What Games Have to Teach Us About Teaching and Learning: Game Design as a Model for Course and Curricular Development

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If you are at all interested in the idea of games as a part of education and learning then you have probably come across James Gee's *What Do Video Games Have to Teach Us About Learning and Literacy*. Gee's book is an important text because he is able to quantify the way people learn and apply what they learn in video games. This is compelling material for the many teachers in search of new pedagogical methods that harness the recent increase in popularity of video games. There is a problem however in Gee's argument. While he explains the learning processes of gamers, he doesn't in fact provide any road maps as to how exactly one should go about using video games to teach.

He makes a convincing argument that video games have the capacity to help us reexamine how we learn, but he doesn't tell us how to make games that students will want to play and will also learn from. I must admit that when I first went through the book this shortcoming disappointed me. The notion of students learning through playing games (whether they be frivolous, serious, or persuasive) was tantalizing, especially since I enjoy playing video games in my spare time. But as I got through the book I realized that it was in fact never Gee's intention to do that in the first place. His book was a call to arms, but not one declaring students should be playing video games in school. Rather Gee is insisting that there is something about the comprehensive and engrossing experience of video gaming that we should look deeply into as we reconsider our pedagogical practices and refine our methods of teaching.

The question for educators, then, is how exactly to take advantage of the benefits Gee has made apparent in this book. How do you take the exciting characteristics of video games, which have been central to their surge in popularity, and convert those into pedagogical strategies that will affect real change in the classroom and make the learning experience better and more beneficial for students?

So, where does that leave the possibilities for video games in the classroom, and in what ways can we take advantage of Gee's findings? Undoubtedly there will be some good games made for teaching purposes, and as those games prove their worth, they will surely carve out an important niche in teaching and learning. There is, however, another approach that can be taken if we wish to take advantage of the lessons learned from video games and for that matter games in general. That approach is to use the principles of game design as a model for developing new modes of pedagogical practice. In this manner, rather than using games as tools which we use to teach, we can take those things that Gee has told us "video games have to teach us about learning and literacy" and apply them to larger systems that are designed to encourage just that, learning and literacy.

This paper will argue that the schema and elements that game designers use in creating games can analogously be used as frameworks for reconsidering the structures of classroom experiences, syllabi, and even program development. It will show how the lessons learned from the work game designers do and the experiences that gamers have in game situations can be utilized by teachers looking to evolve their practice in a manner that better prepares their students for contemporary society.

Games and Learning Environments: Definitions

A few things stand out when considering the relationship of games and teaching. First of all, teaching is hard. Second, game design is hard. Finally, being good at both of these things is incredibly difficult for most educators. But the value of games for the development of pedagogy need not rely on the design and development of games that teach. This is because while teachers are most likely not going to be game designers, they are curriculum and course designers. It is this point of commonality between games and pedagogy that is most fertile for the merging of design strategies. Not only does it offer the opportunity for teachers to merely append their existing skill sets rather than embrace an entire alternate field's worth of knowledge, but it also allows them to expand upon or reimagine preexisting materials (courses, programs) rather than begin entirely anew. In this way, incorporating those lessons that games have to teach us about learning and literacy is a bit simpler, as educators are able to deal with a lower barrier of entry (since they are developing new methods from those they are already familiar with) and a shallower learning curve (since they need not learn the extensive intricacies behind the design of a complete game) than they would in designing games for the classroom.

Having established the premise of game design as an analog for course and curriculum design, we must consider what it means to design a game and discuss just how it is done. There is no shortage of literature on the design of games, ranging from practical guides on professional game development to theoretical analyses of the components of games. What can be gleaned from a review of this literature is that defining what a "game" is and how to go about designing one remain topics of great debate. That is healthy of course, particularly as the exposure of video games increases and the discourse surrounding games continues to expand. The goal of this paper is not to resolve either of these debates. That being said, in order to draw direct comparisons there must be a stable framework from which to work, and a crucial part of that framework is a specific definition of a game.

The definition that will be used in this study comes from ludologist Jesper Juul. In his paper, "The Game, the Player, the World: Looking for a Heart of Gameness," Juul arrives at a definition of what a game is by taking some of the most well-known definitions of the term – such as those by Johan Huizenga in *Homo Ludens*, Roger Caillois in *Man, Play, Games*, Chris Crawford in *The Art of Computer Game Design*, and Katie Salen and Eric Zimmerman in *Rules of Play* – to find their commonalities and then to apply some adjustments. The result is the following definition:

> A game is a rule-based formal system with a variable and quantifiable outcome, where different outcomes are assigned different values, the player exerts effort in order to influence the outcome, the player feels attached to the outcome, and the consequences of the activity are optional and negotiable. (Juul, "The Game, the Player, the World").

