Ross Shaw - Edited

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SPEAKERS

Dylan Cave, Dr. Ross Shaw, Brittany Ekelund

D **Dylan Cave** 00:01

We acknowledge that we are on Treaty Six Territory. The gathering grounds for many diverse First Nations, MÃ©tis, and Inuit peoples - whose footsteps have marked this land and whose presence continue to enrich our vibrant community.

B **Brittany Ekelund** 00:14

Hello, and welcome back to Research Recasted, the knowledge mobilization podcast. I'm Brittany Ekelund, and I'm here with Dylan Cave and our guest today - Dr. Ross Shaw. Dr. Shaw is an Assistant Professor in Biological Sciences specializing in Marine Biology and he's passionate about the preservation of coral reefs and preserving the health of fish and the oceans. He received MacEwan's Distinguished Teaching Award in 2016, and is currently involved in a large scale project to bring a public aquarium to the greater Edmonton area.

D **Dylan Cave** 00:45

In addition to Marine Biology. Today, we're talking with Dr. Shaw about his other research involving video games. You may have heard of one - Life on the Edge.

B **Brittany Ekelund** 00:54

Hi, Ross, thank you so much for joining us today.

D **Dr. Ross Shaw** 00:58

Hello.

B Brittany Ekelund 00:59

Yeah. So first of all, we'd love to start by learning a little bit more about what attracted you or excited you about Marine Biology,

D Dr. Ross Shaw 01:07

Marine Biology - going back quite a ways - I guess, to an interest in larger ecosystems and even though I was sort of originally kind of - nomadic, as I put it - moved around by my parents, so to speak with the tribe, all over the place in North America, I was interested quite a bit in working with fish I knew. And, interestingly enough, disease originally, so I always thought practically in life, I'd be interested in working in a field that would always be around.

B Brittany Ekelund 01:39

Well, fish medicine -

D Dr. Ross Shaw 01:41

Yeah.

B Brittany Ekelund 01:41

- is one. Um, and yeah, I think I mean, Marine Biology, like that's one of those cool things that kids want to be when they grow up, right, like you think SeaWorld, which is obviously maybe not a great idea of conservation. But something I'm really excited to talk about with you is a conservation aquarium. So, I guess before we dive into that, can you tell us a little bit about the aquatic biosphere program?

D Dr. Ross Shaw 02:09

Sure. So the aquatic biosphere is - even in its terminology - something that kind of makes you pause, because it is, in essence, easy to explain to the general audience of say, the public that you're looking at construction of a facility that is a public aquarium, so to speak, but very different. So the working name we have on the project, right now, aquatic biosphere - really lends you to think about well, you're dealing with water, obviously, and you're dealing with a biosphere, which is a very large biological living sphere, which can be the whole planet and is in essence. So we are, in building this project, really looking at hitting into education and awareness of the aquatic ecosystems, and how there's a lot of diversity and issues surrounding that, from the organisms themselves and conservation issues to the economics and the actual cultural issues interacting with water. So the facility itself is one of the things I want to accomplish in life. The other being the other half of this podcast, which I've accomplished the first, which is the educational video game.

B Brittany Ekelund 03:25

Okay, so when you're talking about the aquatic biosphere program, I mean, when you say a biosphere, essentially, it could be the size of the Earth. What would this particular project encompass? Like, is it going to be one area of the province? Is it going to be rivers, lakes watersheds? Is it going to be wetlands like what kind of are we looking at? If I was going to go visit the biosphere, what would I see? What can I expect?

D Dr. Ross Shaw 03:58

Yes, so the project itself has - in the planning phases - come up with a very kind of unique concept that was one we always struggle with in biological sciences is that kind of disconnect with the biology; people love to go out and experience it, but when they go to a lot of these facilities, when you think of a traditional aquarium where the historical aquariums - they mainly go for that kind of consumption and entertainment aspect, they do get some of the education but you walk into these facilities and you think, oh, I'm gonna go to this area, I'm gonna go to that area, I'll go see the coral reefs, i'll go see the freshwater lakes, i'll go see the arctic exhibit and you kind of pop around and within the exhibit. We are interested in doing a real connection with the education and the biology. So you would look at a facility that has a path development in it. So as you go through the facility, there is representations through displays and so forth, and the education aspect - immersive knowledge that's transferred to you in various aspects. So you have a connection and a path. So we actually are looking at a water cycle and starting in - most people don't know this - in the Rocky Mountains, so Columbia icefields and focusing on Alberta, but Alberta actually feeds its water from the ice fields, in the rocky mountain snow dome, into the actual Arctic Ocean, into the Hudson's Bay region, and also into the Gulf of Mexico and then that water returns to eventually the Columbia icefields. So we want to have people follow, essentially, in essence, a water drop and the water drop can actually go another path, which we aren't going to focus on in the development, which is towards British Columbia in a way towards the actual Pacific Ocean, but the water drop or the snowflake - as it starts - and melt. So you see that kind of already, you're doing an analogy or a connection and there's a lot of focus on the species that are in Alberta. So the lakes and the rivers here, which people don't know much about. But there's also an aspect beyond that you can go because you have terrestrial environment that feeds into it a little bit. So you can look at aspects of the society's impact, you can even connect with the water ending up in somewhere like Edmonton, and then how we use it each day, you know, cooking, and so forth, and then how it returns to the river before being treated, and then goes on in the cycle. So keeping a real connection with the actual path, and the biology that is connecting to it.

