

## Popular Podagogy: Episode 12



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**00:07 Speaker 1:** Hello and welcome to Popular Podagogy, a podcast brought to you by the Faculty of Education at Queen's University. We're fortunate to be joined today by Jamie Pyper, who is a faculty member here as well as one of the most interesting people in the world. So, Jamie, welcome to the podcast.

**00:33 Jamie Pyper:** [laughter] Thank you very much. I think the introduction makes me feel good.

**00:36 S1:** Yeah, well it's always good when we get you laughing right off the start. Now, in full disclosure to our audience, Jamie has been in here regaling us with tales and stories for the last 20 minutes. So I'm already on a good note. I'm already entertained. And so we're gonna try and capture some of that same enthusiasm in the rest of the podcast when we're talking about storytelling and math education and a few other things in here. So we're gonna dive right in. So, Jamie, you've noted that your research focuses on teaching math to students who typically don't pursue a math-related degree. Obviously, right now math education is a hot political topic in Ontario. So in your opinion what would you say is the most important aspect of becoming a math educator.

**01:28 JP:** Well, actually, I need to ask a question back.

**01:30 S1:** Absolutely.

**01:31 JP:** Could you say math educator? And so, I define math educator as one term, which is someone like myself, which is different than an educator, which could be an admin in a school board which is also different than a teacher.

**01:45 S1:** So when I use the term... This is the first time I think I've ever been interviewed on my podcast here, so bear with me everybody. When I say math educator, I look at it as anyone who is teaching math to students or teaching math to other people. So it could be a math educator in an elementary school and a high school, as in a teacher. It could be an administrator who is helping with teaching math or teaching math policy to some of their teachers or it could be someone like yourself who is helping teach math in a pre-service education system or even a continuing education. So I am using it as an all-encompassing term to let you decide where you wanna go with it.

**02:28 JP:** Okay, good, 'cause I will narrow it down to what should the math teacher or the teacher

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of mathematics in elementary or secondary school be thinking of? And the thing that I think many people get lost in is who they're talking about. People who deal with curriculum or with mathematics or teaching or learning or schools or classrooms aren't always aware that when you... It's sort of interesting in elementary school, 'cause it all happens here that the students are all mixed together. But once you get into high school, they start to separate themselves out into different streams. But the curriculum and the people who talk about mathematics seem to only talk about a certain percentage of students, which is those that are going to university for mathematics or science or math-related. Interestingly, I took some time and went to Stats Canada's website, looked through a number of their data sets and boiled it all down. I was starting to follow some. It was just rabbit hole. And in general for Canada, 12% of our population goes to university for math or math-related programs.

**03:41 S1:** Yeah.

**03:42 JP:** That means 88% are not going to university for anything to do with really mathematics or sciences, but everybody talks about mathematics from the perspective of that 12% going to university for mathematics. Not everybody's gonna do calculus. Not everybody cares about calculus. What is the rest of our population going to be doing? Every time a teacher thinks about what they're gonna do with their class or talks about mathematics to another person, reads something off the internet, finds a mathematical resource, they really got to think about who is the audience for that resource or that conversation or that other person's point of view, and who is the audience that I as the math teacher are thinking about. So that when I take anything that I've learned, it gets used really well for the student that I'm thinking about. It could be the student that's in essentials and going to workplace and then going to be in the workforce. That's a different way of approaching mathematics, not a different mathematics necessarily, but a different way of approaching mathematics than if I was talking to a student who was in applied and then college courses in a high school looking to go to college for architectural tech, business degrees, business diplomas, that kind of thing.

**05:04 S1:** So, that makes math teaching, especially, a lot more complicated because it's making it so that it's individualized for almost every student or at least finding like-minded students and tailoring that curriculum, tailoring whatever it is that you wanna teach to that particular group. So how is it that you think that teachers should be working to try and make it so that it's still purposeful as well as interesting for those students?

**05:34 JP:** I suppose my... Well, the first thought off the top of my head is that the curriculum could be better tailored or better articulated for different audiences as I was talking about before. But let's assume that we're not gonna get that. Plus, many teachers that come out of Ontario, they end up all over the world. I have no idea what curriculum they're going to be using. So they need to be able to unpack it and put it back together again for the students in the class, which means you do have to have a little bit of an assumption that the students that are in your class are relatively homogenous that they're not gonna be so widely set in abilities that you do have to teach every individual student every minute. So you listen to your students, figure out what is most interesting, most relevant, most engaging for them, take what they're telling you is important for them in terms of mathematics and learning and fit that into the curriculum that you have to work with, whether it comes from a textbook or from a document and make it... I think the biggest word is 'relevant.' I think I've just gone down another rabbit hole. So you're going to have to put me back on track.

