

# STRUGGLES AND TRIUMPHS OF AN EARLY CHILDHOOD STEM EDUCATOR: WHY CONNECTIONS MATTER? AN INTERVIEW WITH MS. JADE LEONG

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## Abstract

*This interview between a researcher and an early childhood educator delves into pedagogical approaches for teaching STEM subjects to young children aged 1 to 5 years. The conversation emerges from collaborations and reflections, shedding light on the challenges and solutions within early childhood education. Research by Buechel (2021) emphasizes the importance of STEM training for teachers, as it correlates with increased confidence and implementation rates. Additionally, the impact of teacher self-efficacy and experience on classroom performance and motivation is evident through studies by Katzenmeyer & Lawrenz (2006) and Smith, Douglas, & Cox (2009). The interview highlights a significant issue—early childhood educators often lack in-depth professional preparation in math and science. This knowledge gap results in insufficient content expertise and a lack of confidence in delivering high-quality STEM education.*

This is an interview distilled from conversations, collaborations, and reflections between a researcher (Poh) and an early childhood educator (Jade) on understanding and exploring pedagogical approaches to teaching Science, Technology, Engineering, and Math (STEM) in an early childhood classroom setting. In this interview, early years includes children between the age of 1 to 5 years. Research published by Buechel (2021), concluded that “higher training in STEM resulted in higher confidence in teachers’ ability which in turn resulted in higher rates of implementation” (p. 2). Other studies also show that teacher self-efficacy and experience affects performance in the classroom (Katzenmeyer & Lawrenz, 2006, Smith, Douglas, & Cox, 2009), and thus motivation, and confidence. Furthermore, research “show that early childhood educators rarely receive in-depth professional preparation in math and science, resulting in insufficient content knowledge and lack of confidence in their own abilities to implement high quality STEM learning experiences for young learners” (Brenneman, 2009, Greenfield, 2009, cited in Brenneman K. L., 2019). Jade’s struggles with bringing STEM into her practices reflected similar challenges to her colleagues and others in the field. In this interview, Jade shares her reflections and her journey toward gaining more confidence to bringing and engaging with STEM with her students with support from the researcher who is a scientist and science educator, and more importantly, from other educators and the community, which includes volunteers from a science museum and the university.



*Figure SEQ Figure \\* ARABIC 1. Ms. Jade Leong, Senior Early Childhood Educator. Photo Credit: Used with Permission.*

*Poh:* My name is Poh, and I am a science education researcher in the Faculty of Education at Simon Fraser University. I am interviewing Ms. Jade Leong about the challenges that she experiences as an early childhood educator in bringing STEM into her teaching practice. I will be asking Jade about her reflections, experiences, and challenges on balancing between her passion for STEM education and commitments to everyday tasks as an early childhood educator. Jade, thank you for taking your time to share your experiences with me. I am so glad we get to continue our work together after publishing our visual scholarship piece (Tan & Leong, 2021). Let’s start by telling me a little bit about yourself, your background and how you came to be an early childhood educator?

*Jade:* Since finishing high school, I was unsure of what career path to take. My mom suggested to work with children because she saw a caring nature in me. Throughout elementary school, I often enjoyed spending time with children who were younger than me. I decided to explore early childhood education by attending an adult continuing studies information session at a community center. I learned that the first few years of their lives were vital and crucial to their overall

development. Specifically, I was drawn to the journey of how early childhood educators build close relationships with the children that go beyond rote learning. This was the start of a new chapter of my life. I've been working as an Early Childhood Educator for six years with extended training and experience in special needs and inclusive practice.

*Poh:* It is interesting to hear about how your family helped you discover your strength and interests. Tell us about how you became interested in STEM education? Were you always interested in science?



*Jade:* As an adult, I found science to be very important in the way of life as we go through various changes without realizing it. Such as how much the weather is affected by climate change, the concept of gravity or how mixing certain things together, aren't always meant to be together. This notion of questioning the things around you is what inspires children every day with their innate curiosity of the world. I previously worked in a daycare, and it was British Columbia's first living building. The living building was built on a concept that promotes sustainable practices where its design contributes positively to the environment. I became more interested in learning about the sustainability of the building and how it translates or presents itself to the children's learning and thinking around sustainability.

*Poh:* As you know, many educators like yourself closely align with a specific pedagogy, what's yours and what are your approaches to bring STEM to the children?

