Trades Summit Series: Strengthening Teaching and Learning for the Future
BCcampus: November 25, 2022, Day 2
Keynote: If It Ain't Broke, Break It
Keynote Speaker: Chad Flinn
Host: Tim Carson

TIM CARSON:
I'd like to take the opportunity to introduce Chad Flinn. Chad is currently the Dean of the School of Trades and Technology at Medicine Hat College. Chad has a strong interest in research and trades, vocational education and training. His master's thesis focused on the experience of trade students in the use and co-creation of open educational resources. Most recently, he co-authored a paper on strengthening digital teaching and learning pedagogies for trades, vocational education, and training practitioners. Chad is also researching using the bichronous model for teaching trades in a blended format. Chad has also recently begun his journey towards a doctorate in education with a focus on higher education leadership at Western University. He holds a Master of Arts in learning and technology from Royal Roads University and completed the provincial Instructor Diploma Program at Vancouver Career College and is a Red Seal endorsed journeyman electrician, having completed his apprenticeship training at BCIT. It is my honour and privilege to introduce to you not only a great friend, but an amazing colleague and an outstanding advocate for apprenticeship and trades training. This is Chad Flinn.

CHAD FLINN:
Hey, thanks Tim. It is so awesome to be here. I wish I could be there in person, but unfortunately, couldn't get out of Medicine Hat. So a couple of housekeeping things before I get started, I'm going to go ahead and share my screen. Let's get that going. First off,. I'm going to be using an interactive deck called Pear Deck. And it's for those who don't know what Pear Deck is. It's a Google Slides add-on that allows you to add interactive questions to presentations. So if you'd like, what I ask for you to do is. You see there's a join pd.com there. You can login to that. You can login on your phone, your laptop, whatever, and login to that. There's a couple of questions that are going to be coming up throughout the presentation. So something that I used to use with my students, they loved it. So we'll see if you'd like it as well. So once you get there, there's a code there. The code is going to be DQLARU, determined quizzes loudly award red umbrellas. So it looks like we've got one person connected already, which is good. I'll give it a second here. While you're doing that. One thing I would also mention, I see that there's something in the chat here. Oh, thanks. Is that there's going to be a lot of information coming at you. And I'm sure I've already talked to a few people who attended yesterday. There was a lot of information that came out people yesterday too. It can feel like a firehose. By no means. When I go through my presentation and share some of the things I've done, do I think that you need to do all of this all at once. I would really encourage you to take what you like out of it. Don't feel too overwhelmed by it. If there's things that you'd like to dig in deeper on, please reach out to me. I give my contact information at the end of the talk. And I love talking about this stuff as Tim can attest to. What we're going to do is we're going to get started right away here. See, I've got six people in there already. If there's more people that are

in there, I'm going to hit Start class. But you still can join up if there's going to be a thing. Often that top right corner that'll give you the code. So I'm just going to hit that right about now. We're ready to get going.

I'm going to start this presentation off by saying something that might be a little controversial and might be, some people can disagree with. So here it goes. I think that trades education needs to be broken. I want to repeat that because I think some people, when I say that, think that I said that I think that trades education is broken. I'm suggesting that we break trades education. It needs to be broken. By all accounts. It's not broken. It's working quite well. Depending on the province and the trade you're in. You're in school 6 to 10 weeks, you're going through it for years. After that, you end up writing your Red Seal and you've got yourself a journey person's certificate. So that's great. But the problem is, when I look at it, is as a trades educator and as somebody who's been in the trades myself, we are training people in classrooms that look like this. So I've got a nice classroom here, a whiteboard at the front, projector, got some awesome nifty speakers up there. So I can get some really cool YouTube videos that I'm showing. We have our students sitting behind each other staring at the back of each other's heads. So we're getting them ready for something, but we're not necessarily getting them ready for a career in the trades. We're getting them ready to write multiple choice exams. Now, I know a lot of this is a lot of us. I'm preaching to the choir on this one. But I understand the need for the Red Seal exam, and I understand the need for multiple choice exams. They're easy to mark. They're quick, they're efficient. But what we're failing in trades education is we're trying to train our students in how to construct and how to troubleshoot and maintain and how to collaborate. And when we're putting them in classrooms, staring at the back of each other's heads, we're not necessarily giving them the best experience that we possibly can for trades education. I would suggest that there are other methods and alternatives out there that we could use. And that's one of the things we're going to talk about today is my experience and my journey in doing that. Just to give you a little bit of context, Yes I'm at Medicine Hat College right now in southern, south-east Alberta. Awesome place and I could extol its virtues forever, but I was at BCIT previous to that, and I taught in the Electrical Apprenticeship Program and in the Foundation Program. So the Apprenticeship Program. So a lot of what I'm going to be talking about today was based off of some pilot projects that I did with some pre- apprenticeship courses. That is a 24-week program. So you have a little bit more time than you do in a trades experience. Trades can be, it's crunch time. We've got 8 to 10 weeks to get a lot done. That being said, some of these can be used in apprenticeships as well. So that's something that I have tried. I'll speak to that as we go. I'll get to that when we hit that slide.

