OLTD 508
Assignment #5
April 2014

Evaluation of 'Serious Games'/'Educational Games' For Use in the Classroom

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Game Evaluation Rubric/Measurement Tool
BLANK SAMPLE

Game Name:

Grade: **Cost:**   **Hardware:**
Operating System: **Computer Base:**   **Online:**

DESCRIPTION OF GAME:

Category	Needs Improvement =1pt	Satisfactory = 2pts	Very Good = 3pts	Exceptional = 4pts	Total
Graphics and User Interface Design	Images do not connect to text or they are irrelevant. The interface is hard to comprehend, use, and it is inappropriate for the target audience. Screens are either cluttered or empty causing an imbalance between graphics. Nonexistent attention paid to graphics. Game design does not look good and game play is mired by the visuals.	Images are not always relevant. Text is not always present or doesn't connect to images. The interface is a bit challenging to comprehend, use, and it is difficult for the target audience to master. Screens are either cluttered or empty. Inconsistent attention paid to sizing, placement, and type of graphics and text used. The game looks OK but game play experience is not enhanced by the visuals.	Images and text are mostly relevant. The interface is fairly easy to comprehend, use, and target audiences should be able to master. Most screens contain well-placed graphics, with a balance of text and images with few inconsistencies. The game looks good and the play experience is weakly enhanced by the visuals.	Images and text are all relevant. The interface is easy to comprehend, use, and is well designed for the target audience. Objects on all pages are well thought out. Screens are not cluttered or empty. The game looks great and game play experience is strongly enhanced by the visuals.	
Functionality and Navigation	Necessary buttons or tools are missing or difficult to utilize. Navigating the game is puzzling and information cannot be found simply. Navigation from screen to screen is difficult or impossible. The game did not function properly.	Not all necessary buttons or tools are present. Navigation from screen to screen is difficult or confusing. Some navigation is uncertain, causing the user to become lost in a few places and the student requires help to navigate. An incomplete set of game components work, with minor functionality problems.	All buttons or tools are present but some are hard to use. Navigation from screen to screen is typically easy. Navigation is mostly understandable and users can navigate with little assistance. Most components of the game work properly and support game play.	All buttons or tools are present making it easy to utilize. Navigation from screen to screen is consistently flawless. The game is well organized and easy to navigate. Users can clearly understand where they are and where to go next and can navigate with no assistance. All components of the game work properly and support game play.	
Feedback for the User	No opportunities are presented to receive feedback on user performance.	There are few opportunities presented to receive feedback on user performance.	There are opportunities presented to receive feedback on user performance but they are not timely or consistent.	There are frequent opportunities for users to receive consistent and timely feedback on their performance.	

Educational Value of Subject and Content	Information is brief or incorrect. Little comprehension of content is evident from presentation. The subject of the game is incomplete and the game misinforms the target audience or contains no educational content.	Some solid information presented; however, some information is brief and incorrect. The subject of the game is vaguely described and the game is not practical as a learning experience for the target audience.	Information is clear and correct throughout the majority of the presentation. The subject of the game is partially described and the game is useful as a learning experience for the target audience but learning content contains minor errors.	Information is well presented, clear, flawless, and correct throughout. The subject of the game is clearly stated and the game is a valuable resource as a learning experience for the user.	
Goals and Objectives	Goals are incomplete and there is no way to measure what the users must know to complete the game. Learning objectives are non-existent.	Goals are vague and it is unclear how to measure what the users must know to complete the game. Learning objectives are unclear.	Goals are partially described and partially measure what users must know in order to complete the game. Some learning objectives are identified but not all.	Goals are clearly stated and measure what users must know to be able to do to accomplish the game. Learning objectives are clearly identified.	
Higher Order Thinking Skills • **Synthesis** • **Evaluation** • **Analysis**	The game provides no activities to help users increase their higher order thinking skills.	The game provides limited activities to help users increase their higher order thinking skills.	The game provides some activities to help users increase their higher order thinking skills.	The game provides multiple activities to help users increase their higher order thinking skills.	
Motivation and Transfer to Real World Situations	The game's motivational components are vague and unconvincing. Game has no obvious applications to transfer to the real world.	There is significant uncertainty about the value or rationale behind the motivational components in the game. Game has obvious applications for the real world but users are unable to transfer knowledge to perform any tasks that are similar outside the game.	There is a little to no uncertainty about the value or rationale behind the game. Game components make connections to real life, but students are unable to perform some of the tasks that are similar without the game.	The game successfully motivates its intended audience. Knowledge and skills learned in the game can be easily connected with and transferred to real life situations.	