B Brittany Ekelund 06:34

I mean, that's really interesting. If anyone's ever been to, like, a amusement park, like they have like the Disney Wild Kingdom. And it kind of reminds me of something that you would walk through or go through and follow the path. So I think that's really interesting. Something I'm curious about with it is, you mentioned an aquarium would be part of it. And I'm just kind of wondering, like, is this a biosphere with live animals? And how does conservation interact with something like an aquarium?

D Dr. Ross Shaw 07:09

So yes, it would have live exhibits. Um, to be clear, we've been doing a lot of building on the project and consultation, for example, with the various stakeholders, we recently completed a feasibility study last year, funded by the federal government. And the one thing that's very important to understand is there would be living organisms in the facility, as they are part of the biology, but we're steering away from larger, more problematic organisms. So there's no cetaceans, there's no whales, there's no, you know, seals and so forth - those types of aspects of the larger marine mammals. And connecting to the aspect of the conservation is really to understand the project itself and the facility, as you go through, it would have a huge impact on the aspects of education. There's so many aspects to that, and the project itself, and also the environment and that conservation aspect. So ideally, in these types of facilities, you are looking at not only Endangered Species at Risk species, but you're also looking at the native species, we have over 60 species of native fish here. And you're also looking at invasive species.

B Brittany Ekelund 08:26

Yeah.

D Dr. Ross Shaw 08:27

And that's a component to the development. And then you also have the economics. So really, we call this a triple E project, which is kind of an interesting analogy. So the education, the environment, and the economics all need to work together. I mean, generally society, we understand they're not disconnected, there's always an impact, especially when it comes to water. Water being essential for life at many different levels. And the conservation aspect is very important. So understanding, you know, and real interaction, so an immersive experience. So you can have many aspects to that where you don't necessarily have to have the organisms themselves. Some organisms are so you know, endangered and threatened there would be perhaps a lot of difficulty in maintaining some of them or they get to be very expensive. So for example, in California they have maintained in aquariums, some of the sea leafy dragons but talking behind the scenes to some of these aquariums which I've worked with, they're like, well, Ross, we paid 128,000 US per fish. So do you want to take that risk economically, your facility, do you have the ability to do that? So there are some that are quite rare nowadays and getting unfortunately, more at risk and we know that with the changing environmental factors.

D Dylan Cave 09:52

Well, that's something that I was interested about is like, here locally, what what kind of aquatic animals and plants are the most threatened here in the prairies that you'd be maybe looking to conserve in this project?

D Dr. Ross Shaw 10:04

Yeah, so there are some, unfortunately, to select from. And bull trout is one of the ones, for example, that are on the vulnerable list already. A lot of the aspects of that has to do with our

exploitation of the actual species and bull trout, an example in the early 1900s, fishing them and then tossing them aside because people didn't like them.

B Brittany Ekelund 10:29

Which is wild, because trout is delicious.

D Dr. Ross Shaw 10:32

Yeah. And working in conjunction with looking at, again, those invasive species. So there's not just fish, but there's other species of plants and so forth. And, you know, these have experts in their own field, such as botany and so forth. And looking at those aquatic species that exist in both plants, and animals and even other aspects, you know, interacting with invasive species we may not even be aware of, or not really aware of. And there's some very interesting examples like zebra mussels, most people have heard of.

B Brittany Ekelund 11:07

Yeah, a lot of times you'll go to the lake, and I know they are like check your boat, check your boat! Because of zebra mussels.

D Dr. Ross Shaw 11:14

Yeah. And they've even gone as far as really, as a governmental political level trying to ramp up that inspection. They use dogs now to sniff for them. So yeah, there is a great effort, but these invasive species are very tenacious, and we know that from cultural experience on many levels in European history. And now as zebra mussels, for example, they found them recently coming in on moss balls, so moss spagna moss and things like this, that people buy for their gardens and so forth. At pet stores, they were selling these little moss balls, and in would come to zebra mussels inside of the moss balls and they're very concerned that those could be released, obviously within Alberta and start to establish.

B Brittany Ekelund 11:56

Yeah, but like, how do they survive?

D Dr. Ross Shaw 11:58

They can survive months without water.

B Brittany Ekelund 12:00

Oh, my gosh.

D Dr. Ross Shaw 12:01

Yeah. So there's very interesting aspects of conveying the education there, again, that people are quite surprised to learn about but because, you know, there's so much information out there. And again, it's how it's distributed to the public and we all are aware of that when people go to these types of facilities, they're one of the top three things to visit at a city. So you have many aspects there of repeat visits, and so forth. And you can also convey it through technologies. So there's so much availability, where the project can go in aspects of now even the VR AR technology that's out there, and experiencing an immersive aspect. Other species we could look at their species of fish that are endangered, you know, the pygmy whitefish, lake sturgeon, in which people, fish, still. And there's invasive species of plants like flowering russian, so forth, zebra mussels, commonly people know about. And then those connections with how the environment is used in the aquatic environment for damming, you know, for logging for things like that, and how this impacts upon our rivers. So it is a project that really is not only giving me a lot of personal experience, gathering these experts together and starting to get people interested in the project, knowing about the project and working on the project, we have a working board right now we have an advisory board on the project. And also going through the process, you know, the process of finding a location, completing a feasibility study, and now coming to understand that one of our next major steps beyond the location is getting our project on the list of provincial infrastructure projects. Because we've connected with various levels of government, and starting to understand the process of how this goes through and gets successfully done.

