

Making Learning Engaging Through Interactive Games

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Interdisciplinary

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Lecture – 4

Let us start with a platform called Gimkit. It was started for high school students a couple of years back and but I would say just like any other educational game form, it is not confined to one age group. It might be started with a certain intent and purpose, but it is more uniformly applicable. So, while we try to understand this platform, let us start experiencing it first. The different forms that are available by actually playing the games and then reflect on what are the aspects that make it engaging. So to start with there are a couple of topics listed here and there are a couple of game forms.

I will try to start with some game forms. Let me go ahead with humans and zombies, I am sure in some form or the other in your mobile games you would have played equivalent of this, in fact humans and zombies itself and I am just trying to do some setup here. All you need to do is to join this, go to this link [gimkit.com slash join](https://gimkit.com/join) and enter this code.

You can do it from your laptops or from your mobiles and enter your names and sign in. So, let us start joining this game and as you start entering your names and sign in you will notice your names appearing on the screen. So, let us wait till all of you log in. We have about 9 to 10 players now, hopefully the rest of you will join soon. So, we have about 15 now.

So once it reaches 20 I will get started the rest of you can sign in also and join the game. Another 3 more and we will get started. In this game essentially you will have to answer a bunch of multiple choice questions and as you start answering them you will get points. Using the points accumulated, you can do shopping. Shopping is twofold, one is the game goal is to defeat the opponent team.

Both the teams, humans and zombies have a certain health score given at the beginning. Both of you have about 700 points. You have options of increasing your own health and extending life or jeopardizing the opponent right by decreasing their health there are

different ways available. So, in your health starts deteriorating your team health starts deteriorating from 700 downwards and whoever hits 0 first loses the game your point is to sustain and remain in the game as long as it is more than your opponent. So, I am probably starting the game now.

As we start it automatically classifies you as either a human or a zombie, it auto assigns, it might appear on your own screen also which team you belong to and as more people join they will be classified into one of the two teams. So, I am going to start the game now. So this dashboard shows the health score. So both of you have started on 700 and now slowly it is decreasing. Both of them are now at 679.

It will steadily decrease unless you act upon it. So it is at 652. So far both the teams are doing equally. You answer the questions and sometimes you choose the option of shopping. So as we can see zombies have sabotaged the humans.

So, that is the first step taken by one of the zombie team members. Humans are at 572, zombies are at 610. So, humans have repaired now and zombies have increased their max health to 715. So, right now it is even Steven, 527 each. It is a close game going so far.

Now there is a significant difference. Oh, now zombies are slightly ahead. It is a close one again. Now there is a significant difference, humans are about 100 points ahead, zombies need to catch up a lot. The difference is widening, almost 150 plus points now difference, zombies need to act.

Zombies are catching up a bit now, the difference is come to around 30 points. Difference stays at around ok, now they have equaled. So, both teams are equal now. So humans have sabotaged zombies once again, there is a gap now. Gap of about 70 points that zombies need to make up.

It's a 100 point difference now. Zombies are below 300. I think game is also past the halfway mark with both teams almost reaching 350 and below. Zombies are at 250 and humans are also reaching 350, half their health. The gap is there still about 70 points.

Zombies need to act fast. Now zombies are ahead or is it very close now? Yeah, I think they have caught up. Zombies have caught up. The gap is very small now. That is almost equal.

Zombies slightly behind but not significantly. The gap, once again the gap is widening about 40 points. Both of them tried sabotaging each other, but humans are about 40 points ahead now, although the gap is reduced. The game code is 395991.

Go to gimkit.com slash join 395991. The gap is about 40 points, zombies close to 160. So, zombies below 150 now need to be watchful. Now, the contest gets really critical with both teams under 200. The gap of 30 points may make or break now.

It is close now, 153 each. Both teams are equal and humans are suddenly losing, zombies are ahead. Humans are below 100 and zombies are at 160. So, looks like a last minute comeback. Zombies are 40 points ahead now.

