Design Thinking
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Indian Institute of Science Education and Research, Pune
Indian Institute of Madras
Solve Workshop

Professor: Hello and welcome back to the next stage of design thinking. This is the demo version of the solve stage. Solve is very interesting stage because this is where you unleash your creativity. This is sometimes called the divergent part of thinking. Divergent is when you open up and dedicate your energies into generating a lot of solutions for the problem that you have been analyzing so far. So there are two phases in design thinking. One is the conversion phase where we go deeper into a problem and see what it is that your user needs and in the next phase we do the divergent thinking where we generate a lot of ideas to see what fits the bill.

So always bear in mind that whenever you generate a solution, you do not have to judge on it but always check back whether it solves the problem for them, whether it be through interactions with your audience or asking your colleagues to check whether it actually makes sense for the particular problem, has it solved the conflict, is it addressing both sides of the conflict. So that is very important for this stage. So solve it is, so as always we have our team here, we are going to do the brainstorming live for you and we have our sticky notes as always.

There are two sticky notes that you can see, those have the conditions of the problem that we are going to solve today. I let the rest of the show being handled by my team here. Okay, over to you guys then.

Siddharth Maturi: Thank you sir. So in our last video, we have come up with a desired result for the conflict or the problem we were talking about, that is the number of notes shared. So the two desired results are the parameters we are looking at is less time to prepare and better understanding of the topic. So how can we apply this solve to come up with solutions to bring out this desired result out as what we are going to discuss now.

So firstly we would like to start with the less time to prepare part where all the students required or students who will be willing to ask the notes from his peers, should require less time to prepare basically. So how can it be done?

Nithin Kurian: Obviously if there is less time involved in preparation, then it means that the number of notes that need to be shared should be less. So who would be the right person from which you can get your notes? So I think we should think in those directions. Instead of you getting notes from all of your peers, you should rather focus on getting a note from one or couple of people which would give you desired result, so one would be a teacher.

Siddharth Maturi: Perfect, so that would be the most genuine source of all that information. So teacher sharing the notes with the peers would usually take less time in case everyone is taking the notes while teacher is teaching in class. And it is happening in simultaneously. So if teacher, so we will take that down sir.

Professor: Yeah. So one idea per note you can probably write it down and just place it there where you wanted.

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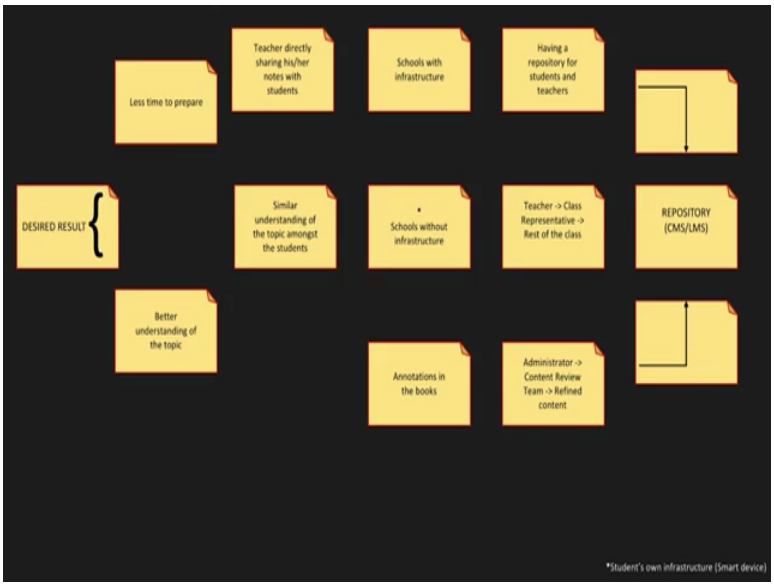

Siddharth Maturi: So teacher sharing notes, so this would be teacher sharing his or her notes directly with the students. Now what kind of medium or how do teachers usually share these notes with students?

Nithin Kurian: So the common practice would be that she would have notes prepared, give the notes to one particular student in the class, probably the preferred of the class. And then he

would have to take Photostat, photocopy of the notes and share it with all the students. And I think that would be a pretty cumbersome process.

