The eLearning Coach Podcast #18

Designing Awesome Game Experiences with John Ferrera

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Connie: Hello learning people, welcome to episode 18 of The eLearning Coach Podcast. It is good to be with you again, I hope you are doing well. Do you think you could improve your understanding of people if you play the role of a border guard? Can you find value in getting chased by zombies? The answers to these and many other questions you may have about designing the game experience are answered in this episode where I speak with John Ferrera, author of Playful Design. John's background is in user experience design and he is the creative director of Megazoid Games. You can follow John on Twitter at @PlayfulDdesign. Here is the interview.

Connie: Hi John, it is nice to have you on the podcast.

John: Hi.

Connie: You are the author of *Playful Design, Creating Game Experiences in Everyday Interfaces*. I think your book is relevant to learning professionals because many of us are designing or would like to design games as learning experiences but we kind of need to better understand the possibilities and the process, so I am pretty excited to have this discussion with you.

John: I am thrilled to be able to talk to you as well.

Connie: What inspired you to write your book, *Playful Design*?

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John: Well, a few things. First, I really personally believe the games can achieve great things in the real world. I believe that they have capabilities that you don't get through other media, I think they are interesting in their interactivity and their ability to simulate the conditions of the real world in the kind of relationship that a person develops with the game playing it over time.

I think all of these things are kind of unique and presented as a medium that has potential that you do not find with other things. At the same time, I also thought that a lot of the design that was going on, and there is quite a bit right now with learning games and games for health and games for change, I think that a lot of the design of these things is very flawed, and I am coming from a design background as a user experience designer, somebody who traditionally has designed conventional interfaces for websites, software, and so forth. I think that a lot of the things that are being done right now are great efforts, but in some ways, they are were misguided in terms of the way that they were actually being done, in terms of their efficacy to achieve the goals they set out to, or in many cases the quality of the experience the player has, and so I wanted to put together a book that would provide a guide for people to think through the kinds of things that make games more effective and make them better experiences.

Finally, just in general, I love games. I think that they are so interesting, it is time that I always feel well spent, and I think that in my profession, as a user experience designer, they are often not seen as professional in some sense, they are not seen as serious, and so I also wanted to provide a book that disabused people of that idea.

Connie: It really does, it is great, I have to say that I went for years not really enjoying playing games, and for some reason, the trend of games being something more serious to start it to get at me, and now, I find them really fun. So what it is about people that give us so much pleasure or satisfaction from playing games?

John: Well, there are a couple of things baked into that. For one thing, I think that play is just a fundamental function of living, I mean not only do human beings play but dogs play, cats play, horses play, and so forth, so there is something in our psyche that has determined there is an advantage in this kind of behavior in getting out and playing, and games are a technology that makes play more complex, more lively enjoyable. It makes it safer and it makes it more intellectual. Games really are exclusively, as I conceive them, in the province of human beings, this is something that we do in order to make play better in some sense. So I believe that we are wired to find games enjoyable. I believe that we have this reaction that we call fun which is the phenomenological response that we have that reinforces constructive play behaviors. I think that the desire to pursue fun in rooted in our biology and in our psychology, and so creating games that make it more effective is something that we are inherently wired to do and that I think is why games have always been a part of our cultures, and I think that games have

become more interesting as computers have opened up the ability to experience play in entirely new ways.

Connie: Interesting. Before we get too far, I should probably just get a level set here in case everyone has a different idea of games. What is your definition of games?

John: I desperately try to avoid being so risky as to put out a definition of games that is my own…. Because, generally when you do that, it is either so specific that it is immediately open to challenge or so vague that it is not useful for any purpose you want to put it to. So rather than doing a dictionary style definition, I tend to define games by saying there are a few characteristics that are common to all game experiences that are pretty uncontroversial. These are the things furthermore that are relevant to their design, and so if we are just talking about games alone instead of videogames in particular, I think there are three main characteristics. The first one is objectives, which is a condition you are either trying to attain, the win condition. It can also be a condition that you are trying to maintain, in something like Jenga or Twister, the game ends when it fails, when that condition is lost.