Humans need to be watchful. A 40 point gap, roughly O. I think humans have made it up. The gap is narrowing.

It is about 10 points gap. Zombies are now far ahead about 70 points ahead. Humans need to be watchful, they are below 60 now. Zombies are at 120. Humans need to be watchful, they are close to 40. Zombies are comfortable at around 110 or so.

The biggest risk is for humans now with inching close to 20 points that is a comeback 70 points. The gap is now again small or not really it is about 40 point gap, but humans are slightly safer now instead of the 20. Instead of being in the 20s, now they are in the 40s. The game is over. So, how was it? How was the experience? Any inputs from the class? Forget about winning and losing, but let us now analyze the game.

What were your emotions while you were playing? Any answers? How did you feel when you played the game? Competitiveness okay, is it just lot of fluctuations in the game? Okay, the game went through a lot of fluctuations, so in that sense it is very engrossing in the sense you have to, you are focused on it at a team level, what else? Right okay there was because you were playing the game for the first time there was no communication between the team members which could have made it a more. Right now, you have to work on your own is what you are saying, ok. Fair point. What are the dimensions? Sir, some words I could not understand due to which I was confused and opted wrong answer at times. Is it because of the question itself? Question difficulty, ok.

How many of you felt questions were difficult or probably you did not relate to that topic? That. Yeah. Ok so this is an important aspect it is good that you called out that I could not understand some questions but they repeated and you were able to answer it right. So this is a conscious thing the repetition aspect. And the fact that we make a mistake and next time we, not even a mistake, you may not even be knowing what the answer is.

So you initially try to take a guess as to what it might be. The next time, hopefully after

the first time you understand the right answer, next time when you play, you at least get to know the, what is the right answer. It may happen unconsciously or rather, that is where the game is actually teaching. See it is not about only cracking the questions that you know them. It is also you can embed questions which are slightly difficult or I would not see even some new facts can be embedded in this mode and as a part of the game mechanism you automatically end up learning and if it repeats a third time it also get reinforced ok.

That is that reinforcement and new learning and reinforcement. So, it should always be a blend of known facts as well as some unknown aspects. What other dimensions would you like to discuss about this game? There was a strategic dimension. Everything was priced differently. So, there is an active consideration to also what is the correct team strategy to win? What is our current balance? What should we be buying? What should we not be buying? Okay.

The strategy aspect. He mentioned about the fact that you could not communicate assume that you had the mechanism to communicate with your team members and you had grouped up as humans and zombies that could have been a team collaboration would have been possible but even outside of that individually you have to take a decision with the team money or with your money that is available is it worth improving your health your team's health or is it worth sabotaging, right, what is the right call to take and at what price also and when should you take that, ok. So, that is where the strategy element is involved. Good. Anything else that comes to your mind? Answering street call question is important. So, that makes me take risk of you know answering the question even if we have not 100 percent Answering a streak of questions, there is an incentive to that because for every answer you give consecutively right, you are being rewarded and you try to take a chance, anyway you will try to give a correct answer for every, the best answer I would say.

You will try to get every answer right. Am I right? I did not understand the point when you said about allows you to take a risk. So, because there is an incentive you give it a try, is there an option of skipping a question? In that context whether to skip or whether to try would have made sense but I get your point essentially you would anyway be attempting it like we discussed in a game environment although there is a sense of loss of points etcetera that is possible you try to give it that loss is not felt hard and you try you tend to try it is not perceived as a big risk but if there is a option to skip or to try a question, there that element of what you mentioned, right, streak is giving me a reward. Let me try for a streak even if I do not get it, no big deal, next time I learn and end up trying, that trade-off will be experienced. Any other dimensions? So, eventually when it went to the next question, I didn't even read it and I clicked the wrong answer. So, I think

no matter what the situation, we should be more patient.