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[laughter]

**06:48 S1:** No, that's good. Rabbit holes are welcome here on Popular Podagogy. That's the thing. I think with what you're talking about it, it really touches on, it's on the teacher to take whatever curriculum it is that they're teaching and finding the relevance within that curriculum to helping the students. One of the challenges I think, though, with that is getting those teachers excited about math. And you mentioned already that only 12% of the Canadian population are going on to university for math. And I don't know what the proportion of that population is becoming teachers, but that's a challenge for a lot of teachers when they're coming into teachers colleges, the idea of teaching math and being excited about teaching math and finding how they can actually manipulate that curriculum. So how do you get these teacher candidates excited about being math teachers and teaching math, especially those that maybe have had math phobia in the past.

**07:43 JP:** At the secondary pre-service teacher level, there's very few that have a phobia for mathematics. If they have a phobia, it's not even a phobia. If they have a bit of anxiety, it's about teaching. Many think they have to know everything. And so now they're petrified that I'm going to walk into a classroom on their first practicum and often everything's lined up for them freely well by their associate teacher. To get pre-service teachers excited about the way mathematics could be learned, give them the experiences that are different than they've had before. Yes, 12% of the population goes to university for mathematics or math-related courses, programs. Out of that 12%, that's the people that are sitting in, say, my pre-service class for teaching high school mathematics. So they're already people who know their mathematics to a good enough degree. [chuckle] That's a interesting pun, to a good enough level or ability.

**08:44 JP:** But as one researcher has said, "We move through life and think we know things because we've observed it. It's called an apprenticeship of observation." And the researcher's Lortie, it was from 1975, really great article. And it is really relevant to people going into teaching because they think that they know how to be a teacher because they've been sitting in a classroom from kindergarten to post-secondary. Well, you've watched things, and you've been a recipient of things. And some of those things are good or not. But as far as you know everything was successful because you were successful. However, you were in that class of 12%. Everybody else that you're generally going to be teaching, 88% of your teaching time is gonna be with everybody, all the other people in the world. So, excitement and engagement for mathematics comes from appreciating that mathematics is more than just what you've learned. It's not just the calculus and that you can do partial differential equations. It's that, "Oh, my goodness. There's a way to look at something geometrically, and there's a way to look at something algebraically. You can graph it. You can have equations. You can use pattern blocks to solve equations, and that moves into the regular algebraic form that we know of."

**10:03 JP:** Those kinds of experiences allow them to start to think about mathematics a little differently. And one of the biggest things in math education today, recently, I guess in the last five, 10 years, is paying attention to mathematical thinking rather than mathematical computation. And I can tell you sort of a... A simple reason why that is, we can't know all the mathematics that there is to know today. We might have been able to in Da Vinci's time, in Euler's time, but there's too much. So we can't be computational fluent in everything. We're going to have to be better problem solvers and have an ability to think mathematically, to know when to do something and to have an idea as to how to pull all the tools together to be able to answer the problem.

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**11:04 S1:** Do you think that it's challenging for the teachers that are coming through these programs and are experienced math educators or experienced with math and they've done these math courses their entire life. And they've obviously been successful enough to make it through a university degree. And then they're going into classrooms, and they're working with students who maybe don't understand the concepts that they have the entire time. And you talked about that apprenticeship model. And the apprenticeship worked for them, but for students that it doesn't work for. How do you close that gap between them?

**11:36 JP:** I think one of the best approaches I've found is going back to what you're talking about before in terms of how to get pre-service teachers excited about mathematics is to give them lots of experiences, like lots of experiences and a very different ones. For example, if we're going to study quadratics, which is a key thread in Ontario mathematics as well as across Canada. Quadratics looks like a parabola when you draw it. But a lot of our pre-service teachers and our students in high school just know it as  $ax^2 + bx + c = 0$ . It's just a set of letters and numbers and exponents that somebody sort of threw around. And it looks like something. It's unrecognizable. It's not familiar. And our pre-service teachers just know to factor it because they learn how to factor. That's it 'cause that's what you do in math. But what does all that mean? So there's a lot of really cool activities that take area of rectangles and then you take the numbers that come from the areas you can build and make into a table of values and then that turns into a graph, and people see that area has something to do with parabolas? No!

