

## Week\_5-Jason\_Haas-HD\_1080p

Hi there. My name is Jason Haas. I'm a graduate student at the MIT Media Lab and Eric Klopfer's graduate student in the Education Arcade. And I'm here to talk to you this week about designing your own learning games. And that may seem really challenging or scary. But hopefully by the end of this, you'll feel pretty confident to give a try.

The first thing we're going to do, I'm going to talk to you about game design, sort of introduce you to some of the elements, and get you familiar with some of the ideas you may interact with while you design your game. And then I'll talk a little bit about your assignment for the week. First, we're going to start with a quick exercise.

Write down all the games you've ever played. Seriously, just pause this video for a few minutes. And I'm going to adopt a funny face while you do that. So hopefully you've written down all the games you've ever played.

Here's some of mine. Obviously, this is not an exhaustive list, like I imagine your list is not an exhaustive list. But it's important to look at all the games that we've played in our lives, from board games, to card games, to street or yard games, to sports. And I'm going to talk about three of those throughout this lectures so that we have some examples to base our thinking and our discussion of concepts in.

So the first game is chess, two armies arrayed against each other on a 64 square board; soccer, which is two teams sort of pitted against each other on a pitch; and World of Warcraft, high fantasy characters facing off against each other and monsters in a fantasy world. So how do games work? You have players. Games have players.

You have to put people into the games in order for there to be a game in the first place. You need to give these players something to do. So they have goals, things they need to accomplish, tasks they need to do, things they need to not do. All these are types of goals. Laugh or don't laugh--those are fun games.

But in order to make those goals meaningful or to give them some heft, to make them challenging, you have to impose rules. So rules can create the ways in which players get to those goals or don't get to those goals, whether they find new routes to those goals or whether they choose to not do those goals and make goals of their own. Rules can do all those things.

There's one more aspect of games that's worth mentioning but we won't think as much about in this course. But games also don't count. When you play in a soccer game, if your best friend's on the other team, you'll play hard against them during the game. But then afterwards, you'll stay best friends. Because of all these things, you have players engaged in goals through rules.

And that's a system. And if you change one little bit of the system, then it can change the game entirely. And we'll talk about that some with our examples later. But you want these systems to not only be interesting. You want them to be fun.

You want them to be really challenging. You want it to be hard to achieve the goals. And you do that through the types of rules you choose. A way you could think about how you create this hard fun is through meaningful choices.

You want players, when they make decisions, when they deliberate in their chess game or they choose which way to dribble in soccer, you want players to think hard and have those choices be meaningful in the game. Otherwise, it's not very fun. Like, if your choice doesn't matter, than what's the point in playing in the first place?

How does chess work? Chess has two players. It's competitive. On a tiled board, the white spaces and black spaces are aesthetically pleasing, but they also have meaning to the white side and the black side. 16 pieces each, many unique types of moves per pieces, only one move per turn, and that's really important. And then victory can only be achieved when a player can no longer protect their king.

So you have a goal, a victory condition, and then rules that constrain how players try and achieve that goal. So how does soccer or football work? So there are two 11-player teams, unless it's pickup, in which case it's just sort of whoever's around. The action is centered around a ball.

Balls are really interesting game pieces, because they sort of bounce predictably or roll predictably until they don't. Sometimes they bounce unpredictably, and that can be very exciting. Only the goalies can use their hands, which means people use all the other parts of their body to move the ball downfield.

It's on a grass or turf field, which has a certain look. And the winner is the team with the most goals scored by the end of a timed period. And so time is a really important mechanic in soccer. People try to score early or late, for instance, in order to have different psychological effects on other players. How does World of Warcraft work?

It has millions of players. It's a huge world, and that sort of invites or demands exploration. In order to really succeed in that game, you have to go all over the place. Most of the game's verbs or actions center around bringing player and opponent health bars either up or down--so attacking or healing people. There's a high fantasy aesthetic.

So the game is infused also with a tremendous amount of other human cultures. In order to give the world this sticky feeling, this feeling of a vast place that could be explored, it really draws on a lot of different types of human experience. And there's a large number of programmed in, hard coded into the video games code, social structures.

So some are goal-oriented, some are less so. And this is because in a game with millions of players, it can be challenging to know how to interact with other people. So the game, like a host or hostess at a party, uses these structures to help people understand how to relate to each other.

So that's how those specific games work. But obviously there's a lot of choices in each of those. And it can be challenging to think about all of them. A concise way to think about these things when you're making your own game is the mechanics dynamics and aesthetics framework, or MDA, created by Robin Hunicke and others in 2004.

And this is just a useful way to think through all the things that are going to go into your game. So the mechanics are the actions, behaviors, and control mechanisms afforded the player--so the verbs or actions I talked about with World of Warcraft. The dynamics are collections of mechanics.

So they work to create the aesthetic experience. So the feedback mechanisms on the left side of the frame here help you to understand what a dynamic might be like. You have a controller, your thermostat, and it reads the thermometer. And if it's too hot, then it adds more cold air. If it's too cold, it adds more hot air.

The room then heats up or cools down. The thermometer changes and measures itself against the thermostat. And so that's a feedback loop. That's a type of dynamic that's made up of a bunch of mechanical pieces. And it creates the aesthetic experience of your temperature in the room.

So aesthetics then, we use the aesthetic vocabulary like a compass to define models for gameplay. So you could think of oftentimes, when you want to make a game, you know what it feels like before you know how it works. So you want to think about the aesthetics and then think about the dynamics that might add

up to those aesthetics, and then drill down into the mechanics to figure out what are the nitty gritty things that the player does in the game that add up to those dynamics.

So you could think about the MDA for chess. Players move one at a time, in a very constrained environment, creates really challenging choices at each turn but then adds up to really long, drawn out chess battles. People take, at the grand master level, all day to play one match.