D Dylan Cave 13:56

Well, you know, I'm really glad that this is going through as a conservation method rather than an attraction. You know, it'll be an attraction in learning experience. But I think like we talked about earlier, it's just like some of those larger aquariums that are just for profit, amusements. So you know, working with something that's more on conservation method, I think is really important, for sure.

B Brittany Ekelund 14:22

But it sounds also like there is an approach to this being an experience and to having entertainment value. And like that seems like it's the fourth E, right, because I think it's easier to get especially kids to interact with an experience that's fun. Like you go to the space and science center and you know, it's a blast because there's lots to do. There's lots to touch. There's lots of things to keep kids engaged and learning about science and obviously, I mean, this already sounds like a dream experience for me because I'm kind of a nerd and I love these experiences even as an adult. So I think that it sounds amazing. So kind of you spoke a little bit about just doing the feasibility study. I'm just kind of wondering if you could tell us a little bit more about like where the project is in the lifecycle like what's next.

D Dylan Cave 15:16

When can i put my hands in some aquarium and touch some squishy things?

D Dr. Ross Shaw 15:23

Yeah, so the stage we're at right now is just completing last year - the feasibility study. And so now we're working quite closely with the city of Edmonton. The project itself doesn't have discrete locations. So our next major step is to get that discreet location kind of nailed down. A feasibility study looks at different locations as part of the study and determines which would be the best location. One of the locations for example has come in top and our list is Northlands. Northlands is redeveloping. We participated in that early call by the city for giving a proposal to the Northlands redevelopment and Urban Planning Committee. This is in itself a process which is very complex. And as a biologist on the board, my position is Vice Chair, our chair of the board, Paula Poland, she's actually leading the project and has experienced a lot working in the past with nonprofit organizations. And this is a community built project. So what I mean by that is in essence, it is envisioned as an Aquarian type project that you can run with a nonprofit and there are nonprofit aquariums. Unfortunately, one of our last ones and Canada, Vancouver Aquarium just recently went private. And as part of their stakeholder process, we did consult with major aquariums, and some of these major aquariums I work with behind the scenes. So that's some value I brought to the project in the past in some of my work. And so I had some of those connections. And it's very interesting talking to them. And looking at the process, whether they're private, or whether they're nonprofit, and they're very successful large - like Tennessee aquarium, New England, and so forth - aquariums that are nonprofit in the US still. So to envision a project that's built from the bottom up, so to speak, we are now at a stage of working with the city we've been doing it early on. So it's fascinating to see an experience where I walk into a meeting with like 15, in the administration directors at the city, and they're all reacting to the project, like we'll - mostly people have come to us after they've got everything done and say, you know, we'd like this location will purchase this land. And it's, it's a totally different reception. If you go early on, we went a few years back, and they all showed up to the meeting. And they were all fascinated by the project and all very interested in the project and very engaged by the project idea. And so we've taken that approach with the city to and they've been very supportive, and they're guiding us through the projects, because we don't want to make mistakes. We don't want to do things wrong. We don't, you know, we're not politicians. And so now we're getting meetings with, we've met with almost all city councilors. And so we hope to present something to the city council in the fall. So we're making people aware of the project at that stage, to really get a settlement on location, and then go through further development design and so on.

D Dylan Cave 18:16

One of my questions was like how big of a space is this going to be? Like, I'm sure that's probably constantly evolving.

D Dr. Ross Shaw 18:24

Um - somewhat I mean, we have a realistic with the feasibility study, we have received the information on you know, you can go very small, you can go medium, or you can go larger. And the size we're aiming for they suggested in the study was a medium. The feasibility study came back very positively showing that the supports of the economics for example, we are located

here in Edmonton, which is one of our top areas to look at. And in that location to have enough people visiting it to have international visitors to have the location at a place that's critical where you could have easy access by say something like LRT. And you could have the area support it. So you're not interfering with the community and developing a project like this and having to remove things from the community save areas they value, and you're bringing things to the community. So the area that we're looking at is somewhere about say, depending on the build you can - a good example as a most recent build in Canada is Ripley's Aquarium in Toronto. Have either of you visited that?

B Brittany Ekelund 19:26

No, I would love to but no.

