

EP 12 - STEM Education Leadership through Inclusive Design

Lawrence DeMaeyer [00:00:12]:

Hello everyone, and welcome to OPC's Leadership Talks podcast. My name is Lawrence DeMaeyer, Professional Learning Advisor at the OPC.

Susie Lee-Fernandes [00:00:21]:

And my name is Susie Lee-Fernandes, OPC's Director of Professional Learning.

Lawrence DeMaeyer [00:00:26]:

As co-hosts, we will engage school and system leaders in authentic conversations to explore their passions, experiences and expertise in K to 12 education. OPC is proud to highlight the amazing work that principals and vice principals are doing across this province.

Susie Lee-Fernandes [00:00:42]:

We hope that Leadership Talks will not only provide you with inspiration, joy, and valuable strategies that will inform your professional practice, but also enhance the learning and well being of those you serve. Enjoy.

Lawrence DeMaeyer [00:01:06]:

Well, it's great to be back with you Susie, for another episode of the podcast. And pretty excited this morning. We're gonna, I think, hear a little bit different perspective on some of our conversations about education and leadership. We're welcoming this morning Lisa Cole, who is the director of programming at the k2i Academy, Lassonde School of Engineering. So I think it's going to be a really interesting conversation for sure.

Susie Lee-Fernandes [00:01:33]:

Thanks Lawrence. We definitely have had some great guests on our podcast and today is no different. So welcome to you Lisa. We are very excited to have this conversation with you today, but before we hear about your area of expertise and passion, it would be helpful to our listeners to hear about your journey and who you are as a leader today.

Lisa Cole [00:01:52]:

Thank you so much for reaching out and asking me to participate in this podcast. I'm really thrilled to share a little bit about what we've been up to here at Lassonde. I actually am a physics and mathematics and science teacher. I started my career in the classroom for about 14 years and I think myself as being a physics teacher with a physics background, I often had this question around why even myself as a woman, racialized woman, teaching physics, despite what I did in the classroom, why I couldn't increase sort of the diverse representation in my courses. So I spent my career kind of grappling with this question and trying to figure out where or what I need to learn to address this question. So I think as I moved from, you know, classroom teacher to department head to, you know, centrally assigned program facilitator in science, tech and STEM education, eventually also worked at the Ministry of Education as an education officer, I think I was grappling with that exact same question regardless of where I was working in the system.

Lisa Cole [00:03:05]:

When I think of myself as a leader, I think, you know, I would say that I lead with curiosity. I'm always interested in learning, observing, listening, understanding the system and the moving parts, gaining insights. I'm genuinely interested in people and really interested in learning about different perspectives on challenging problems, the sticky questions in our education system. I truly believe as a leader, there's always room for growth. You know, change is part of a journey and a process, and I really enjoy bringing, you know, teams together. You know, I often say that I like, you know, surrounding myself with people who are, who are talented, who have diverse perspectives and oftentimes smarter than I am and have insights beyond the insights that I may have gathered along my journey. And I really encourage people to push my thinking, to be bold, to be curious with me, who are action oriented and willing to dream with others that are interested in that journey. I don't claim to really be a leader, I suppose

Lisa Cole [00:04:19]:

I think I'm just a member of a team with, you know, a question that I fallen in love with many years ago. From the moment I decided to pursue a physics degree to, you know, the moment by chance, I fell into teaching and fell in love with the experience with connecting with youth and community. And I take that with me no matter where I go.

Susie Lee-Fernandes [00:04:45]:

Thanks, Lisa. You definitely sound like the leader we need today, that's for sure.

Lisa Cole [00:04:50]:

Thank you for that.

Lawrence DeMaeyer [00:04:51]:

So, Lisa, we've had the good fortune here at OPC to work on some projects with you, and we certainly know that having started as a classroom teacher and had those experiences in a school district, you now have a really unique position where you have a slightly different view on education and pathways and so on. But I know that you continue to be a champion for STEM and for inclusive design and for ensuring that there's diverse representation in the stem pathway and so on. And you're working quite collaboratively with schools and so on to continue to develop those pathways. So can you talk to us a little bit about some of the work you're doing now at Lassonde and how that relates to these themes?