*Jade:* My teaching philosophy aligns with the Reggio-Emilia approach. Reggio Emilia was created by Loris Malaguzzi, in the city of Reggio-Emilia in Italy. He theorized that learning and teaching with children needs to go beyond simple transmission of knowledge and instead, he emphasizes that teaching and learning is a co-collaborative, co-creative, and co-constructing process. This includes documenting children's work by using different mediums and allowing space and time for teachers to communicate and continue the co-partnership process. The center I used to work in was inspired by Loris's approaches. In addition to Reggio-Emilia philosophy of child-centredness, I also believe the educator plays a crucial role in a young learner's journey. Therefore, in my pedagogical teaching, I choose to be a facilitator in the children's learning by using provocations to evoke a co-learning partnership with the child. I am intentional when planning explorations that give way to multiple mediums and materials for the children to discover deeper learning within themselves. I understand that children have unique and diverse abilities, backgrounds and cultures that embody their own thoughts, feelings, and opinions. Children have their own identities. This is the lens I look through even when I am teaching STEM.

*Poh:* It sounds like when you are introducing STEM that respects diverse creative expressions of learning, you are combining science and art. Would you say that you are teaching more from a Science, Technology, Engineering, Arts, and Math (STEAM) approach?

*Jade:* I'd like to think we strive as educators to teach something from a holistic view that embodies all the approaches to appeal to a vast range of children. I am not sure about acronyms and wasn't really introduced to STEM and STEAM until we chatted previously. But yes, STEAM could bring a more holistic view to learning about science for the children.

*Poh:* I really like how well thought out your teaching philosophy is. I'd like to ask you a little more about how your philosophy translates into your practice.

*Jade:* One of the main things we want to strive for in our curriculum is the sense of community. How do the things we cultivate with children impact their understanding of the world? We are not teachers who fill children with knowledge but want them to learn on their own and come up with their own ideas around knowledge and specifically, what they hold as important. When children present the little moments where they find and develop deeper relationships with entities that aren't solely human (animals, nature, inanimate objects), those are moments that I find magical. One example that I can think of how I put my teaching philosophy to practice is that I think about weekly explorations where I and other educators ask the children's questions to guide them to ask deeper questions. We have discussions, drawings, movement, and activities around concepts such as time, change, power, health, and death.



*Poh:* I really commend you in staying authentic and intentional when you merge your teaching philosophy with your practice. Through my research with observation and conversations with other early childhood educators, I understand that it is hard for some to maintain their authentic identity as an educator, in other words, staying true to your teaching philosophy. In your years of being an educator, have you experienced times when you found it difficult to keep your practice consistently aligned with your philosophy, especially when you are teaching STEM?

*Jade:* Developing an in-depth teaching philosophy, for all subjects and not just for STEM, requires time, dedication, motivation, resources, and a willingness to commit. Through the eight years I've been in the early childhood education field, I have had many moments where I struggled being authentic, what I am saying is keeping up with teaching from an authentic place, and like many educators, as years passed me by, I became stagnant; finding that some days felt like I was just there but not present in the moment. So, yes, on some days I do struggle with being consistent with staying true to my practice and on those days, it is easier to just set up activities without being intentional simply just to get through the days. This is because to come up with meaningful intentionality for every activity must be well thought-out and planned and aligned with the curriculum. On those days, I am just waiting to go home. When it comes to STEM activities, it requires even more time and energy to plan because I want to make sure that it fits with the existing centers at the school and more so, it is not my expertise. I know that you asked me specifically about STEM, but these struggles are with every topic we try to do.

*Poh:* I can see how it's not limited to teaching STEM, but in general, teaching. How did you get over these moments?



*Jade:* Yes, it's not only STEM, but for me, STEM takes more effort and time. How I got over these moments? Well, the only way I could change my mindset was to build on my own self-fulfillment. I started by reading articles that questioned my practice and adapted my philosophy from what it once was to a better understanding of what it is now. It's only possible when you have a team that grows alongside you who also realizes their own interpretation and are motivated to take on challenges with you. I would say that the relations I felt with the other teachers helped me reinforce my identity as an educator and furthermore, gave me confidence to bring STEM to the children. From overcoming my own hurdles, I realize how important it was for me to have connections with people who have similar interest, and this includes people who are not early childhood educators. From my experiences in other facilities, educators who don't have the support, connections, and relations, often feel unappreciated and undervalued. This negatively affects their motivation, dedication, and willingness to commit to further develop their teaching. When there is a lack of support or understanding from management, educators tend to experience a toxic environment between staff (i.e., gossip and rumours), an increase in turnovers and lack of care experienced by families. When educators feel this way, it will affect how they plan activities, what they want to share and what they want to teach. What I mean is that the activities and materials often become closed ended because teachers are no longer motivated to think with intentionality. This tends to impact the children negatively as well because they become bored easily and can lead to negative behaviours.

