Making Learning Engaging Through Interactive Games

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Here is a TEDx video that I wanted to show you. See, there are different frameworks and principles. I am not saying this is the only thing. Different researchers have done different kinds of analysis as to how and what causes human motivation. Because that is one thing we are all as humans struggle with at various stages. Be it as a learner, be it pursuing anything else in our life, right? How to keep ourselves constantly motivated? One of the things is he quotes examples from various different situations and scenarios in terms of how humans respond and how gamification tries to connect with that human behavior and tries to enforce that positive behavior.

So, there is a person by name Yu kai Chow, he has proposed what is called Octalysis, this is framework. We will go through the video now and then have a discussion around it. Closely observe the examples he gives in terms of what all things are used to drive motivation and in real life situations how and what kind of results they have yielded. Imagine a world where labor is obsolete, where work is something of the past, but miraculously, everything's still functioning better than ever before.

No, I'm not talking about a society run by robots. I'm talking about a world harnessing the power of play. And I believe that there's a lot we can learn from games to make that world happen. So today, I'm going to talk to you about how gamification can make our world a better place. So let's start with games.

Who plays games? Most people, when they think of a gamer, they think about people like these. Little kids and guys who are probably single, probably unemployed and eat pizza onto their shirts. But the actual statistics could be very surprising to many. The average gamer is actually 35 years old. Almost 70% of them are over 18, about half of them are women, which means there's actually more adult women playing games than male under 18, if you consider social mobile games like Candy Crush or Angry Birds.

So what does this mean? This means that everyone can be a gamer. This is a very generic

demographic. This could be your clients, it could be your employees, it could be your children, it could be your parents. Everyone has the capacity to enjoy games, if there's a good reason to do so. So what is gamification? Gamification is the craft to take all those fun, exciting elements of games and pouring them into boring, non-game contexts.

Things you have to do, but you don't necessarily want to do. So when I say gamification, some of you might start thinking about what we call the PBLs, the points, badges, and leaderboards. And this is where a lot of people think, oh, if I just take points and put it into a product or badges, it'll make it fun and exciting. And that's a big misconception. When I started in gamification in 2003, it was a very lonely passion for me.

Very few people cared about it, and very few people understood it. Now, about three, four years ago, gamification became a buzzword, and a lot more people and companies, organizations, schools started to care about it. But still, very few people truly understand it. So if you think about what makes a game fun, if you ask gamers that, they're not gonna say, oh, because the game has points. They'll say, oh, because it challenges me, it makes me use my creativity, allows me to hang with friends, it makes me be more than who I am today.

And if you think about it, every single game out there has game elements and game mechanics in them. But most games are still boring. Most games are still not engaging. So it's very naive to think that, oh, if I just take these game elements and mechanics that you can find in games that are even boring and pour them into products and experiences, it'll automatically make it super fun and exciting. So what we know here is that good gamification does not start with game elements, but really starts with how it motivates our core drives.

So I spent many years developing a game creation framework called Octalysis. And it's a design framework based on an octagon shape. And in the center of Octalysis are eight core drives. And I believe these are eight core drives that motivate us to do everything that we do in games, out of games. So I'm going to go through these eight core drives and show you one example about how something amazing out there changes the world with it.

The first core drive is epic meaning and calling. This is the core drive that says you're motivated because you feel like you're part of something bigger than yourself. So in a game, it does that often. The world's about to end, and for some reason, you're the only person qualified to save the world.

You feel big. But there's a lot of other examples to make people feel bigger than they are. It can be used to get children with cancer in children's hospitals to update their pain

journals. And that's what Pain Squad does. So Pain Squad is an app that gets kids to record their pain journals so doctors can diagnose them better. And you can imagine, if you're a child and you have cancer, you feel lonely.

You feel like no one cares about you. You're in pain. You're not very motivated to keep track of your pain journal. So the Pain Squad is an app that pretends that you're in the secret police force, dedicated to hunt down this thing called pain. And the motto is keep pain in its place.