Lisa Cole [00:05:32]:

Yeah, absolutely. When I finished up my second men at the Ministry of Education, this opportunity to join Lasande here at York University to launch the k2i Academy. k2i stands for kindergarten to industry bubbled up because I met the dean, Dean Jane Goodyear, over breakfast at a random conference I was at. And we grappled with the same questions around equitable access to STEM pathways. And I couldn't help but wonder maybe some of the innovative work that we need to do to support the K-12 public education system might lie slightly outside of the K-12 education system and be able to leverage some of the different ways in which we might need to access resources, including funding models, as well as have access to networks in maybe a different way. So I took a leap. So in June of 2020, we launched k2i Academy here. And you know, the k2i Academy started out of the Lausanne School of Engineering's equity, diversity and inclusion action plan.

Lisa Cole [00:06:46]:

It was never intended to be designed as a recruitment, admissions and recruitment tool. It was always grounded in equity work. So we're thrilled to kind of think differently about what outreach work needs to look like as an engineering school, working with school boards across Ontario, as well as schools and educators and organizations like OPC. The fun part about my work is that I've spent time learning about the policies and the rules, not necessarily to follow the rules per se, but to think about where there is space between these policies and rules, to collaborate with publicly funded school boards, to think differently about the challenges that are bubbling up, especially in STEM education, and how we might come together to design innovative solutions to those challenges. It's funny because we're an engineering faculty and we use engineering design approaches actually to creating these prototypes of viable solutions to test out with our school partners. And an example of that might be our Summer Work Integrated Learning Program. And so when we think about students who finish grade ten science and opt out of taking a course like physics, which is a prerequisite course leading to

engineering pathways and many STEM pathways, we know that they're already deciding out of grade ten that, you know, these pathways are not for them. So how do you know when you're, you know, that age that it's definitely not for them? And so this program in particular, attempts to reconnect students back into that pathway.

Lisa Cole [00:08:37]:

So, in the summer, we employ high school students as lab assistants who have opted out of physics going into grade eleven in their day school programs, and we ask them to try it out one more time with us. They are paid full time jobs for one month, 20 days, also working towards earning a high school physics credit and working on an engineering design project that's fully integrated into that physics program and the results of that program to date, I think since June of 2020, we've hired over 400 high school students in that program, and 100% of those students in that program have earned their physics credits, with a course median of about 91% over the summers. When we design programs partnered with school boards, it becomes possible to bundle together some of the systemic barriers to access an opportunity like this one and come up with some interesting solutions into a program that addresses those systemic barriers to access and opportunity. And what we're seeing is just recently we received some messages back from former participants where, you know, they will say things like, it was a life changing experience. "I'm now studying engineering and really enjoying this particular career pathway." And the work that we do together is actually stronger because, you know, when I think about what school boards are trying to do in terms of project based learning, thinking about pedagogy, thinking about interdisciplinary studies, theoretically and philosophically, we know that that is best practice. However, you know, how do you mobilize that work when you are busy trying to get through the day in your schools? And at the same time, for us in an engineering faculty, how do we increase diverse participation in our programs if students in grade ten are already saying it's not for us? And so we grapple with very similar questions in postsecondary as well.

Lisa Cole [00:10:57]:

I work with my colleagues, for example, in the Lassonde Education Innovation Studio, and we're also grappling with the same questions around pedagogy, teaching and learning spaces at the undergraduate level. And we're also innovating. We're creating different pathways into our programs. We're creating new programs. We do have a program called Digital Technologies degree program right now now, which is a fully work integrated learning degree where undergraduate students are employed in fully salary paid jobs in the tech sector with our partnering industry partners while they're working on earning a four year degree, and they spend only 20% of their time taking courses over the four years. So we're also thinking about disrupting the status quo on STEM education as well. And I think it's important for us to

continue to collaborate, continue to communicate with system leaders, with administrators, with teachers in the K-12 sector to make sure that we're doing this work together and that we're seamlessly designing with the student and the family in mind to strengthen the student experiences so that everyone can find the place they want to be, to find passion in their work, to find a purpose that interests people generally. And I don't claim that every student is going to love being an engineer, and I don't think that that's really the purpose of k2i.

Lisa Cole [00:12:38]:

But I think what we need to do is ensure that every student has early enough exposure at the possibility so that people can make informed decisions about their futures, and that it's not done by chance, that it's done intentionally.