Siddharth Maturi: Right, definitely.

Nithin Kurian: So how can we, what about using technology to solve this kind of or provide a solution to this problem?

Siddharth Maturi: So then if we are talking of incorporating technology into the solution, we should also understand how tech-savvy or what kind of infrastructure that we possess to incorporate such a kind of solution.

Nithin Kurian: So then we would have to classify schools into two categories, one where the infrastructure allows some kind of technology for sharing of notes.

Siddharth Maturi: School with infrastructure and school without the said infrastructure. Now if a school has, let us consider a situation where school has.

Nithin Kurian: (())(05:23)

Siddharth Maturi: Being shared through technology, use technology to do something like this. So probably we can use online depository where our learning management system or content management system is incorporated into it. Teacher can upload her notes or preparatory…

Nithin Kurian: Material.

Siddharth Maturi: Material into the repository where students can directly access that repository on their own instead of bringing the class representative in between which is less of a hassle for each and every student where they can get their information. So having a repository where students and teachers can...

Nithin Kurian: Teachers both have access to this repository.

Siddharth Maturi: Right, so having a common repository for students and teachers for schools with infrastructure.

Nithin Kurian: Infrastructure, right.

Siddharth Maturi: Then for the school without the infrastructure. So this would be a situation where you have already mentioned.

Nithin Kurian: Right, where students will have to have physically medium of sharing.

Siddharth Maturi: So then it is like from teacher to a representative, class CR to the rest of the class.

Professor: And CR is class representative. Okay.

Siddharth Maturi: So this is in terms of consuming less time to prepare. So these are some viable solutions we can think of right now. So another one, another part of the desired result is better understanding of the topic. So imagine students have, are sharing their notes within themselves and also teacher. So what could be ideal situation for them to have this better understanding of the topic?

Nithin Kurian: Better understanding of the topic. So better understanding should come when they are learning whatever they are learning in class is synchronized with whatever notes they are being shared from the teachers.

Siddharth Maturi: So as learning says it is a repetitive. More you practice, more you get the…

Nithin Kurian: Better understanding. Right.

Siddharth Maturi: So I think yeah, what is happening in the class and the notes they have shared from their classmates should basically…

Nithin Kurian: Match, yes.

Siddharth Maturi: So I think that should be the first step. As in all the students or students who are willing to share their notes should have the same understanding of the topic.

Nithin Kurian: Similar understanding of the topic at least, otherwise it will create more confusion rather than better understanding.

Siddharth Maturi: Similar understanding of the topic amongst the peers.

Nithin Kurian: So how can this be validated or how can the similar understanding of topic come to pool and create a common note where student can just refer that and his understanding of the topic is in sync with what he has learnt and almost complete.

Siddharth Maturi: Right. Again going back to this if best option to any student is to go, take the notes from the teacher.

Nithin Kurian: Teacher, right.

Siddharth Maturi: …so that it is direct that what she is teaching is already there in our preparatory material.

Nithin Kurian: Right. So what if we are able to incorporate the teacher's notes and then understanding that is coming from the students from her class basically and compile that all into the that common repository wherein a finalized editable version of the note is present for each and every student to learn.

Professor: What I would like to add as part of my own experience is that these books where students or somebody annotate it, like say sometimes we call it their own used textbooks. People actually highlight it and write their own notes. I find it to be much more useful than just the raw textbook alone. So that is what you probably hinting at in a physical form that should be. In repository it would be easier I guess, the annotation can be captured and all that.

Siddharth Maturi: And can we mention that so and so paragraph, so and so line?

Professor: Right. Yeah. That is a great idea.

Siddharth Maturi: Yes, annotations between in the books?

Professor: Yeah. So he also talked about editable, being editable, yeah.

Nithin Kurian: So basically you will have an initial content that is being uploaded into this repository which can be edited by all the students participating in the class. So this gets keeps on getting iterated until it becomes a refined note, refined content. And it will always be in line with

what the teacher has taught in class because the students who have attended her class are basically the people who go on and edit at this content.