Total: _____/28

Rating Scale

22 - 28 points	**EXEMPLARY:** this game is appropriate and can be seen as useful in an educational setting.
21 – 15 points	**GOOD:** this is not the first choice game, but if budget cuts and other constraints make it impossible to purchase a game in the exemplary category, these games are second best.
14 - 8 points	**SATISFACTORY:** this category of game is not necessarily suitable for use in an educational setting. This game is only satisfactory which means that it satisfies some criteria but lacks in the majority of the criteria needed.
0 – 7 points	**NEEDS IMPROVEMENT:** this game should not be used at all. The game is not fully functioning and is not ready to be played. The game must be improved before being used in the classroom.

Notes

Game Evaluation Rubric/Measurement Tool

Game Name: World of Warcraft (WOW)

Grade: 8-12 (Teen Version)   **Cost:** Basic Free Account (up to level 20)   **Hardware:** Screen/Mouse/Keyboard/Headset

Computer Base: No   **Online:** Yes   **Operating System:** OSX 10.7 or later/Windows XP/Vista or later

DESCRIPTION OF GAME: *World of Warcraft* (*WoW*) is a massively multiplayer online role-playing game. Players control a character avatar within a game world in third or first-person view, exploring the landscape, fighting various monsters, completing quests, and interacting with non-player characters (NPCs) or other players. As characters become more developed, they gain various talents and skills, requiring the player to further define the abilities of that character. Characters can choose from a variety of professions, such as tailoring, blacksmithing, or mining. Characters can learn four secondary skills: archeology, cooking, fishing, and first-aid. *World of Warcraft* is set in the same universe as the *Warcraft* series of real-time strategy games, and has a similar art direction. *World of Warcraft* contains elements from fantasy, steampunk, and science fiction: such as gryphons, dragons, and elves; steam-powered automata; zombies, werewolves, and other horror monsters, as well as time travel, spaceships, and alien worlds. (Wikipedia)

Category	Needs Improvement =1pt	Satisfactory = 2pts	Very Good = 3pts	Exceptional = 4pts	Total
Graphics and User Interface Design	Images do not connect to text or they are irrelevant. The interface is hard to comprehend, use, and it is inappropriate for the target audience. Screens are either cluttered or empty causing an imbalance between graphics. Nonexistent attention paid to graphics. Game design does not look good and game play is mired by the visuals.	Images are not always relevant. Text is not always present or doesn't connect to images. The interface is a bit challenging to comprehend, use, and it is difficult for the target audience to master. Screens are either cluttered or empty. Inconsistent attention paid to sizing, placement, and type of graphics and text used. The game looks OK but game play experience is not enhanced by the visuals.	Images and text are mostly relevant. The interface is fairly easy to comprehend, use, and target audiences should be able to master. Most screens contain well-placed graphics, with a balance of text and images with few inconsistencies. The game looks good and the play experience is weakly enhanced by the visuals.	Images and text are all relevant. The interface is easy to comprehend, use, and is well designed for the target audience. Objects on all pages are well thought out. Screens are not cluttered or empty. The game looks great and game play experience is strongly enhanced by the visuals.	3
Functionality and Navigation	Necessary buttons or tools are missing or difficult to utilize. Navigating the game is puzzling and information cannot be found simply. Navigation from screen to screen is difficult or impossible. The game did not function properly.	Not all necessary buttons or tools are present. Navigation from screen to screen is difficult or confusing. Some navigation is uncertain, causing the user to become lost in a few places and the student requires help to navigate. An incomplete set of game components work, with minor functionality problems.	All buttons or tools are present but some are hard to use. Navigation from screen to screen is typically easy. Navigation is mostly understandable and users can navigate with little assistance. Most components of the game work properly and support game play.	All buttons or tools are present making it easy to utilize. Navigation from screen to screen is consistently flawless. The game is well organized and easy to navigate. Users can clearly understand where they are and where to go next and can navigate with no assistance. All components of the game work properly and support game play.	4
Feedback for the User	No opportunities are presented to receive feedback on user performance.	There are few opportunities presented to receive feedback on user performance.	There are opportunities presented to receive feedback on user performance but they are not timely or consistent.	There are frequent opportunities for users to receive consistent and timely feedback on their performance.	2

