

Coordinating Professional Practice with Course Pedagogy in the Design of a Serious Games course

Abstract The design of serious games is having a enormous impact on the employee training (Aldrich, 2005) as well as on the education of future instructional designers (Charsky, 2010b). The presentation will detail the results of a study that explores the practices of professional instructional designs that have created a serious game for employee training. The data from the interviews will be analyzed to determine the methods and processes for communicating content, ways to measure effectiveness of both instruction and game play, utilizing representations, and employing game features. The results of these interviews will inform the design of a undergraduate level serious game course. Assessment of the course project, where students have to design a serious game, and surveys of students on their learning and design process will be presented. The study has the potential to influence the theory and practice of serious games and the pedagogy for college level serious games courses as well as the professional development of instructional designers.

Introduction

The study and practice of serious games has been growing tremendously over the better part of the last decade (Aldrich, 2004, Gee, 2003, Prensky, 2001). The reemergence of using games for learning and training has occurred due to a variety of advances in game technology, the shifting demographics in organizations, and a more sophisticated understanding of integrating game design and learning design. There is much support for the contention that game activities provide the engagement that motivates the learner to persist and learn in serious games (Aldrich, 2004; Annetta & Cheng, 2008; Malone & Lepper, 1987; Prensky, 2001; D. W. Shaffer, 2006; Squire, 2002).

The convergence of valuable content with good game design is essential and critical for serious games. If the serious game is poorly designed, the result is either a boring game, where superficial learning happens or a good game, where no valuable learning occurs. Obviously, there is a broad spectrum in designing a serious game, but a balance between game design and instructional design is needed (Charsky, 2010a). Yet making a good serious game, one that engages and teaches, is no cookie cutter process; there is no recipe for how to balance good game design with good learning design. Hence, studying the process and design of serious games is a worthy endeavor that can inform both the theory of serious games as well as the practice of design serious games.

Purpose and Participants

There has been a shift in the practice of instructional design away from a systematic and process approach to a more emergent, design oriented practice (ASTD, 2009). The evolving practice of instructional design maybe well suited to the creation of training games. The purpose of this study is to determine if instructional design/eLearning professionals utilize the typical instructional design methods and models in creating training games or if they use other methods and models that are more aligned with emergent, design processes.

The crux of the study is to determine the best practices in the professional world for design serious games for employee training. These interviews with professional seek to determine the means that serious game designers use to integrate content with game play. Individuals will be selected using the researcher professional connections and through the

LinkedIn Serious Games people group. These interviews are currently underway and will be completed by February 2012.

Using that data the researchers will design projects, instructional content and activities that will, hopefully, teach students how to think and design like professional serious games designers. The projects and instructional activities and content the researchers design will be implemented starting March 2012 in a 200 level undergraduate course on serious games.

Lastly, the researchers will evaluate the course projects and survey students to determine what students learned, how students' understanding of serious games and in their practice of designing serious games is similar, or not, to that of professionals.

Interviews of Professionals

The researchers are currently interviewing industry professionals about the process they use in the design of serious games focusing on how they integrate content with game play. Once this phase of interviews is complete, we will apply these findings to the course to find ways to improve student's ability to design effective serious games, understand how to measure the effectiveness of serious games, and understand the goals of serious game design beyond simple enjoyment.

The interview with serious game designers will explore the process of embedding or integrating content into serious games. It will consist of a structured interview with questions asked found in table 1.

Table 1. Interview questions

Background Questions	Integrating Content Questions		
<ul style="list-style-type: none"> • On a scale of 1 to 7, where 1 is completely disagree and 7 is completely agree, how do you feel about this statement: Games are a leisure activity. • On a scale of 1 to 7, where 1 is completely disagree and 7 is completely agree, how do you feel about this statement: Games are a communicative activity. • For each game genre, please respond yes or no concerning whether you have played video games of this genre or not. <table border="1" data-bbox="191 1402 824 1604"> <tr> <td data-bbox="191 1402 493 1604"> <ul style="list-style-type: none"> • Action or Sports, • Adventure, • Shooter, • Role-Playing, • Simulation, • Strategy, </td> <td data-bbox="493 1402 824 1604"> <ul style="list-style-type: none"> • Exergames, • Advergimes, • Puzzles, • Card Games, • Educational Games </td> </tr> </table> <p>For Professionals What degrees have you earned? What is your current job title and responsibilities? Have you had any formal learning in serious games? In your professional history, have you ever participated in the design of a serious game? Please explain your role if you have.</p>	<ul style="list-style-type: none"> • Action or Sports, • Adventure, • Shooter, • Role-Playing, • Simulation, • Strategy, 	<ul style="list-style-type: none"> • Exergames, • Advergimes, • Puzzles, • Card Games, • Educational Games 	<ul style="list-style-type: none"> • In what ways might game elements interfere with attaining training goals? • In what ways might training methods or strategies interfere with making an enjoyable game? • How can you determine what game genre to use to attain training goals? • How would a professional integrate the content with game elements? • How would you determine if a training game was successful? • What skills and knowledge are required for designing serious games?
<ul style="list-style-type: none"> • Action or Sports, • Adventure, • Shooter, • Role-Playing, • Simulation, • Strategy, 	<ul style="list-style-type: none"> • Exergames, • Advergimes, • Puzzles, • Card Games, • Educational Games 		

Analytical Methods

The researchers are analyzing the responses from participants according to the following metrics.