Shyam Paul M: Yeah, so do not you think there will be a problem if every student can access the repository because like they can make changes and?

Nithin Kurian: Yes. So again there should be some kind of administrator that should be in place who should have super access, who should…

Shyam Paul M: Find.

Nithin Kurian: …periodically go through the content and make sure that unnecessary or such content are not available.

Siddharth Maturi: So administrator should have a content review team who keeps on verifying.

Shyam Paul M: Verifying for everything.

Siddharth Maturi: Right.

Professor: Also I think it also addresses the fact that sometimes when school or teachers in general write their notes, they write it from their own perspective, their own understanding. And they do not understand the what they call the curse of knowledge, I have read somewhere, is that they do not know what it is to be a learner at the first level. So they can probably get down to some level but they probably are not really getting there. So actually students pitching in and making it richer, this helps the other students also sort of get up to speed with the teacher's notes. So I like the direction in which we are going.

Siddharth Maturi: So admin to a content review team where they will review all the content, like search that where the students are coming, editing the content, where they will review all the content like search that where the students are coming, editing the content. Then finally it comes to one refined content which is what teacher has taught in the class. So this is again linked directly to the repository we are using.

Nithin Kurian: So I think we should probably come back and see if our parameters are being met.

Professor: Yes. So keep checking back whether it all makes sense with the desired result, is it reducing the time to prepare as well as is it yielding a better understanding of the topic. And also if I remember the variable that you have in your conflict of interest towards that, it should move towards low number of notes being shared because that sort of reduces the time that person devotes in reading through so many notes. I think it is going in that direction, so usually that is the thing that you have to keep in mind.

Siddharth Maturi: Right.

Professor: Fine.

Siddharth Maturi: So we are also in ideal situation where it would be one content that teacher has uploaded, all the students would go through that content whoever who wants to add, edit, do the modification, do that and come back. So that is the same content that is being modified again and again.

Nithin Kurian: Again and again. So you have just one single content wherein the students does not have to go to n number of places or go through n number of content. He has just one content that he needs to go through and I think his understanding will also improve because the base is the teacher's content and students are building upon that content.

Siddharth Maturi: Adding their point of view.

Nithin Kurian: Point of view to that content.

Siddharth Maturi: Can we come up with the solution statement?

Professor: Yeah, sure. Why not? Just sum it up and see if you are leading to some such solution or something.

Siddharth Maturi: So in this case we can consider a situation where school has infrastructure for sharing this content through an Internet, then where teach can upload her preparatory into that, into Internet repository and students after class can go and access that repository, add, edit, prepare or draw our content, download content from that repository. I think we are all in the same circle.

Professor: Yes.

Nithin Kurian: And to add on, you will have an administrative team.

Professor: Yeah, of course.

Nithin Kurian: That will be constantly monitoring this repository.

Professor: It sounds to me like I do not put the word in your heads but it sounds to me like this is a wiki.

Siddharth Maturi: It would be like Wiki for notes.

Professor: Wiki for notes.

Siddharth Maturi: Wiki for learning.

Professor: So Wiki for that particular subject, for that notes. It could be made linkable and also good things can happen. And it needs an admin for sure, review team which makes sure that, people are not deleting content or leaving it in there, putting in content that does not belong there. Yeah, good. This is going somewhere. So any other ideas that you can think of. This is one concept looks like or you can even…so there are two ways you can go. Sorry, you have something to…

Shyam Paul M: (())(15:22)

Professor: There are two ways you can go about. One is to build on the same idea and see if you can think of your own experience. Another way is to already envision what could be some problems downstream that you would face, that you can probably address and see if it all fits it. Like I like what he said, that I do not want people to keep writing some kind of content and does not belong here. So we have that, so can you think of that to make this solution richer? Any which way, I leave it open to you guys.

Siddharth Maturi: So one would be incorporating a learning management system inside the school where the infrastructure enables this kind of system to happen. Then we already have few

existing products like a Google Classroom or Wiki which can do this kind of, which have similar kind of functionality as well.

Professor: Yeah, that is good. So we are getting to non-packaged as we can go up there.

