
Conducting Game User Experience Research with Preschoolers

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Abstract

Digital games are an important part of the lives of many preschoolers. This talk explores how to conduct user experience with this population, including the unique challenges as well as the pros and cons of various methodologies. Examples will be drawn from product design/development at Fisher-Price.

Author Keywords

Children; preschool; games; play; usability; methodology

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

General Terms

Design, experimentation, human factors, measurement

Introduction

In my talk, I will focus on methodologies for conducting game user experience research with preschoolers. This population is important to consider in game forums because digital media are an important part of preschoolers' daily lives. For example, on a given day, approximately 40% of all preschoolers play video games on consoles or mobile devices (Gutnick, Robb, Takeuchi, & Kotler, 2011). This percentage is expected

to increase with the continuing rise of smart devices such as the iPad and tablets.

My talk will draw upon my experiences developing hundreds of digital games and activities for preschoolers as head of the User Experience Group at Fisher-Price. These digital games/activities span a range of platforms, including learning systems, stand-alone toys, computers, and smart devices (e.g., apps).

Game user experience research is an integral part of the design and development process at Fisher-Price. We use a wide range of methodologies throughout the product life cycle. Those selected depend on what is being tested and when in the design/development process. These methodologies can roughly be broken into four stages:

Ideation Stage: During this stage, we rely heavily on ethnographic research in order to understand children's play patterns, abilities, preferences, and uses of technology. We also conduct in-lab testing of existing products. These observational tests are essential because parents are typically not designers or researchers. They can, for example, provide general information on what their child likes to play with and where/when but are much less frequently able to provide details or analysis, such as how their children play or why they like/dislike specific parts. They also have difficulty envisioning new kinds of products that do not yet exist.

Design/Development Stage: Here, we begin by testing with paper prototypes and hardware foam core/plastic models when applicable, then progress to richer models (e.g., wireframes, functional prototypes).

This stage culminates with testing versions of the actual product.

Evaluation Stage: Towards the end of our development cycle, we place working models of our product in homes for several weeks in order to get a last-minute read on any performance issues. This test also gives us more accurate information on replayability in the field and allows us to benchmark with other products that we have created in the past.

Post-Launch Stage: After release, we often conduct more extended tests in the home. These several-month long tests assess extended replayability and inform product revisions as well as new product development. We also analyze consumer contact with our company (e.g., letters, phone calls, emails) and reviews, making revisions if needed.

In conducting this research, we focus on playability and engagement along with usability, ergonomics, age-appropriateness, and educational value. Due to the strengths and limitations of each method, we adopt a "triage" approach, where multiple methods are frequently used to address questions. Furthermore, the focus is on testing as early as possible, often, and iteratively in order to ensure that design decisions are being made in a cost-effective and timely fashion. In doing so, it is important to keep in mind that our industry research differs in purpose from academic research. Its function is to inform specific design decisions rather than to garner broad truths; thus, fewer participants are needed, with a greater emphasis on observational methods and qualitative measures (Nielsen & Landauer, 1993).

A topic that often comes up in gaming forums is “How do you measure whether a game is fun, particularly with preschool children? Traditional self-report measures (e.g., Sim, MacFarlane, & Read, 2006) do not work well with our target age group due to young children’s limited metacognitive skills. We instead take a slightly different approach by assessing extent of engagement. To do so, we use a variant of the “eyes on screen” method developed by Children’s Television Workshop early on to assess young children’s interest in television segments (Lesser, 1974). Here, researchers observe the extent to which children continue to play the game in the face of distractions such as the presence of a researcher. The more that children “tune out” these distractions, the higher their level of engagement.

In conducting game user experience research with preschoolers, we must overcome a number of unique challenges.

Age of Game Player: As indicated above, preschoolers do not have the verbal and metacognitive skills of adults, which greatly limits the kinds of methodologies that can be used successfully with them. For instance, we cannot rely on think-alouds or interviews. Observation, therefore, is key. Also, preschooler’s development in other areas must be taken into consideration. For example, their emerging fine motor skills and hand-eye coordination and tendency to focus on one dimension make it difficult to use certain input devices and play certain kinds of games.

Skill/Experience Variation: Equally challenging is designing for the staggering range of individual differences within this age group. It is not uncommon for some preschoolers to have no experiences with digital games whereas others may be playing them sixty or more hours a month. We therefore must design our games and activities so that a child with no experience (e.g., with the input device, with digital games) will have some level of success yet “expert” children will also find them compelling.

Identification of Reason for Failures: Identifying problems during testing is not enough; teams must also know what exactly is causing them in order to be able to design the isuses. This process is particularly challenging with preschoolers because there are so many potential reasons why they might fail at something. For example, if they are unable to play a maze game with a joystick, it may be due to misunderstanding the instructions, not having sufficient motor skills, not realizing how to operate a joystick, not realizing where to start/stop on the maze, not realizing you can’t go through barriers, or many other factors. Researchers, therefore, must adopt a flexible testing approach where they pose additional tasks in order to drill down and identify what truly is causing the problem.

Approaches to these challenges will be discussed using a variety of Fisher-Price products such as the iXL Learning System (a handheld entertainment device for children ages three to seven) and our apps.

Bio

Kathleen Kremer is Senior Manager of User Experience at Fisher-Price/Mattel where one of her roles is supervising design research and testing for products centered on digital play. She also serves as a company-wide expert in child development, gaming, interface design, education, and digital strategy. Since

joining the company eight years ago, she has developed hundreds of interactive toys, software, apps, and other entertainment products for young children and their families. Two of these products have won the Toy Industry Association's Toy of the Year: the Smart Cycle Active Learning System (2008) and the Kid Tough Digital Camera (2007). She also is the recipient of the 2011 Human Factors and Ergonomics Society PDTG User Centered Design Award for her research and design work on the iXL Learning System. Kathleen received her M.A. in Experimental Psychology from the University of Pennsylvania and her Ph.D. in Experimental Child Psychology from the University of Minnesota.

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