Educational Value of Subject and Content	Information is brief or incorrect. Little comprehension of content is evident from presentation. The subject of the game is incomplete and the game misinforms the target audience or contains no educational content.	Some solid information presented; however, some information is brief and incorrect. The subject of the game is vaguely described and the game is not practical as a learning experience for the target audience.	Information is clear and correct throughout the majority of the presentation. The subject of the game is partially described and the game is useful as a learning experience for the target audience but learning content contains minor errors.	Information is well presented, clear, flawless, and correct throughout. The subject of the game is clearly stated and the game is a valuable resource as a learning experience for the user.	3
Goals and Objectives	Goals are incomplete and there is no way to measure what the users must know to complete the game. Learning objectives are non-existent.	Goals are vague and it is unclear how to measure what the users must know to complete the game. Learning objectives are unclear.	Goals are partially described and partially measure what users must know in order to complete the game. Some learning objectives are identified but not all.	Goals are clearly stated and measure what users must know to be able to do to accomplish the game. Learning objectives are clearly identified.	2
Higher Order Thinking Skills • Synthesis • Evaluation • Analysis	The game provides no activities to help users increase their higher order thinking skills.	The game provides limited activities to help users increase their higher order thinking skills.	The game provides some activities to help users increase their higher order thinking skills.	The game provides multiple activities to help users increase their higher order thinking skills.	4
Motivation and Transfer to Real World Situations	The game's motivational components are vague and unconvincing. Game has no obvious applications to transfer to the real world.	There is significant uncertainty about the value or rationale behind the motivational components in the game. Game has obvious applications for the real world but users are unable to transfer knowledge to perform any tasks that are similar outside the game.	There is a little to no uncertainty about the value or rationale behind the game. Game components make connections to real life, but students are unable to perform some of the tasks that are similar without the game.	The game successfully motivates its intended audience. Knowledge and skills learned in the game can be easily connected with and transferred to real life situations.	2

Total: 20/28

Rating Scale

22 - 28 points	**EXEMPLARY:** this game is appropriate and can be seen as useful in an educational setting.
21 – 15 points	**GOOD:** this is not the first choice game, but if budget cuts and other constraints make it impossible to purchase a game in the exemplary category, these games are second best.
14 - 8 points	**SATISFACTORY:** this category of game is not necessarily suitable for use in an educational setting. This game is only satisfactory which means that it satisfies some criteria but lacks in the majority of the criteria needed.
0 – 7 points	**NEEDS IMPROVEMENT:** this game should not be used at all. The game is not fully functioning and is not ready to be played. The game must be improved before being used in the classroom.

(Gunter, 2009)

Notes
Higher Order Thinking Skills: This rating was chosen because the game fosters teamwork, coordination, and problem solving skills in the Dungeon/Raid/PvP. Users learn how to work together and coordinate to solve complex puzzles and challenges.

Game Evaluation Rubric/Measurement Tool

Game Name: School of Dragons

Grade: Elementary/Middle School   **Cost:** Free Basic Account/Upgrade to Member for $9.99/month for 500 gems (currency of game)
Computer Base: Yes – Free apps for iOS & Android   **Operating System:** PC & Mac (Windows XP & higher) **Hardware:** Monitor/Mouse/Keyboard/Headset/Tablet