Siddharth Maturi: So as we see a problem in this whole process would be that school having that basic infrastructure to incorporate something like this. So that is the…

Nithin Kurian: That is bottleneck here.

Siddharth Maturi: Yeah, bottleneck here.

Nithin Kurian: Probably we might have to think of a solution where the infrastructure, the necessary infrastructure is not there as well.

Siddharth Maturi: Yes.

Professor: Sure. So we are going to start on that topic. So this guy is the one, similar and no, I am sorry, school without the infrastructure, so that is one condition that you can talk about. So in case somebody pulls the plug on the Internet, also there is things that you can still do offline.

Nithin Kurian: I think essentially we would have to build a similar kind of repository but it should be offline.

Siddharth Maturi: Offline, yeah. And probably if the school does not have infrastructure, the students and teacher should have a common ground or common repository like a system outside school at least where they can like what WhatsApp is partially trying to do in terms of sharing notes nowadays. Like they collect pictures and put it up in their WhatsApp group. So like a similar kind of WhatsApp group if teachers and students can come up with a common system outside the school, just in case if school does not have infrastructure which is required, so then also it leads us to a similar kind of a solution where teacher can put up her content and students can go online, access.

Nithin Kurian: I think there are some already existing applications, be it on the Android platform or on the Internet where students and teachers can come in and like you mentioned Google and

so on, where students can use that existing infrastructure and then put it in the content. So now it is no longer dependent on the school infrastructure, it is only dependent on whether students have required infrastructure at home to access this particular application. So if a laptop or such devices are not available, at least a smartphone should be available with the student so that this kind of applications can be made use of.

Professor: Okay, good one. What I am hearing is that schools do not have the infrastructure, but students do have some kind of infrastructure and we will use that.

Siddharth Maturi: Yes.

Nithin Kurian: Really.

Professor: Perfect. Okay. So that is the basic assumption here.

Siddharth Maturi: Yes.

Nithin Kurian: yes.

Professor: Okay. So students (smart), okay I will let you write it.

Siddharth Maturi: In a situation it is not necessary that students should have a smartphone, like my brother is in his 11th standard right now. He uses my mom's phone where they have a common place where teachers come, put up their notes, they share notes with their classmates. So this is already a process which is happening today. In case school does not have a repository or infrastructure like what we would ideally require.

Nithin Kurian: I think even during our customer journey mapping we got several insights regarding sharing, and one of the key platforms students were using across the board was WhatsApp. So that is a very rudimentary way. Now we are taking WhatsApp one step further and incorporating a repository like this into some that kind of an application so that sharing can happen through that application and you have a proper repository existing in that kind of application.

Professor: Okay. So is it possible to actually make this specifically for note taking? That is what you are saying. So that is where you are going with this that this app will be specifically, I am saying the word app but for a lack of better terms, is it will primarily be for note taking and sharing. So it will keep going into that repository. So it will solve sort…

Nithin Kurian: And all the features of the existing repository would be part of this application as well. Students can keep uploading their notes, the common repository can be edited from individual note content, there will be an administrative team who will be adding members, who can take out members, who can keep a track on the content.

Professor: Okay. And I did not see that as a note but the LMS, Learning Management System also coming into play. So we are not just talking one course but actually bouquet of courses. So total package of courses. So all the teachers can also sort of plug into the ecosystem. Maybe there is two courses per teacher, so that could also be part of your system. Interesting, okay. What else? So any problems downstream with this that you have not covered, by installing are you introducing more problems for the school? What are those? If you can catch them here, we can even address them right here.

Siddharth Maturi: One thing would be if we are talking about situation where schools do not have the infrastructure that is the basic problem where they are asking their students to probably partially encouraging the students to do something like this outside their school which schools should be doing right now. So I think that would be one problem.

Nithin Kurian: Then what about motivation from individual students towards adding this content? So my understanding is that students are already packed, students are already pretty much engaged with what they already have to learn. So this is an additional activity that they have to do and does not have any kind of reward that is coming to the student for doing this activity. Imagine I am the best student in class in terms of taking notes and learning. So what motivation do I have as a student to go in and upload my particular content and ensure that my peers are learning, especially in this competitive environment that is one thing we have to look at.