D Dr. Ross Shaw 19:29

It is a narrow, relatively small footprint. And they did it successfully in the middle of city and they went down. So this is one of the things in building something that's sustainable and environmentally recognized as being able to you know, be net zero kind of thing where it doesn't require excess energy input over the whole year is you can go down and when you go down, they went down three stores. And so when you do that, you can actually conserve a lot of your heat and recycle a lot of heat and so forth. And we all know we have winters here. Sorry to mention that in the middle of the summer. So the size of the footprint, around something about that size we're looking at around, say, I think it's recommended around, say 9000 square feet, or - no - meter squared, sorry, or 100,000 square feet. So, five acres, in and around directly the building size itself. And then depending on if you have an area where you're sharing parking, or you have parking availability, how much you dedicate to that and other factors, we really want to do green space. And one of the things that's important to think of in the concept that we're envisioning is the public's aspect of understanding the story of water has many cultures. And one thing I've been pushing for on the project and mentioning on almost every meeting I go is when you first approach the facility, I really want people to have an understanding and an impact that brings in Indigenous knowledge. And not just to put Indigenous knowledge in the facility where you have just, you know, you go up to a single display read a little bit or something like that. But when they first see the facility, and how it's integrated into the environment, so the surrounding environment, and the story of water in the various Indigenous cultures when you first come up to it. So that's a very critical component that should be mentioned as part of the project. Because the public itself is obviously very aware of that also, and in the surveys that we've done market analysis is - and even internationally - very interested in understanding that more and, and having it as part of something that they visit beyond the actual, you know, aspects that we experience on a larger cultural, excuse me level within Canada.

B Brittany Ekelund 21:46

I mean, that's really interesting. Like we just had the pope come and they did the whole thing down to Lac St. Anne, because it is a really important space, and the water is like a sacred area. So I think that is really interesting. When you say five acres, I'm just trying to get a

picture in my mind of like, what, like, is there an equivalent is that like the size of the Colosseum, like the old Colosseum? Could you guys set up in there? I'm just kind of looking for like, what - how much space is that?

D **Dr. Ross Shaw** 22:19

So I guess if you think of say your average, a good comparison that might work in the general understanding is something like a community rec center when you go to it or a larger one. I don't know the size exactly of the old Coliseum there that I know it has issues and they want to demolish it, or they've mentioned with the city level. But it's a it's a significant structure. But the build also cost to something like this is it not obviously cheap - in the millions range, so say around 200 - 250 million to build the structure. But you do have a lot of aspects where you can vary that. I don't believe in kind of sprawling structures, I believe in structures that are able to use those aspects of the conservation and sustainability. So really, when people are going in this and going through the path itself, there are so many aspects that people don't necessarily know that you can integrate into a structure and make it part of the environment. So there's an aspect in the project that I always mention, that I've brought up is growing, and sustaining things locally, we recognize now how much more important that is. So one of the things that community is always interested in is growing food, and not just maybe growing food for four months of the year with this type of facility, which hasn't been done before. And one of the unique things we want to integrate is things like aquaponics. So where you can grow food because what large aquariums do is they can recycle their water, which surprised most people about 98% of the water is recycled. And you can also pull off the waste from the organisms. Now, what they usually do with the waste itself is they pull it off, they filter it off, get a solid waste. The nitrogens, the phosphates, the fish fertilizer, so to speak, everything that people want to grow their gardens with, and they get rid of it. So what we want to do is integrate that aspect of the hydroponics and have a greenhouse type area or an area that actually allows not only growth of food, it connects with that sustainability, more food produced locally. We're already heating - the water is your heat reservoir. The oceans regulate our environment that way. And when you have large masses of water, they tend to do that they retain the heat and slowly release the heat. And you can do this technologically nowadays. But large aquariums have not done this yet linked it with the actual food production to a certain level that actually does something in the project that's amazing to people and gives access to the community, which is the thing I've been bringing up again and again, because we want that inclusion we want that accessibility so we want people to say: hey, you know, I can go to the community gardens at the aquatic biosphere. And I can go there year round. Now that's a completely different approach that has been done before on a project.

B **Brittany Ekelund** 25:10

I mean, I think that's absolutely fantastic. I mean, tickled pink.

D **Dylan Cave** 25:15

Well i don't know if this is kind of like a similar thing that could be used this way. But I know a farmer back in my hometown who's recently started a kind of like a greenhouse project with aquaponics, like fish feeding on the on the roots of the plants and then the fertilizer from the

fishe is like, it's like the cycle thing.

B Brittany Ekelund 25:45

Circle of life.

D Dylan Cave 25:46

Circle of Life.

D Dr. Ross Shaw 25:47

Yeah, they've done some interesting projects more from the public's perception of that. Going in and experiencing something completely new, one of the most unique ones I've seen within say the last 10 years, although I haven't done recent visit to a lot of the major new aquariums. The scale of some of those is mind boggling. We're not going for that scale. So we're not going for you know, three football links in size or something like that. With you know, whales.

B Brittany Ekelund 26:15

I mean, you know, here on the prairies there aren't too many whales.

D Dr. Ross Shaw 26:21

They had where you can put your hands into tanks and the fish would nibble off all your dead skin. My son loved that.

B Brittany Ekelund 26:30

I feel like I went down to near Drumheller and we were in the river. And like, you'd just be tubing in the river, and they'd just be going crazy. And I was like, I hate this. Then you get a really big fish. And it's like, Oh, my goodness,

D Dr. Ross Shaw 26:45

are you talking about the Asian carp? Are you seeing Asian carp down there? The Prussian car,

B Brittany Ekelund 26:49

I don't know. It was just by it's called Stevensville. Alberta is a tiny little campground. And I don't I can't remember what the name of the river was. But it could be that because I was like, I've never been anywhere else in Alberta, where you put your feet in, and within 30 seconds,

there's all these fishes being like Num, num, num, num num.