DESCRIPTION OF GAME: School of Dragons comes from the *How to Train Your Dragon* franchise, and is available for use through Jumpstart.com as a free-to-play browser based game, and it is also available on mobile devices, with an app for both android and iOS.   The game is an immersive massively multi-player online role-playing gaming experience for elementary and/or middle school-aged. The player trains his/her dragon and becomes a Viking adventurer, through various quests and activities. Throughout the game there are many opportunities to play with other players, and learn key concept of scientific method, through various activities based on earth, life and physical sciences. The story is set on the island of Berk, and the player chooses an avatar, which is either male or female, and then they must choose a dragon to raise. They begin their adventure with hatching the dragon egg, and once their dragon hatches nearly every quest will provide overall experience points for the dragon, which eventually gives it new abilities. Much of the game is focused on the bonding process between the avatar and its pet dragon, and the player is responsible for nurturing and managing the dragon's levels of happiness and hunger by playing with the dragon and feeding it fish—the dragon will not be able to complete a task if its happiness or energy is depleted. As the dragon grows larger, and the dragon reaches level ten, the Broadwing stage, the player is then able to fly it around and join in on dragon racing with Hiccup's Fight Club and mastering fire breathing with Fireball Frenzy. There is also a farming component to the game, whereby the player must plant and look after crops and feed the animals. This tests their ability to manage time, make thoughtful choices about types of seeds to plant, and how to care for the plants. The player collects a return on their final products and has the opportunity to speed up the growing process with gems. During the science experiment quests the player is expected to solve a given problem following the scientific method, whereby they are to collect research, make a hypothesis, perform an experiment with the dragon, and come to a solution. The educational aspects are interwoven throughout the game such that the player is unaware they are being "taught" some knowledge and scientific principles at the same time as playing a fun game.

Category	Needs Improvement =1pt	Satisfactory = 2pts	Very Good = 3pts	Exceptional = 4pts	Total
Graphics and User Interface Design	Images do not connect to text or they are irrelevant. The interface is hard to comprehend, use, and it is inappropriate for the target audience. Screens are either cluttered or empty causing an imbalance between graphics. Nonexistent attention paid to graphics. Game design does not look good and game play is mired by the visuals.	Images are not always relevant. Text is not always present or doesn't connect to images. The interface is a bit challenging to comprehend, use, and it is difficult for the target audience to master. Screens are either cluttered or empty. Inconsistent attention paid to sizing, placement, and type of graphics and text used. The game looks OK but game play experience is not enhanced by the visuals.	Images and text are mostly relevant. The interface is fairly easy to comprehend, use, and target audiences should be able to master. Most screens contain well-placed graphics, with a balance of text and images with few inconsistencies. The game looks good and the play experience is weakly enhanced by the visuals.	Images and text are all relevant. The interface is easy to comprehend, use, and is well designed for the target audience. Objects on all pages are well thought out. Screens are not cluttered or empty. The game looks great and game play experience is strongly enhanced by the visuals.	4
Functionality and Navigation	Necessary buttons or tools are missing or difficult to utilize. Navigating the game is puzzling and information cannot be found simply. Navigation from screen to screen is difficult or impossible. The game did not function properly.	Not all necessary buttons or tools are present. Navigation from screen to screen is difficult or confusing. Some navigation is uncertain, causing the user to become lost in a few places and the student requires help to navigate. An incomplete set of game components work, with minor functionality problems.	All buttons or tools are present but some are hard to use. Navigation from screen to screen is typically easy. Navigation is mostly understandable and users can navigate with little assistance. Most components of the game work properly and support game play.	All buttons or tools are present making it easy to utilize. Navigation from screen to screen is consistently flawless. The game is well organized and easy to navigate. Users can clearly understand where they are and where to go next and can navigate with no assistance. All components of the game work properly and support game play.	4

