



**The Global Learning Podcast Episode 5:  
Global Learning in STEAM'D – Climate Change and Resilience  
with Shaun Martin**

**Meet Shaun Martin:**



Shaun Martin is senior director for climate change adaptation and resilience at World Wildlife Fund and has more than 25 years' experience in capacity building, training, and leadership development. In his current role, he helps influence policy and practice by bringing climate change dimensions into the fields of conservation and sustainable development. He also provides guidance to WWF programs on becoming "climate-smart," making sure they are prepared to address the inevitable consequences of climate change and their effects on biodiversity, people and the ecosystem services they rely upon.

He has designed and delivered training on climate change and adaptation to more than 1500 people across the globe. He is also a member of the boards of directors for the School for Field Studies and Emerging Wildlife Conservation Leaders, an advisor to ee360 for the North American Association for Environmental Education and serves on the technical reference group on ecosystem-based adaptation for the Convention on Biological Diversity. Prior to joining WWF, he worked at the Institute of International education managing exchange programs for working professionals and university students. Shaun has a bachelor's degree in chemistry and a master's degree in social and economic development from the University of Pittsburgh.

## **Episode Transcript:**

Hello and welcome to the [Global Learning Podcast](#). This episode is ***Global Learning in STEAM'D*** (Science, Technology, Engineering, Arts, Mathematics, and Design) and is presented in conjunction with the Global Learning Colloquia. Today's interview is with Shaun Martin, senior director for climate change adaptation and resilience at [World Wildlife Fund](#). In his current role, he helps influence policy and practice by bringing climate change dimensions into the fields of conservation and sustainable development. He also provides guidance to WWF programs on becoming "climate-smart," making sure they are prepared to address the inevitable consequences of climate change and their effects on biodiversity, people and the ecosystem services they rely upon.

In this episode, Shaun Martin will address ***global learning in climate change adaptation and resilience***. He will also be a featured speaker at the [Global Learning Colloquium: STEAM'D](#) at the NAFSA 2018 Annual Conference & Expo speaking about ***Integration of Resiliency Across Curriculum***.

### **1. What does it mean when we talk about 'global learning' in the context of Science, Technology, Engineering, Arts, Mathematics, and Design or STEAM'D?**

Well I just wanted to start off by saying, before I worked at WWF, I spent a decade in the field of international education so I am a real, true believer in the importance of learning that happens when people from different cultures interact with one another, share their ideas and solve problems together.

And right now, for me there has never been a more important time to discuss and practice "global learning." And for me what's driving the urgency for inter-disciplinary and international problem solving is climate change.

For the past couple of years, I've been giving a talk called, "Learning to Live with Climate Change" and that's exactly what we need to do. Climate change isn't going away any time soon.

And I don't think people have really come to terms with fact yet that climate change is here to stay for decades to come, even if we manage to eliminate all the fossil fuels from our economy, climate change is going to continue to happen.

So if you live on the coast, you're probably already worried about sea level rise and stronger hurricanes. If you grow crops for a living, you know that drought, heat waves and outbreaks of pests are also a growing threat. And infectious diseases like dengue and zika are already spreading to temperate areas like in the United States.

These things unfortunately are only going to get worse as climate change continues. And I really don't think we're preparing society for the profound change we are about to experience.

Climate change leaves nothing untouched so every academic discipline is affected and every academic discipline has a role to play in creating a climate resilient society. So it doesn't matter if teach or work in urban planning, engineering, architecture, business, agriculture, public health, public policy, law, even conservation like I do – you really need to think about how climate change is affecting your world and how you need to start preparing for the changes that are happening right now and will continue to happen in the future.

But we really can't tackle these changes in our professional silos. Climate change affects entire systems, not just single components of those systems. And the only way we're going to build climate resilience is to work across disciplines to solve challenges together.

And because the nature and magnitude of these problems are beyond what humankind has ever experienced, we don't really have time to figure this out all by ourselves. Americans must work with partners in other countries, to learn what others are doing to inform what we do at home.

And really equally important, is we need to share our own expertise with the rest of the world, particularly with countries that do not have the same level of know how in things like science, technology, engineering and design.

So, for me, that's really what global learning is. It's coming together, across disciplines and across borders, to figure out how we're going to learn to live with climate change.

**2. In your work you talk about the resiliency paradigm vs. the sustainability paradigm, can you describe the difference between these two concepts?**

Sure, I'm really glad you asked that. I think we really need to re-think what the concept of sustainability and what it means in a continuously changing climate. The whole idea behind sustainability is that we can somehow maintain our natural resource base, in perpetuity, if we somehow balance natural resource consumption with replenishment. So, you might think of fish - if we limit the number fish we take from the ocean, fish stocks can quickly recover so that we'll have fish stocks in the future.

But climate change is really messing with that whole sustainability paradigm. Even if we stop taking fish from the sea altogether, rapid changes in the ocean that are beyond our control at this point is going to take its own toll on fish stocks. It's a problem of shifting baselines.

So, we may decide to limit our take of fish to one ton this year, for example. That would allow enough fish in the sea to recover to have a full stock again next year for when we can take another ton. But the problem with climate change is, over that one year period of waiting until we fish again, climate change itself is reducing the number of fish in the ocean. And so the number of fish left is below a sustainable level and eventually the fishery collapses.

