

Making Learning visible-Grade 10 science

Glenn Wagner- In the Grade 10 class with the optics, when we dissect the eyeball, like I said it's gonna be quite squeamish. The kids are gonna have a bit of fun. Once they get over that, and they start cracking open the eye. Basically, it's just identification of what parts of the eye they see in that cow eye. It has in common with their own eye. And so ultimately, it's a lot of play if you will. And that's something that I could go on and on about. But there is a value in that, in that structured play. To look at things and take things apart. Not necessarily having to finish a worksheet while they're doing it. Sometimes just being curious for the sake of being curious is incredibly powerful, incredibly motivating to learn. So I'm bringing more of that into my teaching practice, I find. That you know, here's something, you know. What can you learn about it? Here, I'm gonna give you about 10 minutes. Turn it on, and here's some other things, and tell me what you learn. I did that last week with a bunch of materials on refraction and lenses and so forth. And instead of me showing them how it works and so forth. Here, here's three or four of them. Tell me what you learn about light when it goes through these transparent objects. And the kids go back there and they play, and they create all these little creations, and so forth. But at the end of it, they've got exactly what I'm looking for. They know that light bends as it goes through these particular materials. And some bend this way, and some bend that way. Oh okay, hey here's something, let me sum up something here for you. Let me show you how the experts see this working. And then all of a sudden, they've got that base of understanding. And then you can take that and then keep building with it. It's all about the play, you know. It's often a very popular one. And the whole idea is to find out a little bit about how your eye works. And if you remember on Friday...

Female speaker 1- I definitely see how this is a closer real life, real world. Because in the real life, you don't just answer questions, you ask questions and you wanna go further than you normally would.

Glenn Wagner- So I don't expect you guys to become eye experts, I don't want you to be eye experts, but I want you to have some familiarity, of the importance of your eyes, and how incredibly delicate they can actually be. And you're gonna see a little bit of that today. Before we do that, though, we're gonna warm up our brains a bit based a little bit on what you watched on Friday. So why don't you pull out your flash cards, have them in front of you.

Female speaker 2- Like he's introducing a lot of new ways to learn. And at first, I only really liked the book work, even though I love to talk. But this is really opening up my mind.

Glenn Wagner - Now the whole idea behind these flash card questions, as you know is to give you a chance to be evaluated. Without it necessarily counting. But it does count. And as you guys know, or you might not know, but everything that you do kinda counts. It's kind like, you know, when you're going to get your driver's test. Which I think some of you guys will be getting there. You know, no one ever says that the driving lessons that lead up to the actual lesson itself doesn't count. You'd never say that in a billion years, right? And so it's the same with this. These little flash card questions, they all count. They all matter, they all do mean something. Even though I don't put anything in the mark book. That will come later on. But once you get comfortable with understanding the basic concepts, then you'd be ready for the test. Just like when you're comfortable doing all the driving lessons, then you're gonna be ready to do the actual driving. Makes sense? I think so, so that's why we do this. Here we go, are you ready?

- Yeah.

- Here we go.

Female speaker 2- He'll tell you why he's doing it, and it'll make you wanna do it more. 'Cause then it's kinda like reinforcement, knowing that you're going to be learning.

Male speaker 1- Just everything about groups that everybody's talked about, it's so true that we just... All our idea come together, and we're all working together to make an idea clear to each other, and just know what's going on.

Female speaker 3- I didn't really talk much, and it's just the one answer. And you wouldn't think about it more, you'd just learn it and that was that. But then when you collaborate more, and get different opinions, you think more in different ways, and changes your perspectives.

Glenn Wagner- Have a look up here. I'm gonna get you started. If you remember on Friday, we quickly had a look at the eye. Just to get you comfortable with it. You get the squeamishness out, and have a look at it. Remember an eyeball is simply a piece of meat. It's like a hamburger. If you had a hamburger in one hand, and an eyeball in the other, technically speaking they are the exact same thing.

Female speaker 2- Science definitely moves faster for me. 'Cause you're more involved within the classroom, and it's not just the teacher standing at the top giving you a lecture, stuff like that. So you're more involved. You're doing experiments and stuff all the time. So time really moves fast.

Glenn Wagner- This is in your package as well. And this is what you want to ultimately identify. Now when you go onto Flipgrid, you're going to see six things that I want you to identify. And each of you has to have the opportunity to fire up Flipgrid and do your presentation, and swap the phone over to somebody else. You only need one phone between the two of you. And then over here, I've got two things you're gonna need. You're gonna need a pair of forceps, and a pair of scissors. So everyone should have, yeah, enough said. You guys know what to get. So you're seeing what I think is a bit of authentic learning. So in other words, we're trying to take something from their textbook and the world of academia, and bring it to life. So what the kids are doing here, is they're working with some cow eyes that we got from the local butcher. And we open them up, and we take a look at the various parts of the eye, and also get them to understand what the function of each parts of those eyes are. Parts of those eyes, excuse me. So the idea is, again, to make it authentic to make sure that see where they're learning really matters in something in this world. Okay, when get a chance, I'm just looking up here. Place this thing on the paper as well. Over top one of the letters. And you can see how the lens magnifies the letters on this piece of paper. Just pick anything. Right here, did you do that on purpose? Put it over a letter?

- Yeah.

- Yeah, very good. That's awesome.

Female speaker 4- This is the lens of a cow's eye. And if you look through it, it's inverted. So the object on the other side is upside down.

Glenn Wagner- So they're trying to accomplish, I think, is a couple things. They're collaborating together around something that's really unusual for them. Kind of maybe perhaps a little bit gross, or out of their comfort zone, and they communicate with each other as things go along. Now intellectually, it's not a really high level of thought that goes into this. You know, identifying parts, and their function. We see that everywhere in this world. But what is important here is for them to actually get their hands on something that's kind of authentic. Something that they're never ever going to see again, likely in their life. And to know that what they see there is exactly what's going on inside their eye as well. I think that's gold in my opinion. Even though we're not thinking at high levels, but they're communicating, they're collaborating, and in a moment they're gonna be doing Flipgrid, in order to showcase their understanding. Which again, requires that sense of collaboration. So if you can explain it, you understand it.

Female speaker 5- So, all this liquid inside of it, is the vitreous humor. And then the outside layer here is the sclera. All these nerves in here, are not only the cow's blind spot, but also the tapetum, and the optic nerve that goes through here to the outside to connect to the brain.

- Oh my God. That's what it is!

- [Girl] Yup, that's eyeballing that.

Female speaker 1- He really has changed my point of view on how other classrooms work, and how much more open those classrooms could be if we just used... If we talked to each other more.

Male speaker 1- Here it's all, we talk to each other, and we get each other's ideas, and it's all about teamwork.

- [Cameraman] Do you want to come to school more?

Male speaker 1- Yeah, yeah.

- [Cameraman] Because of this class?

Male speaker 1- Because of this class. It's fun, I like this class.