Now, just a little bit about myself. This is myself and my wife Joni. You'll notice there that I'm wearing a Vancouver Canucks jersey. Go Canucks. And she's wearing an Edmonton Oilers jersey. Somehow we make it work. The thing that we're not proud of those we raised a son who is a huge Toronto Maple Leafs fan, so I don't know what to do about that. We've tried and he just keeps getting stronger and stronger in his resolve. This is my oldest son, Bodhi. He is almost 20 years old, which is absolutely mind blowing to me. He took a couple of years off for. He just did not like the training that was being provided online. He is not an online learner, so he took a

couple of years off. The best thing for him, he's literally digging ditches in landscaping. And it's been a great experience for him, but I think he's looking forward to getting back to school. Next up. Get my slides where it can. This is my other three. So we've got Alex is that the oldest there. He just turned ten last week. We've got Kate, who is eight years old and is the boss of the family. And then we have Sam, who is three years old, just turned three in August, and is an absolute crazy man and keeps our life very interesting. So this is them looking all prim and proper, and this is what they're actually like. There are a bunch of wildcats and our house is never quiet. But it's an exciting time. This is the college I work at Medicine Hat College. And I know there's some Medicine Hat College alumni on the call right now. I absolutely love this place. It is such a great experience, such great people that work here. And my time here, I've been here for two years now, and absolutely feel completely, I know it's a word that's overused all the time. I feel blessed to be in the position I am and to have the team that I do. And this is Medicine Hat. We are known for the world's largest tipi. So if you ever come on out to visit and please do, I will definitely take you over there and you can take a peek at the world's largest tipi.

So today's talk is kind of based on. Not kind of, it is completely based on a blog post that I wrote a few years ago called If It Ain't Broke, Break It, or how I opened up my lesson plans and hit delete. So it's an explanation of how I actually went in one day and just took, I was very, very organized when I had my lesson plans. If you are a substitute teacher for me, it was great because I had it all laid out, I had worksheets, when the worksheets were to be handed out. I had the notes, the lectures, the slide decks. I had everything built. And just, I could go down to the minute exactly what was going to happen. As I started to delve into this world of open pedagogy and open educational resources, which I'll talk about in the second here. I started realizing that I needed to be more flexible. And so for that reason, I started getting rid of my lesson plans and hit that delete.

So here's our time to get a little, get a little interactive. So if on your phone, you'll see here, I got a question for you. How many registered apprentices were there in Canada according to the 2016 Census, which is the latest Census data that we have. So you have options there. I'm going to let you go ahead. And as you're on your phone, you should be able to see some answers. I'm going to see what our responses are. Five. We've got five saying for 417,300, we've got one saying 110,000. So let's look to see what the answer is here. 417,300 registered apprentices in Canada. So there's a lot and it has gone up since then.

My next question is, how much growth does that represent since the 1990s? See what we're coming up with here 900%, 200%, its neck and neck. So we got to tiebreaker that we're going to have to look at here. So the answer is surveys that we've got one100%, looks like 200% is taken the lead. I'm going to hide the responses and move ahead here. That is a 200% increase since the 1990s. Again, this is based off of the latest census data that we had in 2016. So we know that they are. I'm suspecting that anecdotally, I've heard that the numbers have gone up. So we will go based on that. So we've seen a lot of growth in trades.

So in order for us to move into my discussion, we need to talk about Kevin. So I'm going to show you a picture here. This is a picture of a foundation program, an electrical apprenticeship foundation program I had. There are 16 students there. The gentleman sitting with the purple shoelaces and the baseball cap. His name is Kevin and he's got a very interesting story. And honestly, Kevin changed the trajectory of my career. Kevin called me about three weeks before the intake started. So I answered the phone and he had a problem. He was asking if there was any possibility if he could leave on a Friday early, at lunch and arrive late on Monday. So arrive around lunch on Monday. Well, this is interesting. I would love that schedule too, so I asked him why he would possibly need that. And so he explained to me that his wife at the time was 8.5 months pregnant and he was working up in the area up north of the Vancouver area. not Penticton. Anyways, it doesn't matter. He was working at a pulp mill and about three hours outside of the Vancouver area. In order for him to go to school, he would still need to work full time. So you worked at a pulp mill. He was, he literally would push a button, a red button and a green button. Green to go right, red to stop. He would do that for 12 hour shifts. He would do that four days a week, Monday to Thursday, 12 hour shifts. He knew that with the baby on the way that that's not the lifestyle that he wanted to have. He wanted to have a more family-oriented lifestyle. His friends, he had a couple of friends who were electricians, suggest that he'd become an electrician. He looked into the Pre- Apprenticeship Program at BCIT and decided that'd be a good route to go. But because of the cost of it and because his wife was on bed rest at the time, she wasn't working. He couldn't afford it. So the only way that he could afford to come to the course was if he was able to work, and he worked this out with his bosses at the pulp mill. Was able to work Friday night from 6:00 PM till 6:00 AM. Saturday night from 6:00 PM till 6:00 AM and Sunday night from 06:00 PM till 6:00 AM and then do a little bit of paperwork so he was able to get in his 40 hours of work. But in order to do that, he would have to get up to Princeton. That's the area he worked in. So he would have to leave early on a Friday and then arrive late on a Monday. So I thought about it and the way that I scheduled my class anyways was we would have our final exams for each week on the Friday morning. So I was able to work out something so that he could leave early on Friday and show up late on Monday.