Professor: And motivation for the share up.

Shyam Paul M: Sharing.

Nithin Kurian: Yes. Sharing of the content.

Professor: So that is one problem downstream. Another thing that you are saying is offline, I mean off the school hours, school is supposed to be to have all this when they are in school but now we are encouraging them to do it off the school hours. Is that debatable? Whether it is for the right thing to do or not?

Siddharth Maturi: So it is also demanding students not to engage in other co-curricular activities, spend time outside school time to do what school is supposed to be doing.

Professor: Right.

Nithin Kurian: Supposed to be doing, exactly. So yeah, it somehow ties in with the problem that I mentioned in terms of allotting separate time to do this particular activity and the motivation associated with it.

Professor: But in this again since we are talking about problems, in this I am not seeing how these pictures of my notes will actually act, I mean as another is it that your original problem that if I add too many versions of the notes, it is actually leading to Oh God, my time of preparation that I have to look through all these notes before I can figure out what is going on in the class. So is it compounding the problem then?

Nithin Kurian: No, repository should have only that one content. The repository irrespective of its, whether it is that kind of repository or on the app, it should, it will only be editing on that one basic content.

Professor: So you are making sure of that.

Nithin Kurian: Yeah.

Siddharth Maturi: In this situation we have an administrator who would be running, managing a content review team. In this situation we can have a class representative who is taking the lead and making sure…

Nithin Kurian: Basically an administrator again who would be ensuring that there is that one content and students are contributing to that one content. And that one content makes sense for all of the students to learn.

Professor: Okay, interesting question would be, how will they do that?

Nithin Kurian: So that is where I will come to that point of the individuals contributing and also for one dedicated or dedicated team.

Professor: No, my question is more technical in nature. Like I take a picture, how may I edit that? So you want that to be the only content and but you want also students to sort of, let be editor, is not that what your original idea was?

Siddharth Maturi: The upload need not necessarily be in terms of image for outside. So it can be a word document or a PDF or, so it could be any kind of media file.

Professor: They are not doing it on school infrastructure but they are using their own infrastructure to do this and it is probably on cloud space.

Nithin Kurian: Yeah.

Siddharth Maturi: On a shared space, yeah.

Professor: So one thing is also I am noticing that they both are tech related ideas.

Nithin Kurian: Yes.

Siddharth Maturi: Exactly.

Professor: So that is one thing for sure, that is the common thing. So students have to well versed with tech or the teacher or both, so that would be a basic requirement for you guys.

Siddharth Maturi: Yes, right.

Professor: Okay. So does that mean that the teacher is not going to share their note with, or whose the picture of the document that is contributed is from the student, from any student, the star student?

Siddharth Maturi: It can be both ways sir. If teacher is also interested in this kind of a system so that it helps us students, then teacher can also pitch in with her content which would be the best content again. If teacher is not interested in something like this, then we will have to come up with the class CR or the best student in the class or students can come up with a choice who has the best content of the all. And they can, remaining students can keep adding on that.

Nithin Kurian: Basically it would be the administration team for both irrespective of how it is, who would decide that base content, that core content. So if the teacher, like he mentioned, if the teacher has the note, then that would become the base content, that would be uploaded and students would have the ability to edit that content. If that is not available, then it would be based on the decision that team is taking as to whose content would be the best to be the base content and then the similar activity will happen on that.

Professor: This is also another one, right, so they have textbooks already in lots of places, books, not textbook, it is books which are prescribed as textbooks for the course. So is that not a good starting point for whatever you are talking about? It just randomly occurred to me that, that is something that they always carry around and all that.

Nithin Kurian: Right. So are you we add that also into.

Professor: I am asking you, this is your idea, you have to do it. My job is to ask the right questions.

Siddharth Maturi: I think if the infrastructure in both the cases allows students to have the textbook also in this repository, be it a school repository or their own private one, then I think it is more easy for the students as well to refer their textbook and the shared content at the same place.

Professor: That will be interesting.

