or the awareness that there are entire populations that have been left unexamined as potential clients. This realization has prompted awareness that various groups, such as the elderly may benefit from digital games, digital media, and digital communication devices.

In our first article, Brown and De Schutter make the case that elderly populations have very different expectations about games and play. They found that when elderly groups are asked to reminisce, they describe very different play and game experiences—experiences that predate handheld devices and even consumer computers. The authors posit that the current research literature on games and play lack description of how the elderly describe their experiences and expectations of games and play. For this reason, the authors take a grounded theory approach to investigate and examine the game and play histories and expectations of elderly populations. This paper proposes that elderly adults may have different memory and expectation about games and play—differences that make their expectations about digital hardware, software applications, and digital games unique.

This study offers a well-executed example of grounded theory, offers insight into gaming preferences of the elderly, and draws attention to the importance of knowing this potential user population and important age-related factors that may either promote or hinder game playing as a gamer ages. Based on these findings, a number of design considerations for game designers who aim to develop games for older adults are provided.

Our next article examines the design, implementation, and study of a digital game for educating undergraduate students in calculus. "Digital Game Based Learning for Undergraduate Calculus Education: Immersion, Calculation, and Conceptual Understanding" was one of five papers recognized for excellence at the 2014 Meaningful Play Conference at Michigan State University (It was my pleasure to present in the same session, and get to know them). This invited paper by Lee, Dunbar, Kornelson, Wilson, Ralston, Savic, Stewart, Lennox, Thompson, and Elizondo (7647 words) investigates the effectiveness of using a digital game to teach undergraduate-level calculus in terms of improving

task immersion, sense of control, calculation skills, and conceptual understanding. Second, it offers insight into how feedback and visual manipulation facilitated conceptual understanding of calculus.

In the empirical study, n=132 undergraduate students participated in a controlled lab experiment and were randomly assigned to either a game-playing condition, a practice quiz condition, or a no-treatment control condition. The authors collected survey data and behavioral-tracking data recorded by the server during gameplay. The results showed that students who played the digital game reported highest task immersion and also performed significantly better in conceptual understanding compared to students who solved a practice quiz and the control group. Gameplay behavioral-tracking data was used to examine the effects of visual manipulation and feedback on conceptual understanding.

In our third article, Downs & Oliver offer an examination of learning with digital technologies that require physical interaction. The article, titled "How Can Wii Learn from Video Games? Examining Relationships between Technological Affordances and Socio-Cognitive Determinates on Affective and Behavioral Outcomes," examines how motion controlling technology allows game players to interact with video games using kinesthetic body motions that replicate real-world activities.

This empirical study was designed as a 2x2 fully crossed, between-subjects experiment, plus control group. It was designed to empirically test how the type of controller (motion controller vs. symbolic controller) and avatar customization (customized vs. not customized) contributed to affective and behavioral responses when playing the *Tiger Woods PGA Tour* video game.

Findings indicated that using the motion controller led to better video game performance and better performance in a real-world putting task. Analysis indicated that the use of the motion controller led to greater perceptions of golf efficacy (indirectly through presence) and was positively correlated with liking of the video game. These observations culminated player feedback, indicating greater perceptions of liking the game of golf.

In article four, titled "Narrative and Conceptual Expertise in Massively Multiplayer Online Role Playing Games," the researchers, Corredor & Benavidas, investigated the implications of avatar creation in the MMORP World of Warcraft. In the study, Corredor & Benavidas found evidence that character expertise developed in one game was transferrable to other games. The researchers examined inexperienced players, general experts in MMORPGs, and specialized WoW domain experts for their ability to solve a character design task in the videogame World of Warcraft (WoW) and their planning in how to use the character during gameplay.

Analysis indicated that experiences from the MMORPG developed transferable knowledge, which could be applied to other videogames (e.g., general expertise skills). Specifically, the ability to identify deep features related to particular types of characters (e.g., Rogue).

The results also showed that there are domain expertise-specific abilities specific to experts in WoW. These players offered better developed descriptions with narrative qualities, including time, intention, and interaction, and also to identifying WoW-specific variables.

These articles present a range of information gathered from user research across a range of purpose, research question, and methodology. The practice of using scientific methodology as a design process has made the subjectivity of user's personal preference manageable, and more development and design firms are using these techniques to inform software, services, and game development.

The use of scientific methods found in these articles, among others, are now used to build and retain audiences, understand these users, and better inform developers or how design choices impact the emotional response of users. These kinds of consumer insights are becoming the new design currency. The integration of scientific methods as user research and user experience design has provided new insights into user audiences. Data can open the door to opportunity, to explore undiscovered markets, and provide new goods and services in what may have been seemingly familiar populations.

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