I'll get back to Kevin story towards the end of the project. But it made me start thinking that Kevin is not the only student that we have out there, that I probably had out there that was in these situations. There are lots of students that are facing barriers in their education and it's, in trades a lot of people think that, you know, as you go through. Excuse me, one second here. As we go through our trades. I'm getting all choked up talking about Kevin. As we go through our trades we're getting paid. So it's cost shouldn't be a problem, but that's not necessarily true, especially in pre- apprenticeship. Pre-apprenticeship has a huge price tag to it as well as you have to buy tools and textbooks. I started thinking of ways that I could figure out that I could help these students with decreasing some of the barriers. One of the things that I did have availability to was the cost of books. We use the modules or the binders from the ITA at the time. And I figured that there's probably ways that I could give them the same curriculum that they needed without actually having to use the resource of the binders. So that led me down a path of OER. Lucky for me is at the time I was also doing my master's at Royal Rhodes and we started talking about open educational resources.

So what I want to do is just give a brief primer and a lot of people here right now know what open educational resources are. I just want to blast through quickly what they are for those who don't know. Oftentimes when we hear the word open, a lot of people's minds go to open source. So open source software would be free software, software that's available to anybody that they can do anything with. The thing is that software does not necessarily mean it's free. Everything on the Internet is free. So we have Twitter, we have YouTube, Pinterest, CNN. You can get so much information from the Internet that is free or you have access to it. But it could disappear tomorrow. They could shut it down. Like we may be seeing the death of Twitter as we speak right now in regards to that as an example. How many people still have their MySpace accounts? I do. I just can't log into it for some reason. So it can move behind a paywall. It can't be altered to meet your students' needs. So once you get it, I mean, it's there. There's not much you can do with it to trademark situations. What open does mean is permissions. So yes, free is an aspect of it, free or low cost, but it's not the defining feature of it. What is the defining feature of it is the permissions.

So looking at this, we have the, David Wiley came up with a five R permissions of OER. OER. You can retain, which means you can make your own copies. You can reuse, which means you can use it in a wide range of ways. So if you have a PDF that I could use into a video. I could probably take that if it had an OER license to it and put it in that video, I could revise it, which is specifically really important to trades. We know that our technology is changing rapidly all the time. I know in electrical especially we have experienced that. So you can adapt, modify, and improve very quickly. You can re-mix. So you can take different types of curriculum that you've found out there or resources and mix them together. Just as a side note, and I'm terrible for going off on tangents. If anybody's into this idea of remixing, everything is a remix. And there's a video by a guy named Herbie Ferguson. He talks about how everything is a remix and it's just absolutely mind blowing. So he's got four parts to it. Check it out on YouTube. Get back off my soapbox here and go on here and redistribute. And that's a big one is you're able to share this resource that you've created, remixing, revising, reusing together to share. So with that, I think it's important that we come up with our definition of open educational resources. Open educational resources, or as the cool kids call it, OER, they're teaching, learning and research materials in any medium, digital or otherwise. So a lot of what we talk about when we have these talks, and these nice keynotes and sessions, we get so focused on the tech, but it's not always about the high tech. A PDF or a Word doc could be fine. Paper-based stuff is fine. It doesn't have to be the coolest newest edtech thing out there. So in any medium digital, or otherwise that reside in the public domain or has been released under an open license that permits no cost access, used adaptation and redistribution by others with no or limited restrictions.

Which gets into the question of what kind of licenses are we talking about here? We have what is called a Creative Commons license. For those that haven't seen these, you'll start seeing them everywhere. Like when you buy a white car, you're seeing white cars everywhere. You're going to see these popping up as you're looking for resources. We have different restrictive levels of them. So we start with the CC BY. So it's Creative Commons BY which means you just have to

attribute the person that you took it from. So Tim Carson had an awesome resource, which he does have a few out there. And I wanted to use it. I could go ahead and use it, but I would have to attribute that. I got that from Tim Carson. If Tim had a CC BY license on it, that's what I would have to do. CC BY SA is CC BY, which it means after tribute and share alike so if I was to have to share it, I'd have to share it with at least a CC BY license. Then we start getting into the CC BY NC, which is non-commercial, meaning that you can go ahead, you can create, you can do what you need with it. You can share it, but you can't charge people money for it. So there's no fear of you creating this awesome resource that you want people to have and then somebody taking that and then monetizing it on you and then making money on it. Then we get into the CC BY NCSA means that they have to, very similar to the beat CC BY SA except that you can't have money on it. CC BY ND, which is non-derivative, meaning that you start getting a little more restricted. You can't change anything in it. So you can use it for free. You can go ahead and redistribute it, but you can't make any changes to it. And then we get to the most restrictive which is CC BY NC ND, which it almost looks like a cool tattoo, but very restrictive. All right, so once I discovered what OER was, I started getting really excited, like, where do I find this stuff? How can I find these resources? There must be a multitude of trades-based resources out there. And at the time, this is about 2016, 2017, I believe, there was a great resource out there. It was BCcampus. And this is where I began my awesome, amazing love relationship with BCcampus. I started seeing that they had all these different resources in there. Tons of them, but not necessarily there for what I needed in the electrical area. So I started realizing, okay, there's some really good stuff that I can pull out here for safety. But there's not a lot that's focusing on single-phase transformers or even now AC DC circuit analysis, that sort of stuff. Another area.