Siddharth Maturi: That would be one. Another thing I was thinking about the editing parts is not every student would want to write their personalized note on what they are reading like you said about annotations in the book. I go through a paragraph and I would want to make my point of

view on top of that page. But every student need not necessarily be thinking the same thing about that paragraph.

So I think if a repository has a system where textbook and notebook can be put in at the same place, and on the textbook I write my thing and notebook is where base note is shared and people keep editing or keep adding value to that base note which is shared commonly to everyone, is the situation where the sharing is happening. In the other cases, where textbook is there I write my own understanding of that topic in my textbook in the same system.

Nithin Kurian: So the textbook will be personalized.

Professor: Right, that is what I was thinking.

Nithin Kurian: They both would be general.

Professor: So there is a generic equation where this is the best available content.

Nithin Kurian: Content for that.

Professor: And then you can personalize on top of it and not, if you, you can probably have one option of not sharing it also.

Nithin Kurian: Yeah, absolutely.

Professor: That is the user, the student per say. Very interesting direction this is going. So any other problems, yeah, so that is around that path. Can you envision anything else that may, this may lead to which you think is a problem?

Siddharth Maturi: This again sir, students maintaining their infrastructure is not in line with less time to prepare again because they will have to spend time outside the school time again.

Professor: Right, that is a good point, very good point.

Siddharth Maturi: So I think time factor is a question here again.

Professor: So if it is provided to them, it is far better than, so they have to contribute to this and make it richer and better.

Nithin Kurian: I feel the contribution per say might not take a lot of time but the editing, the actual editing of the base content to get that finally note, that would be the one that would take maximum amount of time and effort. So if you ask me as a student to upload all my notes into a repository, then that might not take a lot of time. But to sit and see what content should go into that the final note, that could take some time.

Siddharth Maturi: That is again depends on this administrator. If the school provides the administrator, it is less time consuming for the students. If the student is administrator in the system like if they are maintaining their own infra, the student or the teacher who is part of that private system should be an administrator, so which is demanding them to have, invest more time into this process. So I think that part is editing, doing the editing part, review part.

Nithin Kurian: Review part and all that would take lot of time, yes.

Professor: Okay, fine. So it looks to me like you want a repository, would be on a system that the school has or it is an ad hoc system that the students get together and contribute towards a build or read it could be. But this is the starting point. So at this point I would like you to write down what are features that are coming out of this. How would you qualify? How would you describe this repository saying these are the things that we absolutely want, these are the things that we should, we can have sort of a feature?

Suppose you are looking for a repository, what all features should it absolutely have? If you can write that down, sum it up from what that, so that way it is easier for you to look or build. If it is not there, you can build. If it is there, you can look for something in that. So that would be our next step to end this whole process.

Nithin Kurian: So one would be.

Siddharth Maturi: Basic cloud infra.

Nithin Kurian: Basic cloud infra, yeah.

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Siddharth Maturi: One would be the basic cloud.

Nithin Kurian: Cloud or some kind of server infrastructure.

Siddharth Maturi: Server, yeah, where upload and download is.

Shyam Paul M: So they can upload pictures, PDFs, PPTs everything.

Siddharth Maturi: And in terms of upload, it should have a functionality where it can accept textbooks in terms of PDFs and notebooks in terms of a proper note taking application.

Nithin Kurian: Right. So it could be in doc format or it could even be in image format.

Siddharth Maturi: Right, option to access textbooks in doc or PDF, image. Then note taking application.

Nithin Kurian: Within this repository.

Siddharth Maturi: Within this repository where that can take their personalized notes on top of this or access the base content and start writing. So basic note taking.

Nithin Kurian: Application.

Shyam Paul M: Or a feature.

Siddharth Maturi: Feature, yeah, note taking feature, so this in terms of upload. So someone can upload their documents or their notes onto it. And download would be with respect to the requirement of a student, what kind of a document or image or note they want to download.

Nithin Kurian: So the feature would be download basically. Next would be editing.

Siddharth Maturi: Share basically, to upload the.

Nithin Kurian: But uploading and downloading would essentially take care of sharing, right.

Shyam Paul M: Students can share with other students like specific student. If I want to share note with you, so to not all, I just want to share with you.

