# EDUCATIONAL GAMING DESIGN

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# INTRODUCTION:

- There are a number of factors that should be taken into consideration when designing an educational game. This presentation will focus on educational game design and provide some principles that can be used throughout the stages of game development.

- The information in this presentation is taken from our Educational Gaming Design document that goes into more depth.

# GAME DESIGN PRINCIPLES:

- Goals
- Content
- Interactivity
- Feedback

# GOALS

- The game must present a challenge
- The player should have goals to achieve
- As stated by John Laird, a game shouldn't be too easy or too hard; there must be a balance.
- Some common goals we see in games is solving puzzles, scoring points, and improving abilities.
- Goals should be well defined and measurable.
- Swartout and van Lent found that the goals of different levels help motivate learners to continue playing (as cited in Dondlinger, 2007, p. 24).

# CONTENT: EDUCATIONAL VERSUS EDUTAINMENT

- Edutainment games are classified as “those which follow a skill and drill format” where the player(s) are practicing and repeating skills in order to memorize the facts (Dondlinger 2007).
- Recalling knowledge continually can see benefits within the math classroom.

- Educational games “require strategizing, hypothesis testing, or problem-solving” which tend to highlight upon the idea of higher order thinking (Dondlinger 2007).

- When designing educational games, it is important to factor in higher-order thinking skills to foster a positive learning experience and engage students for real-life situations.
- Gaming can catch the minds of those students who do not learn traditionally, engage students who feel bored, and challenge students who want succeed.

# INTERACTIVITY

- “The main characteristic that differentiates edutainment and video games is interactivity,” states Dondlinger 2007.
- Games need to provide a balance of interaction between the player(s) and the game environment.
- Gaming situations where a player has complete freedom can seem boring and unchallenging. On the other hand, games where the player has little to no control over their actions place the player in an observation situation where learning is minimal or often times not even taking place.
- “Effective games weave objects and characters into a game environment that provide feedback and hint structures for successful game play” (Dondlinger 2007).
- Effective game design should stimulate social interaction with cooperation or even competition.

# FEEDBACK

- *"Feedback* : As in education, feedback in games is important in providing players with timely and relevant information on their progress towards goals and identifying their level of achievement so far," states Charles, M, Bustard, D, and Black, M. 2009.
- Feedback is one of the key aspects to gaming that creates learning experiences for students.
- Within educational games, feedback is built in and allows students to know what is expected of them as they play.
- Students are free of criticism and able to make mistakes, which create an environment that enhances learning.
- Learning from mistakes is often a large form of feedback in games. "This approach is to encourage student involvement by rewarding desirable behavior, including the completion of optional challenges, and giving regular feedback on performance, measured against others in the same class" (Charles, M, Bustard, D, and Black, M. 2009).

# CONCLUSION:

- In conclusion, educational games have a place in the classroom and when designed properly can assist students practice the skills they learn in school. "Educational video games require strategizing, hypothesis testing, or problem-solving, usually with higher order thinking rather than rote memorization or simple comprehension," (Dondlinger 2007).
- Through the inclusion of goals, content, interactivity, and feedback, educational games can make a substantial impact on education. They combine 21st century skills with higher levels of thinking and help motivate students to perform at their best. As gaming becomes more common in classrooms, the research behind it will help it grow and develop further. "

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