So I went looking even further and I found out about the Skills Commons. Now Skills Commons is a plethora of open educational resources for any trade. The only thing I would, the caveat to Skills Commons is, it is gigantic and its search filter is horrible. So there's a huge learning curve, learning how to use that, because people will post things to Skills Commons. But it might just be a syllabus. And the course I've gone looking for things on, let's say use single-phase transformers. I get excited because I find exactly the resource that I need. I hit the download and it ends up just being a syllabus for a course, not the actual resource itself. So you really have to be careful what you're looking for. It takes some time to look through it, but once you start getting the hang of it, there's a ton of great resources on Skills Commons.

But back to my original problem, I still couldn't find exactly what I needed. So I started looking at ways that I could take my notes and take some of my lesson plans and develop them. Which leads me to another story. I had a student once in class ask me, come up to me and say at the end of class he's like, You know what, Chad, I wish I could knock you on the head, throw you in the back of my car and take you home. Yeah. Okay. Elton, why would you want to do that? That's illegal. It's called kidnapping. Elton said, and I'm sure we've all had students that have explained this, that in class when I was working on the whiteboard with him, Elton got it. He got the lessons. When he was working on the practice problems. He nailed it. The problem is after school, he'd go to the gym, he'd go hang out with friends. He'd hang out with his partner. And then by the time it got evening, after supper, he'd sit down to do some homework. Something

got lost in translation. And so he's wondering if there was a possibility. How can he figure out the steps of getting through? He wished he could have me sitting there with him walking through how to do that. So instead of allowing Elton to kidnap me, I started thinking of ways that I could do that. And at the time I was starting to get into edtech stuff. So I started making these little walk-through videos on practice problems. And so just that go step-by-step process for these things. And I shared it with my class, and my class started asking if they could share them with other classes. So I started posting them to YouTube. And I opened up this thing called the Electric Academy, which is now at almost 40,000 subscribers, which I'm quite proud of. But the thing I'm most proud of is at the time Amanda Coolidge, executive director of BCcampus, got in touch with me and said, you've got all these amazing resources. Have you thought of licensing them as Creative Commons? And I didn't even know I could do that. And so in YouTube, when you go to the licensing on it, you can license to Creative Commons. So all the videos there are Creative Commons license so people can go ahead, they can grab them, they can take and reuse and remix them, redistribute them. Do whatever they need with them. So it's been a great experience in regards to that.

Another thing I started dabbling in, and this is going back to that don't get overwhelmed. This is just some of the stuff that I've worked on, so please don't get too freaked out about it. One second, I have got to. I'm going to do exactly what I said I wasn't going to do. And I thought that I was going to be able to share my sound and I didn't. So what I might have to do is unshare my screen for a second. Here we go. I'm going to make sure I've got sound. Share sound. Okay, there we go.

I'm going to share a video that I created. So this is H5P, which is an interactive element that you can build into your slide decks here. Now I'm just waiting for this to load up. So what I did with this is with H5P is you can take a video from YouTube. So I've taken one of my own and you can layer on top interactive elements. So what I'm going to do is I'm going to fast forward. And I'm going to fast-forward to a point. You see here, the video stopped when I was talking about adding resistors together. And there's this little element here. I can click on that and it's just a prompt. Or when you're adding resistors in series, you can do this arithmetically. So it goes through, it gives. Like it stops the video so that you can see this little prompt. And they're like, Oh yeah, that's great, That's how I do that. And then I can go ahead and I can play it. And so then it stops again. And what I've done is I can add in a question so I can have the question set up. So let's say I'm going to go wrong. 13 ohms. And it tells me it's wrong. I can set it up so that they can see what the right answer is, which is 17 ohms. I can make them retry it. I can get rid of that, re-seeing or seeing the answers 17. Check. It's good. It goes through the whole video on that. So you can add that on top of it. Again. Just something that I played around with, really easy to use. I would love one day to actually sit down and make a video series on how to use H5P for this element alone because I found it extremely useful. So that's another thing I started doing with my classes, taking the videos that I've built and adding little interactive elements on top of it.