Communicating content

In their responses, participants may describe ideas that should be included in a game, whether this be a learning objective, concepts, skills, or knowledge. They may describe either particular examples of concepts integrated into a serious game or general concepts that should be a part of any serious game. Where possible, what the concepts, skills, and/or knowledge are and how they were integrated will be recorded.

Ways to measure effectiveness

Participants may describe how they know the serious game they designed was effective. The fifth of the integrating content questions particularly addresses this. They may describe the means they used to measure that effectiveness or the success of various strategies. Where possible, the measures they used and how effective the measures were for evaluating the content of the serious game will be noted.

Game features used

Participants may describe game features designed to deliver the content. These features may include the story, a point system, playing mode (e.g., single-player, multiplayer, networked), control schemas, avatars, and so forth. When possible, the type of features mentioned, how it was used as a part of the serious game, and how it was used to deliver content and meeting training objectives will be recorded.

Representations used

Participants may describe representations they designed for the game, such as visual design, symbol systems, textual or auditory systems, and so forth. These representations may include game perspective (e.g., first-person, third-person, isometric, disembodied, or abstract), genre, interface elements (e.g., HUD), and the representation of game features—for example, iconographic versions of a treasure chest. When possible, the representations mentioned, the role it served in delivering content, and how it fulfilled the training goals will be recorded.

Course Pedagogy

The proposed methods for the 200 level undergraduate serious games course are only partially set. The researchers have selected an initial reading list that consists of articles and book chapters from various sources. A typical quiz will be given every two weeks to assess students understanding and a cumulative final examination will be given.

The serious games project the students will require them to build a game on personal finance principles and practices (household budgeting, retirement planning, saving, etc.). The students will be given readings and resources on this topic and encouraged to find more information, but they will not be given any requirements about the type of game to create or how to integrate the content with game play.

Assessment of Student Understanding and Practice

To assess the serious game design of students the researchers will create a rubric with the following components: training goals, communication of content, use of representations, use of game features, and assessment of training goal. These categories purposely mirror the analytical categories of the interview data. Further, the researchers will also survey students about their process, design decisions, and have them reflect on their serious game.

Implications

The study provides a unique perspective on two areas related to serious games. First, we will present the data found from our interviews of professionals that have created serious games. The data will, potentially, offer advice to researchers on creating models and processes for serious game design. The data from interviewing professionals that have developed a serious game will begin to shed light on the practices that are used in organizations. The data may confirm or refute the use of instructional design methods and models that some has claimed to be too limiting in the creation of serious games. Further, these interviews may help develop or improve upon instructional design methods, models, and practices so that traditional methods are aligned or retrofitted to suit serious game development or new methods can be developed for designing serious games.

Second, the data collected from the course projects and student surveys may provide evidence for which pedagogical elements and methods and what course content was most effective in teaching students about the design of serious games. The knowledge gained from this aspect may be beneficial for educational technology programs with serious games courses as well as for the professional development of instructional designers.

The data from the student surveys and the project assessment will provide valuable information for educators developing courses to teach the theory and practice of designing serious games. We suspect that students are very excited and interested in creating games that are fun, believing that the fun will automatically drive learning. We also suspect that professionals will focus more on the practical nature of developing serious games that provide a return on investment and lead to better employee performance yet these professional may not be able to articulate the underlying theories and concepts for why their games were successful or not in training their employees. Hopefully, this study will link instructional design methods and models to best practices providing professional with more evidence for using games in training and academics will have more evidence to promote the value of games in instructional situations.

References

Aldrich, C. (2004). *Simulations and the future of learning: An innovative (and perhaps revolutionary) approach to e-learning*. San Francisco, CA: Pfeiffer.

Annetta, L. A., & Cheng, M. (2008). Why educational video games? . In L. A. Annetta (Ed.), *Serious educational games* (pp. 1-12). Rotterdam: Sense Publishers.

American Society for Training and Development (ASTD) (2009). *Instructional Systems Design: Today and in the Future*. Retrieved August 2009 from <http://store.astd.org/Default.aspx?tabid=167&ProductId=21409>

Charsky, D. (2010a). Making a connection: Game genres, game characteristics, and teaching structures. In R. Van Eck (Ed.), *Gaming & cognition: Theories and perspectives from the learning sciences* (189 – 212). Hershey, PA: IGI Global.

Charsky, D. (2010b). From Edutainment to Serious Games: A change in the use of game characteristics. *Games & Culture*. 5(2), 177 - 198.

Gee, J. P. (2003). *What video games have to teach us about learning and literacy* (2nd ed.). New York: Palgrave MacMillan.

Malone, T. W., & Lepper, M. R. (1987). Making learning fun: A taxonomy of intrinsic motivations for learning. In R. Snow, & Farr, M. (Ed.), *Aptitude, learning and instruction: III. Cognitive and affective process analysis* (pp. 223-253). Hillsdale, NJ: Erlbaum.

Prensky, M. (2001). *Digital game-based learning*. New York: McGraw-Hill.

Shaffer, D. W. (2006). *How computer games help children learn*. New York: Palgrave MacMillan.

Squire, K. (2002). Cultural framing of computer video games. *Game Studies*, 2. Retrieved June 1, 2005 from <http://www.gamestudies.org/0102/squire/>