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Instructional Design for the Games Generation

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Abstract

Today's youth are different from previous generations in their greater access to computing and communications technologies. Games are a key part of their culture, and gaming has influenced their learning styles and preferences. Educators and trainers can take advantage of the power of games to engage and motivate learners by applying the principles of instructional design to the use of games for instruction. The challenge to instructional technologists is to develop the "l337 5k!lz" (elite skills) required for effective design and development of instruction for the Games Generation. This paper examines why and how games can be used to support learning.

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Instructional Design for the Games Generation

During the last twenty years, society has undergone tremendous changes in the ways that people obtain and interact with information. The network model of peer-to-peer communication is replacing the broadcast model as networked computing approaches ubiquity. The majority of today's learners (K-12 and traditional first-time college students) have grown up with computers, video games, mobile phones, and portable media players. As a result, they are used to a variety of stimuli, they are adept multi-taskers, and they are enthusiastic adopters of new technologies. But teaching and learning in the schools has changed little in the past one hundred years, despite efforts to incorporate audiovisual media into instruction. As a result, learning in the classroom bears little resemblance to learning outside the classroom, leading to a greater degree of disengagement among learners. Educators need to utilize the "cultural tools" of contemporary society to engage students in increasingly familiar ways (Strommen, 1992).

A common attribute of contemporary digital tools is their ability to host or facilitate games. The digital game industry now has an annual "box office" greater than the movie industry, leading some to identify a Games Generation (Prensky, 2001). This generation's cognitive style differs from previous generations in their preference for speed, multiple tasks, graphics over text, immediacy, exploration, and connection with others (Prensky, 2001). The challenge to instructional technologists is to develop the "l33t 5k!lz" (elite skills) required for effective design and development of instruction for the Games Generation. This paper examines why and how games can be used to support learning.

What is a Game?

There is general consensus that a game is a controlled form of play. That is, play is freeform while a game has rules. According to Prensky, games have additional common elements, including goals and objectives, outcomes and feedback, some form of competition, interaction, and representation or story (2001). It is important to distinguish between games and related forms of play like simulations and role playing. Games and simulations are similar, but simulations propose to represent reality and games do not (Garris, 2002). However, a simulation may be a game if a performance goal is set. For example, SimCity is an endless simulation of a city. But if the player sets a particular goal, the simulation turns into a game. Role playing is a particular type of simulation in which participants immerse themselves in a defined situation and role. Role playing may be part of a game, such as in MMORPGs (Massive Multiplayer Online Role Playing Games). Games tend to be turn-based and therefore less dynamic than role playing or simulations (Feinstein, 2002).

Why Use Digital Games in Instruction?

Johnny got game

Another name for the Games Generation is the Millennials. These learners prefer group activities, watch less television, believe it is "cool to be smart," and are fascinated by new technologies. They are more likely to collaborate with their peers and say they are disappointed with the use of technology in school (Oblinger, 2003).

In 2003 the Pew Internet and American Life Project released the results of a survey of college students. Everyone surveyed had played a video, computer, or online game. Seventy percent played at least once in a while, and 65% played occasionally or regularly. About one in ten admitted that playing was a way of avoiding studying. One third admitted to playing games

that were not part of instructional activities during class. A majority (69%) reported no exposure to these types of gaming for educational purposes in the classroom. The most important trend spotted was the integration of gaming into other activities, using games as brief distractions (Jones, 2003). Clearly technology in general and games in particular are important elements of youth culture. But what is it about games that makes them so compelling? What do games have to offer for instruction?

What games provide

Relatively little research has been done on why and how games can be used in teaching and learning. Game players can provide anecdotal evidence of learning from increasingly sophisticated entertainment games in which they control complex systems, govern cities and worlds, and manage businesses and theme parks and restaurants. However, most studies of the benefits of playing games to learn have emphasized the motivational or social aspects rather than knowledge acquisition (Kafai, 2001).