Now, moving on, I also was able to get some grants through BCIT and BCcampus to start creating some open educational resources, which is just thank you so much BCcampus, because

that has been just a blessing for me to be able to create them and also for my students to be able to have them and other students. So the ones that I'm most proud of, I have done some of my own. I was most proud of the ones that I did with Mark Overguard this Math for Trades, Volumes 1,2,3. Taking applied mathematics and putting it into layman's terms for trades students. There's a lot of great math books out there, but they're either at a high-school level or at an engineering level. So what Mark and I really strived to do was to create math textbooks for everybody. And this is proof that miracles can happen because he's a plumber and I'm an electrician. We normally don't get along, but we were able to create that resource. So definitely worth checking out. I started creating these things, started creating these resources, started working with others. Another one was Basic Motor Control with Aaron Lee, another amazing instructor at BCIT. So I was able to start creating my own resources.

Now, moving on from there is interactive as I was, and as much fun as having, building all these elements and trying to be engaging with my students and getting them active, activated with these resources that I was creating, I still would end up with a student that looked like this. So we've got this student asleep on his desk there. We've all had this student, not necessarily this exact student, but we'd had this student. And I just wanted to take a second and I want to go on a little bit of a rant. I'm going to stand on my soapbox for a second. I think what happens is this. I got a quote here. It says, If they were harsh in their ways, it can be justified because of the popular opinion that the student was a troublemaker. It's specifically speaking to instructors and teachers. If teachers were harsh in their ways, it could be justified because the popular opinion is that students are the troublemaker. One thing I've experienced is that our students, when they come into our classrooms, sometimes we are so focused on our subject matter that we think that our students are coming in as blank slates. And, in fact, I think most of us could attest to the fact that our students do not come in bright eyed, bushy tailed blank slates. They come in dragging their entire life behind them. And sometimes they've got huge barriers that they're dealing with. In my experience, some of these students that I had sleeping in class were students that had worked the night shift to be able to afford to go to school during the day. I had one student that was experiencing some problems at home and was literally living in a van in a park. I've also had students that had new babies like Kevin and were kept up all night. So we have to be able to start realizing that our students are not always going to be bad actors. Yes, there are students out there that are the ones that are difficult. And yes, I'm not saying that they don't exist, but I am seeing that they are probably the minority, not the majority. So before I get off my soapbox, I love this quote by Jesse Stommel who is one of my heroes when it comes to pedagogy and teaching. Start by trusting students. How about we give them the benefit of the doubt instead of being upset that our students are falling asleep or not able to get things done or being troublemakers. Maybe we start talking to them. Maybe we start encouraging them to be, actually having these relationships with them to figure out what's going on. So we need to start trusting our students more. And that's it. I could go on longer, but I will get off my soapbox there. I've got this in here because I can go off on rants on these things.

Which brings me to, if I could figure out a way to actively engage and get my students to actively engage in their own experience. Maybe they won't be falling asleep so much or having

those issues. So this comes up to another one. Another hero of mine is if after so many years of controlling student behaviour, analyzing their data to understand the curtail that behaviour, we're still unhappy with their performance, If we're still having issues with them, perhaps it's time we turn education over to them. Perhaps it's time we made them our colleagues. Maybe we bring them in and we start co-creating with them.

And so that's where I started getting into this idea of open pedagogy. And so I'm going to go into that right now. So before we even go on to what open pedagogy is, I just wanted to give you a quick, easy definition of open pedagogy. I have a group of people laughing here because as many people are in this session right now, That's how many different definitions of open pedagogy we can have. If you go online looking up definitions of open pedagogy, you go down a rabbit trail. So what I'm going to do is. I'm using Michael Paskevicius's. This is a definition for the purpose of this presentation for what open pedagogy is. So I'm just going to read through this quick. Teaching and learning practices where openness is enacted within all aspects of instructional practice, including the design of learning outcomes, the selection of teaching resources, and the planning of activities and assessment. So that is including the students in those. So that's mind blowing enough. OEP or open educational practices are open pedagogy engage both faculty and students with the use and creation of OER. Draw attention to the potential afforded by open licenses, facilitate open peer review. And I love this part, and support participatory student- directed projects. And that's what I want to talk about today.

Open pedagogy. So there's a friend of mine Rajiv Jhangiani and his partner in crime, Robin DeRosa. They say that open pedagogy is the site of praxis and a concept defined by ongoing conversations. So. What I'm hoping by this firehose of information is that we will have more intentional fulsome conversations about what we can be doing to break trades education and rebuild it. Again, yes, it's a firehose of information. I'm trying to plant a seed in your brain, a little itch in there to think of ways that we can go ahead and break something and then build it up again.