**12:39 JP:** And then you can take wax paper and draw a line and put a point anywhere else on the piece of wax paper and start folding that wax paper so the line touches the dot and you just do it a number of times. All of those little folds turn into a parabola. No! You gotta be kidding. I get the same response from some of my pre-service teachers as I do from my grade 10 applied students. When we do this activity, they go, "Sir." Well, my pre-service teachers don't say, "Sir." They just call me by my name, but the students in high school say, "Sir, Look! This looks like the shape you drew on the board." I said, "Oh no! You're kidding." [chuckle]

**13:23 JP:** Anything like that is just really cool stuff. You can take a ball, roll it up an incline and measure the amount of time it goes up and comes back down. And the time plotted against the distance that the ball traveled turns into a parabola. There's all kinds of stuff they give you. Bounce a basketball and just use a motion sensor, which are really cool devices, collects the data of the ball dropping from the motion center to the floor and bouncing bounce, bounce, bounce, bounce, bounce... That makes a whole bunch of... Well, you can approximate them as parabola.

**14:00 S1:** And so with all of this, first of all, that's incredible. And I wish that I was doing that when I was in high school. But second of all, how do you introduce all of these things? Where would you recommend that teachers go to find these types of activities or think about math in this way because it's probably not necessarily the same as what you would see in a traditional textbook, and what many of us have probably experienced with their math education?

**14:28 JP:** Whoa, that's a really good question, and I have three answers to it. There are some incredibly amazing people in the world, who think about mathematics this way all the time. You just need to find them and follow them. Twitter's great for that. Somebody who's not on Twitter, though, who is here at Queens is Peter Taylor. And he thinks this way about mathematics. Even though he's teaching at a university, he does so much work with high school mathematics. Get involved with those people. Talk with them. Go to conferences. Go to meetings. Go to any talk. Find their books,

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just read them. The second one in terms of how do you think this way? I think complexity science gives me a really nice place to go with this because the idea behind it, and this comes from a book by Waldrop in I think it was 1992, and he talks about the first time that complexity science sort of emerged in somebody's thinking. And it was I think in San Diego, a whole bunch of people from all different fields came together, and they were sort of left in a room. They had coffee and donuts, but they couldn't really metaphorically leave the room until they thought of something or until something had happened.

**15:46 JP:** I think it took three or four days. And finally, as the book talks about it, people started to recognize the geologist and the geographer and the statistician and economist and the physicist and all these people, the computer scientists, started to find things that were common about what they knew and how they knew it. And out of this emerged this idea of complexity science. The point I'm trying to make, though, right now... It's a little bit of a way to get there, is that...

**16:14 S1:** It's okay. I told you, we like rabbit holes on this podcast.

**16:15 JP:** Oh, this is a good one. The best way to think in as unique or innovative or creative ways possible, read everything. Experience everything. It doesn't matter if you really like mathematics. Read the stuff on history. Read the stuff on the arts. Go take an art class. Go just read anything and everything. And all of that experience, you never know when it's gonna be useful. It sort of like what I tell... That's not sort of. It is like what I tell my pre-service teachers. You gonna have a virtual library, and it's just gonna sit there just off your right hand, just up in the air. And every time you learn something or read something, you just take that and you put it up in your library 'cause you don't know when you're gonna need it next. But there's something good in there. Just hang on. And invariably, three years, five years, sometimes even 10 years later, "Oh, my goodness. I know something that has to do with this issue that's going on with my students in my classroom." Go to your virtual library, pull out that book, that journal article, that TED talk you listened to, something, and you could get some really cool insight.

**17:21 JP:** How do you make that happen for yourself? I don't know, but I had a person explain it so brilliantly. I think it's Season 8 of RuPaul's Drag Race. And the drag queen is Kim Chi. And she is brilliant, absolutely phenomenal...

**17:41 S1:** I'd just like to point out that Josh is sitting here. Our producer Josh is sitting here just nodding along. As soon as RuPaul's Drag Race pulled up he got right into the podcast. So for those listening at home, just know that Josh is very engaged right now.

