Antoinette Ellis - Finding Pathways to Gender Equality in STEAM Transcript

- Hi everyone, My name is Antoinette Ellis and I am the arts integration educator in residence here at the Institute For Arts Integration and STEAM. I am also the CEO and co-founder of ACE and Company Limited, a recruitment firm dedicated to helping women and young girls find successful careers in science, technology, engineering, arts, and math. In other words, STEAM. Today I would like to discuss how we can help our girls and women find successful pathways to achieve gender equality in STEAM. And I believe we can do this by having a talk about why there're not so many young girls or women pursuing an education or career in STEAM. And how do we encourage our girls to explore the career possibilities available to them regardless of gender. These are pretty heavy questions, but before we do that, let's take a deep dive into exploring what STEAM education is. We are gonna explore the acronym. Well, almost everyone has heard of the acronym in STEM, science, technology, engineering and math, or STEAM, as we talked about, science, technology, engineering, arts and math, and they use STEM and STEAM interchangeably without understanding what the A in STEAM truly means. The definition of STEM focuses on the process and inquiry of science, technology, engineering, and math. For example, robotics, gaming, coding, hackathons and et cetera. The definition of STEAM uses design principles and connective processes from the arts and STEM as access points for inquiry, critical thinking and dialogue. So I know the A confuses a lot of people but one thing to remember is adding creativity, art, to STEM does not make it STEAM. For example, just because you're facilitating a robotics program and the students are painting the robotics that does not make it STEAM. The A actually encompasses all forms of arts. It's visual arts, music, theater, and dance. There has to be a direct connection to the content and art standard, and they have to be assessed equally and naturally for it to be considered STEAM. For example, with STEAM, you can integrate science with visual arts or digital arts, technology with music, engineering with dance, and math with theater. Each content has to be assessed equally in order for it to be arts integration within STEAM. Students need to learn both the content and the standard together. Another way to look at it is that the arts integration is an approach to teaching and learning through which content is taught and assessed equitably in and through the arts. I also want you to know that arts integration has to be a part of STEAM but STEAM does not have to be a part of arts integration. You can choose any content and integrate it with an arts standard. You can choose language and integrate that with an arts standard. That's arts integration but it doesn't make it STEAM. The only way that an arts integration can be is when the art is integrated with science, technology, engineering, and math. I know, what a mouthful, but there's resources to help you. What may look like STEAM might actually be arts enhancement. So arts enhancement might seem tricky, but it really isn't that complicated. Arts enhancement uses the arts and service of another content to increase student engagement. The keyword is service. If we look at the example of the Lego robotics the visual art component, the painting and the decorating it's what's used to increase student

engagement. That is what is meant by service, but the students aren't learning a about the arts standard in the process. So, which is why it would not be considered arts integration and STEAM. Now you have an idea of arts integration but you might be wondering, well, what about STEAM careers? What are STEAM careers? Well, when it comes to our students career options we have to prepare them for tomorrow. We have to let them know that what is available for them and teach them how to be flexible because STEAM careers are forever evolving. We don't even know what STEAM careers is gonna be available tomorrow. I remember finding out about certain careers that I had no idea existed when I was out of school. I was wondering if my choices would've been different if I was offered the opportunity to explore. So the possibility in STEAM careers is endless but it's not limited to tech. So another thing is people think STEAM, they think tech but the possibilities are more than that. You can be an astronaut, graphic designer, photographer, fashion designer, interior designer, sound engineer, website app designer, software developer, biomedical engineer, and there's so much more. But we owe it to women like Ada Lovelace, the first computer programmer and many other women who have paved the way for us to pursue careers in STEAM. As mentioned, and I hope you're not gonna forget, science technology, engineering, arts, and math. But if Ada Lovelace was the first computer programmer for writing algorithm for a computing machine in the mid 1800s, then there's a huge disconnect somewhere. According to Sasista, as of June 2021, less than 25% of females hold a position in a tech major company like Apple, Google, Microsoft, and so on. It's really hard to believe. And you look at today, we've come a long way since 1800s, but yet barriers still exists. Where's the disconnect? Well, it is said that women in tech have experienced lots of challenges and continue to do so, But why do you think some of those challenges are, what are they? According to a survey by Research World, women felt like they are not being taken seriously due to gender perception or they're still a huge gender pay gap or the glass ceiling for them to move higher is too high and not having female role models in tech to look up to or lack of diversity within a company or team. Then there are the stats that we continue to hear about. Well, out of 10 listings on a job post if a woman only sees two that she qualified for, then she most likely won't apply where it's the opposite for men. I've had countless conversations with CEOs and hiring managers that have the same concern. They want to hire more women but there are not enough women applying for the positions and there's not enough women pursuing a career and an education in STEAM. So where's the disconnect, what is the problem? Well, the problem is this. Gender unbalance does affect the future pipeline. According to an article by CNN business Microsoft received survey results that says girls will show interest in STEAM around age 11 and then lose interest by age 15. Well, why is that? The part of the reason I believe that is is that because we usually tell ourselves that if a subject is too difficult we won't continue to pursue it, like math. Then we carry it throughout our lives. And instead of figuring out an another way to understand the subject, we just give up. But we as educators can help our students conquer this by exploring arts integration. As I talked about earlier, girls need to know not to give up and if it seems too hard, we can find other ways of learning through arts integration. I heard many female speakers say that they struggled in math or in other subjects, but they kept with it. They found a way to learn the content and now they are a professional in STEAM, like a scientist, all because they