Climate resilience is a new framing around the problem of natural resource management that makes more sense to me. Resilience is basically the ability to maintain functionality in the face of disruptions and stressors. And climate change is bringing us lots of those.

So, rather than trying to achieve balance between consumption and replenishment, which is the sustainability paradigm, we use resilience thinking to try to manage resources recognizing they're in a constant state of imbalance in the face of climate change disruption and stressors.

So, what we're doing is we're managing for change rather than managing for stability, and that requires a lot more monitoring of ongoing changes, a lot more flexibility in policies, and a lot more cooperation among diverse stakeholders with lots of different interests.

But I really don't want people to stop worrying about reducing their ecological footprint. Far from it. To have a fighting chance, we really need to decrease our consumption of everything – food, water, energy, all resources.

If we want to build resilience, we can't be wasteful. We need to conserve those resources now so that they'll be available in times of scarcity in the future.

But really we can't pretend any longer that we're going to achieve balance, or so-called "sustainability", in the era of climate change. It just doesn't work anymore.

**3. Thank you Shaun, that's a lot to think about. For my next question, what are the global skills that students going into the resiliency field need?**

Well that's a great question, and there are people who actually devote their entire careers to studying resilience, but that's not really what I'm talking about here. What I'm talking about is the need to redefine problems we're solving in the light of climate change, no matter what discipline you work in.

So, for example, if you're designing an airport, you need to know that runways have to be longer than before, because airplanes need longer runways to take off in hotter temperatures. When you understand this and do something about it, the airport you build will be resilient to temperature increases in the future.

Let's say that you own a vineyard in California, you might want to start buying land in Oregon so you can grow grapes in the future and that will make your wine business more resilient.

Or if you're a community that depends on beautiful coral reefs to attract tourists, you might want to start planning to diversify your local economy should those reefs disappear from your area someday.

So, it's not that one really goes into the field of resiliency itself, but rather the concept of resilience, and climate resilience in particular, is integrated into defining and solving problems in whatever field you find yourself.

So back to your original question. What kinds of skills do students need? And I'm going to add educators as well. First thing I would recommend is that everyone needs to become "climate literate."

And you don't have to be a climate scientist, but you do need to understand the basics of climate change. You need to know how to interpret climate change projections and understand how changes in climate are affecting your area.

I've set up Google alerts for "climate change and wildlife" and "climate change and forests" and that way I get daily newsfeeds and have kept up to date on the latest research on how animals and their habitats are being affected. And I use this information in my work. So this is part of me becoming more climate literate.

Second, I think people really need to learn how to innovate. Innovation has become a cheap word these days; it's overused. But there's actually a whole method to innovation that we all could benefit from. What it really means is defining problems before you develop the cool ideas, piloting solutions, learning from mistakes and failures, and then refining those solutions and bringing them to scale. That's

innovation, and to solve the kinds of challenges we're up against with climate change, we all need to learn how to truly innovate.

And I guess the last thing I would say is that, we all have to become "systems thinkers". And I started off my academic career as an engineer, actually, and we're trained to think linearly. And so if this is my problem, and I do X, I'll have the result I want to achieve. But we never really look at what doing X means for somebody else's problem.

A systems thinker would look at how cities, and infrastructure, agricultural lands, forests and water resources are all connected to each other, and then how climate change is affecting those connections, and then develop ideas to minimize trade-offs and bring benefit to all those different sectors.

That's kind of the systems thinking we need to bring to solve the wicked challenges of climate change.

**4. That's great Shaun, I appreciate that, thank you because it does show the complex, interdependent nature of learning in global learning. What are some of your suggestions for ways that scholar-practitioners in higher education could help build these skills in their students?**

Sure, there's two things, I think. First, just make sure your students are taking courses in other disciplines and they're working with students in other majors on group projects. Students really need to learn each other's professional languages, and not just students but educators, and everybody if we're going to work on these challenges to understand what we're talking about.

It's really amazing how much time I spend when I talk to people trying to get everybody on the same page because we're all using the same words and they mean different things. So, take a word like "mitigation", which seems simple enough, if you're working in the field of climate change and energy, "mitigation" means reducing greenhouse gas emissions to slow the rate of temperature increases.

And if you're working at a humanitarian agency, like the Red Cross, "mitigation" means reducing risk to disasters.

And at WWF it means something entirely different. I was at a workshop last year, and I was really surprised to learn that when my people at WWF talk about "mitigation" what they really mean is reducing road kill of wild animals.

So, when we're all talking about "mitigation" and we mean different things, it's really hard to come to consensus on defining problems and developing solutions. And so, working across disciplines to understand each other, their perspectives, and the language they use is extremely important.

Even resilience itself is defined differently depending on the field you work in. So, it's really important that we start to understand each other's languages early on. And I think universities are the best place to make that happen.

The second thing I would recommend, is you get your students working with people in other countries. This can either happen on campus but I think it's even better if your student's fully immersed in another culture and learns to see problems as others perceive them.