Feedback for the User	No opportunities are presented to receive feedback on user performance.	There are few opportunities presented to receive feedback on user performance.	<mark>There are opportunities presented to receive feedback on user performance but they are not timely or consistent.</mark>	There are frequent opportunities for users to receive consistent and timely feedback on their performance.	**3**
Educational Value of Subject and Content	Information is brief or incorrect. Little comprehension of content is evident from presentation. The subject of the game is incomplete and the game misinforms the target audience or contains no educational content.	Some solid information presented; however, some information is brief and incorrect. The subject of the game is vaguely described and the game is not practical as a learning experience for the target audience.	Information is clear and correct throughout the majority of the presentation. The subject of the game is partially described and the game is useful as a learning experience for the target audience but learning content contains minor errors.	<mark>Information is well presented, clear, flawless, and correct throughout. The subject of the game is clearly stated and the game is a valuable resource as a learning experience for the user.</mark>	**4**
Goals and Objectives	Goals are incomplete and there is no way to measure what the users must know to complete the game. Learning objectives are non-existent.	Goals are vague and it is unclear how to measure what the users must know to complete the game. Learning objectives are unclear.	Goals are partially described and partially measure what users must know in order to complete the game. Some learning objectives are identified but not all.	<mark>Goals are clearly stated and measure what users must know to be able to do to accomplish the game. Learning objectives are clearly identified.</mark>	**4**
Higher Order Thinking Skills • **Synthesis** • **Evaluation** • **Analysis**	The game provides no activities to help users increase their higher order thinking skills.	The game provides limited activities to help users increase their higher order thinking skills.	<mark>The game provides some activities to help users increase their higher order thinking skills.</mark>	The game provides multiple activities to help users increase their higher order thinking skills.	**3**
Motivation and Transfer to Real World Situations	The game's motivational components are vague and unconvincing. Game has no obvious applications to transfer to the real world.	There is significant uncertainty about the value or rationale behind the motivational components in the game. Game has obvious applications for the real world but users are unable to transfer knowledge to perform any tasks that are similar outside the game.	There is a little to no uncertainty about the value or rationale behind the game. Game components make connections to real life, but students are unable to perform some of the tasks that are similar without the game.	<mark>The game successfully motivates its intended audience. Knowledge and skills learned in the game can be easily connected with and transferred to real life situations.</mark>	**4**

Total: <mark>26</mark>/28

Rating Scale

<mark>**22 - 28 points**</mark>	<mark>**EXEMPLARY:** this game is appropriate and can be seen as useful in an educational setting.</mark>
21 – 15 points	**GOOD:** this is not the first choice game, but if budget cuts and other constraints make it impossible to purchase a game in the exemplary category, these games are second best.
14 - 8 points	**SATISFACTORY:** this category of game is not necessarily suitable for use in an educational setting. This game is only satisfactory which means that it satisfies some criteria but lacks in the majority of the criteria needed.
0 – 7 points	**NEEDS IMPROVEMENT:** this game should not be used at all. The game is not fully functioning and is not ready to be played. The game must be improved before being used in the classroom.

Game Evaluation Rubric/Measurement Tool

Game Name: The Lord of the Rings Online

Grade: 8-12   **Cost:** Free basic subscription/$9.99 a month VIP   **Hardware:** Monitor/Mouse/Keyboard/Headset

Operating System: Mac 10.7.5/Windows XP   **Computer Base:** No   **Online:** Yes

DESCRIPTION OF GAME: Lord of the Rings Online is the premier massively multiplayer online role-playing game. This is a slow but fun story oriented game. Players can create an avatar from four races - Dwarves, Elves, Hobbits and Man – each with its own strengths and weaknesses. During gameplay, players can hover the cursor over most icons in the game to display a popup window with detailed information. The game provides an easy to follow storyline and quests are fairly clear and simple to understand if you read the text. The game suits the play styles of a wide variety of players. For example, players can spend their time crafting materials, building structures, exploring towns and outlying areas or going on a quest. Characters can increase morale or health via food, rest, music and battle cries. The game also places a fair emphasis on cooking and farming in its crafting system. Characters can build up power to employ active skills that behave like magic or use objects and artifacts to create effects similar to magic. The difficulty level of the non-player characters (NPC's) encountered by the player will vary and may be no threat to a player individually, or it may be impossible for a lone character to defeat without the aid of a full raid. (Wikipedia)