Nithin Kurian: But then again we would be deviating from our original.

Shyam Paul M: No, I am saying like Google drive. So I have a content and I want to share, so I will just add your...

Siddharth Maturi: So the situation we want to deal here is that low number of notes shared.

Nithin Kurian: Essentially we do not want to.

Siddharth Maturi: We do not want to share.

Nithin Kurian: Yeah, we do not want to encourage individual sharing but we want all the sharing to happen so that it can contribute to that one master note.

Siddharth Maturi: So edit would be then save as anyway the saving of that edited content. I think these are the basic requirements for this repository.

Professor: And did you have the admin?

Nithin Kurian: I think we should also, because of the way the admin would be handling this content, we should always have like parallel content being saved all the time because if I have to go to some point in the past and see what the structure of the note was at that point of time, so that I can come and edit or remove whatever it was, then the past content should always be available with the admin to ensure that the content is.

Siddharth Maturi: Content is missed.

Nithin Kurian: Missed, yeah.

Siddharth Maturi: So the entire log has to be present in the repository.

Nithin Kurian: Yeah. So the log could either be in terms of a certain period of time after which previous content is removed or we should find or figure out some way of how the log should be maintained for the system. So log feature would be essentially the feature that we are talking about.

Professor: You mean like versioning, some of their versions maintained.

Nithin Kurian: Yeah, basically a version. Yes, that admin general admin features of adding users to the group, removing users from the group.

Siddharth Maturi: This would be add user and remove user and the content review team is also under the admin.

Professor: We still have not addressed the motivation of the sharer. So how do we keep the motivation up there?

Nithin Kurian: One thing I was thinking is some kind of rewarding should take place because essentially this is an activity that is conducted within the classroom itself. If we can provide some kind of a reward system to the base content is again, since there is administrative team who is looking at, who is bringing in the content and they are the ones who are editing and building that final content. You can easily understand who is bringing in the best content who is providing maximum contribution to this. We can probably provide a reward system.

I have seen a badge system, a badge given to the top contributor, people who answer questions. In forums they have this badge, also in learning management system also I have seen badges being rewarded. You can have colored badges for this and for that, so that is possible.

Siddharth Maturi: Yeah. This can also linked to some sort of assessment within the school.

Professor: Sure, yeah.

Nithin Kurian: Or continuous evaluation system, you can bring this into the continuous evaluation system, so the best contributor are based on how much you are contributing to this because you are essentially ensuring that everyone in class is learning out of this content. So the best contributor can get positive in terms of assessment also.

Professor: What else? I think all the basic features are covered here. So if you have to look for such a repository, you know what to take and see, compare whether they have all that.

Siddharth Maturi: Base features.

Professor: From the admin perspective, and the badges, motivation we covered. I am just trying to see if you have anything uncovered. Books upload was done over there, upload is there, they will be able to annotate as well. Yes, that is also there I guess. Yes, edit and saving.

Siddharth Maturi: Note taking feature too, like their personalized notes.

Professor: Right. So all this should work irrespective whether the school has the infrastructure or not, so this covers both of them. So if you are going to build a system or by a system, I mean…

Nithin Kurian: User and exit system.

Professor: User and exit system, this is what we need. I think that is pretty much it. So again going back, do you see that this is reducing the time for preparation? Is it leading to better understanding the topic? So that is one last cover and we are done with this exercise.

Nithin Kurian: I think the better understanding part is pretty much covered if there is master copy of all the notes that is being prepared. In terms of time to prepare as long as it is an administrative team that the teacher is assigning or the school as such is assigning to take care of this activity, and they are fine with it, or probably it ties back to their evaluation or assessment and how they are graded and.

Professor: I would write that down. That is important. So you are linking it back to the evaluation. I got it. So this is there, this is what you are saying.

Nithin Kurian: Yeah. So that is, this activity is positively affecting in terms of the marks that they are scoring. So the motivation is being covered. And because it is only a couple of students or people who are looking into this activity, the time, the overall time taken by students to prepare is definitely there.

