

>> From the Defense Acquisition University, this is The Learning Circle.

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>> This is The Learning Circle. I'm Anthony Rotolo, and my guest today is Dr. Alicia Sanchez. Dr. Sanchez is DAU's Gaming Czar. That's her actual title. She's been with DAU for eight years, and in that time she's delivered over 50 of what we call "serious" games. And these go out for use throughout DAU's curriculum and learning assets which serve an audience of over 100,000 strong in the acquisition technology and logistics workforce. Now, I'm going to refer to the informal "Alicia." We've been colleagues here at DAU for quite a while. Welcome, Alicia. How are you today?

>> Hi, Anthony. Thanks for having me.

>> Oh, it's a pleasure to have you. Now, today what I'd like to do is just take kind of a blank-slate approach to the subject of games. We all think we know what games are, but in a learning context, there are a lot of nuances, and I'd like to explore that with you today. So let's start things off with just a basic question: Why are people interested in using games for learning?

>> That's an excellent question. I think a lot of people are interested in the use of games because they realize the power that the game technology holds within itself. I mean, we all have kids or have seen kids who spend hours and hours in front of their computers playing games, and those are the sorts of experiences that I think notionally we'd love for our users to have. We'd love to think about our users being completely addicted to our learning content and, you know, ordering Hot Pockets and bringing in Mountain Dews to stay up all night learning. And so I think that there's a lot of attraction to the concept of games.

>> Now, we hear different terminology thrown around. As you dig deeper into the subject, you start hearing different variants of the word "game." A different word that's used is "simulation." And so I want to first kind of peel back that layer. How do you differentiate between games and simulations within learning?

>> Yeah, that's a really important distinction that we hear of a lot. I come from a heavy simulation background and that is a huge impetus for why games can be so powerful in learning, but in the simulation world, we use simulations for very -- three very specific purposes, either because we can't have an experience because it's too dangerous, because it costs too much, or just because it doesn't happen frequently enough for someone to actually have it. And so when we think about games, I think about games always having a simulation at their deepest core. So for

me, every game starts as a simulation and games become games when we start to add in some of the gaming characteristics that increase replay and add different paths to what in simulations can be a really linear goal. And so, for me, things like scoring and story and the ability to navigate on your own and to meet different goals and receive feedback are what differentiate simulations and games.

>> Interesting. So obviously, if you are NASA and you are going to put somebody on the moon, all those exercises are really simulations when they've practiced using new equipment, getting out of the capsule. It's just too dangerous to do that or you don't -- you can't do it, you can't do it in the field. So that would be an example of simulation, right?

>> Certainly. When we think about Microsoft's flight simulator, that's sort of a really interesting industry standard that a lot of people play as a game. They seem to like it and they seem to like taking off and landing, and those become sort of uncharted little snippets of a story that they start to form themselves, but -- or at least the case a couple of years ago used to be that the first time a commercial pilot flies with people in the back is also often their first time flying a plane at all, and every hour that they've spent leading up to that has been simulated time, because the experience can be so closely replicated that there's no need to actually do it with the real equipment.

>> That's very true. It reminds of a really dark anecdote about 9/11, about how the hijackers actually did some of their training using flight simulation software, which is -- it's chilling.

>> I doubt they had much access to 747s prior to then.

>> No, but I remember that and just thinking, wow, these software tools are so powerful that they might give someone just enough experience to do what they did. Horrible example to bring up, but in a dark way it does speak to this idea. But let's talk about the target audience. Is this a generational thing? Are we aiming these games mostly at a younger demo and learners? Who is the target for game-based learning?

>> So I think that there is a preconceived notion that when we talk about video games that we're thinking about a 17-year-old in a basement and playing Call of Duty all night long, and while certainly that does occur, the Entertainment Software Association release statistics every year about game-players and game-purchasers, and they've shown consistently that game-players are usually split between men and women and that actually women of an over-40 range seem to have the highest amount of game-play these days, but that generationally there isn't an effect. It's not one group playing games more than others. Turns out that everybody's having these types of experiences in their personal lives, and

certainly a goal of any learning program is to provide learning on the terms that we do in the rest of our lives, and that makes it almost a critical component of any learning-centered approach.