Category	Needs Improvement =1pt	Satisfactory = 2pts	Very Good = 3pts	Exceptional = 4pts	Total
Graphics and User Interface Design	Images do not connect to text or they are irrelevant. The interface is hard to comprehend, use, and it is inappropriate for the target audience. Screens are either cluttered or empty causing an imbalance between graphics. Nonexistent attention paid to graphics. Game design does not look good and game play is mired by the visuals.	Images are not always relevant. Text is not always present or doesn't connect to images. The interface is a bit challenging to comprehend, use, and it is difficult for the target audience to master. Screens are either cluttered or empty. Inconsistent attention paid to sizing, placement, and type of graphics and text used. The game looks OK but game play experience is not enhanced by the visuals.	Images and text are mostly relevant. The interface is fairly easy to comprehend, use, and target audiences should be able to master. Most screens contain well-placed graphics, with a balance of text and images with few inconsistencies. The game looks good and the play experience is weakly enhanced by the visuals.	Images and text are all relevant. The interface is easy to comprehend, use, and is well designed for the target audience. Objects on all pages are well thought out. Screens are not cluttered or empty. The game looks great and game play experience is strongly enhanced by the visuals.	4
Functionality and Navigation	Necessary buttons or tools are missing or difficult to utilize. Navigating the game is puzzling and information cannot be found simply. Navigation from screen to screen is difficult or impossible. The game did not function properly.	Not all necessary buttons or tools are present. Navigation from screen to screen is difficult or confusing. Some navigation is uncertain, causing the user to become lost in a few places and the student requires help to navigate. An incomplete set of game components work, with minor functionality problems.	All buttons or tools are present but some are hard to use. Navigation from screen to screen is typically easy. Navigation is mostly understandable and users can navigate with little assistance. Most components of the game work properly and support game play.	All buttons or tools are present making it easy to utilize. Navigation from screen to screen is consistently flawless. The game is well organized and easy to navigate. Users can clearly understand where they are and where to go next and can navigate with no assistance. All components of the game work properly and support game play.	4
Feedback for the User	No opportunities are presented to receive feedback on user performance.	There are few opportunities presented to receive feedback on user performance.	There are opportunities presented to receive feedback on user performance but they are not timely or consistent.	There are frequent opportunities for users to receive consistent and timely feedback on their performance.	3

Educational Value of Subject and Content	Information is brief or incorrect. Little comprehension of content is evident from presentation. The subject of the game is incomplete and the game misinforms the target audience or contains no educational content.	==Some solid information presented; however, some information is brief and incorrect. The subject of the game is vaguely described and the game is not practical as a learning experience for the target audience.==	Information is clear and correct throughout the majority of the presentation. The subject of the game is partially described and the game is useful as a learning experience for the target audience but learning content contains minor errors.	Information is well presented, clear, flawless, and correct throughout. The subject of the game is clearly stated and the game is a valuable resource as a learning experience for the user.	2
Goals and Objectives	Goals are incomplete and there is no way to measure what the users must know to complete the game. Learning objectives are non-existent.	==Goals are vague and it is unclear how to measure what the users must know to complete the game. Learning objectives are unclear.==	Goals are partially described and partially measure what users must know in order to complete the game. Some learning objectives are identified but not all.	Goals are clearly stated and measure what users must know to be able to do to accomplish the game. Learning objectives are clearly identified.	2
Higher Order Thinking Skills • Synthesis • Evaluation • Analysis	The game provides no activities to help users increase their higher order thinking skills.	The game provides limited activities to help users increase their higher order thinking skills.	The game provides some activities to help users increase their higher order thinking skills.	==The game provides multiple activities to help users increase their higher order thinking skills.==	4
Motivation and Transfer to Real World Situations	The game's motivational components are vague and unconvincing. Game has no obvious applications to transfer to the real world.	There is significant uncertainty about the value or rationale behind the motivational components in the game. Game has obvious applications for the real world but users are unable to transfer knowledge to perform any tasks that are similar outside the game.	==There is a little to no uncertainty about the value or rationale behind the game. Game components make connections to real life, but students are unable to perform some of the tasks that are similar without the game.==	The game successfully motivates its intended audience. Knowledge and skills learned in the game can be easily connected with and transferred to real life situations.	3

Total: ==22/28==

Rating Scale

==22 - 28 points==	==**EXEMPLARY:** this game is appropriate and can be seen as useful in an educational setting.==
21 – 15 points	**GOOD:** this is not the first choice game, but if budget cuts and other constraints make it impossible to purchase a game in the exemplary category, these games are second best.
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Rubric Descriptor

This rubric is designed to provide educators with defined criteria to evaluate and choose digital games or simulations so they can integrate the technology with curriculum (Kronenberg, 2010). Educators will find this rubric useful in determining whether or not a video game is appropriate for use in the classroom. Additionally, this rubric makes it possible for educators to determine the effectiveness of the game and the quality of the game. This rubric has seven different criteria. Use the rubric to assign a score to each criterion using the following categories: Needs Improvement = 1 point, Satisfactory = 2 points, Very Good = 3 points and exemplary = 4 points. After assigning point values based on the criteria, the total score for all the categories can be compared to the rating scale listed below the rubric (Gunter, 2009).