Second characteristic of all games is environmental constraints, so something that you have that by its physical characteristics places constraints on what can be done, and so for example, on a Checkers board, you have an 8 x 8 grid. It is not a 7 x 7 grid, it is not a 9 x 9 grid, and that is an important part of the design, that physical environmental constraints helps to define what the game is, and if it was played on a 7 x 7 board, Checkers and Chess and everything else that is played on a checkerboard would be very very different. This is also true of card games, there are exactly 4 Aces in a deck of cards.

Then, the third characteristic is formal constraints, which are the rules, and unlike the environmental constraints, these are things that are only true and only holds true because people agree to them, there is a mutual agreement among everybody who is playing the game that they will abide by this set of rules because everybody wants to enable the game play experience, but there is nothing that physically binds them to those constraints. So in a way, a game is a contract, it is an agreement to do certain things to box in our behaviors in certain ways.

Then, if we are talking about videogames, there is another factor that we have to add on which

I would define as arbitration, and this is also true for things that are not videogames, you do not necessarily need a computer to arbitrate, you have physical arbitration in things like Pinball and Pachinko and Water Basketball, things like that. But with videogames, there is a computer that serves as an intermediary, and that can add a lot of proficiency to the experience. So the rules can be arbitrated through the games, the winning condition can be arbitrated. This allows games to be much more complex. Dungeons & Dragons is really pretty complex to play on paper, but when you play Ultima, when that became available in the late 70s, it opened up an entirely new opportunity for you to have a much more complex game that did a lot more, that involved a lot more rules, and to do it a lot faster to speed through the experience. That has grown over time into something that is incredibly sophisticated like World of Warcraft and games like that.

So a few core characteristics that we were just talking about games, there are objectives, environmental constraints, and formal constraints that define the experience, and then if we are talking about videogames, there is computer-based arbitration as well.

Connie: I think that is a great way to create a definition more by the characteristics or the essence of it. When you say videogames and I really never stopped and thought how that term came about, you are talking about computer games, games that are computer based.

John: Right, a game that is arbitrated by a computer at some point, I do use the word videogame, it has come up at various points that if this is the right term for us to use. I use it because it is the most conventional term, because people get the least ambiguous idea what I am talking about, I think, I generally find when I use that phrase as opposed to something else.

Connie: Okay, great. So with the start of your book, you write that game design, this is a shortened version, game design turns our usual ways of thinking upside down, what did you mean by that?

John: Okay, so in the spot in particular, I was addressing people in the user experience field. There is a lot of overlap in the design disciplines between games and conventional user experiences. Videogames are a subset of user experiences, but they have some special differences that are not true the way that we would normally design. So classic example, I have drawn a graph that plots ease of use over time or difficulty over time, and in the field of user

experience design, when you are developing a website or designing a software product or app, you always want that chart to be very simple where it tracks right along the minimum difficulty indefinitely forever and ever and ever, you always want the experience to be as easy as it can possibly be. You want things to get out of the person's way. With a game, however, part of the point of it is interacting with the difficulties that are embedded inside the experience, and so that graph becomes a little bit different where over time, you want it to become progressively more difficult, as the player, you want it to be progressively more difficult at a precise rate, at a rate that does not make you feel bored over time because you have already mastered it and you have nothing more to do and also it does not make you feel frustrated because if it wraps up too quickly, it becomes too difficult. So designing that way where you are deliberately creating the right kinds of difficulty in the experience is something that is very foreign and user experience designers require change in their thinking.

Connie: Yeah, that makes sense, and really when we are designing elearning online courses, we too are really very involved with the user experience, and I think we would tend to try to make the user interface transparent to the learner, so I think what you are saying is true for our field too, would turn things on its head to slowly make it more and more challenging and that is what makes the game fun.

John: And of course with the game, you want it to be the right kind of difficulty, right? There can be the wrong kind of difficulty that does get into things like the user interface. There is a lot of dragging and dropping across the screen and that becomes frustrating over time and actions are not available to you quickly enough when you need them, those are different kinds of problems … that is the wrong kind of frustration. So a lot of what is true in user experience design holds true in the game, but the difficulty needs to be in the challenge of the gameplay, needs to be embedded in the mechanic of the game.

