Making Learning Engaging Through Interactive Games

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Week – 02

Lecture – 07

Having seen the previous video where we got to see the different kinds of snake and ladder board game mechanics and where the predominant objective was race to the finish. Students went through and got inspired by some of these games and they came up with really creative ones on their own. And we are going to see three examples where the students themselves walk through their entire games that they have designed. One of them is the Circuit Jam game related to electrical engineering. The next one is reaction of species board game and the third one is on tissue engineering. So we will actually get to see these games described by the students themselves they got inspired by the snake and ladder and the race to finish mechanic but they applied their own creativity in the context of their subjects and really made very, very interesting board games.

And towards the end, we will also see a game called Trust Me. This is a game, a mystery game in applied mechanics. I would not call it inspired by the Snake and Ladder game, but it is again a very interesting mechanic. So, going through these games will hopefully give us all inspirations that yes, creativity can certainly be applied, inspired by the templates that are already available of standard prepared games.

Some of these games when the students walk through will also give you additional ideas and inspirations on how to adapt and be creative in whatever context you are going to be developing games on. So let's wait no further and we'll start seeing the videos. Thank you. Looking forward. Please enjoy the videos.

Hello everyone. Welcome to the small presentation of the circuit charm game. This game is essentially a board game. This is similar to the snakes and ladder game that we play. You should go through, you should draw a dice and go through the path and whoever reaches the destination first will be the winner.

Let's first go into the origin of this game. This game is inspired from the respiratory

system game. We thought that there were some disadvantages in that game and we thought of overcoming this by choosing some other design. So we came up with this electrical circuit game. Here what we are doing is we are using basic electrical elements, basic circuit elements to incorporate some fun into the game.

We move along the circuit and these circuit elements in between are used to create some fun in the game. So this game is suitable for high school intermediate and B.Tech first year students. Let's first dive into what are elements that we need to start the game. To play this game, you need to have this circuit chart code.

You need to have some dice, some coins, question cards, and the rules, you should know the rules of the game. Now first, let's dive into the design of this board. This board consists of some resistors, some fuses, some switches, each which consists of one on button or one off button. And this is essentially the initial ground and this is the source of the, we essentially simulate the flow of the current of the game. Every player essentially is an element of this current, some particle in the current.

We should start from A and should go through all this path and whoever reaches the final ground first will be the winner. You can see there are some labels here like A, B, C, D and these are just for ease of asking questions and there are some question marks. These are the points where you will get some questions. The main learning is here this question mark will make you learn something. Now let's come into the rules.

This game consists of some nine rules. I will explain every rule. Let's first dive into the first rule. This first rule essentially is everyone should start at a now the whenever you roll a die, if it rolls it one you should start from here. If it rolls three you should start from here.

If it rolls five you should start from here. If there is two you cannot pass through it this first rolling is essentially choosing the resistance through which you want to go it we want to simulate that the current wants to pass through the low resistance path so to simulate that we essentially designed it in such a way that the less resistance path contains less than contains less length like here we have only one circle here we have three cycles here we have five cycles. It means to pass through it will take some more time essentially to demonstrate that whenever current want to choose the less resistance path let's go to the second rule the second rule is about this question marks. Now say for example you are at p and you roll two you will come here, now when you come at this question mark some some of your another players will pose you a question they will take a card from they will take a question card and pose you a question If you answer that correctly, you will move two steps forward. If you cannot answer that, it will move two

steps backward.

And these are the these question marks are essentially where are the points where you learn something new. The main learning comes from these question marks. The next rule is about this fuses. Now we know that the fuses will not allow high currents to pass through it, What we have done is like just to pass through the fuse you should roll. Only one two or three.

You cannot pass to fuse by rolling higher numbers like 456. Now say for example you are at point C. Now if you roll two you can move to S1. But if you move say for example five you cannot move. You should stay there itself.

It's essentially you lost that role. And the next rule is about the switches. Every switch contains one on and one off thing. The switch will get on if someone on the switch and it will get off if someone off the switch. And if someone on and until someone off the switch, the switch will be in on state only.

