

Educational Gaming: Middle School Students' Activity Preferences

Dolly R. D. Joseph, M.T. & Mable B. Kinzie, Ph.D.

Instructional Technology Program
Curry School of Education, University of Virginia
Charlottesville, VA 22904-4265
dolly@virginia.edu kinzie@virginia.edu

ABSTRACT

This presentation will report initial findings from a study investigating the game playing preferences of middle school aged children. Qualitative methodologies were used to compare and contrast game play preferences of twenty participants in two summer game design camp. Results suggest six game play activity modes which, when used in combination, can engage a larger and more diverse audience.

Keywords

Games, Computer games, Educational games, Middle school, Qualitative methods.

INTRODUCTION

Playing games is a favored computer activity for both boys and girls [1,2], however neither chooses to play educational games in large numbers. Educational games tend to be repetitive and simplistic at best and glorified “drill and kill” at worst. Few educational titles have created the kind of immersive game play experience offered by commercial games.

Exceptions include titles such as *Zoo Tycoon*, *Civilization* and *Zoombinis*, which suggest that it is possible to create a game that contains both engaging play and significant learning outcomes, though some educators may feel these fall short of their potential as educational vehicles. Designing for middle school-aged players is a particular challenge, because of the rapid developmental changes they are experiencing.

In order to determine what game play activities are compelling and what science content was developmentally appropriate for the middle school age group, our research team developed and implemented a game design camp held with two different demographic groups.

BACKGROUND

Many educational software titles use games as a reward for completing learning tasks, rather than combining content and play into a comprehensive, integrated whole. A player might have to answer a number of content questions before playing an arcade or “shooter” game. Although adding a game component may make this kind of learning more palatable, it is not as engaging as it otherwise might be.

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While it may not be reasonable to expect educational titles to match the quality of commercial games, educational games can offer activities that allow children to explore content in new and exciting ways.

While the gap between boys' and girls' computer access seems to be narrowing, there are still gender differences in the time spent on the computer. This difference may be accounted for in the time that boys spend in game play. Boys and girls seem to prefer different kind of play, and games that are designed for a male audience often fail to encourage the same kind of absorption and dedication in girls. Because game play can be an entry point for development of expertise with other uses of the computer, there are fears that girls will lag behind in these domains.

METHOD

Two 2-week camps for seventh and eighth grade students were conducted, one in a suburban school and the other at a community organization serving low income students. Ten students participated in each camp. Campers played, critiqued, and proposed modifications to commercial and educational games and identified elements that created good and bad game play experiences. Qualitative data were collected via video-taped observation and “video closet” responses to design challenges. Follow-up sessions were held several months later, to confirm findings and inquire further. Data analyses were conducted following qualitative methodologies. We used content analysis of campers' stated preferences, game play habits and proposed game modifications to identify and describe themes in children's game play preferences. Case studies and cross-case analysis allowed further analysis within and across children.

RESULTS & DISCUSSION

Campers played over 30 educational and commercial games. As the games were critiqued and in some cases re-designed by the campers, certain patterns in their activity preferences emerged, and six activity modes evolved from the analysis. These modes shift the focus away from categorization of games based upon stylistic considerations and genres (e.g., *role playing*) to describing the types of play experienced. These experiences can be classified as *active*, *explorative*, *problem-solving*, *social*, *creative* or *strategic* in nature (some activities encourage several of these modes). It was rare for a game to appeal to all campers. Instead, they gravitated to games that best incorporated the experiential modes they prefer.

The game play mode most often thought of in connection with computer and video games is the *active* mode. In this mode the player must respond quickly, using rapid-fire

techniques, “twitch” speed, and combinations of keys or buttons, to achieve the goals of the game. The game clock and/or threat of character “death” provide structure and consequences. In games that shape play around action, the storylines often emphasize dichotomous conflict where the player embodies good against an evil opponent. Many of the most popular commercial games, including “shooters”, arcade-style and puzzles incorporate active modes into their game play.

Another mode widely experienced in games is *explorative* play, where physical space and travel is simulated through the layout of the game arena. By hiding certain areas from view, the player is allowed to discover new areas and challenges in turn. Explorative play can be easily modified by the addition of other activity modes. Many three-dimensional shooters combine active and explorative play, where players find their way through virtual buildings or cities while dodging bullets and shooting enemies. Slower paced educational games often pair exploration of an area with problem-solving activities.

The *problem-solving* mode is commonly encouraged via puzzles in educational games and commercial titles such as *Myst*. Here, there are specific rules for activity sequence and solution to the challenges. Even if there are a number of challenges within a given game, they are generally well defined, and independent of one another. The problems may be hierarchical, requiring one problem to be solved before moving on to another, or the problems may be parallel and unrelated. Problem-solving may be fast-paced and reliant upon hand-eye coordination, or it can take a slower, logic-based form.

In *strategic* play, the emphasis is on manipulation of resources—military, financial, or “human”—over a longer term. In games that emphasize problem-solving, achieving pre-set goals determines progress, while games that encourage a strategic mode of play often enable players to select their own or the computer’s benchmarks. Games that can include strategic activities include *The Sims*, titles in the *Tycoon* series, *Civilization*, and the *Age of Empires*. Few educational titles have incorporated this play mode into their games.

Social activities involve interactions between players and game characters and among players themselves as they interact or collaborate. This mode can offer the opportunity to manipulate the behavior of game characters, providing a god-like level of power. Interacting in the multi-player mode allows interaction in whatever manner the game allows, be it fighting, cooperating, or romancing. When two players use the same computer and station to control only one character or action, they must cooperate to some degree. Some players particularly enjoy this mode for support, camaraderie, and/or help.

The final activity mode is *creative play*, which offers the opportunity to personalize characters or environment. *SimCity* and the *Tycoon* games allow players to determine the layout and palette of cities, golf courses, roller coasters, and theme parks, while other games allow selection of character powers and appearance. Other creative elements in games can include free form drawing, or the use of stamps to design printable or email-able documents.

When campers were presented with a game that did not incorporate any of their preferred activity modes, they were unlikely to become engaged. If a game included a preferred mode among multiple modes, they would adjust their game play to exploit their play preference. Games in the *Tycoon* series were appealing to more campers because they incorporate multiple modes.

Our initial results support previous research that there tend to be gender differences in game play preferences [3], but that gender-neutral activities, such as problem-solving and strategic play can appeal to both boys and girls. Games can be appealing to the largest audience if they incorporate and balance activities from activity modes appealing to boys, such as explorative and active, and girls, such as social and creative; as well as the modes that may be more gender-neutral. Additional qualitative analysis is now underway, in order to describe preferences for these activity modes across types of children. We will share these results at the conference.

The use of activity modes to inform game design will help encourage more appealing games and more effective learning vehicles that will reach a wider audience.

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