Connie: That makes perfect sense. Let us talk a little bit about games for learning and then games for persuasion just so we can get some possibilities and some ideas from you. You discussed 4 unique qualities of games that make them a good medium for learning, can you explain each one of those four?

John: Sure, the first one that I described is agency. This is the idea that the players are the ones who are put in charge in the game, and normally in teaching, the way that it works is that the

student is in some sense disempowered. The teacher, the instructor is the one who is driving the motorcycle, the student is the one who is riding along in the sidecar, and of course that is fine, that is a model that is necessary and it works in most situations, but it does necessarily raises questions about volition. Students will at some point, many students will at some point start to ask whey I am here, is there something that I want to be doing, am I learning this because it is something that I need, is this something that I feel personally motivated by, personally interested by? In a game, it is entirely different. You are the one who is in charge, you are the one who is determining what you are going to learn and when you are going to learn it because there are concrete objectives you are trying to meet inside the game, you are trying to achieve a specific end, and so you are the one who decides when things are going to be learnt. Of course, it is guided by the experience but the player has a palpable feeling of agency in the game.

Another quality is failure based learning, which I think is coined by Will Wright who made The Sims, Simcity, and games like that, and this is the idea that there is actually some value in trying something and failing again and again and again and again and again….. that in the process of doing that, you are actually gaining a better understanding of the given subject and that the only real harm to failing is that in the real world, it leads to either loss of resources or loss of money, it is dangerous in some sense. But a game on the other hand removes those concerns because it is a completely safe virtual lab where you are free to fail as spectacularly as you may like and just get up and try again, and so for example, I used to play a lot of Angry Birds a couple of years back when I was big. I became compulsive about it at certain points, and games do have this compelling aspect to them, where there would be levels inside of it that I would try them dozens and dozens and dozens of times over before I finally cleared it. In the process of doing that, I learnt a little bit more about what was going to work in different situations incrementally, even in the toughest ones where I was trying it 40 to 50 to 80 or times. Each time I went through it, I learnt a little bit more about it. I draw a parallel between Angry Birds and another little neat app that I have for my iPhone called Algebra Touch which kind of similarly allows you to learn by failing it. It is a drag and drop interface for doing algebraic equations, and there is no failure condition inside of it, you do not reach an end, you just keep trying until you get to the end of it. I think that is very valuable, you just cycle through it again and again and again, you can break a number out into the factors, I do not know, I think it will be better if I do not break it out into factors and you can combine it right back up again, and the

game is just sitting there waiting for you to figure it out which you necessarily need to do at some point, and so that is the failure based learning.

Connie: So would you say that failure based learning is a lot like a simulation, if we want to teach someone how to run a nuke plant, I always think of Homer, but that is not who I mean. When we are trying to teach someone how to do that, you are in an environment where you can fail and you do not hurt anyone.

John: Absolutely, you can blow up the whole chemist's lab and just clear it and start again. There is something valuable in that, and there is something valuable in the lesson that if you keep at it, you will get it and you will with games. The games are designed in such way that they are always winnable, there is that promise that lives inside of games. It is important that that be fulfilled, it will be adequately tested to ensure that you can in fact complete the tasks, that it is humanly possible, but as long as that is baked into the design, as long as there is certainty and that promise is kept, then there is every reason for the person to keep trying and keep playing, and there is value in learning that lesson. This is also related to another quality that I describe as learning by doing where theory and practice are rolled together into one. Instruction on its own carries a certain way, but when you combine it with practice, there is a concreteness that comes into the learning experience. So for example, GlassLab created a game in collaboration with EA called SimCityEDU: Pollution Challenge, pollution challenge is the unit that they put together with this sim game built on the sim city engine that is intended to provide a platform for learning all kinds of lessons about the way things run, and in this, you need to figure out how to allow a city to grow economical without causing undue pollution or harm to the environment and upsetting the populace with degradation of their quality of living. It is a difficult thing to do, it is very a challenging game. It is designed specifically for the classroom, and it steps you through a number of different challenges where you are actively trying to do this yourself. You are taking ideas that you learn about pollution, about economic growth, about industrialization, and you are putting them into practice. That provides a great concreteness to the lessons that you are learning.