Juul derives this definition from the following six features:

> 1) Rules: Games are rule-based. 2) Variable, quantifiable outcome: Games have variable, quantifiable outcomes. 3) Value assigned to possible outcomes: That the different potential outcomes of the game are assigned different values, some being positive, some being negative. 4) Player effort: That the player invests effort in order to influence the outcome (i.e. games are challenging). 5) Player attached to outcome: That the players are attached to the outcomes of the game in the sense that a player will be the winner and "happy" if a positive outcome happens, and loser and "unhappy" if a negative outcome happens. 6) Negotiable consequences: The same game [set of rules] can be played with or without real-life consequences. (Juul, "The Game, the Player, the World")

As a foundation for understanding games, Juul's definition does a good job of covering not only the

functional and structural aspects of what a game is – rules, variable outcomes, differing outcome values, negotiable consequences – but also recognizes the importance of the quality of experience the player has and amount of effort he must exert to play the game. As a definition upon which to do a comparative study of learning systems and games, Juul's definition also works well because his six characteristics align well with a general understanding of learning environments and their operation. Let us consider them one at a time.

1) Rules. Just as rules are vital to establishing the boundaries within which the player plays a game, rules are an important part of delineating a learning environment. Whether those rules are behavioral "you will not chew gum in class" or structural "class meets twice a week and a paper is due at the end of the semester" there are parameters of a learning environment that are analogous to rules in video games. What is of particular significance is that just as rules help delineate the game world from the real world, learning environments are set off from other spaces in everyday life by the set of conditions that distinguish them from leisure, home, or work environments.

2) Variable, quantifiable outcome. Variability of outcome is important in games because the level of uncertainty it introduces in conjunction with the player's ability to have an impact on that outcome is what makes the game playing experience compelling. Learning environments share this variability in that the amount of knowledge that will be gained is uncertain at the beginning. With regards to quantifiable outcomes, assessment structures allow educators to make clear the intended outcome and quantify for learners whether they have achieved the predetermined goal of the course/class. Variable, quantifiable outcome is of particular interest in considering game design as a model for pedagogy because an improper balance of variability and difficulty can be the death knell of a game, especially if that game is too easy or difficult or generally unpredictable. The challenge that game designers find in properly striking this balance is similar to the challenge educators find in developing syllabi and curricula that are compelling to learners.

3) Value assigned to possible outcomes. This is perhaps the simplest parallel to make. Achievement in games is rewarded in a number of ways including points, character upgrades, or progression further on in a game's narrative. Similarly grading/assessment evaluates the work done by students at different stages in a learning environment. The challenge here is to find ways to use value assignment in learning environments to motivate students as effectively as the assignment of points of and upgrades in games does to compel gamers to play games longer and more skillfully.

4) Player effort. Another relatively straightforward parallel: Just as a gamer must exert effort to accomplish anything in a game, a learner only has the potential to learn if he invests energy in the work it takes to complete the tasks assigned in a learning environment. Good games inspire players to willfully exert effort in the hopes of accomplishment, a paradigm which is much more effective than the strategies of compulsion and mandatory work that many learning environments adopt.

5) Player attached to outcome. A game player plays games because of the belief that the end result or reward of playing it is worth the effort exerted. That reward may be an Xbox achievement, money earned in poker, or the satisfaction of completing the story of a narrative game. Either way, there must be enough value to justify the work and for the player to establish an attachment to the game that will result in a psychological response to differing outcomes. Taking this into consideration with regards to learning environments, we can begin to see how a student may be more likely to engage in a course if the possible outcome is in some way worth that engagement and is likely to engender a feeling of happiness. Therefore, creating the balance of attainability, apparent worth, and level of difficulty to engender attachment to an outcome is definitely a challenge that game and course designers share.