So I wanted to walk you through my class that, I did this with the first class I did with this. This is the first group. This is such an amazing group. And every time I talk about them, I almost get like I had them probably three years, not three years ago, six years ago now. Just fantastic. Now, I had a habit of leaving my phone on my desk and I had it unlocked because I've got kids and every time they tried to get into it, it would lock it up. Anyway, it doesn't matter. I would leave my phone unlocked, My class would have a habit of taking my phone and taking pictures of it. So they took a nice group selfie for me. I found one that I could post because there's pictures like this one, except they're using different hand gestures, if you can imagine. So. There's this group here, they're awesome though. They're such a hoot and they bought in. The first thing is I mentioned at the very beginning of my presentation here that I had an issue with having my students stare at the back of each other's heads and being siloed away from each other. Staring at me as interesting and as fun as engaging as I obviously am. Staring at the back of somebody else's head is not the best way to learn in my opinion. So what I did was I moved them into pods. So I've moved them into groups of four. And what I did with those pods is every subject. So generally within the apprenticeship, not apprenticeship, the pre- apprenticeship

program, they would do a subject per week, or subject to every two weeks. And so they would have their group for a week. Then the next subject matter that came along, I would shuffle them around. And so they'd have a whole new group of people. We did this for six months. These groups got to know each other extremely well. To the point of on the last day of class, there was more, and this never happened to me before. There was more than a few people crying and it felt like the end of summer camp, to be honest, you know, for those of us who went to summer camp and it's just like you're saying goodbye. You're going to keep in touch, but it's just not going to be the same. It was like that. And these groups, so they had a WhatsApp group that we all belong to this day. Six years later, they're still very, very engaged on a WhatsApp group. Some of them are still hanging out. If any of them have issues with their bosses or a project that they're working on or something that they can't figure out, they ask each other. So there's still a community. That was six years ago. So I got them in pods. It was great.

What we did in these pods was we created, I made them create their own textbooks. So they would have, we have those binders. So the ILMs is, or whatever you want to call them. We didn't always use them though. Let me, just one second here. Just going to close up. And so what I would do is I make. I went through the ILM. I went through the course outline and for these areas, I took the course outcomes and I'm going to show you here. I created a Google Slide Deck. And my interweb is seeming to be slow right now. It's blank, pretty much so blank structure of an atom. This is all they were given. Each group, up to four groups. They would get these blank slide decks, but just like outcomes written on. It was up to them to put the information in. So they had to come up with, make a cool title slide structure of an atom. I want them to research the information, then to go find it and put it in there. So at first it was a lot of cut and pasting. So we started talking about how that's actually plagiarism. So we had a lot of meaningful conversations about that. But it was a process again because I had them for six weeks, I was able to walk them through it. But I wanted the images, they'd have to create self-tests. So by the end of the unit, I would get things that would look like, oops, sorry, I went back to that. Here's some examples of some of the slides they built. The first one here, this RL circuits. They created these triangles themselves. They added that information in here. I didn't give that information to them. I didn't lecture on it. They found it, they created it. How to demagnetize a magnet. They created that. Some of them got super into it and realized that you could start hyper linking two different slides. So they created a table of contents. It was funny because when they did that, that was the most exciting thing that they had done. Self-test. So they would have to build the self-test for the end of each unit. For those of us that use ILMs and the binders and VC, then we know that at the end of each unit there's a self-test. I had them create the self-test, telling them that I would be taking questions from unit self-test and putting them in the actual summative exam at the end of the unit, so it was in their best interests to write good ones, but also it was in their best interests to go ahead and share the resources with each other. So these groups with each create, so I'd have four different slide decks or textbooks created. And at the end of the unit they'd all start sharing them all because they all wanted to see what the questions were for the test. Because everybody knows the biggest question that we have from our students. Is that going to be on the test? Well I'm giving you the test question. So go ahead and start learning from that. So it worked really well.

One thing that I would do too is, one second here while I move ahead, is I would get them to build their own videos. So I was, I had a lot of fun creating my own videos. So I would get them to go ahead and create their own videos as well. And I used an app called Flipgrid, which is completely free. Microsoft owns it and it's free for educational use. I'm going to show you an example of one of the things that my students created with it. So what I would do is I put the problem up on the board at the end of the night and I would ask them to do a Flipgrid video, walk through how you solve the problem. You could do it just by writing it, using your handout with a camera and reading it out. Or you could get a little more in depth. This is Mio. I'm going to play the first few seconds of it and make sure that I have the sound on. Let me know if you cannot hear the sound, but share sound. But he went ahead and he got a little more interactive. Some of Mio's videos towards the end of the course got really creative but really weird. He had one where all the resistors were my face and it was this very creepy. I thought about showing it, but just creeped me out too much. So anyway, this one he used the carrot as a pointer and I'll just let Mio speak to it.

VIDEO:
Hello guys. I'll be showing you guys how to solve a parallel circuit. But first I'd like to shoutout to Diljen for teaching me this because without him, I wouldn't know what I know. So shout out to OG.

CHAD:
I'm going to stop there. But there's a few things that I would like to mention. I love to use the carrot. I love at the beginning he gives a shout out here and talk about how well first up, let's talk about the soundtrack. He's got, it's open source music that he found, so he put that in and he's quite proud of the fact that Matt said there's like groovy thing playing in the background. All these videos did. And then he gives us, the most important part is he gives a shout out to Diljen. Diljen was a student that struggled with math, hard, really struggled with math, and Mio and him were getting to be tight because Mio is one of the smartest students I've ever had in my 12 years of teaching. What he did though is, Mio missed a day. And he came back and Diljen walked him through how to solve a parallel circuit. So I loved the fact that Mio gave a shout out to Diljen and called him the original OG, because all the students would review these as well. And so it's just one of those community building things. It was so awesome. So he goes on, he solves the circuit and it's all good. So it's such a great experience. I love Flipgrid for that. So they create their own videos.