>> That's fascinating. I remember being at a conference several years ago and the -- whoever the speaker was brought out that statistic showing that suddenly there's this big constituent of like moms that are playing casual games. It might be, you know, those games that are linked to Facebook and things like that, but it really -- it was such a huge component that it rivaled some of the stereotypical demographics that you would expect, that it is, you know, that it would be just younger teenagers or young adults. Very interesting trends. Now, when we think of the games, we tend to make assumptions, since we're in this digital age, that we're just talking about digitally-based games, but are these all video games that are being developed for learning? Can they be the tactile real-world board games? What other forms do they take?

>> You know, I think that when I think about developing a game for a learning objective, it's most often a video game or, at the minimum, a hybrid game, that there's a board game that has a component. Certainly board games have been used in education for decades and have been very successful providing really great learning experiences, but one of the things that I think is most powerful about the use of games is the ability for games to bring learning down to an individual level, and for that to be present, that has to be in some way standardized but often in a video game setting. For example, case studies. We see there's a lot being used in education. However, when we implement those in the classroom or when we do role-plays, the people who participate are often people who are either the most comfortable or the most extroverted. If we can take those sorts of assets and make them into video games, we can provide everyone with an experience that they can participate in equally and see causality and the real effects. So I particularly like to think about games as video games when I think about providing someone with an experience, a learning opportunity, but certainly we still see a lot of really great games being used in education that don't have the technology background.

>> So there really is a mix. Now, have you developed anything that was not video-based as a gaming component?

>> Yes. A couple of years ago, for mLearnCon, which is the big Mobile Learning Conference that the eLearning Guild has ever year, which is a wonderful conference. It was in San Jose that year. I had an opportunity to build a learning game for them, and I had very little budget and very little time, and I wanted to really center around the conference goals, so I actually wound up building a card game, because what could be more mobile than a deck of cards, that allowed people to tell people their stories

about the mobile challenges they were facing in the learning world and allow other people to relive those or experience them in a story way, and so I used a deck of cards as a generator for people to share stories about what they had built or what their current challenges were at the workplace, and that went over I think pretty well. It was a tournament-style card game, but it was the first time I had ever done one that wasn't necessarily a video game and a really isolated experience, so that was really interesting for me.

>> And you touched on story. I find that very interesting, because a game is like a story. It's got a beginning and a middle and an end, and there's kind of a conflict or a contest between two or more people. How important is story to games? Is that really what's underneath it?

>> You know, I think that when we think about games, we think about the technology and the capability and the competition, but really, when we think about games for learning and serious games, we're really looking to have these sort of hugely memorable learning experiences, because if learning isn't memorable, then you don't remember it written. That can be problematic in and of itself. And for me, story is a central component about what makes something memorable. If I were to tell you about any game that I played, it would likely be based on what the story surrounding that game was and not about, "Well, I got to shoot stuff." It would be "I got to shoot stuff in this context and that was really neat." And so I think that a lot of times we underplay the role of story in these learning experiences, but those are really the things that cognitively get stored and put away for future use.

>> Excellent. So we've defined a bit about games versus simulations. We've talked about the kinds of audience and the forms that these games can take. But when it comes to the instructional design of games, what kind of learning objectives work best?

>> Well, you know, content will always be king, and all of the game developments that I've worked in have always started with a really thorough investigation of the content. However, what's really important to the success or failure of a game is its ability to provide someone with what they perceive to be a realistic, relevant, and application-based experience. We try to focus on the experiential in almost all of our games, and so learning objectives are often based on the practical application, the performance aspect of any learning goal, and it's almost moving from a training institution -- or from an education institution over to a training institution. A lot of the content that we see in classrooms can be driven by policy, can be driven by shades of gray, can be just declared of knowledge, and a lot of times that can leave a learner with a lack of understanding of

when and where and how they should apply that information. And so I like to use games specifically to allow practice opportunities, to add context to content, to allow people to understand what the causality of making the wrong decisions can be in those safe environments, just like a simulation provides you the safe environment to make errors. Within games you can test out hypotheses, you can try different paths, you can see what really works, but you can have those experiences in a way that allow you to understand how the information should be transferred from the classroom to the real world.

>> Now, once you've decided that a game suits the subject matter, how do you go about building it? Do you subcontract it out or do you use in-house talent? What does that process look like?