Last quality was role-playing, games invite you to put yourself into shoes of somebody else for a limited period of time, and that opens up the possibility for people to think about themselves in different ways. There is a good amount of evidence that the avatars that somebody plays in a game affects their self-image, and in a game, you can give people a choice of what kind of a

character they are going to be in the person, there is the opportunity to own that role. So this I think is a common pattern for a lot of educational games that are being developed now where, there iCivics where you are a defense attorney, there are games where you are the physician, there are games where you are the astronaut, and things like that, things that invites somebody to step you into a different role and to experience what it is like to be there and to picture themselves in that role, and I think that is another really great quality for learning because it invites somebody to think of themselves as somebody who is capable beyond what they might normally conceive themselves as being able to do in their lives.

Connie: Those are 4 great potential ideas that we can use for learning games, so thank you for that. Is there any research that shows that there are advantages to using games for learning rather than using a straight forward didactic approach, I know there is research, but what is the summary of it?

John: The game based learning research is very much in the R&D phase, which makes sense because the people are still figuring out how to do this well, the interest in it is relatively recent, but there are some studies that are coming out. So in the middle of last year, SRI, which is doing studies like this funded by Bill & Melinda Gates Foundation. They published a meta-analysis of somewhere around 80 research studies that were relating to STEM and education, and it did find that there was a beneficial effect in students that were using games compared with those who do not. In most cases, it seems that most games right now are really focused in particular on science, so there is more research needs to be done on other fields as well. Although there is also some indication that very subject-specific games can do very well indeed, and so Baila College published a study just this year showing that students who played iCivics, which I mentioned before, had significantly higher test scores in civics classes. This is a game that is very targeted toward a particular curriculum and it demonstrated advocacy in the game experience as something that is able to instruct in way that can engage students for deep play and helped the lesson that the learning should really sink in, and apart from that, I am anticipating a lot of studies from GlassLab, which I mentioned before, as well as Institute of Play. Those are really the research hubs right now, the real innovators in game based learning, and they are actually collaborating with a public charter school in New York City called Quest to Learn that incorporates a lot of game based learning into the curriculum, and they are in the process of designing games and evaluating them. I am anticipating more research from them in the future, I think that is the real place for innovation right now. Apart from that, there is a lot

of qualitative and theoretical writing about the specific advantages of games for learning in the classroom, and these conventionally have talked about things like 21st century thinking skills, in particular systems thinking as well as strategic thinking and things like that. Self-directed learning, the capacity of games to model reality with a high degree of fidelity as well as something that I think is intuitively beneficial, which is automated assessment, the teacher has the opportunity to choose technology to get a really fine picture of where students are. For example, I mentioned SimCityEDU before. It has a pretty sophisticated assessment module built into it where the teacher can monitor where each of the students are with each of the challenges, the degree of complexity and solutions that each student is putting together, and they can get sort of an automated report at the end of this that can help them to figure out situations in which they need to provide more scaffolding, which students are ready to move on to other subjects, like it provides a level of granularity that would not be available to the teacher where they get a really precise picture of where each student is and what the opportunities are for them.

Connie: I can really see that working for adult learning too, for traning. So John, what are some of the most common design failures that beginners make when they are designing games for learning or any kind of games?

John: So I think there are a few things that are really really easy to fall into. One is focusing on a narrow aspect of design such as aesthetics or words and not really committing to the game as a game experience first and foremost, and so I have often heard the phrase chocolate covered broccoli used. I think it is an awful metaphor, not least because it does not sound appetizing in the first place, but furthermore because it does not seem to be especially hopeful about either education or games. It makes it seem like education is in some sense inherently unpleasant and needs to be hidden, and I do not think that either one is true. I think that games have the capacity to illustrate that learning is extremely interesting and dynamic and fulfilling. I think that a lot of the time, learning games certainly traditionally has been designed to obscure the learning to make it as though you do not know that learning is going on. Of course you do, you know what the intention is behind the game, you are fully aware of that, you may as well agree to that with the player and say, hey, let us focus on making it really a great game experience, something that you are going to enjoy as an intrinsic experience. Then, another really common problem that has been cropping up increasingly as more games have been designed for the classroom is the failure to incorporate it into the environment. So I think that a lot of games are

designed in a way that it does not seem cognizant of the fact that there is a curriculum in the classroom and there is a schedule in the classroom. Some of them appear to be designed so that there is no limit on the amount of time that somebody is going to be spending with it, not that I think that games should just cut off after say 10 minutes or so, but rather that perhaps it should be running out of interesting things to do after a certain amount of time and they can be designed so that their dependency upon audio, a lot of them are designed without thought to the context in which they are actually going to be used. I think that is something that is really important for designers to bear those things in mind.