6) Negotiable consequences. This is the one feature in Juul's argument where our analogy begins to become a bit sticky. The notion of negotiable consequences means that while a game may have an

impact on the player's life outside the game (he may lose a bet or lose a friendship because of an argument over the game's result) that is not mandated by it. In this way, Juul encapsulates the notion that games are set apart from real-life but leaves the door open for the reality that the consequences of gaming very well may spill over into the rest of the player's life. While the link between games and real-life is negotiable, education on the other hand is inextricably linked to real-life. It may seem that this disparity refutes the parallel between game and instructional design, but it can alternatively be seen as an anomaly that in fact enhances the argument. If the educator makes clear that the work done in a learning environment is a place with considerable implications in the real world, this non-negotiability of consequences can instead be used as a motivator for students to engage in the activities of the learning environment. In this way the characteristic of games being apart from every day life can be used as a sort of double negative. By that I mean that since school is *not* a leisure or entertainment activity and is also *not* separated from real-life, the parallel between games and learning can motivate students to think about how engaging as actively in a learning environments as they would in a game can ultimately benefit them. The end result is that if curricula are structured in a way that engenders the same appeal as games, and the reward of learning is shown to be as worthwhile as the reward of leisure activities, then the non-negotiability of the learning environment can be an enhancement rather than a hindrance.

Noting these points of correlation between game design and the design of learning environments, we can begin to see the potential of rethinking our approach to course design. Taking the parameters set by Juul and considering them in light of teaching and learning we can perhaps now describe a new kind of learning space: a *variable environment* (2) with *parameters/rules* (1) in which students are *attached to the outcome* (5) of their *work/effort* (4) and are given active control of the *possible outcomes* (3) of their participation. While in some regards this may seem like a simple transcription of a traditional learning environment into Juul's definition, there are features in this definition that either do not appear or are not apparent in many contemporary places of learning. Giving a variability of experience, an actual attachment to outcomes that derives from something other than punishment and active control in the development of the learning space, are all characteristics that are in short supply in most contemporary learning environments. This definition provides us with a foundation to reconsider why those things are in short supply and the methods by which they can become more prevalent in learning environments. Let us now proceed and consider some of the approaches that designers take in creating game experiences. As in the case of establishing what a game is, considering design principles will help provide lessons in how to construct a better learning environments and experiences.

Games and Learning Environments: Design Principles

Having settled on a definition of the word *game* and drawn some parallels to learning environments, it is time to move on to some of the principles that guide game designers and may be useful to educators. First I want to note that in this section I will not try to address the particular steps of game development and making a game, or even recommend a course of action in creating a specific learning environment based on game design principles. Designers of learning environments are just as diverse and individual in their methods as designers of games, and as it is impossible to simplify the process of all game designers into a neat package it would be folly to do the same with instructional design. Instead I will try to elaborate some of the parallels from which effective course and curricular design might spring forth. But, whereas the previous section focused on definitional parallels, this section will consider how some of the general principles game designers use can be seen as useful strategies in the design of effective learning environments.

Just as Juul's definition served as the foundation in the last section, it is useful to look at a comprehensive model of game design when considering how principles of game design can be used to

shape learning environments. There are a number of good works that describe the game process, including those by Chris Crawford (*The Art of Computer Game Design*), Jesse Schell (*The Art of Game Design*), and Richard Rouse (*Game Design: Theory and Practice*); and as the field grows more well-written works are appearing regularly. However, for this study I will be using the model developed in *Rules of Play* by Katie Salen and Eric Zimmerman to establish a relationship between game design and the design of learning environments. *Rules of Play* provides an in-depth description and analysis of the principles and procedures of game design and Salen and Zimmerman have done an impressive job of documenting the many manifestations that games can take, addressing questions that range from the general to the very specific.[1]

As Juul's definition of a game showed direct correlation with a particular conception of a learning environment, so does Salen and Zimmerman's approach to what games are, what they consist of, and how to proceed with designing them. Salen and Zimmerman state that the goal of their book is to "look closely at games as designed systems, discovering patterns within their complexity that bring the challenges of game design into full view" (*Rules of Play* 2). This view of games as complex, designed systems is an important perspective. In particular, Salen and Zimmerman make it clear what they mean by *design*: "Design is the process by which a *designer* creates a *context* to be encountered by a *participant*, from which *meaning* emerges" (*Rules of Play* 41). This active reflection on the act of design is an important lesson for pedagogues building courses and curricula, because just as game designers must put design, context, participation, and meaning in relation to one another, the teacher must do so when devising courses of study. Just as the best games are only effective in attracting and maintaining the attention of players if they are well-designed, the best learning environments will be created by designers who take seriously the task of creating a context for students to decipher meaning through participation and immersion.

In order to structure their study of the wide range of game design methodologies, Salen and Zimmerman use a schematic by which they can first categorize game design concepts generally under three main headings: Rules, Play, and Culture. Then they analyze game design within more specific parameters, such as "games as systems of information," "games as the play of meaning," and "games as open culture." For the sake of this argument I will consider how the three broader headings – Rules, Play, and Culture – situate not only games as a product of thoughtful design, but also as potential models for learning environments.