Now if switch is in on position, now essentially what happens is we should assume this dotted path to be our real path now. So this will help you to shorten the path. Whenever someone on switch, you can go in this path. Now next thing is if say for example a person on the switch now essentially what does that mean is the path is this now. Now anyone say for example someone is here if he rolls 5 if he rolls 3 he can go to 1, 2, 3.

You can directly come to the point D. It's not like if someone on the switch only he can use it. It's like if someone ons a switch, anyone can use that shorter path. The third rule is say, now here we are essentially simulating the current, right? If say for example, there is some branch with no current, that means we cannot move through it. So for example, if someone is here and someone owns the switch, so that means this, now this resistance is not of use.

So he cannot move here. There is no current in it. That means he cannot move here. Say for example someone is here and there is no one to off the switch if there is no one to off switch, there is no way he can get out of this. So, for this kind of scenario we someone should ask him a question if he answers it correctly he can get out of it or he will stay there and the last rule is the whoever reaches this ground first will be the circuit champ.

He is the winner. Thank you for listening to this presentation. Have a good day. Hello everyone. I am Krishna Priya, a PhD scholar from Department of Biotechnology, IIT Madras. First of all, I would like to thank my supervisor, Professor G.

K. Sureshkumar and Mr. Karthik Vaidyanathan for making me aware of a joyful way of learning which is filled with lots of fun and excitement. Being a part of Let's Play to Learn team, it gives me immense pleasure to share with you all a wonderful board game that I could design based on the methods to detect reactive oxygen species which are produced in most of the living cells. As you can see on the screen, ROS's Challenge is a board game with differently colored steps corresponding to the various fun elements that you get to find on your way to reach the final step. And simultaneously, you also get to learn the various methods to detect different types of reactive oxygen species. Moving into the details, the players will be provided with the board with the action cue list to be followed as mentioned on the left bottom corner of the board.

For example, if you land on a green colored step, you get a reward of moving three steps forward. In case you land on a black step, you will need to miss a turn. And the most fun filled step in this game is the pink one. Landing on which you get a golden opportunity to pull back any other player of your choice by two steps.

Hello everyone. Today I'm going to talk about a game called Little Inventor. The game is designed for tissue engineering course. It's an introducing field artificial tissues are fabricated mainly to restore and improve tissue function. To engineer any tissue three essential requirements are scaffold, cells and growth factor which is called as tissue engineering triad. Apart from this there are other requirements depending on the tissue type So the round 1 revolves around collection of materials required for tissue fabrication while the round 2 consists of basic questions related to tissue engineering.

So the rules in round one are the player gets to roll a die and whoever gets the highest number wins the first chance to play the game followed by the other. So the one who wins the first chance gets to choose a problem statement. A sample problem statement is given here. followed by the materials which are needed to collect are being played here below the problem statement. These are the essential cards which a player has to earn in order to qualify the first round.

So this is the sample of the board game. The first round revolves around this rectangular path wherein each player will have to start from in this rectangular path by rolling a die and collect all the essential cards for fabricating a tissue. The sample here, suppose a player rolls a die. He gets one on the die. He moves to the position on the board game, which is a scaffold spot.

So the player will be given two scaffold clue cards related to his problem statement. If the player is unable to guess the correct answer, he still gets his scaffold card but in turn gets a penalty which is losing his next turn. This is the sample of the clue cards related to

scaffold and this is the answer. And this is the clue card which the player earns at the end. So the same way when the player again rolls a die, he gets four.

So the player moves from scaffold position to the cell. Pick four positions ahead and he lands on cell spot in the board game. So the player gets two cell clue cards related to his problem statement. this is the sample of the clue cards and the right answer so similarly when the player also gets additional cards in this round one which is called the key card which is in green in color here so the player when he moves gets two this card he can use these key cards in order to get clues in the round two. So these are the essential requirements which a player has to collect in round one to qualify whereas in the round two this is the checkpoint again the player will have to roll a die When he comes on these green spots is where he will be asked questions.