According to Garris (2002), there are several reasons why educators should be interested in using games in instruction, including the shift to a learner-centered model and the intensity of involvement and engagement in games. Games allow exploration along the lines of guided discovery. Instead of reading about something students can experience it. Many of the attributes of games are also attributes of good instructional design. Games often involve problem solving, provide rapid feedback, and can adjust to optimal level of difficulty (Oblinger, 2003).

Garris (2002) describes the motivated learner as enthusiastic, engaged, focused, persistent, and intrinsically motivated. The factors that make an activity intrinsically motivating are challenge, curiosity, and fantasy. Not surprisingly, these are all elements of games.

Besides motivation, games can serve as immersive learning environments conducive to experiential learning. Findings demonstrate that experiential learning improves learners' problem-solving skills and judgment (Feinstein, 2002). Experiential methods have much in common with games (and with the preferred learning methods of the Games Generation), including interactivity, feedback, and active learning (Ruben, 1999).

When Are Digital Games Appropriate Instructional Choices?

There are two broad approaches to using games in instruction: using games to teach and making games to learn. Kafai (2001) describes these approaches as "instructionist" and "constructionist" respectively. In the former—and far more prominent—approach, an existing game is used to teach something. In the latter approach, the learners make the game and learn from the process.

In deciding when to use games to teach, it is useful to begin by determining the learning objectives and suitable activities. Prensky's matrix of "Types of Learning" (p. 156) addresses this task by describing the type of content to be learned, typical activities employed, and possible game styles. For example, facts are often taught using questions, memorization, association, and drill. Some possible game styles include game shows (such as "Jeopardy" or "Who Wants to be a Millionaire?") and flash card type games. Theories are often taught using logic and experimentation. Appropriate game styles include open-ended simulations and building/construction games. Feinstein (2002) suggests that role playing is appropriate in addressing interpersonal skills, while computer simulations are better suited for exploring systems without human interaction. Most researchers agree that the intrinsic integration of subject matter in a game is highly desirable.

Constructivism may provide ideas for effecting change in the curriculum through technology. Two features are especially promising: the notion of play and experimentation as forms of learning, in which children explore ideas and work out their own understanding, and the discovery that children learn better when they work together (Strommen, 1992). When children play games, they often modify the rules. Piaget claimed this reflected the children's increasing understanding of the world. The creation of new games was the children's attempt to demonstrate their mastery through representation (Feinstein, 2002).

Whether games are used to teach or made to learn, a key aspect of their use in instruction is debriefing. Historically debriefing has been used to obtain information from a participant (e.g. military debriefing of rescued hostages) and to desensitize a participant (or dehoax in the context of a psychological study involving deception) (Peters, 2004). However, debriefing in the context of experience-based learning focuses on participant learning.

Because participants in a simulation game may have different experiences and therefore derive different knowledge, debriefing is an important phase of the learning process. Debriefing involves a joint analysis of their experiences. The design of the debriefing should be tailored to the learning objectives and the participants' characteristics (Peters, 2004). Debriefing should focus not just on content but on process, especially when the game is played by teams rather than individuals. Gaming is appropriate for practicing decision making, especially in the context of resource management. When games involve teams, they better represent the decision-making environments of the real world. (Feinstein, 2002)

When games and simulations are used in instruction, the desired knowledge and skills to be acquired are known in advance. Intermediate debriefing throughout the game can facilitate feedback and improve learning and performance (Peters, 2004). The final debriefing session may

include a test. It may also be used to help the participants connect what they learned from the game to the real world. When games and simulation are used in assessment, the focus is on what is learned by the non-participants. The instructor forms an opinion about the participant's performance based on observation (sometimes supplemented with data or information from other sources) compared to the model of desired performance (Peters, 2004).

There is great potential for the use of games in instruction. However, there is little consensus on the game features that support learning or the outcomes that may be achieved. Clearly there is a desire among today's youth to use technology and to play games. Therefore games offer instructional designers a way to engage learners and motivate them to achieve the desired objectives. The immediate obstacles are the limited budgets and limited experience among teachers, and the lack of new forms of assessment (Strommen, 1992).

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