**17:56 JP:** RuPaul was asked that question. Sorry, Kim Chi was asked that question. And I think it was by RuPaul, but it doesn't really matter who. And the question was, "How do you think of the ideas to create these kinds of images and personas with your makeup and your dresses and clothing?" And Kim Chi said, "I don't know. It's like I'm walking down the street, and I see a rock. And I pick up that rock, and that rock just seems to make me think of this and this and this. And I'm gonna make this rock my make-up and my clothing. And that's my inspiration." I listened to Kim Chi say this, "Oh, that's exactly the way I feel when something... " 'Cause I had a pre-service teacher say, "How do you think of some of these things to do in your class?" "I don't know, it's like I see a rock. And then I just think things." [laughter] It's not really helpful.

**19:01 S1:** Sure, if we're thinking of it as sticking with our theme today, going down rabbit holes,

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and making sure that we have somewhere to think off of, I... You lost me on this one, I don't know.

**19:18 JP:** Well, here's another example. A colleague of mine teaches at OISE the math education for high school of math teachers. He takes photographs of things all over the world and finds the mathematics in the photograph, and then you can impose the or lay over the mathematics on top of the photograph. It becomes part of your lesson. Bridges look like semi-circles or they look like parabolas or all kinds of stuff can show up. And he's got a really nice one for trigonometric functions and the sine wave, and I think it had to do with streets in San Francisco. When you go with over the head picture, you can see some of these S or curvy roads. They can be approximated with a trigonometric function. Really cool stuff, all comes from pictures.

**20:06 S1:** So you're the coordinator of the research team dedicated to improving teaching and learning in mathematics, science and technology. So what project is your research group doing that you're most excited about right now?

**20:19 JP:** Well, first, there's the three projects that are ongoing by other members of the MSTE group, that are quite phenomenal. Lynda Colgan is working on Science Rendezvous, the biggest Science Rendezvous science fair...

[overlapping conversation]

**20:34 S1:** Which, if you haven't heard of it, please look it up. It's amazing.

**20:37 JP:** It is. Richard Reeve is working on makerspaces, and especially in conjunction and collaboration with some of our local school boards. Peter Chin's working on co-operative education and workplace learning, so how students are learning in workplace, kind of, spaces. It's under the acronym C-E-W-L, CEWL, I think that's sort of cool. The one that I am working on, which is taking up all of my time, is problem-based learning as a professional learning model for secondary school pre-service teachers. I always wondered, 'cause I've studied teacher efficacy, mathematical discourse, professional literacies, and how that fits with the secondary school math teacher, problem-solvings. I wanna say, "Obviously", but it might not be for many of my math colleagues 'cause they know problem-solving 'cause they do it, 'cause they're math people, but it's not necessarily the thing that you study.

**21:33 S1:** Yeah.

**21:34 JP:** But for me problem-solving in mathematics has a direct link to problem-solving as a math teacher. Because every time you stand in the classroom, there's problems that are gonna happen. Some of them involve the mathematics, and some of them just involve the student, but it's all in the context of the math classroom, so that makes it relevant and important. When I put the classroom practice and the experience, teacher-learning, their belief structures and then how that moves into their behaviors, that says to me that... Well plus, you can't learn everything anymore, because there's too much to learn. What do you do? You create really good learners. Problem-based learning is all about learning, it's not about completing anything per se, but it's about increasing your capacity to be able to solve problems. And I'm putting that in this context, the problems of practice that show up in classrooms.

**22:25 S1:** And I think it's important, and I really appreciate the idea that you put out there, where

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there's just too much now, that it's not possible to just have content and say, "We're gonna learn this content, and then you've successfully learned this content, and you move to the next part."

**22:40 JP:** Yeah.

**22:40 S1:** It's necessary now for everybody, not just students or teachers, but for everyone to be able to adjust and learn, and continue to learn. And it's that continual learning and improving on your skills to help you continue to learn, that is really the essential piece. And so I find that to be quite an interesting part of your research, and I think that that's an important component of that. And you've talked about this before in other pieces that you've done, where it's not about acquiring specific skills, but it's about acquiring specific literacies. So would you be able to expand a little bit and explain that to our audience here?