>> That's an interesting question, because I think a lot of people have a lot of different opinions on how you could actually implement a game, and the way people perceive games can be really, really personal. If you ask me about a game, I probably think of Call of Duty first, or Halo because I like shooters. To you, a game might be Settlers of Catan or a board game. And so in the initial phases of trying to figure out what sort of game could be good, it's really important to make sure that everyone involved has an understanding of what sort of games would be most applicable, and again, to me, that goes back to the simulation-based aspect. Once those sorts of things are decided, it's often best to become involved in what can be a really lengthy preproduction process where you really start to define the requirements to at least have some sort of conceptual story and have a really good understanding of what it is that you want the outcomes of your game to be, because it's hard for game companies to have a really great understanding of the learning world. ISDs and game developers often have really different ways that they experience learning and the world in general and that prevents them from seeing things on level playing terms in a lot of cases. And so we almost always sub things out, but we almost always do it after a production cycle in-house that gets us at least as close to a paper version as we can that gets all of the content developed, that allows us to pilot as much as we can, because we really don't want to commit assets and resources to programming until we're pretty sure that we have a game that makes sense and because games can be so personal to an individual as far as what they're going to understand or be comfortable with.

>> So you've really thought this through from every angle, so really the result is a very highly spec'd set of requirements for a subcontractor.

>> Yeah. We like to think of our subcontracting process as almost solely the production, and so everything, whenever possible, could be done in-house. That's not to say we don't have some productions that include design, and those are usually much more

complex for multi-player games and the sorts of games that are going to require systems and infrastructures that are going to push the boundaries of our internal IT framework and capabilities.

>> So it's a pretty complex and layered process. Are there any pitfalls to it that you've learned from hard experience?

>> Oh, certainly. We've learned a lot of lessons in the last eight years at DAU, and as cautious as we've always been, we certainly have learned some lessons and had some pitfalls happen to us. Some of the most notable ones were -- one of the concepts that I like to play around with, within the experiential learning, is the concept of cognitive fidelity. To me, if you are completing a process at the cognitively equal level, then perhaps you can take some creative license, meaning perhaps I can use rats to do a business process, and it doesn't matter so much that they're rats because the process is equivalent.

>> When you say "rats," you don't mean live rats. You mean cartoon --

>> Animated.

>> Or animated rodents.

>> Rodents, rodents of a -- that's right, we don't want to be offensive to the rats.

>> Yes.

>> Yes. Rodents of a long-tailed nature who have different roles in the acquisition process. Those were viewed very unfavorably by our community because they were unable to identify with these rodents, apparently, and --

>> Do you think it was that or is there a concern that if you add an element of whimsy to the content that perhaps this subject matter isn't being taken seriously?

>> Isn't being honored. I think that those games were perceived as a bit childlike because they involved such a strange fictitious main character. We have also used factory settings for continuous process improvement with humans, animated humans, of course, building bombs to prevent aliens from smiting the earth and seeing high cognitive fidelity and feelings of relevance. And so certainly we had to get a better understanding of what the parameters of believability within cognitive fidelity were within our particular context. We certainly didn't want our students to feel embarrassed having their games up on their screen that their co-workers might think that they are involved in some play time that didn't have relevance to their job.

>> Yeah, that's interesting. I think you touched on how a game has to fit the culture of the organization, and I've encountered that, too, many years ago developing products and the choice of imagery, photographic imagery versus illustration, and certain clients would say, "I don't want those cartoons," and they're not cartoons. This is not Popeye and Bugs Bunny, but they were illustrated, and even with that, sometimes there wasn't the comfort level. But, yeah, there's a whole lot to those audience considerations that go into the mix.

>> But additionally, you know, the pitfalls can be just not having the content be mature enough. The way that we do things here, specifically at Defense Acquisition University, are very different than the way commercial industry does it or private institutions, and that means that it can be really, really hard for us to find subject matter experts who have the deepened, you know, the deepened understanding of our processes here. So sometimes we've seen efforts go really poorly because we weren't able to find the right subject matter experts. Sometimes we've seen them go much longer than they should because we weren't able to break down our technology barriers. And so certainly games are not without risk, which is why we've started to implement the much longer preproduction phase and the ability to do paper testing prior to investing in production cycles, because we don't have the latitude to build four or five games and see what sticks for one topic area. We have to build one game and build it right when we do it.

>> So what have been some of your favorite experiences in developing games? What kinds of games were your favorites and seemed to resonate with students?