We should be careful on our answers. Yeah, so yeah the competitive time pressure nature of the game and that is why I also read out these scores continuously even if you were not watching. It is a conscious thing to put you all under pressure I mean just in a fun sense ok. At that time can we keep our heads and keep scoring. In fact, there were some additional points there were you all started with some cash in the beginning. Got to accumulate all the cash only during the game play most of you might not even have been able to shop at all because it takes some time for building that cash.

So, for the game to be enjoyable what I realized was if you start with 0 cash if you were about 10 mod members in each team right. Each of you would have had to get some 10 questions right to accumulate some minimum cash. in order to execute some actions that may not be possible in the short time frame. So, you start with some initial cache just so that you are able to execute strategize and go, but your point is well taken the time element which causes the excitement is also the thing that makes one make mistakes, but that is the fun element also because if it was a pure strategy game where you had infinite time the results would be different. It will be boring, it will not bring in that attention.

So we need to trade off between the two. Okay, so I think the idea was simple byte sized information on any specific topic can be fed in this form bundling some known information and some unknown information in the form of a game So we get that environment of play, competition, winning etcetera and it gets bundled with the learning process. It is useful for some specific aspects and this is a humans versus zombies team game. We will try another game form where the entire group is a team, the entire class is a team And there is a common challenge, this was one team versus the other, we will try another So let us go to form, this is called the floor is lava. Essentially you are all standing on a building and situation is that there is molten lava rising from the bottom. You need to keep increasing the height of the building as much as possible together as a group and how long are you able to sustain before the lava takes over the building, okay.

So this is a team effort, each of you answering right and contributing helps build up cash and helps you build the stories of the building or probably build planks etc. You keep raising the height of the building, that is the goal, okay. So let us see how long you are able to survive. Here again you can just join the game, go to gymkit.

com slash join and enter the code as 771952. Once you are all in, we will start the game. Yeah, it needs, just refresh it, yeah. So with about close to 20 of you, I will just start the game, the rest of you can continue to login. Is your network problem solved? So work together to help survive the lava, survive as long as you can. and the screen dashboard

indicates where the lava level is and the lava height is right now 550 blocks, the building height is 2200 which is basically one-fourth of the building is lava.

If you can see on the top right side. 2201 is the number of blocks of the building height and 550 is the lava. So, construction has started, the construction details can be seen ok. Suddenly it has risen. So, there will have to be a corresponding challenge.

So, the lava will start rising slowly also. So, the construction has gotten up to 10,000, 25,000 now. So the lava has reached the halfway mark or probably less than that I would say. The building height is 48,000 odd and lava is at 20,000 odd. Now the lava height is 65,000 odd and building height is 93,000, so about 60%, 60 to 65%. so it's now at around 80 percent or slightly less than that maybe close to 80 percent So, it is now almost at 90 percent 120,000 odd is the height of the building and 108,000 is the height of lava.

It's almost reaching, the lava is almost reaching about 1000 blocks away.

About... Yeah. So, you have survived for 5 minutes and almost all of you are involved in the construction process. 100 pieces were built, I mean whether in the form of small planks or large ones. So, typically it is I mean you also again once again started with initial cache that helped you build fast otherwise it would take a long time to start building, but anyway usually it is about 3 to 4 minutes in the previous instances that I have played. So, this is good work you have survived longer. So, how was this game play? This is not competitive, basically we are all facing a challenge together.

When do you think this kind of a game scenario can be envisioned, right? Can you think of one or two examples where this kind of a game scenario, this collaborative or probably together against a problem, what kind of problem in today's world do you think we can use this? Covid is a good example where it is a collective challenge against humanity, very good answer. Another thing that is very very popular these days, very very you will be hearing it somewhere the other I am sure. Disaster is correct, yeah, but disaster is again periodic. ah something that in in some form it is a disaster, but again it is not a very ah some something that is ah happening that ah.

War. War also is periodical. Water crisis. Ah. Water crisis. What is the larger form of it? Disaster. Global warming. Global warming, what is the larger form of it? Climate change.