Whenever there's pain, two times a day, you've got to record it down. But to reinforce on that epic meaning and calling, look what they do in the app. Hey, rookie. Welcome to Pain Squad. It's really great you're here.

We need all the help we can get to help put pain in its place. You are now officially a full-fledged detective in Pain Squad. Well done. At this rate, you might even be the next chief. They just don't make them like you anymore.

You truly are one of Pain Squad's best and brightest. Keep it up. But this case isn't closed yet. Your squad is still fighting. We couldn't have done it without you.

It's a way to go. So now, when the child updates her pain journal, she's not just doing something because she has to. She feels like she's part of something important. A team depends on her. She's fighting with the team against this force called pain, and that motivates her. That's epic meaning and calling.

The second core drive is development and accomplishment. And this is the core drive that says you're motivated because you feel like you're improving, you're leveling up, you're achieving mastery. And one of the most well-known examples of this core drive is the Nike Plus Nike Fuel Band. So we all know that health and exercise is very important. But health is a long-term thing, and our brains are terrible at processing long-term benefits.

We like short-term gratifications. So what the Nike Plus does really well is it shows you short-term accomplishments, it shows you how, hey, you have run an extra mile compared to last week, you're improving, your Nike Plus score is getting higher, and so you feel accomplished, you feel, I'm growing, I'm getting better, I'm leveling up, and that motivates you. And to further drive that feeling of accomplishment, it also introduces a character to celebrate with you whenever you hit a new milestone. So this little character jumps up and down, so excited, so happy, falls on his face, and is like, yeah! 10,000 Nike fuel points earned, you feel accomplished. The third core drive is empowerment of creativity and feedback.

I'll just pause here. The first one he mentions is about whenever we are driven towards a purpose, right? The way we actually look at the task itself changes. I mean however, so the first case was a case of cancer right, but when you are a part of a larger team trying to gather data and fill in your data, what you are filling in is going to be used for some larger purpose. That gives you a different meaning than the pain itself. So, it is how do we use that motivational aspect that is the only thing that can motivate those kids or even probably adults from suffering right. If in that state also can I be of any use to humanity all of us want to be feeling useful right contributing.

So, that was the first thing. The second one is a more easier to understand example, right? The exercise. But I would say that exercise is also applicable for learning. Because learning is also not easy. I mean, in areas where it is difficult, we need constant nudges.

Hey, you have progressed so far. We need a pat on the back. All of us need a pat on the back for the long-term challenges because our mind is only inclined towards we want to see quick results in everything although we know everything takes time which is why you have the apps like Duolingo right you it gives you a small challenge or a task and then it gives you points if we were measured on the mastery of a language. We know language mastery takes a long time same thing is the he is using the example of fitness here but it applies universally. Anything where we cannot see the results immediately, gamification and points and motivation. I mean of course, as he rightly said it is not just a question of fitting in points blindly, but in a more meaningful way and associated with the right motivational drive which he will explain also subsequently.

Basic building blocks. And there's an infinite amount of ways for you to utilize your creativity, to try different combinations, strategies, see feedback, and adjust. And that's a very engaging process. So my favorite example in Core Drive 3 is the serious game called Foldit. So scientists have been trying to figure out this AIDS virus protein structure problem, and the top PhDs in the world couldn't figure this out for 15 years. So they decided to make a game called Foldit, and as you can see, you have a big protein, there's things you can do with it, you have an objective such as maximizing surface space.

And miraculously, this problem that no one could solve was solved by a gamer in 10 days. So when you think about how a 15-year-old problem is solved in 10 days through a game, you have to see how powerful games can be in making our world a better place. I'll pause here once again. It's a great extreme example, 15-year-old problem solved in 10 days. It may be one-off, but why do you think it has happened? What aspect of games might have made it easier to accomplish? Makes you think in multiple directions.