>> You know, my favorite game still to this day remains the very first game that I did when I got here to DAU eight years ago, which is Procurement Fraud Indicators, and it's a short game. It's used in one of our smaller continuous learning modules, and it's just this great game that allows you to play an investigator in potential procurement fraud, which is a situation where you are influencing somehow the bidding on a contract. So you might be taking, you know, money for your kids to go to college from a potential vendor in exchange for selecting that vendor to win a major contract award, or you might be taking cash and buying boats, and it's just a funky game where it's set in the '70s. There's not even any audio. It's animated. It's almost a photo hunt. You go in and -- for I think 10 different sorts of procurement fraud, you get to investigate a private setting like an office or a home or a vehicle, you find clues, and then you create hypotheses over whether you think any fraud has been committed, and if you believe it to be committed, then you can move into an interview with the candidate all in text, and you then have to make decisions and follow different paths of

interrogation to essentially finally determine what type of fraud was committed, and that one has done really well, what the students say. They resonated with the style of it, they resonated with the simplicity of it, and it really did add a huge amount of context to what was a very shade of gray area. So that's been my all-time favorite. I've done some alternate reality, smaller things that involve tsunami situations and contingency contractor. There are so many different great topics that we have here. It's been all over the board, from acquisition to systems engineering to logistics, business, earned value, but we've been really lucky to have such a great group of topics to work with.

>> Yeah, it is very diverse and it keeps things interesting here. We're actually working together on something now, a little tangentially, but the gaming piece is the major feature of this product which focuses on critical thinking. Could you share just a little bit about that?

>> Yes. I'm super-excited about this particular game. It's going to be a critical thinking game, and it will be the first of its class here at DAU in that it will be a game that solicits emails from the players, so the player will be in a situation and, at targeted points, they will be asked to construct and craft emails that should give them the ability to demonstrate critical thinking. Because critical thinking is a constructivist task, we knew that we couldn't use a different game parameter that didn't involve either them speaking directly or being able to type directly into the system. Of course, the state of technology doesn't allow us to process those emails, and so the story element of this particular game is critically important, because what we've done is we have created distractors in the game. You type an email at several points, you send that email, you have the ability to think about that email, you might be provided some hints on that email, the ability to resend it, and in the end, those emails are somewhat inconsequential. We craft in another situation to become a larger priority issue. We could send one of the other characters in the game to say, "Hey, we got your email, but unfortunately we've decided to do this," whether it's what you wrote or not, and students won't necessarily be aware in the forefront that their emails are not being taken seriously within the system or not being considered, and so we're using a little bit of smoke and mirrors and suspension of disbelief to try to really elicit a deeper level of critical thinking.

>> Interesting. So you can use, really, what I would call from a design standpoint, a bit of economy to sort of fill in the gaps where maybe technology can't do all those higher order things.

>> Certainly.

>> So, yeah, that sounds terrific. But back to that big picture of games in the learning industry, where do you see the trend

line? Where do you see things going? What are the things that are being emphasized, and what are the emergent things, the emergent areas that people are focusing on?

>> I think that one of the most interesting camps within serious games right now is really the Games for Change camp. It's a lot of really interesting games that are designed towards either health or well-being, and we've seen a little bit of that recently within politics, which makes it a little bit interesting with the Obama games initiatives, and so I think that there's a lot of power that we haven't even begun to see. As technology becomes more advanced, the gaming industry continues to push the envelope and to lead to a lot of technological advances. One thing I was commenting, for those of you that are into football, if you've noticed that when you're watching football now, the player gets a little circle around him. That's actually an old thing that Xbox -- or that Madden, NFL's Madden's been doing for years, the cameras over the field, the ability to see the game from different positions. It's really interesting the way the games industry leads the way for a lot of our consumer experiences. Within serious games, however, within the educational realm, I think that what we're going to see more frequently is the expectation for high-quality learning assets to include games. We're using games all the time in our personal lives whether we categorize them that way or not. We're expecting better experiences and higher-quality experiences. And, unfortunately, I used to have what was a super-cool job because I got to do something that no one else did, and my job is actually becoming quite normal. I think that almost every learning organization has to have a games component; otherwise, they're starting to fall behind in the ability to provide these experiences and this truly deep learning to their learners.

>> They really are. Back to that Madden example, so really you've got game motifs that are now influencing other media.

>> Yeah, which is really neat. The first time I saw that, I said, "Hey, that's an Xbox."

>> I'm going to have to look for that.

>> Yeah.

>> Well, this has been a great conversation. I'd like to visit with you again through the year.

>> Certainly.

>> If you'd be willing to come back and we can talk about -- there's so much to talk about in this area that I wanted to set the stage for it, but I appreciate your time today, Alicia.

>> Yeah, Anthony, thank you so much for having me and hopefully we will talk again soon.

>> Thank you again.

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