Rules

Salen and Zimmerman describe rules as the formal qualities of a game. These rules are fixed, explicit, binding, repeatable, and limit player action (Salen and Zimmerman, *Rules of Play* 12). Importantly, rules define the boundaries of action of a game, set it apart from the rest of the world, and distinguish game play from general play. The most apparent rules are explicit by nature and provide players with the limits within which a game can play. Examples of explicit rules are those that govern piece movement in chess or the guidelines defined in the rulebook that accompany a board game. Beyond explicit rules there are other rule structures that are crucial to setting the parameters for game play, such as constituative and implicit rules. Constituative rules are those those that determine game mechanics. Think of the mathematical principles behind a game such as Tic-Tac-Toe where the increasingly limited range of options after every turn is determined by the mathematical possibility of the game's grid. Implicit rules are those that exist in social structures, such as sportsmanship and etiquette, and that impact the experience of game play (Salen and Zimmerman, *Rules of Play* 130). Staffan Björk and Jussi Holopainen in "Game Design Patterns" describe additional rule-like bounding components that influence the range of activities allowed when playing a game. In particular, they discuss the impact of modes of play – changes in play such as taking turns in chess or going from action to inventory

management in a digital game – and goals and subgoals in determining the variety of game play that different game players experience (416-418).

But rules do more than just set the table for game play and allow for a variety of experience. It is the proper construction of rules that determines the flow of game play. For this reason the design of elegant rules for a game is critical to the interactivity, immersion, and fluidity of a player's experience. Salen and Zimmerman note that "as a game designer you generally want players focused on the experience, rather than making sense of the rules. One important aspect of designing rules is creating experiences where elegant rule design maintains proper player focus" (*Rules of Play* 136). Perhaps this is where the educators have the most to learn from the rules of game play when considering the design of learning environments. As it stands, it is not the broader rule sets of learning that are in most urgent need of attention. Length of class time, number of weeks in a semester, amount of work expected on a regular basis—these different types of operational, constituative, and implicit rules usually work well as a functional framework. It is the elegant management of these rules and the goals and smaller subgoals of a learning environment that can turn a classroom or online space from a tedious workspace into an open place for exploration and investigation.

Just as game designers massage a game's rules to enhance game play and maximize a player's experience, instructional designers should refine their instruction to maximize the potential for learning. They should establish structures that are balanced in a way that keeps students focused on the material, but that are also navigable in a way that allows them to have some control over their experiences. Changes in learning environments that correspond to such an approach could be: creating greater student control over the scale and timing of assignments, offering a greater range of acceptable formats for assignments, encouraging more student-led learning sessions, or providing opportunities to redo specific projects in order to achieve higher grades. These are just a few suggestions of adjustments to the organizing rules of a learning environment that do not require a complex rethinking of the shape of a learning environment, but can offer different levels of freedom and increase the range of experience for students. There is no one-way to do this, no magic set of design parameters that maximizes the learning experience, because ultimately each environment, each individual or group of students, and each instructor is different. But there is always a time and place for experimentation and alteration, as long as it moves towards a more effective learning environment. It is for this reason that educators should think more consciously about how the rules of their learning environments shape their students experiences and how reshaping, adjusting, and balancing these rules can lead to better learning.

Play

In the discussion of rules, game play has already emerged as an important concept. In Salen and Zimmerman's survey of game design, play covers those aspects of gaming that deal with the experience the player has. It is important to note however that there is a differentiation between general play and game play. Play can cover a large range of actions from *playing* an instrument, to *playing* at recess, to *playing* a role. Games share the playfulness of other forms of play, but whereas general play usually occurs without limits, movement and action in a game is limited by the rules of that game. As a result, the interaction of the player and the game system generates a specific type of play: *meaningful play.* The significance of meaningful play is that the player's action results in an outcome that is discernable and integrated into the larger context of the game. The level to which a game play experience is discernable and integrated are important because it is the creation of meaningful play that keeps the game going for a player and makes the game playing experience a successful one (Salen and Zimmerman, *Rules of Play* 33-35).