Finally, just trying to make a game that is going to be fulfilling, games sometimes get on the wrong track with players and invite the player to think that the game is there in order to be an intrusion in the classroom experience. I think that the game needs to be conceived over something that is going to be inherently enjoyable.

Connie: The point that you made about the environment and also the fulfilling part to a lot of people that listen to this podcast designing learning experiences for the work place, it could be the same problem, you can have something really loud and what people can put on earphones, I guess and you can't have a game that is going to take forever because your boss usually wants you to get back to work after you have done the training, right?

John: Exactly.

Connie: And then, it is not going to be motivating if it is not fulfilling. Let us talk a little bit about games for persuasion. In the world of learning and development, we often have to create some type of experience where we are trying to persuade people to change their values or attitudes such as living a healthier lifestyle, being more tolerant of differences in people, those kinds of things. Have you seen games influence peoples' behaviors in the real world and can they?

John: There are a couple of levels to that depending upon what it is that you want to achieve. First, there are games that are intended to motivate a specific action in the world, and there are lot of examples of that coming out right now that tends to be the focus of gamification and so forth where they are trying to elicit some specific activity in people. So I think a really good example of games that have been designed to motivate action is something like what is called a Pokewalker, this is a few years old, but this was an add-on for a Pokemon game that you can

play on a Gameboy, and it looked like a little miniature game console onto itself, it just had 3 buttons on it and it was pedometer. You wear it on your belt, and over the course of the day, as you walk, it is counting your steps, and as you go along, it imposes or superimposes a fantasy world on top of your everyday activity. So while you are walking through a park, the game has the opinion that you are walking through the magic cave or something like that, and as you walk, after a certain amount of steps, that is determined by an algorithm inside the Pokewalker, you will come across something like a potion or a monster and then you get to pick that thing up as you are going. At the end, you synchronize it back with your Pokemon game and those things actually become available to you in the game. This is really fabulous in a way, it is a very tight correlation between a real world action that the game is trying to encourage, wants you to walk more, to exercise more, to be more active, and an extrinsic reward that is fulfilled through the game experience. So it is inviting you to think of your activities in terms of this broader fantasy world and it is tying it into it through the gameplay itself. I think that is really clever, and there is a more modern version of it that has been adapted for adults called Zombies, Run! that you run on your iPhone or your android phone where as you are running, it is superimposing a fantasy about a zombie apocalypse that you are trying to escape.

Connie: I know someone who uses that, and he told me that while he is in that world, it feels completely real.

John: Right, because it is designed to, it is designed as things like news broadcast that breaks in over your music, “this part of the city is under invasion” and things like that, like it is a whole storyline, it is very robust and very rich, very well thought out. So I think a thing like that is fabulous, this is a very efficient, very correlation between actions in the game and actions in the real world, it is very motivating. Then, there are games that are not specifically trying to elicit a particular action but that rather want to change your mind about the world, about conditions and try to convince you to adopt a different point of view. I have been playing one recently called Papers, Please, which is really interesting. It is a game where you are in the role of a border guard in an Eastern European country in the time of communism, and you are checking peoples’ documents as they come through, you looking for forgeries, you are looking for discrepancies in their documents, and it is the most exciting document inspection simulator that you are going to play, at least this year.

Connie: Amazing.