D Dr. Ross Shaw 27:09

One of the kind of curious like, a theme I use is kind of an in some meetings, I just get the strangest looks. And I understand why it's thinking outside the box. So we were in a meeting with a car voter, Alberta Conservation Association, and and I said, Well, why don't we do at the facility? You know, invasive species are very important. You're monitoring them, and you're looking at Prussian carp. I said, so instead of doing, you know, the standard approach where and at some of these facilities, you know, you have like, say a pond where they can view fish or you have a you fish, which is curious. So why don't you do a little you fish for invasive species. There's this long pause, and then the directory meeting with this, that's a really good idea, actually, because that would, if it's self contained, obviously pool like you don't have it in or anyway, it can get out so to speak, but you have the public actually catch it, which they really want to do, it seems and see what it is. And then they actually interact with it and see it. And those invasive species are very important for the public to recognize and report, as we know, in various forums. And Prussian carpet is one of them. Unfortunately, that's moving its way up through Alberta.

B Brittany Ekelund 28:19

Okay. And that might explain why in my whole 35 years of life, I have never like experienced that in an Alberta like river Creek anywhere. So

D Dr. Ross Shaw 28:30

it's probably that like one of the projects. And one thing I should mention is the integration, the ability to integrate in post secondary, not only for the research, and the development in the industrial aspect is very broad. So if you look at MacEwan University, and its accessibility and a project like this, and the connection set the various areas, so the various academic fields, almost every one can be involved, which is when you think about it. So design of the facility, we've already worked with students and design, we've already worked with designing aspects. They did a project with us with the Conservation Association to do a small trailer that goes around and educates the public, called the minnow cute name. And they actually have the ability in business. They've been working the business students on projects with us to look at our market analysis, our business design, and biological sciences students have been working on the project, you know, and when you actually design the facility, art in the facility, many different aspects. studies can be done, for example, seems to be almost limitless interactions with the public aspects in psychology looking at, you know, dwell time in certain spaces, or, you know, there's many different disciplines that could work.

D Dylan Cave 29:47

It really seems like the light coming from the university this is benefiting the project significantly, because not a lot of not for profits or even for profits have the resources of all of these Different disciplines coming together, especially on on the level and scale that this is

happening at.

D Dr. Ross Shaw 30:07

And we've had some very success even early on. And integrated. For example, if I talk about biological sciences, some projects I did with, we submitted to get a grant from National Geographic to get an underwater drone. And we actually use that drone. We were successful to get the grant and use the drone in Alberta lakes and ponds to look for invasive species. And so that's early on in the project, some of that integration and eventually envisioning, you know, that this would be not only an area that students can work out, because a lot of these aquariums I worked with in the past, they they do this, they integrate Vancouver Aquarium was when I worked with that as a graduate student even and they integrate student projects, and they give them access to facilities behind the scenes, so to speak. And I want to take it even further with design of the facility. And the public gave us that as feedback early on, they said, Well, the best thing we like about some of these is when we get to see how the science works. And so the you know, the scientist in a fishbowl so to speak. So they're part of the actual exhibits. And we talked to California Academy of Sciences. I know the director of science there, and she was Dr. Bennett, she was very helpful in giving us some tips because that facility is actually a natural history museum, but they have a large, they're a large facility, and they have science and research in the background. And she said your best thing is to integrate it beforehand, because we tried to retrofit a lot. And, you know, we found the ways that didn't work. So we'll tell you about those, and how you know, the public just watching scientists write data down on a on a piece of paper. It's not that and so that's very helpful and design of this. And I think that that's the bridge and knowledge that is often lacking, like the public can't necessarily go and read your academic paper and understand it or if they do, they don't necessarily have the driver motivation. They want a different form of that and they want that interaction. They want that immersion

D Dylan Cave 32:03

ABS that's amazing. I think this is a great spot where we're going to take a quick break and when we come back, we are going to be talking about life on the edge. A little bit more about the video game produced by McEwen biology department in conjunction with designed that you can read more about or listen to more about on one of our last podcasts with Dr. Isabel sparano and Robert Andrew KCO. We'll be right back. All right, it's ad time. We have a very extra special ad for you today. You may recognize the name Laney Beaver, she was a guest on the podcast for our student research podcast. Well, besides being a mother and a student and a researcher, she's also a beater and a jewelry designer. Owl Eyes by Laney beaver can be found on Instagram and Etsy. And you can find her and her beautiful handwork at the downtown Edmonton farmers markets. Find links in the episode description and consider supporting local and supporting Laney next time you need something to jazz up your look.