You are enjoying the problem. The moment it is a research problem to be solved, our natural tendency is to, oh my god, I have to solve it the perfect way, the right way. We are not in our free flowing state, very good aspect. Yeah, trial and error equally important point. Assume that you will not be judged at all how many hour trials you make. Actually research is also like that in the true sense, but we do not get that feeling in true research.

As I said even classroom environment whichever environment right everything is actually a trial and error environment only, but somehow only in a game environment we truly assume that it is a trial and error environment. And moment we get that true trial and error environment and in a non-judgmental state also mixed with fun results actually happen. Remember we discussed the concept of flow right where we are easy inside, we are easy and relaxed inside that is where the maximum productivity happens. So, this is one such example, it may be an extreme example, maybe not everything can be converted into a game and probably solved in 10 days, everything probably can be converted, but even if that 15 years has become 1 year right, it is still a worthy thing or for that matter many more forget even about the outcome, if many more people attempted it that itself increases the probability of it getting solved right so that game environment made it conducive for many people to try it out which is why in one sense the hackathons that we do right hackathons what do they do why is there so much enthusiasm participation and also outcome coming out of hackathon? From the company's perspective hackathon to students like In a company, people will think so much about a project. Students will give a fresh perspective and they will approach it as it, they will not have the burden of so many things on their back.

They will approach it with a free mind. So, probability of getting good students is very high. Free mind, young mind and it is a, it is after all a contest. You are not going to be judged on your, the trial in a company environment or even for example any institution, right. Okay, you are assigned this project, you have a deadline. Within three months you have to solve the problem.

Drive is ownership and possession. This is the core drive that says, because you feel like you own something, you want to improve it, you want to protect it, and you want to get more. So this is the core drive that powers a lot of virtual goods, virtual currency, things like that. It's also the core drive that motivate us to accumulate wealth. But it can also get us to learn math. Dragon Box is a learning game that gets little kids between five to nine year olds to be obsessed with solving hundreds of middle school algebra questions.

Now, I don't know about you, but when I was a kid, math was the ultimate school grind. Like, everything else could be fun, you know, physics can be fun, science, history can be fun, but math, no, math is not fun. Math, you just sit there and you have to do it so your

parents don't get mad at you. Check out how Dragon Box gets this to be fun for little kids. So the premise of the game is that you have a box, and inside the box there's a baby dragon.

This baby dragon only wants to come out when nothing's around it so it can eat. So, this is the onboarding stage, teaching the rules. These green circles you see are zeros in disguise. Zero means nothing, so you tap on it, it disappears, zero means nothing.

It scans, the dragon wants to come out and eat happy. Now on stage three it introduced some basic math principles. Positive robot and negative robot cancel each other out, become zero. Negative two and positive two cancel each other out, become zero. And now the dragon scans and the dragon wants to come out and eat again. And you can see the little dragon turns from an egg to a little baby.

Nice. At one point, it gets pretty complex. The dragon box becomes an X, and you're trying to isolate that X. So you have to do things like balance both sides of the equation, multiply everything by 2. You also need to make sure the numbers are optimally solved, so no 2 over 4. So you can see in this process, the child is trying to make sure this is optimally solved, and the dragon will eat it because it's yummy. But the other two, they're not, so the dragon refuses to eat it.

Those will be yuck. As you can see, it'll be yum, yuck, yuck. You know, bad numbers. Dragons don't like bad numbers. So the child only gets one star out of three.

So now the child doesn't even know he's doing math. He's just trying to feed his dragon, grow his dragon. He's like, oh, why don't I get three stars? I've got to figure out a better way to isolate this so the dragon wants to eat everything. Something really, really amazing. The fifth core drive of octalysis is social influence and relatedness.

This is pretty straightforward. This is basically what you do based on what other people think, do, or say. And my favorite example here is Opower. Opower is a utility SaaS company that tries to get people to lower their utility bills. And they saw that the best way to change people's behavior is to show them how their neighbors are doing. You show them their utility, how much you're using, your best neighbor, and your average neighbor.