John: And the game has a very specific rhetorical intent behind that, what it is trying to do is it is trying to say that people end up in tough situations. It gives you sympathy for both the border guard, who simply wants to get through the day as quickly as he possibly can, so that he can get paid more, so that he can provide for his family, it is the whole dynamic where your family is sick and you are to provide for them, and at the same time, you try to accommodate the needs of people who are trying to get through, who need to get home, who are separated from their loved ones while guarding for people who are forging their documents and who may impose a malicious intent upon the country that they are entering. It illustrates that these things are complex, it is very illustrative of the way that abuses emerge in the world. I think it is just kind of fascinating, that is a really great persuasive game that it is available for free for PCs, and I encourage people to go out and give it a try, because I think it is very instructive in terms of the kind of impact that a game can have on the way you think about things.

Connie: That is really a fantastic idea, I never heard of that game, so thanks. Would you say that the several things that you have illustrated here are those some of the most effective techniques for persuasion?

John: Sure, well, I think that there are a few guidelines that help to make better persuasive games, and if you are going to set out and try to make a game, for example, let us say you are going to try to change somebody's mind about things, then a few principles will help you to do that a little bit better. One is to define a very clear core message to have a focused sense of what it is that you want people to believe or what point of view you want them to hold because doing that allows you to shape the gameplay efficiently around the message that you want to convey.

The second is to tie that specific core message to the winning strategy in the game such that once people understand the way to win, they necessarily adopt the point of view in the game, so in a sense, what you are creating as a learning mechanic is inviting people to develop hypotheses about how the game might be won and then prove them out through the gameplay. Games in a sense are arguments and playing them is a form of evidence.

Third guideline would be to offer people meaningful choices. It means that they are free to make mistakes inside the game, right? And there is no particular bias in the game that drives

people overtly toward making the right choice; rather for the process of play, they discover what is the right choice and what is the wrong choice. It sounds wrong, but there needs to be the ability for people to make wrong choices in the game in order to be able to illustrate why they are incorrect and again that gets back to failure-based lending.

Connie: How else do we learn other than by messing up, right?

John: Exactly, I think that is a powerful way to learn because then you have an appreciation for why something is incorrect and that helps to establish the correction of something else.

A fourth principle will be to really try to keep it real, so that your game remains credible, as being instructed in the way that it is trying to be instructive. For example, if you are designing a nutrition education game, and eating one apple all of a sudden gives you super strength in the game, there is something that is not instructive about that because it is saying something that is not true in the real world, that is not really going to happen. If on the other hand, you slowly gain health by making better choices about your nutrition over time, that is much more credible, right? I think that it is important, if the game is going to be persuasive, I think that it needs to be committed to its own credibility.

Then, fifth to enable self directed discovery to allow people to figure out on their own which things they are going to do and to provide a broad variety of choices for somebody to make. I think that allows people to develop a sense of ownership of the lessons that they are learning inside the game. The less overtly guided the game is, the better because rather than developing the feeling that something is true because somebody told me this is true, you come to learn that something is true because you have proven it to yourself, you have gone through a process that has illustrated and demonstrated why it is true that making better choices to eat more vegetables and more fruits is beneficial for your health, right?

Connie: Boy, those are great techniques, thank you so much for sharing them. If we come up with a good game idea and we figure out the strategies and objectives and the rules, how do you recommend prototyping it to be able to get feedback from people before investing too much time and effort into it?

John: I would like start out by doing the game on paper rather than going directly to code

because code is costly, code is time-consuming. Paper is very easy and paper is very cheap. Additionally, there are some benefit in paper in that it allows you to cut out certain things that you do not need to be initially concerned with, so you are not worried about the aesthetics of the game, you are not worried about the user interface, and doing that sort of focuses you on the core mechanic of the game, on building the things that are going to make the game meaningful in the first place, and it allows you to cut and shape it to size. There is a real good presentation out there by ---3600-- who is the creative director at EA Maxis, about doing paper prototypes, and this is what he advocates, focusing on the things that make the game a game in the first place, to define those objectives, those environmental constraints, those formal constraints that are going to be determining over the long term what the shape of this game is going to be and how it is going to convey its meaning. From there, you gradually go out once you gain confidence in the design to build electronic prototypes that are very simple and then develop them into something that is more complex and more representative of what the final shape of the game and hold off on decisions about aesthetics and about the way that people are going to interact with it until the later stages.

Connie: How much of I understand that, how can you hold off how people are going to interact and still test it out and make prototypes and things like that?

