Game-like Design Model

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Abstract: The author outlines a proposed game-like design model for teachers to employ when planning courses, units, and lessons. The author calls for teachers to work as designers of experiences and facilitators of learning. The design model consists of three phases: Wonder, Play, and Make. The Wonder phase is centered on inducing cognitive dissonance, defining roles and identities, and starting to unveil the challenge. The Play phase calls for teachers to design experiences that are similar to levels within video games, and that allow students to explore and tinker, while experiencing both challenge and support. The Make phase consists of clearly defining the challenge, setting the conditions for the Make, and a call to share. The paper concludes with additional possibilities and constraints.

Prologue

Imagine that you are a six-year-old child in a remote village in Ethiopia that has never seen printed materials, a road sign, or even words on packaging. One day a large box arrives with no explanation. You open the box to find shiny objects (Motorola Zoom Tablets) for you and 19 of your friends. You, of course, have no idea what a tablet is, but nonetheless, you are hooked. You figure out how to power up the tablet in less than five minutes and within five days you are using 47 preloaded apps. Within two weeks you are singing alphabet songs throughout the village. Within five months you have enabled the camera and personalized the desktop, though both rights had been intentionally disabled.

The story highlights what Nicholas Negroponte, the founder of One Laptop Per Child, attempted recently in two remote villages in Ethiopia (Talbot, 2012). The experiment (appropriate or not) highlights a seemingly natural, unfiltered, sequence of learning. The children experienced a sense of wonder, the freedom to play, and an opportunity to make.

How can we create experiences for students that follow a similar trajectory? Game-like learning is one possibility.

Designing for Game-like Learning

In game-like learning, students are dropped into inquiry-based, complex problem spaces in a manner consistent with what players experience in video games (Salen, Torres, Wolozin, Rufo-Tepper, & Shapiro, 2011, p.xi). As “the ultimate goal of the game designer is to deliver an experience” (Schell, 2010 p.21), game-like learning redefines the primary roles of the teacher to that of *designer of experiences and facilitator of learning*. As experience designers, there is much for teachers to learn from game designers.

Game designers often find themselves needing to teach the player through design rather than explicit instruction. Here’s an example of teaching through design:

During a scene from the documentary *Indie Game* (2012), game designer Edmund McMillen describes how he teaches through level design. He demos a level on *Super Meat Boy* in which he intends to teach the player that they can scale walls. On the level being displayed, the novice player will arrive at a wall and look around for ways to move the character, Super Meat Boy, forward or up on the screen. Noticing that no viable options are available, the player experiences disequilibrium, as they cannot progress. With a void of options for moving forward or up, the user attempts the impossible, to scale the wall. The player tries and learns that Super Meat Boy’s sticky blood exterior allows him to suction, albeit momentarily, to surfaces, thus allowing him to scale walls with ease (Pajot & Swirsky, 2012). No tutorials were provided, no Powerpoints presented, the game designer simply designed the environment to allow the learning opportunity to unfold.

Consequently, Game-like learning is a departure from the prevailing instructionist teacher-led classroom, to a decidedly constructivist and constructionist approach. In the paragraphs that follow, I endeavor to convey a game-like design model with the goal of helping teachers, aka *designers*, design with game-like learning principles for their courses, units, and lessons. The model is simple: Wonder, Play, Make.

Wonder

Last week, my two-year-old son struggled to locate a toy truck that was directly in front of him. He looked with wide-eyed excitement, but failed for what felt like minutes. To his mother and me, the task was simple, even though the truck sat nestled between 20-30 other toys. Alison Gopnik, a Professor of Psychology at the University of California, explained the curious condition we witnessed during a 2009 interview on the National Public Radio Show *Talk of the Nation*. Gopnik explained that babies and small children "…really seemed to be designed to learn" (Conan & Gopnik, 2009). She differentiated between adult consciousness as having a flashlight-like focus, and babies and small children experiencing the world with a lantern-like focus. The wider, lantern-like focus, dictates that babies and small children are necessarily bad at *not* paying attention, failing to disregard distractions. Being bad at not paying attention turns out to be an asset for early learning, as "…their consciousness is captivated by anything that they think might teach them about how the world works" (Conan & Gopnik, 2009).

What does it feel like to see the world with such a child-like wonder? Adult travellers may have the best idea. By putting themselves in strikingly different places and spaces, there is an awakening of consciousness as they try to make sense, and learn about their new surroundings. The feeling is likely associated with why many contemporary nomads refer to travelling as a drug, the powerful effect of seeing the world with child-like eyes.

The challenge then, for teachers, is to design experiences that awaken consciousness and ignite curiosity. The first step in design is to induce a state of cognitive dissonance for the learner, resulting in disequilibrium in thought, thus opening the door for learning to occur. Disequilibrium is uncomfortable, prompting the learner to be motivated and open to learn. The vacuum that is created when a learner experiences the unexpected, is stuck, witnesses discrepant events, or otherwise challenges their mental models, can act to awaken the curious mind.

After design induced disequilibrium ensues, the students are charged with taking on alternative identities and roles. Similar to a video game experience, identities and roles can range from the fantastical world of make believe to more reality-based assignments. The identities/roles allow students to connect with the larger narrative designed by the teacher, see problems from multiple viewpoints, and feel greater freedom in taking intellectual chances.

Wrapped up with the formation of identities and roles is often a slow unveiling of the larger challenge to come. The challenge is not fully disclosed during the wonder phase, rather hinted at in order to provide further definition to the narrative and shape student inquiry.