B Brittany Ekelund 33:11

And we're back. So Ross, you mentioned that the biosphere was one of two things on your bucket list. And the other thing on your bucket list was life on the edge. And you've now accomplished that. So I'm kind of curious. When did you know that you know creating a video

game was something that was on your to do before I die? list of accomplishments? Um,

D Dr. Ross Shaw 33:39

I probably knew that early on when I started teaching at McEwen, I've been here for 22 years now, you've been saying that and I know there's faculty that have been here longer, but it's I've been here a while. Yeah. So early on. I knew this because I was seeing that students were playing video games, more video games were becoming more popular. And the first kind of perception and still around today is not necessarily positive with that. It's similar to think of when phones were introduced. So we see phones as a distraction. So if you're actually on a phone, maybe you know a lot of people can interpret that you're distracted by it. So video games were perceived and can still be perceived the same way today, and a lot of it you know, you hear for example, say a parent comment, oh, you know, X child is on video games all day. They're just not doing anything so to speak. And one of the things that is being missed in that is their learning. And so I started to think well in an aspect of teaching so being teaching folks to why see it as a distraction. So when someone's using their cell phone, or video games in general, one let's see how you can use it, especially the addiction part, which is funny because a lot of people mentioned that word with video games. And so I started looking into it more and I thought I'd love To be able to do a video game early on, I was thinking of video game that was actually like sports sports a game that God is we say nerved. Because when they released it, they changed it for the market. But it was originally designed to actually, in the concept show how life could evolve, which is a very complex thing to start to tackle, but to give another method to explain that. And so when I say to students, I am fascinated and really taken in with serious video games, they kind of look at you, and they're like, Wow, it sounds really intense. What do you mean by serious and then I say, educational video games, and they go, oh, and their face kind of changes. And you can see their face change to not necessarily positive, which is curious. And I say, look, get your reaction. As soon as I say educational video game, you're still like, oh, it's not going to be fun. And that's the problem. They found with educational video games, a lot of them are focused on the education rather than making them fun. And so much so that the research field actually called for people as recently as 2017, to make more fun, educational video games. And so I knew this quite a few years ago, and I thought, I have to push past that kind of cultural perception. And I still did. And it's, it's, it's kind of changing, because it's not going away. So it's kind of like saying, Well, my students won't bring phones to class. They won't play video games. No, you can't expect that of students, you have to adapt. And you have to see, well, what advantages are there to this in the learning process. And so that's where educational video games come in. And there's very few design for university students. That's one of the things I was surprised that, but I kind of knew there are, it's increasing, but especially in minor in biological sciences. And so they get a lot of exposure of students in K to 12. And then it's kind of like, they meet the edge of a cliff and welcome to University

B Brittany Ekelund 36:59

God are your videos. Yeah, no more or trail for you.

D Dr. Ross Shaw 37:03

And so we did a survey early on in some of our studies that I've collaborated with. And you

mentioned in the other podcasts, Sophie listeners will access those. Isabel and Robert, that we actually had data we actually worked on serving well, how many students that MacEwan percent wise would play video games and how often and we were somewhat surprised, but both 50% of them play it almost daily. Oh, wow. Daily, or up to weekly. So you can see it's increasing. And you know, that if you think what are 400 million people doing right now, as you listen to this, they're playing fortnight for example, at this moment, 400 million. So what are people doing? A lot, they're still and it's increasing in the video game industry. Always people are surprised makes more movies, they think of the movie industry economically, as being big and making a lot of money. No, it's dwarfed by video games. So video games, a popular video game economically can make more money than a movie can make that's popular, like say something for Marvel or something. In a year, it takes Marvel to make that money. And a video game makes it in 24 hours.

B Brittany Ekelund 38:10

Yeah, so it's a massive industry. Yep.

D Dr. Ross Shaw 38:14

So I want to continue to develop these educational games, and link it with learning and focus on the fun and the academics but not to lose the fun. And that's important. And that's difficult. And I didn't have the expertise to do this at any at any scale, to be honest, except for the ideas. So you asked kind of my role in the project. Yeah. Is overall as the project lead because I came with the original idea, but I needed all these other disciplines. So they had the expertise. I couldn't program graphics on a computer

B Brittany Ekelund 38:44

and I want to stop you when you said Danna, do you mean Danna? Cobbs? Ash? Yeah, we also had her on the podcast. She did not mention she was part of the game. Yeah. So yeah, go ahead. Sorry.

D Dr. Ross Shaw 38:57

Oh, no. And so I came with the original project idea. And my role was to oversee in that aspect of, you know, because I came with the idea and then worked with design to get it narrowed down and go through that whole double design process. I'm probably laughing if she's listening to this diamond design process, I can't pronounce it to figure out well, what can we make that will be within our realm? So you know, I came with all these big dreams, and they're like, whoa, whoa, whoa, whoa, you don't have the resources. We don't have millions of dollars here. You haven't come with a million dollar grant. And so the project really, actually worked out. I would say top notch because you get a game, which is focused on teaching introductory biology concepts, but you're not asked as a student or a player in general, because people in general can play it to sit down and spend weeks at it, or be too challenged. And that's what people will be like, oh, you know, I don't have time for video games here, or I don't have time for an

educational video game. And so also think of focus. So think of students who are like, using a lot of multimedia Tic Toc, etc. And their focus is used to not a lot of time. And so we designed a game that you can play in under two hours and yet learn from

B Brittany Ekelund 40:22

okay. And yeah, it's kind of just to refresh people's memory. You're, you're defending yourself as a cell against things that are attacking. And I thought it was really cute because it was like, you know, the pandemic had just, you know, had is our defense. Robert, we're talking about like how, like, coincidentally, we had already created a Coronavirus as the ultimate boss. And I was like, I mean, that's funny.