Ah. Climate change, sustainability or climate change. So, what you said about water, the other smaller forms are a subset of this. Climate change or sustainability, this is a apt scenario to picturize. I mean of course, this game talks about a very simplistic thing

where lava is rising, but actually if you can design a game where there are different elements that add to it right like erosion of greenery, then rampant usage of let us say plastics and what else will contribute. So, all those are factors that are working against humanity and we will have to survive against the, if we can envision such a game then this kind of a scenario will be very apt. Ok, again coming to game mechanics, what can you all think of? What can you think of from a game mechanics, game experience perspective? Yeah, go ahead.

You started off with 10000 dollars, but realistically you could only make up to maybe 50 dollars per question answer. So, it did not feel at all balanced that you could realistically earn any of that money back. Ok. So, the answer the money allocated for the gain for every question is not proportionate.

Yeah, ok. What else? I did find shopping when I click on that shop button there were a few instructions but like because I knew that the time is not getting close so I just randomly clicked something and I started because there was no time to read it like for five dollars what is the thing I'm getting and all that so I feel that there should be a Either we should have information about all those shopping. Shopping things given upfront before the ok, that can be done. See once you play this game, once you get the mastery, you will be able to plan better. The same thing you did for you know in the previous game, the time limit being the pressure right, what can, what amount of money can help you get what? Correct that instruction had it been given in the beginning you would have been able to manage better, fair point. So, it is not really you are not performing good as last one that is not the thing.

It is just the nature of the game probably in the humans versus zombies game the deterioration of health happened slowly even here the lava was rising slowly ok. There is a way to change the rate at which lava rose otherwise this again this game can also go on forever. So, it is just broadly to expose you to the game mechanic that we are playing this, so this again can be customized, we can make it a longer form game also if needed. In which case the truest form in which we should be playing the game is when you do not have any initial cash, you take a long time to accumulate the cash and start doing the actions, ok. But we do not want to start in that steady state because the game will be too prolonged you will lose the sense of enjoyment.

So, we need to balance different elements. The time pressure is for creating your active interest, but sometimes that can get too precious and when you do not know the all the rules, right. So, we are trying to trade off between different elements. So, as I introduced this, there are different other play forms available in this. We will continue to explore other forms also. One of the forms that is very popular, I do not know about in this group,

but it was very popular during the pandemic days which is Among Us.

How many of you have played Among Us? Almost more than half of you, ok. So, do you want to try the Among Us equivalent mode? Among us equivalent, it may not be exactly but it give you that feeling of among us, okay. So the game adapted form is called trust no one and it is inspired by among us. So How many imposters do we have? 2 is enough or shall we make it 4 for the class size of about 25 odd people? More than 4.

May be too difficult then. 4 is probably ideal, no? 4 is ideal. I mean I do not want the game to go on for too long, just want you to get the feel of it and investigations per crewmate can be set to 10 and yeah, the rest can be fine. So we will start this game and sign in with the game code. The game code is 389243 and you can slightly dial in late also for those who have challenges, but as soon as you dial in we will get started. So I will start the game, the rest also can join.

Just watch out for the instructions. You may know, people who have played Among Us may know it but others also it is not too You may not have to do the task that you do in among us but it is just about a question of identifying the imposters by running investigations. So I will keep the investigation log on and you can watch out while you continue the game. So, there are 6 meetings and 180 investigations and it will keep changing as more of you sign in. So the investigations are slowly starting as can be seen on the screen.

Noreen has investigated Aditi. Okay, let me not read it out. I will probably hold on for you people to have discussions during the meeting time. And as you do the investigation, sometimes you will get different kinds of messages saying that it is completely clear, not very sure, etc. So, use that also as a basis for forming your conclusions. About close to 20 investigations done, from about 180 we have come to around 160.