If the answer is wrong, he must stay back in his previous position. So these are the sample questions for round 2 and the right answer. And these are the clue cards which will be given to the player if he earns key cards. So this way the player will have to move and reach the destination based on the problem statement given to win the game. So overall summary of this game is the prerequisite to play this game is basic understanding of tissue engineering approach to develop a tissue.

So based on the previous board games feedback, that is the game name life around reactive species, blue cards are included in the form of pictures for better understanding. Game goal is first one to reach the end point. The core dynamics used are race to finish, solution, connection, construct. The game elements are chance, competition, aesthetics, story. Game gives a basic understanding of various tissue engineering aspect.

Thank you. Hi everyone, this is Meghana and the game we are looking at now is trust me. This was designed by me as a part of play to learn course so this game follows a mechanics of mystery story based. And the course I've picked for this game is Applied Mechanics. So the objective of this game is to learn basic concepts and to solve simple problems in Applied Mechanics. And you will not require a lot of materials in this.

You'll just need these file cards, which I'll walk you through. And you'll need a pen and a pencil. And you'll need a notebook. This game can be paid individually or as a group and there are four case files and five suspects so you go through each file and eliminate one person based on the clues in each file.

So the storyline starts from here. So There has been a robbery that took place at so-and-so bank and you are appointed as a detective to identify who the culprit is. The police have already ruled down five people as the final suspects and your job is to identify the

single culprit who is responsible for this bank robbery. And as a detective, you will be provided with four files and each file has a few clues which you need to use and eliminate innocent and finally reach to the culprit. So the first case file Okay, so in the first case file, the clue is given as, from the database of crime records, it's found out that there's a similar pattern of robbery observed last week in Manchester by an ex-mechanics professor. And we suspect that it is the same identity person who is committing this crime as well.

So we gave this five suspects each test with a single question from applied mechanics. And we've asked them to provide their answers and all five of them will be provided with different question and firstly Cindy we provided the resultant of two forces p and q acting at an angle theta is what and she provided an answer of this. And similarly, we have provided Jason, Maria, and Noah, and Lucas each separate question. So as we know that from the records that the culprit is actually an ex-mechanical professor. So we can eliminate the person who answers this question wrong.

So based on this answers, you can discuss as a part of group or individually solve and eliminate a person who gave false answers for this question. And going to file two, this file will have an other clue. So in the previous file, we've already eliminated one person. So we are left with four people for now. And going through file two, in the file two, the details are given as like in the crime scene, we found a plant which is used to break in the bank.

And the plank was a 6 kg board and similar measurements as a crime weapon is provided to all this rest 4 culprits, rest 4 suspects I mean. And so plank's dimension is also given in the figure. And against the each suspect, we have their bearable weight or bearable force. So based on this figure and the dimensions and how they carry the plank, you have to identify the force the at A and you have these people potential. So you can eliminate people who can't bear the calculated force at A and will be finally less than three people.

And now we have file three. In the file three, we have a truss and we have to identify the zero force member here. So in the zero force member, initial of the point of the zero force member is a person who is innocent. So in this case, the C is a zero force member and we rule out Cindy here and going through file four, Okay. So file four has another clue where it is shown that this locker room door has a police security system.

And the door opens only when the torque at pin A is 4.9 kilonewton meter. So based on this figure, we also have the dimensions of this system. And we have the weights of the respective suspects. And by using this system and substituting the weights of the two left

suspects, we identify which person can provide a torque of 4.9 kilo Newton meter at A and that person is our culprit so and answers are given the next file and similarly we can add up such questions in the mystery game like this follows a story kind of mechanism and reach to the final output or final goal.

So similarly, I've attached solutions for all these questions here. This game can be made differently by changing the values here or adding couple of new questions. So this is a fairly simple mechanism. And yes, this is the game I've designed. Yeah, thank you.