For football, you have the ability to not use your hands for the players creates this fun spirit where people are trying to do everything but use their hands to move the ball down the field. In World of Warcraft, the raid environment, for instance, where you go into dungeons and kill monsters with other people creates-- you're leveraging this ability just to move health bars up and down, but you're doing it in these really interesting social structures which create really interesting dynamics when you try to socially coordinate and coordinate in virtual space in order to kill huge dragons.

There's three crucial things you want to think about when you're creating learning games. You want to think about your audience. So just as you would in a traditional mode teach four-year-old a 17-year-old and a 63-year-old differently, you would also create games for them differently, too. You also want to think about your learning objectives. So what is it you want to learn or that you want them to learn?

You really need to have a clear idea of this, because the systems of learning games really try to convey this learning objective. And if you're hazy about it, it can be kind of challenging. And then you want to find what Scot has talked about a little bit, the mechanical or systemic match for what you're trying to convey. So oftentimes, when we create learning games, what we're trying to do is provide novices with an experience of something that professionals do but in a sort of stripped down sort of way.

So you want to find out what's fun or interesting, where that hard fun is in what a professional practitioner does and then simplify it down, but while retaining the same hard fun aspects for your learning game. That was a lot. I just gave you a whole long lecture about how games work.

I'm sure you have tons of questions. I wish I could answer them all right now. But I can't. So we have to move ahead. Is everyone ready, because we're going to talk about your assignment for the week

And your assignment for the week is going to be to create a pitch for your own learning game. So what you need to do is post your idea for a learning game to the platform with words and images. So you could do this via video. You could do it as a series of pictures.

You could do it as--I don't know--a poem. However you think will work, just try and convey the idea of the way you think is best. And let's say that if you're creating a video, no more than five minutes, just to respect everyone's time.

The key is to not overthink it. This is your first time as game designers. And it's going to be challenging. And you may worry. You may think, oh, I'm not good at this.

Really, don't overthink it. This is meant to be fun for you, fun for the community, and just an opportunity to try out these ideas. So don't worry about being a novice. Everyone was once.

So how could you do that? So the first thing I recommend is start with a learning objective. Find something that you're passionate about that you want to teach and hone in on that. When you're passionate about something, it's going to be a lot easier to find where the hard fun in it is.

What's exciting about it? What might be exciting to other people? And then you can try and convey that to your audience, speaking of which, pick your audience next. So once you have that thing that you really

want to teach, that you're really excited about, think about who you want to teach it to, because as I said, you're going to teach it differently to a four-year-old, a 16-year-old, and a 63-year-old.

And then finally, find that mechanical match. Once you know who you're talking to and what you're talking about, find what it is about your topic that will produce the best game. When you are doing these things or working in the endeavor you're trying to teach about, what is exciting? What gets people excited to go to work if, it's their job, for instance?

In our Radix game that Susannah talked about earlier in the course, we picked the mechanical match of the massively multi-player online game like World of Warcraft, because we wanted to convey that science is about discovery, about figuring out new things. And so a game like an MMO that's about exploration, about discovery is a really good way to convey that.

So if you're stuck, here's a way you can get unstuck. If you're thinking like, oh, I don't really know what I'm doing, and I'm not a game designer, one way you can start to play around with these ideas is to take bits of other games and stick them onto parts of other games to create a new game. So if you wanted to take the head to head competition of soccer and add it to chess, you could create speed chess.

So you have this whole new game just by changing one thing borrowed from a different game in order to create, basically, an entirely new experience. Now, if you're wondering is this going well, am I doing a good job, one way to think about checking your work is just to think, could I use this game to teach another subject easily? And if the answer is yes, then it's time to rethink what you're doing a little bit.

So oftentimes, people propose learning games to us that are essentially just like quiz questions or like quiz questions, and then you fly a spaceship in between. And those are challenging to think of as really good learning games, because you're not doing the hard fun, you're not giving players the meaningful decisions to make to make it a really interesting, compelling experience. So if you're making a game about biology, where it's just quiz questions and then you can change those quiz questions for history questions, and they're the same game, stop what you're doing and think about it.

If, on the other hand, you're making a history game that's a simulation of a complex era in your country and you can't transform it into a biology game easily, then you're doing a great job. Another thing you can do to make sure you're doing a great job is to play test your game and iterate. All first time game designers--and this is me included--will have some glorious first pass at a game that has emerged fully formed from their head.

And they bring it to their friends, and they say play my glorious game. And their friends are like, this part doesn't work, this part stinks. And it's very disheartening. That's going to happen to everyone, because games are made to be played by players.

So a way that you can really make your game good--this is just a pitch, so you don't have to go too in-depth on this. But bring your ideas to your friends and try them out. Create prototypes with scraps of paper. Just mess around with them with your friends, because I guarantee you, your ideas, and your game will get better.

And that's why we do these things. You really want to use games as an opportunity to create meaning and context. So Daniel and Wendy earlier talked about constructionism as learning by creating things like simulations. But constructionism is also learning by creating community, by creating opportunities for people to have interesting discussions about challenging topics or hard to learn things.

So games provide a nice opportunity for two students to say, man, that decision was really hard for me. Oh, yeah, I was really hard for me too. What did you do?

Oh, I did choice x. Oh, I did choice y. How did it work out? And now you have a really interesting discussion rolling in your classroom, and that's what you want. You want to use games as an opportunity to investigate hard things to communicate about or challenging topics, interesting things, and to provoke a community learning. During that debrief afterwards where you talk with your students about what happened, have that be where the really meaningful stuff occurs.

You have your assignment. My contact information is on the screen. Fill up the community with good game ideas. Have fun. I'm looking forward to seeing them.