Another thing that I come into in a lot of the questions I get asked is, how do you assess all this? So you've got them creating these textbooks. They're creating their own videos. They're writing tests. They're creating all these steps. I would have them write their own labs by the end of it, which I don't have time to get into right now. But how would I assess it? And what I did is I'm always watching, I'm always walking around. And actually, what I love about this model too is I was able to have a lot more discussion with each table because I'd be walking around. I actually found it worked harder teaching, doing this method than just standing in front of a classroom,

lecturing and then giving out worksheets and then lecturing and giving worksheets. It was a lot more fun too. What I did was I actually had them assess themselves and they had to assess their peers. And the reason why I did that was I just thought it was a good exercise in reflection, understanding, learning how to learn, metacognition. But also as tradespeople, they're going to have to assess their. When they become journey people, they're going to have to assess their apprentice's work. So how can they do that constructively? Because I know a lot of times as tradespeople, we've all had those bad journey people who were very, very critical in a destructive way. And I wanted them to learn how to do this in a constructive way. So when I handed out these at the end of the unit, they would also have these Google forms that they'd have to fill out on a Friday, I'd reassess them on a Monday. I would have a little meeting with them on Mondays. On Monday, before class, lunch, and after class, I would set up quick five-minute meetings just to walk through their evaluations. Always at the beginning, without a doubt, if a student was a 90% student, or in Mio's case, a 100% student when they assess themselves, Mio would come in at about 80%. Always harder on themselves for the most part> There's the odd one that would assess themselves too high, but that was the exception. Another thing is though we may assess their peers, it was always 100%. This guy is awesome, great, couldn't have done it without them. Except the fact of the matter is, I was there, I saw and I knew that so and so was not awesome, so and so didn't do it, or so and so didn't show up to meetings. That was all in there, so I could see that so I can have a meaningful conversation. And so we had some great conversations about that constructive criticism and how important it is and that you're not ragging on the person's character. You're just talking about what they could be doing better. So it was a little push at the beginning, a little hard to get them to finally get there. But by the end of the course, actually had them out there assessing lab projects with rubrics and doing it in a way that was authentic. They would call each other over and like, hey, you know, you don't have this H going into the outlet box that right. Or you didn't know your pigtails are a little off here. They were doing it in a constructive way and that was awesome. So I really, really enjoyed that aspect of the assessment, the self-assessment, peer assessment. And it also allowed me to have some one-on-one time talking them through it.

Another thing is authentic assess, authentic assignments. So what I tried to do is just get away from them always doing self-tests, worksheets. I wanted them to really dig into things that they might actually experience out in the field. Now shops do that very well. A lot of trades out there will have shop time. I'm an electrician, apparently we're above shop time. So we have a lot of theory base and we do a lot of stuff in lab benches, but we don't do a lot of hands-on kind of things that you might do in industry.

So what I did was when we got to electronics, I had them work on a Raspberry Pi project, and I'm not sure if anybody uses Raspberry Pi's or knows what they are. But basically they're a little microcomputer. They're about the size of a credit card and they're about 20 bucks. And so I was able to get our program head to agree that we bought them for the students. So anybody that had a cost issue, it wasn't going to be a problem. Then what I would do is, if you look up online, there are so many different projects you can do with Raspberry Pi's. They can create gaming mod systems. They can create their own little mini laptops, Wi-Fi boosters. There's this, there's robots, home automation systems. There's so much that they could possibly do with these

things. So what I would do is I'd give them access to a repository of projects that they would have access to. And then I'd tell them to go ahead and in their pod, go ahead and pick a project. So the ones that this group worked on was, one of them worked on a gaming system, and actually two of them worked on gaming systems. One of them ended up working on a Wi-Fi booster. In the first picture here you've got Greg and Ben giving the thumbs up. They had to upload the operating system. So there's like it's a Linux-based system that they would have to upload from Raspberry to get the actual thing working. So they would have to do that. So hands-on learning how to do that. Then they had to actually build the hardware. So you see this group here, they're putting it all together. Great group. Then they actually had to start troubleshooting issues. So look at the far right here. There's a guy, gentlemen wearing a gray hoodie. His name was Hardeep. And he was like one of the sweetest, gentlest people you've ever met. He is awesome. The only problem is when they were doing their Wi-Fi booster, they could not get it to work. And they will keep coming to me to solve the problem. And I kept pushing back. I knew what their issue was, but I didn't want to swoop in and always be saving them. So I would give them little hints going in the right direction. He got so frustrated that he was using words that I as a tradesmen were blushing on. He was getting so frustrated. And at the end of the day, it ended up being a firmware update that they hadn't been able to figure out that they needed an update. He figured it out, he uploaded it. It worked great. And I've never seen such a big smile on his face was, I will never forget. It was absolutely brilliant. So these hands-on experiences were great for them. I would do the same thing when I had them in labs. I would get them used to the basics of the lab and then I would actually have them designing their own labs as well. And so that's something else that I would love to talk more about. I'm just going to get through so something pops up on my screen.