**23:21 JP:** Sure. When I started thinking about literacies, I started by thinking about mathematical literacy, which is the compilation of the symbols, the signs, the words, the graphics, and so on that all comes together to make the language that we use when we talk about mathematics, or with another mathematics person. But I'm here in the faculty of education, and so when we talk about mathematics, we're also talking about mathematics in the classroom, secondary classroom, or elementary classroom. Literacy was initially defined as basic literacy, reading and writing. Then it was changed or updated to functional literacy, which was the reading and writing that you needed to function, as a member of society. And then it got updated, this was by UNESCO, around 2008. It was updated to something... The definition is huge [chuckle] and it goes on like, "Yes, there's reading and there's writing, but there's problem-solving, and there's computing, and there's appreciation, and..." I read this and my mouth dropped open thinking, "Oh, my goodness. This is what literacy is being defined as now?" That's quite impressive.

**24:35 S1:** Yeah, and I think it's important that we look at it in that sense, because literacy is not just reading and writing, it's the ability to interact with everything around you, and that includes things like what you're talking about, which is problem-solving, it includes being able to evaluate a particular resource that you're looking at. It includes so many different things, and so, to narrow it down to just such a small thing as reading and writing, is almost doing a disservice to the idea of what skills we need in our day-to-day lives, in our education, and anything else that we're doing. And so I thought that was quite an interesting part of your research that you were doing.

**25:14 JP:** Plus, as a professional, as a teacher, then your... You have many literacies to deal with, you've got digital literacies, because we're dealing with technology in the classroom all the time, as students bring it into our classroom. We've got assessment literacy, assessment for learning as a phrase, as a concept, is quite different than marking and grading, it's not the same thing. But there's a whole set of language about what that is. We've got media literacy, we've got health and welfare literacies, we've got learning disabilities literacies, we've got... As a professional, you have all these, I don't mean "little" as in they're not important, underlying literacies that are pillars to the professional teacher discourse, so that when we talk as teachers, we should be able to understand what my fellow teacher is saying to me, but to have that discourse, I need to understand all of these literacies. In that, with math teachers, is the mathematics literacy, the technology for the use of mathematics literacy, that creates quite a mix of knowledge that you need.

**26:19 S1:** Yeah.

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**26:20 JP:** So professional literacy is very important.

**26:20 S1:** So we're gonna take a quick break, but we'll be right back with more from Jamie Pyper.

[music]

**26:32 S1:** Are you an occasional teacher looking to improve your job prospects? Are you an experienced teacher trying to reach the next pay scale? Are you interested in improving your overall teaching practice? Queens Continuing Teacher Education has you covered. With easy to access online courses, you can log on to your course from anywhere you have access to the internet. Courses offered by CTE range from Special Education to Technological Education to Safe and Accepting Schools. Queens CTE courses work with your schedule, have supportive expert instructors that want to help you succeed. Registration is fast and easy with no commitment to pay until the Friday before the course starts. What are you waiting for? Visit [coursesforteachers.ca](http://coursesforteachers.ca) for more information or to sign up today. That's [coursesforteachers.ca](http://coursesforteachers.ca).

[music]

**27:29 S1:** And we're back with Jamie Pyper here. So, Jamie, I can tell as we've been going through this entire conversation and you've been waving your hands and giving the gestures and being all excited and ready to go that you may have a little bit of theatrics in your teaching. So how does storytelling and performance kind of find its way into how you teach in a classroom.

**27:55 JP:** That's sort of an unfair question because not everybody has... I have a Dramatic Arts minor from Waterloo.

**28:00 S1:** Oh, so this is practiced hand gestures.

**28:03 JP:** [chuckle] Yes, and I did all of the Sears Drama Festival when I was in high school, all five years. And I did stage managing for a local show back home in North Bay for my dad, that kind of stuff. So there is a bit of theater, but I think every pre-service teacher should take some kind of theater like course, just a mini one. And it's about presence. It's about diction, and it's about projection so that your voice can do what you want it to do in the room for the required purpose. But I think one of the best things about storytelling and having any kind of a presence in the room, from a theater perspective, is improv. Now there's some amazing improv artists out in the world. I'm not one of them, but I understand the principles of improv. And it was described to me like a ping pong rally that you don't want to end. So it has to go from me to you, from you to me, back and forth and back and forth. And in improv, no matter what the other person gives you, you must take it, accept it and work with it so that it becomes a part of it. You can't stop it, you can't resist it and you can't deflect it because then that just... Then the ping pong just drops on the floor.