Justification of Categories

Graphics and User Interface Design

"As gamers and game developers we know that immersion is everything. When you're immersed you lose track of time and become involved in what the game is presenting" (Quintans, 2013). The graphical user interface (GUI) is the interface that allows for direct interaction with the device through graphics and visuals (Wikipedia, 2014). "… user interface that allows interaction with the electronic device through graphical icons and visual indicators" (Wikipedia, 2014). Graphics and User Interface tells us how well a game is designed, or how "fluid the games user experience is" (Quintans, 2013). It is the methods (keyboard control, mouse control) and interfaces (inventory screen, map screen)" (Quintans, 2013), and graphics. With good graphics and User Interface, the player is totally immersed in a game—and with educational games, we want our goal is for students to experience "flow" within a game environment, that is the state in which a person is focused and highly immersed an activity, and the player loses track of time. (Nakamura & Ciskszentmihalyi, M., 2002). With educational games the interface must be clear, realistic (to the game), and there must be an appropriate balance between game characters, background, and text, in order for players to understand their position at all times. Objects on the page are well thought out, and "almost everything must be literally one click away" (Quintans, 2013). Visually, the foreground must stand out from the background and the background must not be too busy or too empty. The command and dialogue boxes must be clear and the font must be easy to read and consistent. The game environment or setting must be an accurate representation of a virtual world that match the perceived conditions the players would experience in *real world* conventions. The various screens must have the same feel and should be scrollable, so the players using mobile devices are able to view the screen's content (Quintans, 2013).

Functionality and Navigation

It is crucial for players to have simple and understandable navigation in order to advance through the game without feeling overwhelmed or frustrated. Navigation is the most common task that is associated with game playing, and it involves moving through the interface and way finding, which is planning how to move through an environment. If the gaming environment is difficult to navigate, then the game essential becomes unusable. (Smith & Du'Mont, S., 2014). With Gee's (2013) principle "Just in Time" and "On Demand" we know that our students need clear navigation, and the game should give "…information either *just in time*—that is, right when players need and can use it—or *on demand*, that is, when the player feels a need for it, wants it, is ready for it, and can make good use of it"(Gee, 2013). It is important for players to have the ability to stop, pause, and start actions, to save progress and repeat parts of the game again.   "Without these abilities, the learner/player would become frustrated

quickly and develop a negative attitude toward the game…leading to the opposite of the desired effect" (Kronenberg, 2010). In terms of functionality, or what functions the game offers, "interaction with the machine is increasingly more natural, reducing learner anxieties and reservations of game technology use in an educational context" (Kronenberg, 2010). Good games excel in providing a range of functional elements, such as controlling devices (keyboard, mouse), visuals (video, animations, and images), auditory elements (music, sounds, and speech), and textual aids such as hypertext (Kronenberg, 2010). The set of capabilities that the game offers are becoming increasingly intricate, for instance some offer 3D with augmented reality overlays and voice recognition, which provide "more of an immersive environment" (Kronenberg, 2010). Gee's (2007) principles of good games incorporate the idea that many aspects of game world increasingly use, "smart tools and distributed knowledge" where in smart tools have skills and functions of their own which they lend to the player; the core knowledge required to play the game is distributed or shared between the player and the avatar/character in the game.   Good functionality, navigation and "multimodality" (Kronenberg, 2012) essentially create a understandable and more immersive user experience and facilitates shedding of disbelief in artificial environments" (Kronenberg, 2010), which are key factors in choosing games for educational purposes.