Susie Lee-Fernandes [00:12:55]:

Thanks Lisa. I feel like you've covered every major question we should be asking right now in education in what you've just said. But the idea of even the name k2i—kindergarten to industry really makes me reflect on the purpose of schooling and the current challenges right now in terms of equity and access and opportunities, as you shared. So could you delve a little bit deeper on in your experience and in your work, what are some of the ways that leaders can engage in these important conversations to positively impact authentic inclusion?

Lisa Cole [00:13:31]:

You know, I do find myself in a very privileged place where my personal self and my professional self are intertwined. And, you know, that could be a good thing and a bad thing because I feel like I can never turn work off because it's so intertwined with my personal self. But, you know, I think when we think about, you know, the need to create inclusive learning spaces and to think at a systems level what it means to create equitable opportunity and access, at the foundation of all of those conversations, I think what we have to remind ourselves as leaders is that education is a human endeavor. I know we have a formalized education system, but if we imagine for a moment we didn't have a formalized education system, learning would still happen. Because I think as people, as humanity, we have certain survivor instincts. You have no choice but to learn. Who do you learn from? You learn from your community.

Lisa Cole [00:14:39]:

When I think about equity and inclusion work, that work is a human endeavor. And as leaders, I think in this formalized education space, I think it's important for us to remember that.: that we need to lead with people first, which includes things like leading with kindness, with an openness, the process of even leading without people. You're not leading. You lead with people. And it doesn't always mean that you are necessarily the final decision maker. Change doesn't

happen without people around you. And when I think about the need for inclusive spaces, we can talk about inclusion in the classroom for our students and equitable access for our students.

Lisa Cole [00:15:36]:

But I would argue as a system leader or a school, you know, administrator, we also have to think deeply about what it means for our staff in our buildings and what it means for our community members that engages with us. What does it mean to be inclusive in our community? And I don't claim to have answers to all of it, but what I do know is that for me, you know, I always remind myself that the work we do is about people. And, you know, the other things that I've learned is that when you surround yourself with people and you really position the work as being relational, you become bolder in, you know, taking opportunities up because you know that, you know, you're making likely the best decision as a community to take risks together. And when we take risks together, we're open to taking missteps together. You know, we often say in education, we need to honor mistakes. We need to be okay with mistakes. But that's really hard to do if you're doing it by yourself, right? Because then you feel like you own the mistake. But when you take risk with the community, those mistakes are learning opportunities.

Lisa Cole [00:17:02]:

And likely because you've included a community with such diverse perspectives, likely within your community, there's viable, really creative solutions to those missteps. I think about that a lot. I also believe that as you create your teams, you need to, you know, strengthen trusting relationships and authentic trusting relationships. And, you know, that takes time. And we often don't refer to time as being sort of a resource. But if you really think about it, you know, everyone is limited by time, and there's only so many minutes in a day. So when people trust you and people want to go on a journey with you, they're giving up the most valuable resource that they have, right? Their time. And so, you know, how do you, how do you honor someone's time and make the work that you do together meaningful for others? I think it's false to say that anyone is truly an expert in equity, diversity and inclusion work.

Lisa Cole [00:18:09]:

I think it's a learning journey, and I think it's just really important for us to remember that that learning journey involves people and collaboration and learning about different perspectives. This is hard work, and I think if we do that work with people with genuine curiosity, you know, anything becomes possible.

Lawrence DeMaeyer [00:18:34]:

Wow. Thank you so much, Lisa. I think you've, you know, you've really given us, you know, all educators, some really big provocations and really a powerful example to follow just through

the way you've oriented your approach to your work through these big questions. I really love what you said about centering our humanness in the process and focusing on developing those really authentic relationships in the work that we do. Because, as you said, education is really a human endeavor, after all. So we really want to thank you for spending some time with us this morning and sharing with us some of your experiences and thoughts on education. And we really do appreciate the work that you're doing to build those bridges and expand those pathways. And we hope you continue the great work.

Susie Lee-Fernandes [00:19:29]:

We hope that you have enjoyed this episode of the Leadership Talks podcast where we engage in authentic conversations with school leaders. Please share with your friends and colleagues, and we hope you will join us.

Lawrence DeMaeyer [00:19:40]:

Again if you have a passion or story to share as an educational leader or would like to find out more about the other amazing professional learning opportunities offered by the OPC. Please visit our website by clicking on the link in the show notes.