Inducing disequilibrium, shaping student identities and roles, along with starting to unveil the challenge, act in combination to create a state of Wonder. The students have "a need to know" (Salen et. al., 2011, p.16). "To truly learn, remember, and understand, your mind must be in a state of questing, of seeking to find knowledge" (Schell, 2010, p. xxix). Or in other words, as John Dewey wrote, "Eagerness for experience, for new and varied contacts, is found where wonder is found" (Dewey, 1910/1991, p.31). The students are now ready to experience Play.

To Play

Armed with a need to know, students enter an inquiry-based interdisciplinary environment that is designed for Play. In the classic book on play, *Homo Ludens*, John Huizinga asserts "in play, we may move below the level of the serious, as the child does; or we can also move above it – in the realm of the beautiful and the sacred" (Huizinga, 1950, p.19). We will attempt to achieve both.

In designing a playful experience aim to create a space for students to explore, tinker, feel challenged, and feel supported. The design continues to unveil the larger challenge and allows students to practice within the identities and roles introduced during the Wonder phase. Though not a necessity, actual games can compliment this phase of learning quite well, ranging from commercial video games to user created analog games.

Regardless of whether you choose to actually employ games, Play can feel game like. In designing for Play, we can follow the lead of game designers and think in terms of level design. A common feature of videogames is to "increase difficulty with each success" (Schell, 2010, p. 177). Thus, in games, players often work at the outer limits of their capacity as they develop skills. If a player struggles, their character (or avatar) may experience a momentary setback or even death, but ultimately, the player can simply start over. The player learns through the challenge, and through the failure. In addition to level design, game-designers can also teach us about importance of feedback. Within a game, you receive constant feedback on how you are doing. Feedback takes the form of "judgment, reward, instruction, encouragement, and challenge." (Schell, 2010, p.230) In video games, feedback helps to make you a better player.

Taking the lead from game designers, game–like design allows the learner to feel that understanding is attainable,

but is always just a bit out of reach, or "challenging but not 'undoable'" (Gee, 2007, p. 68). To create a level type feel, design a sequence of levels (or mini challenges) that slowly build student understanding and support exploration with just-in-time information, just-in-time guidance, and just-in-time surprises (to keep things interesting!). As the experience facilitator, allow time for students to explore levels and tinker with models. Allow students to learn through the challenge, and through the failure. Use feedback, lots of feedback to motivate, and to make students better learners.

The phase of Play should be messy, but if done well, it will be an engaging inquiry filled experience for students. "Play has the tendency to be beautiful" (Huizinga, 1950, P.10).

To Make

Having experienced a sense of Wonder and the freedom to Play with ideas, the student seeks to express their understanding, they seek to Make. Think of the Make phase of learning as an opportunity for the students to beat the Boss. In video games, players develop skills through gameplay and eventually test their skills against a variety of bosses. Often times, a game ends with a final Boss, a gnarly character that is sure to test the players' full range of skills and their stamina. Except, in the classroom, the Boss comes in the form of a design-and-build challenge.

In the book *Makers The New Industrial Revolution*, former *Wired* magazine editor-in-chief Chris Anderson asserts that "We are all Makers. We are born Makers…" (Anderson, 2012, p.13). And subsequently, "We are all designers now" (Anderson, 2012, p.59). Anderson describes the emerging world of customization and individualized manufacturing that is evidenced in the success of companies like Etsy, and the forecasted growth of personal 3D printers and other fabrication devices over the next decade. We have reached a period where each person will have the ability to design and build in a way that only factories have done in the past, "…nothing is stopping you from making anything" (Anderson, 2012, p.66).

Now it's time to launch the challenge in full and set the conditions for the Make. The goal is to have students experience "learning-by-making" (Papert & Harel, 1991, p.4), as they transfer the knowledge and skills that were developed during the Play phase, to a different context. They will develop design skills, such as: communication, collaboration, critical thinking, problem solving, creativity, and innovation.

The challenge is situated within the narrative, deepening the connection to identity and role, and placing the learner on a team. Student teams work, often in competition with each other, to design, build, iterate, and eventually Make a final product. Providing a student friendly rubric can help to guide progress and add structure to the (wonderfully) messy process of learning that will unfold.

As a learner, to Make is to test all of your assumptions, to learn through iteration, to learn from teammates, to make your thinking visible, and to express publicly what you currently know and understand. "There is no greater integrity, no greater goal achieved, than an idea articulately expressed through something made with your hands. We call this constant dialogue between eye, mind, and hand "critical thinking -- critical making" (Maeda, 2010).

At the culmination of a Make is a call to share. Sharing is often public and can take many forms, depending on the nature of the Make. The audience for a discrete lesson might very well be classmates, or peers in online communities. For larger Makes, invite experts in to judge the challenge. Experts can raise the stakes, increase the feel of authenticity, and add a degree of age appropriate professionalism to the process.

Epilogue

The game-like design model outlined in the previous sections is not meant to rigidly define a singular path toward designing game-like learning environments. The reader might rightfully question whether students should Make during the Play phase, or Play during the Wonder phase. The answer is YES! I do however offer the following pair of rigid design constraints if you choose to employ this model for game-like design, students need to start in the Wonder phase, and conclude in the Make phase.

Many of the ideas outlined above are not new, rather they represent a mash-up of educational thought from the last century, with emerging technologies that are only now coming into focus.

The design model as presented can be employed on any level, from course, to unit, to lesson. Design the experience – Wonder, Play, Make.

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