Transcript

I want to take a minute to tell you about my proposal for my project and what what I'd like to do. But I want to start with talking about the current reality. And what we're looking at right now. I mean, first off, teachers are facing a lot of institutional inertia. They want to do things differently. They want to do things better their teachers want to do better by their students. But there's a lot of things holding them back. Some of it's just with working with the other people working with administrators. But there's a lot of institutional inertia that holds you back and keeps you doing what you've been doing, because it's been working. And so it's hard to change sometimes. And it's hard for us to get everybody in all the stakeholders to change. There's also a great fear of the unknown. You're going to do some new things, and you're not sure how well it's always going to work. And so people get very nervous about that. And then there's just the fact that we have assessments that we have to deal with, we got government reporting, and those are really hard boxes to fit new new models into and if you do things new How do you assess it? How do you report back to the government what they're doing? I see it all the time. I deal with it daily in my department where we have to fit things into some really, really tight boxes. But what we do really doesn't fit there. What's best for kids doesn't fit in that box. And but you have to still live with that you have to play the game and you have to work it to work around that. And that's really difficult. So a lot of times, it's just easier to go along, keep doing what you've been doing. But it's some examples that really diverge from that, that really stand out to me and I want to talk for a moment about that because this this is inspiring, and this is where a lot of my passion comes from. First off, I got to see presentation Bryan Bryan Aspinall, and he was talking about one of his students. He was doing a probability lesson with middle schoolers and they just weren't getting it. They weren't. They weren't really understanding. They weren't really doing it. They just kind of it was coin flipping and they really didn't flip the coins. They really didn't get a whole lot done. And one of his students one that was going, that was really up. He said it was more special ed, slower learner, and was tracked to just, you know, go and go get a job, but not really do anything. And nobody really gave him much credit. He actually went home and wrote this program to do the coin flips. And part of it was to just do the thing that he they were having trouble doing. He was just interested in it. But he also had said he wanted to prove that his teachers theory was wrong. He wanted to prove that, that if you did the coin flip a million times that wouldn't come out 5050 almost on average. And he put all of that in there. He ran the math, he did the loops he came up with all of it demonstrated an amazing understanding of probability and of doing doing testing and proving proving theories and all of that in this one simple exercise that now has been something he did Mr Aspinall uses in In his classes over and over, and I get to see

some of that presentation that he gave. And then something from my own class was one of these a drawing like this, we do a solar car. And my students were working on the turning for the solar car. And they spent hours working through this and trying to get it working. And they were running numbers and running angles, trying to get it to work right and fussing over and fighting over it. And then one of them, they finally saw that they got it all working. And one of my juniors was sitting there and he looked up and he goes, Oh, so this is why we need trig. It was that moment it was in that inspiration that they had discovered the reason for what they were doing and they had really worked through the problems and, and really crafted that learning on their own. Now, all this goes back, starting back with Dewey, around the turn of the 20th century, he had wrote that students would thrive in environments that allow them that experience allows them to interact with their curriculum. He really thought and believed that all student It should be able to take part of their own learning. And you hear that today. But this is really something that's been around for a long time. And so do we started talking about that? Well, Piaget picked up the picked up the torch from there around in early to the mid 20th century concept schema, basically that those building blocks and mental models is how you make sensitive information and how you put things together is that constructivist theory that you're going to build and put it together. And you could see that actually working in that solar car example I gave you that they were building these little blocks together, they constructed their own learning. And but then moving on from there in late 20th century peppered from MIT had really built on that what Piaget done and he developed actually a program called logo to teach math in a new way. And I actually used a logo later in the 80s. And had done things with it is really cool because you would program it, you had this little turtle and you had simple commands and you gave it directions and degrees and you would do things And you could construct the math learning from that. And he would do that he would have the students walk out a pathway, and then go over to the programming in the turtle, and they would just discover and learn what was working and they really owned the knowledge they were doing. He proved that it worked really well. And through all this work at MIT, he eventually started working with Resnick, who was also at MIT, and they work together and lab and resinate eventually developed scratch, which you saw earlier, from Brian Aspinall present part where his student had built that coin flipper in Scratch. Well, scratch was developed out of MIT, and it allowed for more coding classes, more class integration opportunities, it was easier for students to get into you could bring it down to lower level students, there's actually almost no reading. I've actually had a friend of mine who his his son learned reading by programming scratch because he was reading the things there and was learning learning the reading and learning how to do it just so you could program better and better and was learning reading through that. So again, he was building his knowledge he was constructing it from something else. And all of these all of this together really gets into something called computational thinking. And computational thinking is a way

of problem solving. But being very systematic about it. It's the foundation of computer science. It's use in computer science is not about coding coding is just one of the things you do. But the big part of computational thinking is this idea of abstraction that you you build up pieces of a problem, reusable parts, those those mental models that Piaget was talking about, decomposition, where you break a problem down into its smaller pieces to really get at the heart of it, and little bitty parts and deal with small pieces of it at a time. You saw that in pieces with Paget and logo and what they were doing there and you see it in Scratch as well. Pattern Recognition again, dealing with logo and dealing with Piaget where you built up you're like wait, man, there's a pattern here. And I can keep doing this. So if I take this these abstract parts that I put together and I use them differently, I can build Build up something better. And then you come up with algorithms and algorithm design and, and really algorithm is just a fancy word for just an order of operations. You know how you're going to do something. And instructions. That's all it is. But we use that when you do these four things. And it really gets to better problem solving and helping students construct that knowledge and really owning it. And really getting to the heart of it and being problem solvers and getting deeper into the things that they're learning. Not just learning it the surface for a test, but really learning it deeper. And so this is where all the research bounds. So here's what I'm proposing. I would like to work with teachers in my campus, let's let's just say, Miss Butler, one of our English teachers, and she wants to do more with her students in regards to Lord of the Flies and do something unique and different. Instead of just videoing the students as they act out a scene, do something a little deeper with computational thinking and coding in it to where it's You can go deeper with that. And really take the students and try some new things and allow them to take some new ownership and try some new things out, but she's not really sure what to do. And I'd like to help her with that maybe bring in Sphero to do that, and let the sparrows be the actors and help her work with the students to teach them to program the spirit to be those actors and to show that emotion of what's going on. But then take it a step further and bring in yet another Sphero with who's a female. And now you're what would happen if there was a female on the island in the story and what how would that change it and the kids can get into it, but they're really digging deeper because they have to convey what they want to show through the Sphero. And they have to really understand the emotions and the thoughts because that's Pharaohs are just a plastic ball and really go deeper with that and get into that coating and really think through the problem even deeper and gets us a really good problem solving really good learning with that.

But to sustain thatI can't go around and help everybody in the building. I'm only one person and I've got my classes to teach as well. But I want to help sustain that and make it something bigger. So to help sustain it and do that, I'm going to actually pull myself back a little bit and leverage the power of my students. I work

with my students, they work with other teachers and throughout the district on things and let them teach, teach Miss Butler how to do that and work with her students. And they would actually be the ones facilitating next I got more students and we get more people engaged and more word of mouth and more people doing these things, and make it grow more organically. And that's really what I'm proposing there is to create that organic, grassroots we're, we're helping I'm helping the teacher put in this type of thinking and doing this and taking that design thinking model and spreading it out and using students to help build that and let my students take the ownership of that and then build that with other teachers as they want to employ those techniques that my students know and they know all too well. But let other students know that and get other students actually teaching that in driving that, that that method of taking ownership into their classes and bring in that computational thinking those coding activities in themselves.