This is a discussion time based on about 40 discussions, 40 investigations. You can all discuss amongst yourselves and once you have decided you can start doing the voting. You can discuss in open class and whatever inferences you are make out, able to make out, you can share it with the rest. Yeah you can ask questions like he is asking and please watch out, you can discuss it in open class, there are some small groups. Can we take this thing because you know definitely imposters can bluff here, right? That's a good observation.

That's a very insightful observation. So, be careful with that. For me, people Jai, Kumaran and Tanuja all checked me out and I believe they know my status as of now. How are you? So given that case, you know, my results being, you know, Devansh and

Saurav is here can be taken as true 100%. Other people can also vouch in this fashion. Aditi, here I ran into my relation on her.

I saw her job group because she's not involved. I heard that too. G is in conference at work. I don't know who G is by the way. so didn't you do any other investigation I just ran one English ticket, so I told you that.

And? That's it. That's it. That's it. Did you get clear? Yeah, Kashish can say if I'm clear or not.

But I'm clear for that. You know, we should write it down. It is clear. He is Darshan. I don't know. Next round, I don't know Darshan.

Tony, is that what you said? I was thinking about the shadows. Oh wait, no. One second. It's not written. What are you doing? It's not written. What about Jack? I think we can discount the people who are like clear in the lot of all of our like maximum investigation and then we can filter them out at least these are the same people Who called for the discussion? I called, I called for the discussion. Otherwise the game will go on forever. So, I allowed 40 investigations out of 180 after you did 40 because in a smaller group and setting you also have the ability to call for investigations.

I thought 40 investigations will give some kind of reasonable clues. How many people did Aiman get and how many people got cleared for that? Two people got cleared for that. Darshan, how many people got cleared? Did Aiman get cleared on Darshan? Kashil got cleared on Kashmiri one.

G, did Aiman get cleared on G? I don't know. Incomprehensible. Incomprehensible.

Okay, so. You need to call up for it. Okay. How do you call it? Chinman. Chinman. Interesting. How many years has Gokul been? Gokul, how many years? Okay, shall we start? Start the vote if you have decided. Start voting. So, 16 votes, what about the remaining 5? If you do not get in another minute, I will close the voting if people do not want to vote. I am not forcing, but if people do not want to vote, we can end the voting.

Yeah, if you want to abstain. 18 votes done. Looks like there are no more votes and we will close it early. Let us see what. So, G was voted out of the ship.

So, G turned out to be an imposter. Who is G? Now, you should reveal yourself ok. So, I think what we will do is while you can continue the game let us reflect on it as we end the class we will probably have another session of it this could really get on longer with you

not having the freedom. You have all seen Among Us, what have you experienced so far and what is it that makes this game nice one? Let us analyze the mechanics of it. It is fun being the imposter. It is fun being the imposter, ok, but in a broader sense for a learner. The good part of this game is the teams keep changing every time, like you are in a different role with different type of people.

So each game becomes a new game. And secondly, your communication and discussions also evolve with more games. So you tend to notice So, there are multiple aspects that you are mentioning.

Number one is there is a variety. The role that you play differs. Every single instance it differs. Second is you get to know the nuances as you start playing which keeps that interest element and boredom from going away. Communication you need to you cannot crack it all on your own right there is no sense of individual mastery you need to collaborate and find out using multiple different clues. That is a very important dimension that you are bringing in any learning aspect because that way the mind does not go into the boredom loop. Sometimes, when we are faced with challenges, if you are able to initially it will be difficult when you are able to master it, then the excitement goes away because there is boredom, you know how to crack it, you will not want to touch it.

But here there is the loop of mastery is taking longer and it is only not dependent on the individual. It is based on the collective wisdom, correct? I mean you have to accumulate different clues and like what he said, there is also a sense of whether the investigation has been done right and whether the people have, whether the imposters have bluffed or not. That is also a big challenge which is all what makes the game interesting also. These are the elements that contribute to the high level of interest while playing the game. And learning is embedded into it right, again there is repetition, you would have found the same questions being repeated, repetition needs a sense of curiosity or a excitement right. Can you, what is your opinion if some topic that is boring or that you find it difficult, if it is made in the form of this game, do you think, how many of you think it will add to your interest in learning? I mean you can agree or disagree, that is okay, but just imagine if we were to be playing among us in a class on a topic where the facts are not very fun to learn or whether there is difficulty, how many of you agree that? It can be to some extent, you do not have to agree 100 percent.