*Poh:* I am amazed by the steps you've taken to overcome these emotional struggles that can really impede learning with the children and relating to your colleagues. I can also say that your mindset can also apply to other educators who are not necessarily in the early years. As we've briefly mentioned in the beginning about the importance of not only staying authentic to your teaching practices, but also to create and maintain the relations that you've formed with your entire support system. Can you tell me more about this?

*Jade:* Having a team with a strong relationship to challenge and question the way you practice not only supports you in the long run but can fulfill you to achieve more. When educators encounter a problem, they are encouraged to discuss it, add to it and critically reflect on their self on what makes it so meaningful to them. We are continually questioning our values and influences that affect the way we think and why our reasoning is "sound" but you can evolve or adapt without losing your own voice. Members of management encourage you to take the benefit of paid workshops and professional development to continually inspire you, create an intrinsic motivation as well as a better state of mind when working with children for years.

*Poh:* All that you've said has been so insightful and I am sure all educators who read this interview can appreciate and maybe even identify and sympathize with what you've experienced. For the readers who may have the same struggles as you, what would you say to them?

*Jade:* When educators take time to critically reflect upon their practice, they need to feel encouraged to dedicate spaces to make that time available in the day. They will naturally feel motivated and a willingness to commit when they see the impact it has on their children they work with daily. The children are more engaged in activities; feel more attentiveness to wonderings and questions and will display more acts of meaning making when discussing their ideas with you. As an educator, you might feel a newfound eagerness to discover with the children when actively listening to their conversations and watching them play and you may feel invigorated when discussing with co-workers about your observations of the kids. I find it particularly fascinating when STEM activities are involved because it gives me an opportunity to reflect on something different.

*Poh:* What are some of realizations you've come to as an early childhood educator?

*Jade:* For me as an educator, I've thought of how I've come full circle when I first started ECE and how I see things now nine years later. My own personal development is that the way to make things change is to take the initiative. I was so empowered and moved by this way of guiding children that I was excited to share my discoveries with others in different fields from me in the beginning. The knowledge I gained from hearing other's perspectives helped me influence what I know to be true and create a mark in their world. I feel I have contributed in some way that has affected me and others around me. This is part of the movement that pushes me everyday as my career is what I breathe and live with not only in my work but personal life as well. Together, the reward is the journey we walk but diverge into many pathways that start from one point.

*Poh:* What is the one thing you would want the readers to take away from this interview?

*Jade:* In the end, I want other educators to know we all struggle in the many points in our life where we feel stuck, unable to change or find things repetitive. It is okay to live in that space but don't feel discouraged when you have those pauses in your work or professional life. Acknowledge who you are in those moments and reflect on what is needed for you to get out of that mindset so you can respond appropriately and make changes. Change is possible but only if you take the initiative to try something new, take risks, be vulnerable but most of all, be authentic by being yourself. Be honest with yourself and true with how you feel when those moments happen. Don't be afraid to share your doubts and struggles with fellow workers because more than not, they had them too which makes things all that more relational in any context. And most of all, seek support from other educators, communities, and even researchers, like what I have with you, Poh!

*Poh:* Thank you Jade for sharing all that you've learned throughout the years and your willingness to be open and relate to the reader about how you've searched for ways to further develop and relate to bringing science to your students.

## **Biography**

Poh Tan is currently completing her second PhD in Education from Simon Fraser University where her thesis focuses on decentering dominant ways of teaching and learning science, specifically through an Indigenous Hawaiian framework and storytelling. Her first PhD was obtained from the Faculty of Medicine at the University of British Columbia, where she focused on the biology of blood stem cells. She is a research fellow at Science World and Vancouver Botanical Gardens Association, Vancouver's science museum and urban garden. She is founder and CEO of STEMedge Inc., a STEM educational consulting company. Poh has been practicing STEM outreach with K-12 students in the community space for over 20 years and frequently trains science facilitators who bring STEM to the public.

Jade Leong's journey in early childhood education began with a genuine passion for nurturing young minds. After high school, she embarked on a career path filled with purpose. Encouraged by her mother's observation of her caring nature, Jade explored her calling. Her fascination with children, especially those younger than her, grew during elementary school. The pivotal moment came when Jade attended an adult continuing studies information session at a community center. There, she realized the profound importance of the early years in a child's development. What captivated her most was the unique bond early childhood educators formed with children, moving beyond mere rote learning. This revelation marked the beginning of a new chapter in Jade's life. For the past eight years, she has dedicated herself to the field of Early Childhood Education. Jade's commitment extends to specialized training and hands-on experience in supporting children with special needs and fostering inclusive practices. She continues to shape young lives with her caring nature and unwavering dedication.



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