And everyone who always thinks they're somewhat a little above average, which is impossible, you can't have everyone above average, When they see that, they're like, oh, I need to change my behavior. So with Opower, within a year, they saved over $250 million of utility bills. And that's a lot of electricity, over one terawatt. Yeah, We'll pause here. Isn't that social influence? Can you think of such examples in your life, insti life or outside? Not necessarily the electricity context, but wherever else you have observed that.

Right now in campus AI ML everyone is doing it because they are seeing other people do it. Correct, correct I mean that is true because we are all looking at what is happening around and are we missing out or should we be a part of it whichever way we look at it. So, that is one good example. But in a conscious way, are there any things being done? Inter-hostel contests on different aspects, are there some leader boards across hostels happening, I must compete, I must be better than that hostel in some parameters et cetera, nothing like that? So, that part is missing the operational part is missing, but essentially just get people motivated on what others are doing and this is see which this behavior of saving power if we are told individually we may not be able to do because we need somebody else to see there will be suddenly these money collection drives for some calamity etcetera cyclones floods etcetera. Although individually naturally we are motivated to help out right but when a group does it we will do it extra do you agree when somebody is doing fundraising we will naturally join although individually we might have joined also because we always like to join initiatives as a group.

So, that is tapping into the social relatedness aspect and in fact, most games tap into the social aspect of things. Some of the games of course, that you played digital games, they are more assessment games and individually to be played. But some of the games tap into the social nature of people. Scarcity and impatience. So this is a core drive that says you want something just because you can't have it.

Like if grapes are on the table, you really don't care about the grapes. But if they're on a shelf just beyond your reach, you're always thinking about those grapes. You know, can I have them? When can I have them? Are they even sweet? Kickstarter is a great example that utilizes a lot of great game design techniques. They first dangle this great reward, this great prize in front of you, cool technology.

Then they show you what we call a countdown timer. 21 days to go. You have to act now. If you don't act now, you won't get this prize. So the sense of urgency. Then it shows you what we call the last mile drive.

Oh, there's only 3,000 left. Only 2,000 more, and we'll get it. You'll get it. And finally, all together, this is what we call a group quest. You can only accomplish the quest when an entire team moves together on it. This is this you will see everywhere in a lot of advertisements tap into the scarcity.

Have you seen it? Only two houses left they will say. Actually maybe there are many unsold units we do not know that, but are at least they would have built one block out of the many blocks and then they say only two remaining. and or they will give a deadline or

a time by which a sale would expire. In fact, recently I saw this applied in a context of there is this facilitators or trainers forum the they hold a meeting every month. Until last year the person who coordinated it I mean this has been going on for the last few years. It will never get full registration and in fact, on the day of the event also they will keep the registrations open.

Now, they have started putting reduced pricing for the first few days and then they change the pricing and now it becomes houseful much before the event day. The scarcity part, you are missing out something changes the people behavior. You're always thinking about it. And this is the core drive that's heavily utilized in the gambling industry, but it's also the core drive that makes us want to finish a book or watch a movie. And it can also be used for a lot of other good things, like getting people to obey the speed limit.

This is Speedcam Lottery. How it works is whenever you drive by the Speedcam Lottery and you're speeding, it will take a picture of your car and it'll give you a fine. Pretty straightforward. But when you're going by the SpeedCam lottery and you're within the speed limit, it'll enter into a lottery pot when you have a chance to win the money from those who are fined. So, even though your chance of winning is fairly low, and it's not a lot of money to begin with, because everyone thinks that, oh, maybe I'll win this time, maybe I'll win this time, you change your behavior, slow down, huh, you know? So, Speed Cam lottery successfully reduces the speed of passing cars by 20%.

Very tangible. The eighth and final core drive is loss and avoidance. And this is also straightforward. It's you're doing something to avoid a loss. You don't want bad things to happen. And my favorite example here is called Zombies Run. Now remember in Core Drive 2 we talked about Nike Plus motivating people to run to make them feel accomplished, feel like they're growing, feel like they're improving.