You can either disagree or you can agree yes, maybe 30-40 percent to some extent. I see a few hands going up. Now that in itself is good, because at least you we have gone from a level of zero interest in the topic and being disconnected to some game elements are making us interested in a subject which we thought we were completely not interested in.

Sir, one more perspective, this acting in this similar format the focus will then more shift to the game than to the learning of the topic. Good point, very good point that we have to be very mindful of.

I am glad you brought that up. We should not make it too game focused. And the one way to do that can you guess how to not make it game focused? Now you are all having it easy because of what? I had mentioned a point earlier in the previous game which makes it easy for you to do that investigation etcetera. What does investigation cost? Okay, we will come to that. That is a conscious decision to repeat the question so that there is repetition, learning and mastery. But the fact that you are able to do an investigation costs money right, that money has to be earned by your answering a question.

Right now you are using your preliminary loaded money ok. So, if you earn your money and start using it that aspect that you mentioned what was that? That the focus will become more. For more on the game. So, yeah.

So, if it is harder to earn the money you will start thinking wiser and. start focusing more on learning the concepts. So, it is again a permutation combination I am not saying that we will have to adjust that fine balance between see because if no cash were given if it is hard struggle for you to earn money in a topic that is not interesting. is a challenge, it is not helping you. If you are given some cash and some cash you will earn through your mastery and he brought about a point right, how much money should you earn on answering a question that in the combination of the total money being given to you at the beginning that has to be the right proportion. So, by playing around this parameter Hopefully we can arrive at a point where it incentivizes the learner sufficiently to be interested in the game and the learning part will happen because of the repetition.

The repetition of questions is a conscious choice. The idea here is not how many questions you crack, some difficult questions have to be repeated either in the same format. If you find the repetition of questions boring, the exact same format, what can you do? To overcome the boredom of having to face the same question multiple times in the same exact format, what can be done? You can create like different questions with the same answer. For example, like it was asked what does what defines matter.

So, it was the same question with same option. Similarly, matters can be understood with these properties kind of a thing. Correct. Yes, same question with a different format is a choice and some variations of the question you all gone through psychometric test right. In psychometric test what will happen? The questions will not look different, but they are actually testing the same thing. That is because try a people will try to game the test by trying to give the best answers to avoid that they are rephrase the question, but in a

learning context what you said exactly we reinforce the whole ideas we need to reinforce and therefore, the questions can be worded differently. So, by an adjustment of initial cash the cash that you earn by answering a question and by rewording the question the learner interest can be there without focusing too much on the game dimension.

The game dimension is attractive that is very key component of making the learner interested in the process, but it should not be over done I agree with you. Maybe we can keep queues in the game which redirect that loop into this question on the topic. Like once the questions are over, we are doing the discussion.

Discussions for the game, yeah. And these concerns about what questions are asked. So, maybe a queue which can bring it back to the topic.

Sure, sure. Very good point. So, the game aspect is going separately from the discussion. game learning aspect. So, if it can be integrated in some form that will make the experience more beneficial and holistic. Physics lab. Yeah, the tasks were given right, if the tasks are corresponding to the questions being asked, then it will be a better game, I agree. So, anyway I just thought I will introduce you to these kind of games in a different way, we will see some of the other tools. In fact, See the, what do you say, the highest, there are different kinds of tools available, we will try to expose you to a few forms and see which ones help in the learning process in what way, ok.

So we got started with this. We will see a couple of more tools tomorrow and next week and we will also get to do some assignments, ok, in designing these games around these subjects. Thank you.