Authenticity and Autonomy

Glenn Wagner- What you're going to see is something that I would have done normally, so I'm not doing this for the cameras because you guys are here, this is something I would have done no matter what. So I think what you're gonna see in one class, in my Physics class is you're gonna see a little bit on the upper end of Bloom's taxonomy. The kids are gonna get a chance to create and analyze circuits in such a way that we're gonna be playing with some Play-Doh and we're gonna create a circuit that they've never made before but they have to understand some of the basic concepts behind it. So what you're going to see I think ultimate in that class is some autonomy in what they're going to choose to do. They're gonna of course get a chance to work with a partner and I think that's kind of an important part in all this. So there's a relatedness aspect to that and then finally they get to work at their level of competency. So you know one group of students may do this fantastic circuit, whereas another group might do a more rudimentary one, and that's fine. And I mean that's life, you know that some people are gonna go for it and some people are gonna say that's pretty good, I'm happy with that. And I have to be happy with that too. I can't have that as necessarily as the standard. And at the end, you're going to see the students basically document their circuit. We're gonna use a little bit of technology and they're gonna post a video based on, they're just gonna more or less explain their circuit and how it worked. Okay, are you ready? Okay, let's do a little bit of a warm up, we've been working with electric circuits all last week. You've been having these little concept tests a fair bit last week, I've got one more for you, it's a little more challenging than the other ones, are you ready? Here we go. So here it is. Two light bulbs A and B are connected in series to a constant voltage source. When a wire is connected across B as shown, bulb A, well there are your four answers. If I can get you to think silently to yourself for the next 30 seconds or so, no table talk. Here we go, formulate an answer. This is where I think that form of assessment piece comes into play. So I think traditionally we think we know that they're learning, you give 'em a quiz or a test, they write answers, you bring it back, you mark it, and then you say okay there is your grade, you know, you learned a little bit, you learned a lot, I'm not so sure that's true. I think though if we change the process by which we get kids to think about learning is getting them to chat with each other in productive ways. So, for example, in my class we do this idea called peer instruction and the idea is that the kids will receive a question on the overhead or the blackboard and it's a concept question and they have to think a little bit about the answer. It's not like a low level Bloom's taxonomy question, they gotta actually use some of the knowledge from before and they have to work out the yeah, yeah, yeah, okay great. But they do it silently to themselves and then they turn to a partner and explain their understanding. Short hair to long hair the answer you chose and why. Long hair, you listen carefully, paraphrase back, or disagree accordingly, here we go. Because the whole idea, if you can explain it, you understand it. And to me that is the key to getting that feedback to the kids.

- It doesn't have anywhere to go in its path, they're in the exact same voltage.

- [Girl] So wire B is connected, one of them is the exact same?

- [Boy] No, wire B is burning brighter 'cause A is acting as a resistor.

- But they're asking about light bulb A, they're saying what would light bulb A do?

Glenn Wagner- Yeah, it's going clockwise, yeah. And would that matter, I wonder?

- [Boy] Yeah I think it would matter.

Glenn Wagner - You think so?

-[Boy 2] I don't think it would matter.

- You don't think it would matter?

- [Boy 2] It's gonna go through like the path of least resistance, it's still gonna skip B.

Glenn Wagner - Yeah, okay, yeah. Okay are you ready? Okay, flash me, show me what you got. Okay we got a smattering of ones here and a smattering of twos here. Alright this is gonna be a little bit crazy but I want you to hunt down somebody who's got a different answer, keep 'em up high. And I want you to see if you can convince that person the answer you chose and why, here we go. Okay, you had a nice spirited conversation, I'm kind of curious whether you guys have changed your

mind. Flash me, show me what you got. Okay, so it looks like we seem to be unanimous, the twos, you switched your answer, alright. So I'm kind of curious, what was the thinking that went on. So Ainsley and Lexi. Ainsley what were you and Lexi thinking ultimately? What did you originally pick and why'd you change your mind?

-[Girl 1] So we originally picked two because A would be as bright as like it normally would without the wire. But then the people that said two, or one said that it's compared to B, so then A is brighter than B.