D Dr. Ross Shaw 40:51

It's odd, but it's also, I always say eerie when I'm asked that question, because one of the, one of the areas we talked about a lot in Cinsault courses and culture in general, and I know people are tired of it is he's COVID and coronaviruses. But at this time, going back a few years, we started this project in 2017, we started writing up the first major grants, and I should mention MacEwan University funded this project and the grants to us, which we are very grateful for it give us that kind of ability to employ students. So it's also important to know that this project was built for students really for students, and that almost all the research funds went towards that. So the researchers were not off going to various places in the world time of funds by any means. It was employing RAS research assistants to work on the project in the disciplines, and the game itself with Coronavirus, and some of these meetings. I still remember distinctively some of the students. The students were wonderful. And one of them said, you know, in design, she said to me, you know, as I was asking about their various backgrounds, she goes Ross, I hate biology. And I'm like, okay, so she said, No, I never liked it. You don't often encounter that. And I said, Oh, well, maybe after this so convinced you a little differently. And so she was talking to everyone in the meeting, say well, what kind of viruses and bacteria should we have? And they said, Well, how about we attack the students first their cell with STI sexually transmitted infections, and there's long pause again at the meeting and one of them for a selfie was like, Yeah, that would get their attention. So they get attacked by gonorrhea and things like this. And, and they get to learn about it. And then I was asked, Well, what do you want? Is it a ultimate thing that they face in the game? A boss or yeah, they call it a video perhaps the toughest, toughest thing you go up against and and I said well, we should do our coronaviruses because in the course I teach it one of the courses I teach we look at infectious disease there's a section on that and we're always aware in biology that on some of these respiratory viruses like influenza and so forth and students learn about this and others know about this Spanish flu they they've come from within this group, this coronaviruses crown of thorns, so I said you need to do a Coronavirus so that is the eerie thing because I I said oh I talked about this in courses there will be a pandemic so I think we should do a Coronavirus oh my gosh yeah, it was it was a it was not it was you know and that's why it's strange because but the public in release of the game and it's you are the one that invented it. They seem to like to fight you know, it's popular from various levels to fight Coronavirus, but this one is linked with ways the cell can fight Coronavirus.

B Brittany Ekelund 43:47

Yeah, I thought that was just like, it was such an interesting little piece of this story, which really goes to show like we really knew that this could happen online. And yet here we are. Two and a half years later.

D Dr. Ross Shaw 44:00

That would be the scientist thing culturally, we told you so we told you

D Dylan Cave 44:05

Yeah. 100% So like, now that the game has been released, how has it been received? Whether it's analytically or just like you know, word of mouth like what are you hearing about this game?

D Dr. Ross Shaw 44:18

generally positive it's always kind of nervous to nervous aspect when you know you do this type of creative project and he spent so much time on it and effort and, and money you can put into it and you think of a game and then it's not necessarily received properly, right? So you get the thumbs down versus on the top of the general public,

B Brittany Ekelund 44:36

which is a very detailed analytic.

D Dr. Ross Shaw 44:40

And think of Well, that's how the whole culture seems to work nowadays, right? You get these trends, these things that take off, and we've gotten thumbs up, which I think the whole team is quite happy about. And we've released it on a platform steam, but the other flip side of that coin is good. didn't notice. So you asked about, well, how's it going? It's just been released and really needing to get the word out. And part of this podcast can be that because there are so many video games that are released, and how do you get the attention of the public. And there's within this, it's the world's largest distributor of digital content. And there are people in there called curators that go around and look at things and critique them. And, and they've even reviewed it positively, which is a really good sign because it shows us and we, you know, you can always self believe, and you can always say, you know, I think that this is the best thing. But once you put it out there, you may get a totally different response. And it's been positive so far. So really, what we need to do is we need to have people comment on it give us feedback, because we're continuing to work on the game, we just in collaboration, so one of the things I wanted to do early on in the project and bring the team into was studying the educational effects, the learning effects. And so where he now have a grant, a shirt grant to study this in collaboration with Dr. Ga Bong, who's at Concordia University in Montreal, and we just received that this June. And so we're going to use it again, to employ students to actually work on the research with us and to also modify the game a bit based upon some of that feedback, eventually, that comes through.

D Dylan Cave 46:24

Well, like most game developers, they add new things, they tweak it, you know, after they get a little bit of user feedback, you know, looking on the Steam Steam store right now is getting very positive reviews on on Steam, so I'd recommend checking out Life on the Edge for sure. You know, that little shout out? I

D Dr. Ross Shaw 46:41

was free to that's important free.

B Brittany Ekelund 46:44

Link in the episode description.

D Dylan Cave 46:46

You can play it on Mac and PC.

B Brittany Ekelund 46:48

Yeah. Can you play it on the phone?

D Dr. Ross Shaw 46:49

No, it is not adapted to the full no mobile support?

B Brittany Ekelund 46:53

Is there a plan for that? Because I know, like, I mean, the phones, and that's something that you mentioned was that, you know, a big piece of of looking at students and being like, how do you turn this obsession with the smartphone into like a power for good?

