

Creating Serious Digital Games

A Summary of Techniques

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Author Note

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Abstract

Creating Serious Digital Games for use in higher education can be intimidating for those who don't have any programming experience. Many people have great ideas for games to make learning more enjoyable, but don't have the time to learn a whole new field. There are many premade games available, as well as applications for various levels of game developers for creating serious digital games. We will play with a few different types and level up in the process.

Many educators have discovered that using games for helping students learn is good. This appears to be true no matter the age or the materials. The bigger question is “*How can an educator create digital games that the students will want to play without spending the time becoming a game designer or programmer?*” It can be done, but don’t expect to be the next Farmville creator.

There are a lot of games on the internet that have been created by other educators in a wide variety of fields. There are also people who have created websites just to collect these games so they can be found more easily. Looking at these games is a great way to get started. They will give you ideas on what to do and what not to do when making games. They may even have exactly what you need for a particular topic. I have sent my students to some of these games, even if they are for K – 12 students, and they report their helpfulness on the discussion board. The students sometimes report that while the games designed for children are helpful, they are not as enjoyable as the games that are created for adult learners.

Other people have made educational games with varying degrees of success. How did they do it? Many of them started the way I did, with Simple Games.

Wait! What’s a Simple Game? Great question, a simple game is a game with few rules and requires few skills to play (Graser, 2010). Many children’s games, board games, and quiz games fall into the Simple Game category, which makes them great for making a quiz more fun.

I generally call a fun quiz a Game-Like Learning Activity. I find these types of games limiting for several reasons, but they have their place. Many of the quiz game generators only allow multiple choice questions and only text based information. This is fine if it is for a knowledge check and the information formats this way. If the game is for discovery or the information has pictures or special formatting, this can be an issue.

The level after Simple Games consists of Casual Games. They tend to have more rules than Simple Games, take a little more time to learn, and some require a bit of skill. Casual Games are not always included in the educational game literature, but I feel that many of the learning objectives can be easily put into a Casual Game with success. There are a lot of educational games that already fit into this type of game, as they are more complicated than Simple Games, but are still fairly easy to play. Many people play Casual Games, with the desire to return to the game, which makes it a good type of game for the repeated practice that is needed in many fields. There are a few applications that make creating Casual Games relatively simple. Some of them require no programming, while a few applications require some programming, but they often have well written tutorials.

Casual Games come in many forms including matching games, hidden object games, time management games, and more. Some of the non-educational Casual Games may even fit a learning objective, so no work is needed other than finding it. Other benefits of using entertainment games are that the work is done, they look nice, there is already support for them, and some students may be more inclined to play if they haven't already. Some of the entertainment games can be expensive, but many of the Casual Games have trials or are inexpensive. Sometimes finding the game type to fit the learning objective can be difficult (Whitton, 2009, p. 97). Playing a lot of games is required to find just the right fit, what a shame!

Some learning objectives won't fit well with Casual Games either. The next level up is a Complex Game. These games are just that, complex. They have a lot of rules just for the game and they take a lot of practice and skill (Freeman, 2010). However, many people put the time and effort into *learning* how to play these games. Some of the better entertainment Complex Games can take days or weeks to play to the end, and so may not be the best choice in a limited time

frame. Complex Games like the other types of games often have only one goal throughout the game (Brathwaite, 2010), though they have a lot of good ways to help the player achieve that goal. They also have good graphics, sound, animation, and the list goes on. There are even some game engines available that will help someone build a good Complex Game.

Most of the really good Casual and Complex Games are put together by a team of people, each person or group of people focusing on one aspect of the game. Even when only a small group of people or just one person is creating a game, it is good practice to have a solid Game Design Document to be referenced frequently through the development of the game. Some of the things to be included in your plan are a story line, rewards, hazards, and will it be cooperative, competitive, or a combination. If the game is very complicated, a database may be needed to house all the information (Allmer, 2009; Brathwaite, 2008; Griffith, 2009, Chapter 3). If it is not very complicated, some of the game engines can handle the resources.

Besides using a quiz game generator or other programming tools, it is also possible to create Simple Games using some of the applications that many educators already have or use. A bit of creativity with access to an interactive video maker can turn a video tutorial into a Simple Game or even a slightly more complicated game. For example, I have seen people make videos in Second Life to show how things are done in the Real World, why not add “hot spots” at the interesting bits to see if the student has learned something?

Here are some additional thoughts to keep in mind when planning an educational game. Will the results be saved, if so to what degree, will they be recorded into a course management system, shared high scores between classmates or just personal high scores? Is there a good connection between the learning objective and the game type (Whitton, 2009, 91)? Is the game too complicated for the material? Is anything about the game detracting from the learning?

Having the student forget that they are learning is okay, but not what they are learning. Are the students doing an activity just to get to the game? Is the game a wrapper for a poor presentation of material (Braithwaite, 2010)? There are a lot of bad learning games out there; it takes a lot of work *not* to be one of them. There are also a lot of learning games that could be good with a little more work. There are also a lot of good learning games that are free to be used.

It takes a lot of time, energy, and resources to make a good educational game, especially for adults. If it helps the students enjoy learning the material, then it seems worth it to me to put in the extra time and energy. Explore the games other people have made, entertainment or educational, you may find what you need. Play with the games that can be modified. When you are ready, go play with the game engines, or learn some of the programming languages, if you dare. Go play some games and get your ed game on!

An up-to-date list of websites, game engines, and other useful materials for games and Higher Education can be found at <http://math.RamsHillFarm.com>. If there are websites or other information that should be added, drop me a line!

References

- Allmer, M. (n.d.) (2009, February 27). The 13 Basic Principles of Gameplay Design. Retrieved from http://www.gamasutra.com/view/feature/3949/the_13_basic_principles_of_.php
- Brathwaite, B. (n.d.) (2008, November 30) Creating a Game Design Document Applied Game Design [Web log post]. Retrieved from <http://bbrathwaite.wordpress.com/2008/11/30/creating-a-game-design-document/>
- Brathwaite, B. (Director) (2010, June 1). Game Design Workshop. *6th Annual Innovations in e-Learning Symposium*. Lecture conducted from George Mason University, Fairfax, VA.
- Freeman, M. (Director) (2010, June 2). Serious by Design: Learning Design for Serious Games. *6th Annual Innovations in e-Learning Symposium*. Lecture conducted from George Mason University, Fairfax, VA.
- Graser, J. (Director) (2010, June 2). Expedient Application of Simple Gaming for Learning and Assessment. *6th Annual Innovations in e-Learning Symposium*. Lecture conducted from George Mason University, Fairfax, VA.
- Griffith, C. (2009). *Real-World Flash Game Development: How to Follow Best Practices AND Keep Your Sanity*. Amsterdam: Focal Press.
- Whitton, N. (2009). *Learning with Digital Games: A Practical Guide to Engage Students in Higher Education (The Open and Flexible Learning Series)*. New York: Routledge.

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