did not give up, the options remained open for them. What students don't know is that sometimes if they stay on the path of least of resistance then they will have less options to choose from. We have a big problem on our hands and if we don't do something, then girls like our daughters, nieces, and sisters, won't see all the opportunities that are truly available to them. Not enough girls are taking STEAM courses or following a career in STEAM. So what does this mean if we don't do this and we still have a problem today? It means that there is an not enough women in STEAM fields, period. It means that equality and pay will remain a factor. It means that the selection pool of qualified women in STEAM will remain low. These past few years have been hard, especially for organizations that support girls in STEAM. Some of them have had to close their doors or figure out how to stay afloat virtually during a pandemic. Now, if these organizations close their doors then what happens to the work and the foundations that they have been laying before the horrible 2020? Well as educators we can help. Young girls need to see them else working together to create change. They need to continue to see themselves in careers that was once deemed just for one gender. They need to see the change, they need to be the change. The future of work does not just depend on trained or qualified skills though. It needs allyship to give fair and just opportunities for all girls. So let's face it, if the careers tough today and tomorrow are built on the backs of STEAM, and if we don't have a plethora of women and men in these roles seen as equals then nothing would've changed. And the work of Ada Lovelace and others will continue to be in a distance instead of history changing the future. Hmm, something to think about, but finding successful career pathways for girls in STEAM can be achieved through collaboration. It's a joint effort amongst all sectors including private and public. So did you know that countries all over the world have committed to solving the most pressing global issues? Well, if you didn't, they are and they're doing this by participating in the United Nations sustainable development goals which is also known as Global Goals, also known as SDGs. In 2015, 17 goals were created by United Nations as a call to action to end poverty, protect the planet and ensure by 2030 all people enjoy peace and prosperity. We still have a lot of work to do. These SDGs are designed to end poverty, hunger, AIDS and discrimination against women and girls. Goal number five in particular is gender diversity, achieve gender equality and empower all women and girls. Companies and organizations all over the world have committed to addressing this goal. We as educators can do the same thing by working with our students to be innovative on how we can address gender equality. Let's explore some ideas you can implement in your classroom today. You can explore the SDG number five gender equality by visiting the website and taking a look at the goal targets. And there's a list of them that you can actually go through and see what they are. Have your class come up with innovative ideas on how they can address those goal targets. You will be amazed at what they come up with and see if any of their ideas can be implemented in your class today. Another option is to explore female role models in STEAM, past and present. They're so many amazing women who have paved the way for our generations and for the generations to come, women like Ada Lovelace, the first computer programmer or Alice Ball, a chemist who discovered a treatment for leprosy. There are also many women today that are continuing the legacy of paving the way. Women like Dr. Merit Moore, who is a quantum physicist and professional ballerina and Jessica Alba who is a well-

known actress and CEO and founder of Honest Company Jessica Alba works with scientists to create safe and eco-friendly products for families. How awesome is that? Have your students write a report on a female role model they discovered and ask them why do they choose them. Ask them to list what these women have done in the past to pave the way or what they're currently doing to pave the way for others coming behind them. Another option would be to explore a list of STEAM careers and find a female STEAM professional and invite them to your class. And you could find that on the internet easily. Invite them to your class in personal or virtually. Ask them to share what they do and why they chose that career. It will be really awesome to see what they come up with. Create diverse working groups as another way. We all know there's assignments and group assignments but we have the opportunity to make it diverse. So I challenge you to choose the groups because we all know girls wanna work with girls and boys wanna work with boys. Even though there may not be anything wrong with that it really isn't a reflection of the real world. In a professional setting you will have diverse people working together regardless of gender. This should be reflected in the classroom as well. And let's encourage our girls to have a voice in the group and lead. The last one I have is assign a mentor. So mentorship is so important. It's important for our girls to see someone to encourage them and motivate them. It can be a mentor from an organization that works with girls in STEAM, or even teachers in your school. Have a conversation network and see what's available to provide these options for your class. So can you believe we barely scratched the surface? There's a of endless possibilities of finding successful pathways to achieve gender equality in STEAM, and it can be done, it really can be done, we can do it together. I hope this information will help you in starting the journey to having these amazing conversations in your class. These are conversations that will help to achieve gender equality. And what you discuss in your class today will affect the workforce later on. So I'm looking forward to hearing what you've come up with and I'm encouraging you to see what's possible. I wanna thank you for this, you know, spending this time with me, I hope you had a great time like I did and hopefully we can do this again soon, thank you.