Feedback for the User

Students need to be provided with feedback so they can know how well they are doing, understand the progress they are making and make modifications in order to improve performance. Although it may take a long time for students to realize the progress they are making, it is important that games include a reward and feedback loop that provides a constant stream of positive feedback (Kronenberg, 2010). Feedback related to the progress being made in a video game is often ongoing and can come in the form of points, token, or sound effects and it is usually "in response to the player achieving the challenge, solution, sequence, etc. needed to progress to the next and more challenging level of the game" (Willis, 2011). According to Robert Sun, "by creating conditions where students are given clear goals, receive immediate feedback in real time about their progress, and affirmation in the form of rewards that are linked to mastery of appropriate skills, flow can be achieved" (Sun, 2012). We have included this category in our rubric because we felt that it was important for educators to select games that provide students with feedback so they make modifications in an effort to achieve the goals of the game.

Educational Value of Subject and Content

As there has been a lot of controversy over video games and the educational value they possess, it is important for educators to ensure that the subject and content of the games they are choosing for their students have educational value. Kronenberg (2010) suggests "the settings and conditions which lead to a possible integration of COTS games must align with the intended learning goals." It is important for students to understand that their role and actions within a video game are connected to learning outcomes. Understanding these connections will motivate students to improve their performance. Additionally, when games provide "rewards" for achieving a predetermined goal, students are motivated to continue play in order to attain goals (Kronenberg, 2010). When we created this rubric, we felt that it was important for educators to select games that have an educational value and connect to curricular goals. Making this connect allows educational professional to justify the use of video games in education.

Goals and Objectives

Kronenberg (2010), recommends that when choosing and evaluating a COTS games, one needs to consider the tasks that the players will need to accomplish to further themselves in the game. These tasks should be "manageable, clearly stated and broken down into smaller sub-tasks" (Kronenberg, 2010). COTS games offer a feeling of achievement to players through the advancement of the game and attaining goals within it. These types of achievement give the player motivation to continue playing and test their abilities. It gives them a sense of accomplishment. Kronenberg

(2010) shares the fact that it is critical for players to see the "connection between their actions and outcomes" in order for them to continue to improve their performance and even to enrich their learning. When we created our rubric we decided that goals and objectives are an integral part of a lesson and therefore they are an integral part of a game being used to support learning in an educational setting.

Higher Order Thinking Skills
Synthesis/Evaluation/Analysis

Higher order thinking involves cognitive skills, which include critical, reflective, creative, logical and metacognitive thinking. When individuals encounter challenging and often unfamiliar problems, questions or dilemmas, our cognition attempts to make sense of the problem and successful application of these skills result in explanations, evaluations, decisions, synthesis, analysis, performances, and products that are within the context of our prior knowledge and experience (King, Goodson, L., & Rohani, F. PhD, n.d). Within the context of an online game environment, the player is provided a task that is just outside of their comfort zone, what Gee's (2013) refers to as the "cycle of expertise," whereby the player is given a task, and he/she practices the task until it becomes routine, and then the player continues to "ratchet it up" (Gee, 2013), continuing on in this cycle of performance. In a sense the game is scaffolding knowledge, and the challenge is just enough to motivate "the player to experience the game with fully focused cognitive and emotional attention to the task at hand" (Kronenberg, 2012). A good game is said to be "Pleasantly frustrating" (Gee, 2013) where the cognitive load is not too much, but it engages higher order thinking skills enough that it is at the outer edge of the player's "regime of competence" (Gee, 2007). That is, they feel "doable", but challenging. Cognitively, this is a highly stimulating and motivating state for learners.

Motivation and Transfer to Real World Situations

According to Kronenberg (2010), when selecting a COTS game it is important to have a high motivational factor for players. Games and simulations that were made precisely for a specific learning outcome are not usually as engaging and motivating for players. With a higher motivational reward the players will then become "fully immersed in the domain and [are] highly focused on the current tasks" (Kronenberg, 2010). According to Kronenberg, the aspect of being fully immersed both cognitively and emotionally in the game is missing from a lot of edutainment products, which "interrupts the flow of the gameplay", and it keeps the "learning quite separate from any flow experience" (Kronenberg, 2010). By players immersing themselves into a game where they are highly motivated they will master the process of the skill and thus gain transferable real-world skills. Similarly when there is a real-world skill to be learned through game-based learning players will be motivated to learn, practice and master the skill. When we created our rubric we felt this was a very important aspect when choosing a game to support learning as without motivation to play the students will not be engaged and the lesson would fail to be supported.

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