Now Zombies Run makes people run because they don't want to be eaten by zombies. So, Zombies Run is a game that pretends you're in this apocalyptic world where zombies have taken over everything. And you're this runner in the wilderness, in the world of zombies, and you're running with earphones on. And there's a radio station with binoculars talking to you saying, Hey, careful, Runner 5, there's a horde of zombies on the west. Oh, careful, there's a zombie right behind you and he's gaining on you. and then you hear sounds, and you're like, crap, I gotta run faster, I don't wanna be eaten, right? So again, now you're eating because you don't, you're running because you don't wanna be eaten by zombies.

A very strong motivation. So, these are the eight core drives of Octalysis, and like I said, I believe every single thing you do is based on one or more of these core drives. But it's also put together on an octagon shape for a reason. The left side core drives are more

extrinsic motivation core drives, which means you're doing these things for a goal, for a purpose, for a reward. The ones on the right are the intrinsic motivation core drives, which means you're doing it because it's just enjoyable.

You don't need a reward to use your creativity. You don't need a reward to hang out with friends, and you don't necessarily need to gain anything by being in the suspense of unpredictability. In fact, most people have fun losing money in casinos. And if you notice, the core drives on the top are more positive. I call them white hat gamification techniques. So if you're always doing something because you feel like you're being part of something bigger than yourself, and you're growing, you're improving, and you're using your creativity, it feels very, very good.

It feels like you're in control, you're powerful. The ones on the bottom, I call them black hat game techniques. And if you're always doing something just because you want to avoid a loss, just because you don't know what's going to happen next or you can't have something, it's going to be very, very powerful in motivation, but sometimes in the long run leaves a bad taste in your mouth, and it's not a very sustainable long-term design. So once you have that framework, you can start analyzing why different things are engaging and motivating. You can look at Facebook, how it motivates us, and maybe it lacks a little bit of epic meaning and calling, maybe a little bit of scarcity.

There's basically everything you want you can get on Facebook. You can look at things like LinkedIn, right? And LinkedIn, yeah, there's not a lot of space to utilize your creativity on LinkedIn. You create a profile, you look at people, that's about it. But it is relatively important. There's ownership, it's your own life.

There's a lot of things in LinkedIn that engages people. So that's just level one octalysis. There's actually five levels in total, and it gets a lot more complicated later on. But the premise is this. Good gamification design is a complex subject. It's not just slapping on points, badges, leaderboard, game mechanics onto an experience.

It's never a cookie cutter solution. And so, when I started in 2003, I had a vision. I foresaw a world where there's no longer a divide between what you have to do and what you want to do. And in this world, all you have to do is play all day, and everything you need to do is getting done. You support your family, you have better relationships, your organizations perform better, and society overall becomes more productive. And I work every single day of my life to push towards that vision.

But there's only so much I can do by myself. So that's why I need you to be part of that journey with me so that we create a world where whenever we wake up in the morning,

we'll say, wow, that dream was amazing. But I'm so glad I woke up and back to reality because that's where the real fun is at. Thank you. He has developed this beautiful way to visualize what is happening in gamification. We just covered as a part of this course just to give a sample or an inclination, this is more like a 101 course, but there are deeper aspects to it and we at least by seeing these examples you will be able to correlate to whatever is happening around you.

And talking of linkedin right I mean there was a very simple experiment they did when they started many years back people did not fill their profile profile basic profile details. They introduced one ah blue color circle that you can see you know your profile is ah 80 percent or 85 percent full it shows, the moment they introduced that there was a big increase in the percentage of the people who filled it. Because people do not want to see, I mean they are not publicizing for the world, we do not want to see incomplete things. In a visual form that incompleteness was shown to us or they will just say 5 more percent needed to complete your profile.

That looks like a better nudge than sending many emails. So, that is one example of the incompleteness driving the human behavior. So, just wanted to show some examples of where it is used across different industries including education, more related to the human motivation. Because human motivation continues, has been and will continue to be a motivation the motivational challenge will continue to be there for years.