- [Mr. Wagner] But why would that be?

- [Girl 1] Because it's gotta go through the wire so it's the path of least resistance.

- [Mr. Wagner] Okay.

- So it's not going to be--

Glenn Wagner - You guys are exactly right. It is number one, it is gonna burn more brightly. So this question came up twice though with Shawn and Will. Does it matter which way the current is flowing? If it was flowing say clockwise versus counter-clockwise?

- [Students] No.

- Why not?

- [Girl 2] Because the current still gets to A.

- [Boy] Electrons don't disappear from the wire.

Glenn Wagner - So I'll know that they've learned it by watching them explain their understanding to others and I can just walk through the classroom and I can watch the kids talking with each other. I can see how animated they are or I can see where they are stuttering or stopping, you know that type of work. So that's how I know, get them to explain things, massively important. Get them to take something and teach somebody else. That way I also know they they're learning. So well done, look, remember the whole idea behind this game is, you know you can make mistakes here and then chat with each other, see if you can correct your thinking and there's nothing wrong with that, that's exactly what I want to see happen in our class, okay? Beautiful, okay, cards away please guys, thank you very much. So here's what I would like you do, you're gonna grab a white board in a moment, and you're going to create an idea, you and your partner for a circuit you might wanna create. So negotiate, alright? And then you're gonna plan it out on your white board and sketch it on there and then I want you to call me over when you're done. And just so I can give you the magical Wellington Wolverine check mark, okay and then off you go. Now before we go any further, you're gonna construct this thing and then you're gonna evaluate it, right? We'll get to that in a bit, but I want you to remember from Friday that what I want you to do is to document at the end with this thing. In the great lab I'm looking for a conversation around ideas of what it is they're gonna want to create. I wanna see them come to negotiating agreement on the product that they might produce and I also want to see them working together in producing that product which makes perfectly good sense. That gives them that autonomy, that relatedness, and again that sense of competency, that level.

- [Girl]Okay, so we'll do, oh, okay.

- [Boy] So when it comes off, the light bulb will go out. So this can be acting like an LED or whatever. And then you can have...

Glenn Wagner - So I see a lot of autonomy, I think that's awesome which is exactly what you can do with the activities like this. 'Cause to me giving the kids autonomy is the number one thing you can do in order to ramp up that intrinsic motivation, motivation to really want to learn and you can hear it back there, I mean they're

doing a fantastic job with that. They're relating to each other really, really nicely and you see them interacting with each other in a very friendly and positive way and they're also working at their level of competency. In other words, some of the kids are doing simpler ones versus ones that are much more complex and that's okay. So the kids have been given the instructions to create a circuit with Play-Doh and with six LEDs and a battery. The idea is for them to create not only an interactive type of device but something that is also useful. So we've got some students that are creating an intruder alert, others are creating I think a bowling ball simulation and understanding when the pins are down, the lights go on or off. So it's up to them where they wanna go with the creation on this thing. So the next step is to get a demonstration going, making sure the circuit hopefully works and it's okay if it doesn't, you want to see the process of actually getting there because some of them might run into some technical difficulties but they can still document what it is that they've done. So I want them then after that to take their cell phones out and describe what it is that they know, what is they've learn from it. So if you can explain it, you understand it and that's what I want out of this activity.

- So that means one pin is knocked over, these ones are kinda just like chilling there still.

- [Boy] And some of these, they're just--

- Chilling.

- [Boy] Mr. Wagner wants to do bowling.

- Yes, Mr. Wagner!

- Mr. Wagner!

- [Boy] Reset the pins, alright.

- [Boy] Drum roll.

- [Boy] Some will crash.

- [Boy] Yo, man.

- [Boy] That's good, so you got two, three pins knocked over so three lights went out.

Glenn Wagner - Every teacher wants to see their kid involved in learning. I have yet to meet one that doesn't enjoy that, you know, it's fun to watch your kids learn and of course you're just acting as the guide on the side or as an active learner, whatever the case might be, but turning it over to them, there's nothing better than that.