Properly designed meaningful play is what generates pleasurable game experiences, motivates players to work to learn the details of a games rule system, and stimulates the desire to develop mastery of the game system. In this way, the discernability and integration that constitute meaningful play are significant in thinking specifically about shaping meaningful experiences for students in learning environments. If meaningful play can generate outcomes that motivate a gamer to work through learning situations in the hopes of developing mastery of a game, then the same parameters can be applied to a reconsidering of the types of experiences generated by learning environments. A student who can see that the work he does has discernable relevancy to his course of study, and that the reading, writing, and other assignments he completes will be integrated into the development of the class over time, is bound to have a more meaningful connection to the class. Educators can generate this type of meaning by explaining grading results more clearly, designing assignments that have multiple stages that build upon one another, or making sure that work that is done (say in a blog post or response paper) is connected back to group meetings of the course. All of these simple modifications to course design increase the discernable value of work done, and allows for students to see how the effort they exert is integrated to a larger learning system, which their actions can influence.

To take the possibilities of play another step further, let's return to the design of games to see how interactivity and choice are also important in the design of game play. Interactivity is at the heart of creating meaningful play in a game system. In order to generate discernable and integrated outcomes, a game must have a system of interactivity. Game interfaces come in a wide range of forms, from a football to dice to a keyboard. All of these allow for interactivity that results in the discernable and integrated outcomes that delineate meaningful play. Perhaps just as important is that these interfaces allow the player to make choices. You can throw a football in a number of different ways or direction, you can roll dice from different angles, and you can punch the buttons on a keyboard in many different sequences. In the end, the quality of game play is determined by the game system's response to these choices, because the depth and quality of the interaction determines how meaningful the play is to the player (Salen and Zimmerman, *Rules of Play* 61).

Expanding on the idea of choice and interactivity, Greg Costikyan notes that what in fact makes game play unique is not just interaction (Costikyan points out that even a light switch is interactive) or choice, but the decision making process that is involved in making that choice.

> The thing that makes a game a game is the need to make decisions. . . .What does a player do in any game? . . . At every point, he considers the game state. That might be what he sees on the screen. Or it might be what the gamemaster has just told him. Or it might be the arrangement on the pieces on the board. Then, he considers his objectives, and the game tokens and resources available to him. And he considers his opposition, the forces he must struggle against. He tries to decide on the best course of action. . . . And he makes a decision. (Costikyan, "I Have No Words & I Must Design")

Costikyan's explanation of the role of decision-making in games is particularly relevant to learning environments. Decision-making is a complex process that implies the ability to discern between options, then weigh their differences, and proceed with a choice that is based on the player's ability to judge the situation. It is through learning how to make independent decisions that people learn how to learn and how to act independently; therefore the ability to teach proper decision-making skills, whether they are in writing, researching, or doing algebra, is undoubtedly a critical goal of learning environments. The fact that building a game is essentially the building of an engine designed to put a player in position to make decisions is another example of the potential that game design has for teaching educators how to build learning environments. Structuring learning environments in a way that generates meaningful experiences should be something all educators hope to do. In order to do this

they can use the lessons learned from game design to consider interactivity and choice as tools by which they can generate experiences that require decision-making skills and foster independent thought.

Culture

The relationship of games to culture occurs in two possible directions. First of all, games are influenced by the cultural contexts within which they are designed and played (Salen and Zimmerman, *Rules of Play* 104). One example of a game that displays this kind of influence is the video game *Modern Warfare.* This first person shooter takes place during contemporary or near-future times and uses recognizable real world conflict zones, such as the Middle East, as the locales for game play. The player's familiarity with these surroundings, from news reports, other forms of culture such as movies, or actual personal experience, allows the designers to develop meaningful play by placing the game system within environs that have a specific impact on the discernability and integration of outcomes. For instance, if a bullet hits you you know you will be injured or killed and that that damage will have a noticeable impact on game play. While such a context is apparent in detailed video games, less visually or narratively articulated games such as chess also work in this way. The specific assignment of strength and movement capabilities to different pieces on a chess board, kings are the most important piece and queens can move more than any other piece, is a direct reflection of the culture within which the game was developed. In this way, careful consideration of how a game is situated with a specific cultural context allows the game designer to engage with cultural conventions – such as character types, genres, or aesthetic styles – and either follow them to make for familiar experiences or innovate them to create unique game play experience.