**29:23 JP:** Same thing between a teacher and a student, that the teacher is really needing to listen for what the student says and almost anything they say. You should be able to use in some way. So they say something, you go, "Huh?". Then, you hang on to it. You play around with it. And then you say, "Well, what if we think about it this way?" And you toss it back, and they get to do the same thing and toss it back. It goes back and forth. That principle of improv, I think, is one of the greatest things about storytelling and classroom practice because... I know I just brought it around to storytelling, and you thought I wasn't gonna get to storytelling.



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[chuckle]

**29:54 JP:** Because there's a story being created between the teacher and the student. The teacher thinks they know what the story is, but that's only because they've got a curriculum document and they're hoping to get to this end goal. But you never know how you're going to get there. It's like an open-middled problem. We know where we're starting, we know where we're ending and their singular points. But there's a number of different paths and trajectories to get from the start point to the end point. Those are the stories. And actually, a number of my literature friends, teachers, use plot and character and all those story-writing devices to help articulate what it is that happens in a classroom between the beginning and the end amongst teachers and students.

**30:37 S1:** I'd just like to point out as well, that that same ping pong match that improv, is similar to what you do in a podcast where you're always just going back and forth between the two people and you have to find something between what the other person is saying and going through. So I'm pretty much a Dramatic Arts minor at this point in time, I think. I think I'm gonna just claim that from now on, even though...

**30:57 JP:** Perfect.

**30:57 S1:** I probably do not have half the skills that would be needed for that. But...

**31:02 JP:** You're welcome to the club.

**31:03 S1:** I appreciate it. Honestly, though, I had a few friends who did their teaching degrees but also had drama as a minor. And they weren't in performance and theater but the skills and the confidence and the ability to interact with anyone really came from that. And so it was quite impressive to see them and I picked things off of them as well just to try and steal and work my way through it as good teachers do. And it really was something that I think is an important skill. So it's interesting to see how you've brought that into your classroom.

**31:40 JP:** Yes.

**31:41 S1:** So apparently, when you were asked to teach science, you were doing a science experiment and would you tell us a little bit more about the story and maybe something about safety in a science classroom?

[laughter]

**31:56 JP:** Well, apparently I need to brush up on my safety. This is from a long time ago. So the safety rules have changed from when...

**32:04 S1:** Naturally.

**32:05 JP:** But this lines up with improv in the classroom 'cause you have to deal with whatever you have in the room. [chuckle] The one though, with my eyebrows had to do with the experiment where you take a paint can. You put chalk dust in it. There's a hole in the side with a straw. And you light a candle in the center of the paint can. Just tap the lid down nicely, but then you blow into the

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straw. The swirl of chalk and everything, and I forget all the science behind it, I'm gonna have to trust my science colleagues to fill that one in, creates an opportunity for spontaneous combustion. And so it blows up, and the lid just sort of goes "poof" and lifts off.

**32:46 JP:** Well, my science colleague who helped me prep, [chuckle] forgot to tell me how much you're supposed to blow into the straw into the paint can. And I thought, "Well, geez. A little bit? You must have to do a lot." So I just took a huge big breath and I put my head over the can [laughter] and then blew into the straw. And this huge fire ball and explosion went "Skaboom!" in the room. And the paint lid went up past my face and this huge fire ball went up past and it's singed my eyebrows. Everybody in the class is dead silent. This is a grade nine-science class and they're all... And then it sort of reduced and everything was okay, but it's just one of those things that happens and then you look, "Oh, what'd we learn from that?" [laughter] That's where the safety comes in [laughter] 'cause all of the students know exactly what you needed to do to make it more safe.

**33:45 S1:** If you're a student in that class, though, you probably are so excited that your teacher just exploded a paint can in front of you. And you can only imagine what the rest of your science class is gonna be like where you're just ready to go because if this is what's happening at the beginning of class, what's gonna happen for the rest of class. And it probably results to a lesson in safety for a few them as well, especially as your eye brows started to grow back.

**34:10 JP:** Yes, yes.

**34:11 S1:** So are there any other... We normally have a segment at the end where we talk about classroom confessions. Do you have any other funny stories that you'd like to confess to on our podcast here?