D Dylan Cave 47:12

Like, like, what does that language when Duolingo Duolingo Duolingo is a great learning game, I think

B Brittany Ekelund 47:18

or like is that something you would consider in the future is creating a different game that would be set for a platform like,

D Dr. Ross Shaw 47:24

yeah, actually, Unity I've learned from the competing science side is actually a language that unifies different devices. So it's fascinating. That's why we could put it on. So the computer science aspect and explaining it to the biologist myself was like, what's like word Ross, you know, you go in and you go File, Save As you go, you go PDF, and you go these various versions. So I'm like, Oh, I can understand that. And losing all the technicality. Of course, the unifies these different devices. So it is possible to do it on phone. And it's something we could work on. We haven't discussed it as a team yet. But it is an area that definitely in exploring different devices. But my mind goes even further, like I have a prototype I talked about at a conference a few years ago, and other areas of VR and AR so and then I have a concept for an educational game in an area that I'm exploring with an external funder, which is really where we need to go for the next major project. And so and there's some initial interest in that. So giving students the ability to manipulate it. And I think an area that's coming that is being overlooked is VR and AR and getting the devices to like, my son uses an Oculus quest, for example, that's totally wireless, puts it on, jumps around, oh my gosh, that is where the technology is going. So when that slider wait is like your glasses, or something like that, that's when you and you know, the business side of it was to push that price down, for example. So now that's cheaper than a phone. There's a pause there, most of the public probably is like what? So the VR in that sense is cheaper than buying a phone and people are used to being Yes, are used to buying phones. So that's where it's going to change. And once you get those economics in combination with the cultural people will want to be immersed, like in that famous movie Ready Player One, they'll want to access that. And that's where I'm already thinking, where I want, like, for example, students to be able to have a prototype already developed in conjunction with computer sciences is being able to learn how DNA replicates, and is put together so students can put on their VR headset and or VR glasses in class and collect this I see the educational resources and that's what this is an area being developed.

B Brittany Ekelund 49:44

I mean, something that just like literally popped into my head is like, is there a plan to incorporate this with the aquatic biosphere? Like maybe there's a VR experience where you are in a pond, you're a fish and there's An invasive species and you always lose like there's no way to win the game. And that's the piece of it. Like, is there a plan to incorporate this VR into the biosphere project?

D Dr. Ross Shaw 50:11

Oh, yeah, it's the, in the essence of developing some earlier initial things, the technology is there, you could do that. They already have VR snorkeling, they have swimming with whales, as exhibits that are VR and AR technology. So these are starting to come out. So yes, you could do that. You couldn't Burj those types of projects,

D Dylan Cave 50:32

the multimedia things to bring in? Yeah. Yeah. More experiences? Yeah, for sure.

D Dr. Ross Shaw 50:39

And it is an area that I see does that engagement with the learning. And that's really important, because we're quite concerned in at least the academic fields of students being bored, unmotivated, you know, and disengaged. And that connection between the actual learning and what cultural changes are occurring. And so it takes a lot of time, effort and money to develop these projects, like you look at even a video game. It can be millions to develop, and then you don't know if it'd be successful. So you really have to, I've discovered work and do though, consultations early on, we did prototype testing and ours and see the reactions that people see from the students to faculty, we did both. And the overall process is complex, and it takes multiple disciplines and it's a fabulous opportunity for students who would that's integrate both projects. Yeah.

B Brittany Ekelund 51:39

Okay, well, I mean, we are coming to the end of our time today, but we want to leave it obviously with you. Is there something that we forgot to ask about or that you really want our listeners to take away from today's conversation?

D Dr. Ross Shaw 51:56

I guess you know, I think I'd mentioned back to maybe the first part the aquatic Bhaskar we actually have a podcast. Okay, you can see it's, it's also become very successful. It's called water. We doing water we doing? So you can Google that it's on Apple podcast, okay. It's not competition. It's just let us

D Dylan Cave 52:19

check us. Yeah, there's no such thing as

B Brittany Ekelund 52:21

very collaborative.

D Dr. Ross Shaw 52:23

Exactly. Let's promote each other.

B Brittany Ekelund 52:24

Brittany Ekelund 52:24

Okay. Can we just hear a little bit maybe about what the podcast is about? Or what people can expect?

D Dr. Ross Shaw 52:30

Yeah. So this is a podcast led by David Evans, our director of conservation and he is collecting in we're in season two experts from around the world and looking at aspects of how we use and are impacted by this precious commodity of water. So there's many things on the podcast, he looks at reef chemistry, coral reefs, interviews, people metals, that are being extracted from the oceans, geothermal energy. He looks at food fraud, Canada with fish and other things. Desert locusts, you know, wildfires, all these things that people don't necessarily make a connection with water but are connected to water.

B Brittany Ekelund 53:08

Okay, well, we will put a link to that in the episode description along with a link to the game it's free on Steam go planet.

D Dylan Cave 53:15

Well, that's all we have for today's episode of research. recasted if you want to dive deeper in today's podcast, you can visit research recasted on your favorite podcasting platforms to find new episodes every two weeks. Also, check us out on Instagram at research recasted where you can leave a like give us a follow or send us a message if you have any follow up questions for today's episode.

B Brittany Ekelund 53:37

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