Moving ahead here. So at the end of the unit, I asked them, I think one of their final assessments, what do they like, what they dislike about the projects? I wanted to get the real voice because I thought it was awesome. I thought I was having fun teaching. And it looked like they were having fun with the experience. But I really wanted to get some hands-on, so I let them have a, it was a completely anonymous survey that went out. So here's some comments that came back. I liked how you made it truly understand what we are learning. It's a good way to get the information stuck in your head. I also found it helpful because textbooks language can be confusing and so it's nice to convert that into something easier to understand. A lot of these students took these resources that they'd built in their pre-apprenticeship program and ended up using them for their second year as review and in their fourth year for their IP review final.

What did they dislike? I liked working in groups because it allows me to see how other people think and work. If they understand something that I don't, I can see how they worked through the problem. It also allows us to share tips and tricks. Again, everyone, I think most of us who teach would agree. The best teacher in the room is not you. The best teacher that's going to be in that room. It's going to be the other students. They are going to find ways, tips, tricks, and hacks for that to work out through these problems and to teach. They speak the same vernacular as each other. It's just an awesome way to allow them to teach as opposed to us

being there. Sometimes we get so we understand the subject matter so much that we can't take it down to a level that they need us to take it down to.

This one was, this is a shout out to OER. I love, love, love that you saved us so much money on our books. Thank you so much for that from someone who has to pay their own schooling and works part-time, I really appreciate you doing that for us. I disliked the fact that we didn't get 100%. And I know that's probably really hard to achieve in doing a project like this. PowerPoint wizard perhaps, or maybe the next one I can achieve that perfect mark. Looking forward to feedback on how it could have been better. It was fun though, making it in our group efficient and full of laughs. So again, I was a hard marker on it and no, nobody ever got 100%. It would have to be Steven Spielberg putting it together, but they wouldn't know that. But at least these high achievers had something to strive for. And I loved that they felt safe enough to share some of the things they didn't like. Just dislike being responsible for other people's work because it reflects my mark. Other than that I really loved these slide projects. So it would, that would be an issue and that's something that we talked about throughout the course was making sure you had time for the others and work with them.

Now at the beginning, I started this presentation talking about Kevin and talking about how Kevin was the impetus for all of this. Kevin now, I'm still in contact with. Kevin's wife gave birth to their daughter about two weeks after class started. So he had a beautiful baby girl and recently just had a baby boy. Kevin was one of the best students I had as far as scholastically, he was brilliant. He was a hard worker. He was a leader in the classroom, and now he's a foreman out on a construction site, and working so hard. And just one of those people that you knew, you could see that we've all had those Kevin's where you knew that they were going to go on to greatness. Kevin has achieved that. And so, but the thing is, this is Kevin, but how many Kevin's did I miss, or how many Kevin's can we help in the future? How many Kevin's that couldn't have done this had we not had something in place for them, and flexible enough for them and had things like OER, there available for them and the resources there. One thing Kevin would do too is watch those videos when he was on his way up and on his way back, so allowing for that flexibility and that sort of thing.

So as I close, I'd like to say that we need more, not fewer ways to listen to the voices of students reflecting on education. We've got to stop just talking at our students. And we've got to start talking with our students. We need more, not fewer ways to include students in conversations about the future of teaching and learning. I know it says in college, but we can just replace that with trade school as well, alright? Or trades education. We need to have those conversations with their students. It's great that we're having these conversations today where we're talking to our peers. And I know that when I go out afterwards they're going to have a great conversation with Daren. But we also need to have these great conversations with our students, and it is amazing what they can bring to the table. So please, we need more, not fewer ways to listen to the voices of students reflecting on education. We need more, not fewer ways to include students in conversations about the future of teaching and learning in college. One good conversation can shift the direction of change forever. So what I hope from all of this is that I planted a seed in you that you can have a conversation that could plant seeds

as well, and we can get this growing. Because again, like I said at the very beginning of this presentation, I think that trades education needs to be broken. Not that it is, but we need to break it, take it apart, and then put it back together again. And we can, this is the time. We've got this window now at especially after the pandemic where we can do some crazy cool things. So yes, Lori says, if it weren't for students, where would we be? So that is the conclusion of my presentation. I'm not sure if we have time for questions. I'll let him speak to that. I'm here for the next few minutes if you need me, but if you need to get a hold of me, this is my contact information. cflinn@mhc.ab.ca. That's my Medicine Hat College email. I'm very active on Twitter though that might be changing in light of what's been going on. But you can find me on LinkedIn too. Just look up Chad Flinn, Medicine Hat College. You'll find me there. I'm very active on that as well. But yeah, I would love to talk more about this if, I'd love to have conversations if you want to get into it on Zoom or whatever. That's fantastic and we'll go with that. So thank you so much for your time today.