A second way in which games are situated within culture is in their capability to be transformative. Although not all games are transformative, some games do have the capacity to have an impact on the development of the cultural contexts in which they are situated (Salen and Zimmerman, *Rules of Play* 305). Take soccer and the World Cup. The results of this game tournament have a profound impact on the countries that take part in competition and have the potential to influence the dynamic of international relations between different countries. Whenever Brazil makes it to the final game, the entire country shuts down with all eyes glued to broadcasts of the game play. International tensions, such as those that developed between United Kingdom and Argentina over the Falkland Conflict, can also be exacerbated by results on the soccer field – which is exactly what happened when Argentina defeated England on the famously disputed "Hand of God" goal scored by Diego Maradona in the 1986 World Cup. So, although games are not necessarily transformative – a game of cards is unlikely to have a long term impact on culture on either a large or small scale – they do have the power to impact the cultural context within which they occur, and this is an important feature that will be considered when looking at the role culture plays in the design of learning environments.

Addressing the influence of a game's cultural context is perhaps the design principle most easily transferred between games and learning environments. Like games, learning environments are inevitably situated within a cultural context that influences the experience of the student in the environment just as it influences the experience of the player in the game. There is a difference however in the relationship between learning environments and cultural context. This is because although learning environments may be set aside from the real world, the consequences of actions made in a learning environment are non-negotiable and not separate from reality. Just as this distinction represented a divergence at the level of definition, so does it impact the way in which the designers of learning environments consider the role of cultural context. That is because instructors can assert the power of a learning environment to contextualize cultural experience and act as a transformative space, just as they could highlight that the non-negotiability of outcomes of learning environments is

imperative to a student's interaction with the real world.

Learning environments have a level of significance above that of games in society because they are the places from which most if not all the components of culture are ultimately generated. These spaces provide students exposure to the cultural world around them through courses, curricula, and other designed educational experiences.[2] In this way, students are armed with the tools with which to better perceive and think critically about the world in which they live. Students thereby gain the capacity to go back out into the world and become producers of the cultural contexts that constitute society – and within which activities such as games exist.

The significant role that culture plays in the system of experience that occurs in learning environments is similar to the role that culture plays in games and game design. But, because learning environments are situated in a world with non-negotiable outcomes, considering the impact of cultural contextualization on the design of learning environments is critical to the success of the design of that environment. Salen and Zimmerman, reflecting on the role of culture in the design of games, note that it is at the intersection of the formal, experiential, and cultural characteristics that the meaning of a game is determined and is where the most powerful gaming experiences are generated (*Rules of Play* 511). This logic connotes that the ability to design effective environments is predicated on the instructor's ability to incorporate the cultural imperative of learning into the formal and experiential structures of his learning environment. If the instructor is able to accomplish the type of synthesis of form, experience, and context that we see in successful game design, then he is more likely to foster an environment in which students come to a better, more full understanding of the world around them. Furthermore, these students may also find ways to parallel the transformative properties of game play and apply the knowledge they gain to change the world around them. In this way we can see how the principles of game design lead us down a very direct and systematic path that in the end encourages the same principles of comprehension and empowerment that are at the core of sound pedagogical theory.

Conclusion: Bringing it Back to Dewey

> "A primary responsibility of educators is that they not only be aware of the general principle of the shaping of actual experience by environing conditions, but that they also recognize in the concrete what surroundings are conducive to having experiences that lead to growth. Above all, they should know how to utilize the surroundings, physical and social, that exist so as to extract from them all that they have to contribute to building up experiences that are worth while." (John Dewey 40)

It is interesting how easily a quote by John Dewey from 1938 can fit into a discussion about the principles of game design and their applicability to the development of learning environments. Dewey knew back then that the key to student growth lay in having a diversity of experience and that in that diversity of experience the student should be given some level of self-determination to learn for himself. We can easily find in Dewey's writing meaningful play, the encouragement of interaction, and the proper situation of learning in cultural circumstances. He even notes the importance of rules in his model of progressive education and uses games as an example of rules elegantly designed to enable play and experience but that also maintain social control (Dewey 52-53).

From Dewey we can see that encouraging the types of experiences that we find in games in learning environments is not necessarily a novel idea. Nevertheless, the lesson Dewey offered seventy years ago remains a powerful one and thinking about video games and game design in our contemporary information society re-enlivens it. As online and hybrid learning continues to evolve, the possibility for interactive experiences has become more readily available and learning environments must be

rethought, reshaped, and retooled. This provides the opportunity to construct learning environments within which students feel agency and where their choices and actions have real impact on the nature and outcomes of the class. As students are given more agency, teachers however must find a way to cede some of their own agency without the learning environment slipping out of their control. In this way they face the challenge of telling the story a course is meant to tell by letting the students discover and explore the story on their own. These are the types of experiences that students have come to expect in their cultural excursions within video games and other digital media, and game design provides the model educators can turn to as they look to improve learning environments.