**34:20 JP:** [chuckle] Oh yes, it goes back to improv as well. Different grade nine class, but the same year. It has to do with an explosion, has to do with improv, has to do with dealing with what you have in the room. I had a new student in class, and he had just shown up from Toronto. So he looked Torontonionian-ish. He had his hat side... This is back in the time when we didn't wear a hat sideways. We didn't wear our pants down to our ankles and that kinda thing. But he had the right look, and I thought, "Wow, wouldn't this be nice to help a student who's new to the class, and he was starting to make some friends, help me with an experiment?" So I asked him to come up, and he said, "Uh... Sure." And so he came up to the front. Now this is an experiment where there's lots of safety devices. It's a metal canister on a... I forget what you call it in science class. It's a post that screws down into the desk at the front of the classroom. And then you put a ring, a ring clamp, on the bottom and put the canister on top of the ring clamp. And the ring clamp on top of the canister so that when it lifts off, it doesn't actually lift off, it stays right there on the desk.

**35:29 S1:** See, that's learning from your previous experiment. That's good.

**35:32 JP:** [chuckle] Yes, and I paid attention 'cause as my tech teacher colleague said, "When you're dealing with a acetylene and oxygen, remember A before O or up you go." And I thought, "Oh, I'm gonna remember this." 'cause I have to put acetylene inside the canister and oxygen inside the canister. And then you take the tape off a little hole in the top of the canister, and you put a lit match there. And you're supposed to just wait because you don't put enough oxygen in the canister. And in fact, I screwed it all up because I actually put oxygen in a canister to a 50-50 mix, which is

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the optimal one for making it go "boom." And I was not supposed to. You're supposed to let the acetylene leak out the top as oxygen fills the bottom of the canister. And then when it makes a 50-50 mix, then it goes "boom." And I thought, "Oh, this is great. I'm gonna do this experiment." I forgot. I filled... I put both of them in there. I was not thinking of A before O before you go. Although I did put acetylene first. [chuckle] And then I put the oxygen.

**36:28 JP:** So this kid from Toronto is new kid in the class, standing in front of me. I said, "Now you hold the match. I'm gonna pull the tape off, and we'll see what happens." He's like, "Okay." I like, "Yeah. Okay, let's see what happens." [chuckle] So I pull it off. And he had the match right there. The largest explosion. It rattled all the windows. Every kid in class was visibly shaking in their seat and this poor kid, [chuckle] he was... [chuckle] I think this is probably the closest he's ever shown a peer that he was close to tears because he couldn't hear anything, he had no idea what was going on. And when everything sort of calmed down, I'm yelling in the room 'cause I couldn't even hear myself speak. And I'm saying, "So what do you think happened there?"

[laughter]

**37:16 JP:** "Why? Do you think it worked?" And I'm thinking, "I already know it didn't work." [chuckle] I asked the question anyways, and so I looked at him and said, "We should try that one again." I'm still yelling. And he looks at me, he goes, "Uh-huh" Turns around and walks back. "Well, you're not doing improv very good."

[laughter]

**37:35 S1:** So if you take anything from this podcast, I hope it's that literacy is a very vast definition and not to ever give Jamie Pyper a match.

**37:46 JP:** No.

**37:47 S1:** Or at least if you're one of his students, please don't ever take the match. So, Jamie, before we go, I just wanna give you an opportunity to tell people where they can find you, so I'll let you do that now.

**38:00 JP:** Sure, I have a Twitter account, 3-1-4 underscore P-E-R because everybody knows that 314's the beginning of pi. So it's Pyper. Isn't that funny?

[chuckle]

**38:15 JP:** That's pretty cute isn't it? So that's my Twitter account, and I'm also starting a web page under the name mathperceptionproject.ca. So that'll be live in about a month, and there'll be things that I think about and that I do with pre-service teachers and with grad students and with research and with classroom practice. It's just sort of a mixed bag of things, a bit of a blog and a bit of a repository of stuff.

**38:37 S1:** So similar to what we were talking about earlier where we were saying, "Get out there and join a community and find people that can help you." That's a good place to start there. And definitely following, I gave Jamie a follow this afternoon so that I could start getting some of these math tips myself and hopefully stay a little entertained with it at the same time. So I encourage

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everyone else to do that too.

**39:00 S1:** That'll do it for another episode of Popular Podagogy. You can find us on the Faculty of Education website here at Queen's University, the CFRC website here at Queens University. You can also find us on Apple Podcast, Google Play, Stitcher, Spotify and places that I'm not remembering. Before we go, we have a new producer. And I just wanna say thank you to Josh because he makes us sound good and have a good night.