John: Well, a paper prototype can allow you to test the core mechanics of the game without actually interacting with it, so [a game designer] has done a number of workshops on this in the past where he has invited people to take videogames that you would not think would lend themselves to paper prototyping and reduce them to a paper prototypes, sort of back into them, and so for example, some of the things that people have prototyped on paper have been the game Asteroids, which you would not think would lend itself very well to paper, but if you talk about just what the core mechanic of the game actually is, what the challenge of the game is, and what it's asking people to do, you can in fact reduce it to paper in rather proper way, so what people had done in this case was that they created a random set of cards that contain an asteroid that is either large, medium, or small that is a certain distance, number of spaces, from your spacecraft, and they gave you a dice and a little probability matrix that plots the size of the asteroid against the distance from you is what it was. So size versus distance, and that probability matrix prescribes what you need to roll on the dice in order to be able to successfully clear the asteroid, and so the closer it is to you and the larger that it is, the easier it is to hit it, so that you have to roll a 2 or higher in order to be able to successfully hit it, but if it

is farther away and smaller, then it is more difficult and so you need to be able to roll exactly a 6 in order to be able to hit it at that distance.

Connie: So rolling the dice was kind of like simulating random generation?

John: Exactly.

Connie: Very cool.

John: Right? so that correlates to the basic things that are actually happening inside the game, the factors of distance, the factors of size, those are all incorporated into the design right there. You take the scale that the player has and you turn it into randomness figuring that scale is essential a measure of probability when you average it over a population because people will range in their skill and a lot of people are going to be playing the game. So you can reduce that to a probability, and in so doing, you can really focus on the kinds of decisions you need to make about what form this game is going to take. So if you are prototyping asteroids on paper initially, it would allow you to make decisions about what kinds of factors are going to play into the game, the size of the asteroids, the rate at which the approach you, things like that.

Connie: I see how that can really help you come up with better design ideas, just concentrating on the mechanics like this, so that makes sense now. A lot of the people in my field end up working alone or in very small teams, you know of any tools that allow you to create games a bit more easily?

John: Sure, there are start-up platforms that are available that have very visual user interfaces. So one is available for the iPad and is called Hopscotch and that allows you to make very very simple iPad games. It has a very simple programming mechanic to it and you can put together things that are small and interesting quick using, some something that has a very simple drag-and-drop interface like that. But I also want to emphasize that having a skilled designer is going to be important at some point in the process, the more complex that a game gets. If a game is just out to illustrate a single point, I think that you can do that very effectively with a simple development tool like Hopscotch or with a tool like Tiny Tap, that is another one that is available for the iPad, but at some point, if you are designing a videogame, you are going to have to get into more complex levels of programming and more complex types of design, so I

think that ultimately it is going to be important to become involved in the development of games because I think that there is a need for that skill set, that there is a need for people with a background with programming, with a background with designing experiences to become involved in creating better learning games, creating things like SimCityEDU that are very sophisticated, but for very small lessons, if you are just trying to illustrate one idea, then I think that a small platform can be great.

Connie: Okay, is there one language that people are using most often, one programming language for programming games?

John: So a lot of people are using a platform called Unity, which can be ported to a lot of different devices, so it can run on a PC, it can run on a Mac, it can run on an iPad, it can run on an android phone, so you can have one base of code that you can port to a variety of different platforms. Again, it's a plug-in that you have in your PC, but it is free and it is broadly available. So Unity has become a really popular one as of late. There are a few others that are out on the market that I am less familiar with. I think that flash is becoming less credible as a development platform because it is not supported by iOS devices and that does handicap you to a great extent, but there is also HTML5 which is emerging as a really great standard for running games in a browser.

Connie: Well, John, this interview went on a lot longer than I thought it would, so thank you so much for giving us your time.

John: I am happy to.

Connie: I think we got a lot of great ideas.

If you have been thinking about designing a game for learning or really any other purpose, I hope you found John's insights helpful. You can find the notes for this episode with links to some of the resources at theelearningcoach.com/podcasts/18. If you have missed any of the previous episodes, you can find the back list in iTunes or at the elearningcoach website. Until next time, here is to exceptional learning, take care.