Professor: I have seen some platforms with self-evaluation tests and all that. So would that be, would that, I mean we do not have to throw feature in that because it is there but is it addressing your basic conflict? Will be my question. Will that evaluation tests, self-evaluation that you can have online?

Siddharth Maturi: Again problem here would be sir, it might be accepted by the teacher or might not be accepted by the teacher. Teacher would want to evaluate her or his students.

Professor: Yeah, in addition to that I am saying, you already have that here. Continuous evaluation is there, grading system is already there. So the official external (())(40:53)

Nithin Kurian: The self-evaluation would be in terms of having a list of questions that the student need to answer.

Professor: Possibly, yeah.

Nithin Kurian: So who would be, the administration team itself would be uploading that or creating that content.

Professor: Yeah, like this course for example, for our students here they have a sort of mechanism that they are making sure that yes, I have learnt this topic well. So that could be one way or in between the video it is paused, there is a quick test that they score, it is totally, I mean nobody is grading them, nobody is figuring out to keeping track of how much score they have. There are some things like that. But I agree with you that it may lead to increase in preparation time. That is one thing for sure. But it may lead to better understanding of the topic for sure because they are doing it at your own pace, and doing that. I mean I leave it to you guys. If you think it is helping you, you can add it, otherwise leave that.

Nithin Kurian: I think we can add that personal evaluation. Probably we can have this also tried to the way this entire system is working sir.

Professor: Very nice.

Nithin Kurian: In terms of you read a certain topic and I come up with a question from that topic and Sam comes up with another question from that same topic, so the more kind of questions that you are seeing, the better your understanding of the topic, obviously keeping in mind the fact that the time would be a constraint. So probably again the administrative team will come into place and select the best set of questions that are tied to that particular master note. So you go through the note and you go through this best set of questions that are prepared by students and I think the learning would be pretty much complete there.

Siddharth Maturi: This would also become like a second textbook for that topic.

Nithin Kurian: Particular content.

Siddharth Maturi: Like a textbook has a chapter, then questions with respect to that chapter. Similarly a base content and students come up with their questions or doubts or whatsoever. It also becomes like a second version of the textbook.

Nithin Kurian: And that is much more in alignment with the learning that has happened out of the textbook content.

Professor: And probably at a later stage, the teacher can go and check it out saying this is what I wanted to teach but what have students taken from this. So this could be a comparison, okay so this.

Nithin Kurian: It is a form evaluation for the teacher also, self-evaluation for the teacher, like you perfectly said.

Professor: For the teacher you are looking at the content and saying what I wanted to convey is this and what they got is this. Is there a miss-match or is that the same? Very nice, I liked the direction that this is going. Okay, next step after this, so we are done. So first step, let me revise what you guys did. So we started with the basic results that we wanted, desired results that we wanted and then the team started brainstorming on what all possible ideas that could be. A little detail that came in between was that what about schools with infrastructure and without infrastructure.

So they thought of this classification and then started clustering their ideas around these two topics, sub-topics so to speak. And eventually all this boiled down to a repository, master idea and of which the lot of branching going on. And then at the end the last step was to paraphrase in terms of requirements or features if you will saying that these are absolutely what we are looking for in a system whether it be a repository. But my basic, we keep checking back whether my basic desired results is being met or not and now we have tons of features there at the bottom of the table where we have some features that are basic to the system, some which are on the periphery, like the grading system is in the periphery, continuous evaluation system is in the periphery.

But it sort of ties back in to the whole system and then again it flows back into whether the desired results are met or not. So this is how sort of a broad structure of how solve works. They did it with some of my questions I asked in between, so that helped them structure their thinking as well. So if you have some facilitator, a teacher guiding the process, it really helps the brainstorming session to go towards the goal, is our recommendation from the system.

So hopefully this was useful for your own solve stage. I urge you to work on a real problem that you are working on and apply this as the team here did, so good luck with trying out solve stage. We will see you in the next stage which is test or prototyping, putting all this in action, in real-life action, seeing it for yourself in front of your eyes and then of course the last sub-step would be to take it to the customers and see how they react to this which is the eventual goal. Okay, thank you. See you in the next module then.