So, climate change is presenting brand new challenges that humanity has never faced before, and we don't really know how to solve these problems because they're brand new. We're really trying to build the proverbial plane as we're flying it. So, because different cultures tackle problems differently, it gives us a lot more ways to think about problems and solve them. But if we continue just to work in our own small groups, we are limited in the problem-solving skills that we bring. So, I think the more we can promote international understanding and cooperation, the faster we're going to learn and make fewer mistakes. This is what we really need to do for climate change.

5. **Thanks for highlighting the point of an intercultural perspective. It really is important and I think a lot of our listeners will understand this. My next question, can you provide an example or two that illustrate the urgent need to improve resiliency globally?**

Sure. You just have to look at the news.

So last year was the costliest year ever for weather-related disasters. Just in this country, we had three major hurricanes – Harvey, Irma, Maria – and wildfires and mudslides in the West.

People are probably less aware of the fact that in 2016, the world lost more forests to fire than any time in history, an area equal to the size of New Zealand.

And we've all heard about the loss of the Great Barrier Reef or many portions of the Great Barrier Reef during the super El Nino year, but Australia also lost 1000 kilometers of mangroves over a period of just several months in the same year.

And keeping on the Australia theme, maybe last year your listeners heard that bats hundreds of bats were falling to the ground in mid-flight because they were dying of extreme heat.

And just last week in the Arctic, it was over 50 degrees above normal at the north pole – it was over the freezing point in the dead of winter.

And scientists are now learning that tropical forests, that we're really depending on to absorb carbon dioxide from the atmosphere to curb global warming, they're actually losing their ability to do just that.

So, you asked for one or two examples and I gave you a lot more than that. But the point is that there's alarm bells going off all around us. And you know, we reorganized the entire federal government and mobilized trillions of dollars after a single day of terrorist attacks in 2001. And we're facing these climate crises on an almost daily basis. Surely, I think we can do the same thing to our educational system to respond to these challenges we're facing.

6. **That's really sobering; thank you for that. Finally, could you give us an example of resiliency work that World Wildlife Fund is doing internationally that draws on global, interdisciplinary learning?**

Sure. I'm glad you gave me a chance to follow up with some positive news. As dire as all that sounds, and it really is, there's a lot of great work happening out there.

So, my team just visited a remote corner of Bolivia that's deep inside the Amazon rainforest. And our team there has been working with local people there to harvest Brazil nuts as a source of income. You might know Brazil nuts when you go to your supermarket. They're those big juicy nuts.

Well it turns out they can't be grown commercially. The only way you can harvest Brazil nuts is to harvest them from the wild. So, WWF's idea was that if people could gain an income from these Brazil nuts, they would have an incentive to preserve the forest and not chop down trees. And it was working for a long time. But the climate change is putting that work at risk.

So, a couple years ago, during the super El Nino year, that area of Bolivia experienced extreme drought. As it turns out, if it doesn't rain, Brazil nuts don't mature and they don't fall to the ground. So, people can't harvest them. So, that year, people in that area lost 80 percent of their income and they actually fell below the poverty line.

So, that great idea of relying on Brazil nuts as a source of income didn't seem like such a good idea anymore. So, what we did is we assembled a team of ecologists, climate scientists, business experts, and others, to look at this problem and to help the community, work with the community to help them develop solutions to make them more resilient in a potentially drier future.

So, the climate scientists told us that this drought wasn't likely a one-time event, that it was going to happen more and more in the future. And so, people really need to find other sources of income to be more resilient to drier conditions.

So, as it turns out there is one – acai – you might know it, it's that small, purple berry that comes from the Amazon. Well and it's actually fetching good prices in Brazil and the US. And the farmers that were actually harvesting acai, they were actually able to sustain their incomes during the drought. So, this gave us a clue that to be resilient to droughts in the future, people need to diversify their incomes away from Brazil nuts and towards acai. And it really took an interdisciplinary team to look at all the aspects of that situation and come up with solutions. The challenge we're facing now is that there isn't a big market for acai pulp in Bolivia. So, we have people from the business sector and marketing experts working with the community to help them develop a local market.

That's just one story of how we are working across disciplines and across borders to help people build resiliency to climate change and to help nature along with it. So, we really need to learn from small examples like this one, and replicate them in other parts of the world. And for me that's why we need global learning and STEAM'd more than ever.

Thank you Shaun; so many interesting examples and so many practical ways that students of STEAM'D (Science, Technology, Engineering, Arts, Mathematics, and Design) need to come together and really address these problems. So, you've given us a fascinating background for that so thank you for that. I want to thank everyone for listening as well and for joining us for this episode of the Global Learning Podcast. Shaun Martin will be speaking at the **Global Learning Colloquium: Science, Technology, Engineering, Arts, Mathematics, and Design (STEAM'D)** on Thursday May 31 in Philadelphia at the NAFSA 2018 Annual Conference & Expo. Register for the colloquium and receive 25% off your full conference registration. Learn more about this opportunity by visiting [www.nafsa.org/ac18steamd](http://www.nafsa.org/ac18steamd) or contacting [globallearning@nafsa.org](mailto:globallearning@nafsa.org).