

Module 4: Gamification, Final

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Gamification, augmented reality and virtual reality all have a place in the new educational landscape. Learning is more than just memorizing facts and passing standardized tests. It is about engaging the learner in experiences that relate to issues they are experiencing in their lives and encouraging them to make choices and problem solve. Gamification provides a different way to interact with students. Augmented and virtual realities provide stimulating activities and environments in which learning can happen.

Augmented and Virtual Reality

Gamification is used to help learners solve problems by applying game design thinking to non-game applications (Padney, 2015). It can incorporate elements such as role-play, world making and collective storytelling in educational situations (Jagoda, Gilliam, McDonald, & Russell, 2015). Gamification is related to experiential learning and is about doing, rather than passively taking in information, and is an effort to motivate and engage students (Banfield & Wilkerson, 2014). Using games in education is not new, but with the new technologies available, activities can be more interactive and help to build even greater cognition. Another important aspect of gamification is competition. Just as competition is a part of many games and motivates students to achieve through deliberate goals, using game design thinking can provide competitive activities and motivate students to do their best (Banfield & Wilkerson, 2014).

Augmented reality creates the possibility of interaction between virtual and real-time applications and allows students to experience realistic environments in a virtual world (Saidin, Hamlin, & Yahaya, 2015). This provides an opportunity for students to learn actively, which most prefer over traditional teaching methods. It also improves mastery of abstract concepts.

Augmented reality provides a 3-D experience that helps students view objects from different angles and perspectives.

While augmented reality is about the interaction between a virtual world and the real world, virtual reality is about being immersed in a world simulated by a computer. The virtual experience is in real time, uses human feelings and is accessed through special devices (Piovesan, Passerino, & Pereira, 2012). In a virtual reality, the user becomes a part of the virtual world and experiences effects that can feel like real life.

When designing an augmented or virtual reality, the principles of game design thinking, or gamification, can be used to enhance the learning experience and motivate students through healthy competition. Since gamification is connected to experiential learning and augmented and virtual realities are about simulating or enhancing real world experiences, the connection is natural.

Since experiential learning is learner centered and based on activities and experiences that are relevant to the learner's life, both augmented and virtual realities can enhance the educational experience. Augmented reality can do this through the use of an app that, for example, bring photos to life. By scanning the photo, the learner can discover more information about the subject of the photo, than they might just by reading about it. The activities can be done in groups or teams with a bit of competition thrown in by seeing which team can complete the task first. This encourages teamwork, socialization and is fast paced and interesting and keeps the learners engaged.

Virtual reality can be brought into the classroom through the use of simulated experiences. Total environments can be created that offer opportunities for learners to develop a

new skill and to try out new tools. Virtual reality simulations can also encourage communication and collaboration and provide fresh and stimulating learning environments.

Gamification

Since gamification is about applying game design thinking to non-game applications, it has a valuable application in educational settings. According to MacKay (2013), play is an important part of child development. Playing games allows for collaboration and social interaction and helps to build non-cognitive skills related to how we behave (MacKay, 2013).

Using augmented and virtual reality to create simulated experiences where learners can interact with one another, compete and use their imagination helps to enhance the human mind. By playing games, learners learn how to make choices and to achieve goals. The purpose in using gamification in the classroom is to encourage the learners to think about the game, how it works and what it takes to complete it (MacKay, 2013). This then builds self-confidence and problem solving abilities.

Educational App or Game Review

The virtual reality game, designed for educational purposes, that is being reviewed is called, *Lure of the Labyrinth*, <http://labyrinth.thinkport.org/www/index.php>. *Lure of the Labyrinth* is a virtual world in which the participant must find and liberate their pets. The learners will have to outsmart monsters in many different scenarios. Each player will create an avatar that will move around the game and engage in a variety of activities. Through successfully completing the challenges, players earn tokens that will help them achieve their goals. The game is based on national standards that guide mathematical curriculum and helps the students with their pre-algebra math skills. Through the use of mapping activities, students have the opportunity to explore sequencing and numbering relationships. Strategic thinking and

using variables to solve a problem are encountered when they work with the puzzles that guide the play.

This game works well in an educational environment because:

- It is flexible and as the player moves through the game, they are able to make choices
- It can be played individually or with a group
- Players can assess themselves by how they move through the game
- The game provides a variety of activities for the learners to experience including, problem solving, math equations, and puzzles
- Learners are awarded tokens for their successes

The game can be used to build math skills, to teach cooperation and collaboration and to enhance creativity and imagination.

Adapted Educational App or Game Review

QR codes are like a 2-dimensional barcode. They were originally used to provide additional information on products. For example, a QR code could be generated for a piece of artwork. When a QR reader app on a mobile device is placed over the QR code, it triggers something on the device, such as launching a web browser with more information about the artwork or a way to purchase it.

Innovation educators have taken this simple technology and adapted it for educational use. Gwyneth Jones has developed a virtual scavenger hunt using QR codes. The augmented reality game, adapted for educational purposes, that is being reviewed is called, *QR Code Quest: A Library Media Scavenger Hunt*, <http://www.thedaringlibrarian.com/2012/05/qr-code-quest-scavenger-hunt-part-deux.html>.

This is a relatively simple game that involves augmented reality. The instructor has created a scavenger hunt that guides the learner throughout the library providing them with a library media orientation. The learners can use either an iPad or a smartphone that has a QR code reader installed on it. The code reader provides access to clues that, once solved, will lead them to different sections of the library. This game works well in an educational environment because:

- It engages the brain as the learners must first access the QR code and then solve the clue
- The game can be played individually or as a small group and involve collaboration.
- Success can be measured by solving all of the clues
- The game involves moving around the library so engages both the mind and the body
- The learners are provided with choices as to how they will move around the hunt so it encourages decision-making.

This game has many educational applications. The QR codes can be used for any project that involves discovery and sharing, such as inviting the students to learn more about a historical event by putting QR codes on photos of the event. It could be a fun way for students to submit reports. They could place the QR code on an image that represents their report topic and then the code would take viewer to a wiki page that displays the report content. Involving students in upcoming up with unique ways to use the app can also be an educational experience.

Conclusion

Augmented reality, virtual reality and gamification have many educational applications. All can be collaborative, include team-building activities and make learning fun. Through the use of simulated environments, games and interactions, students learn practical skills that will serve them throughout their lives.

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