HUMBER
Humber Institute of Technology
& Advanced Learning
ACCESSIBLE MEDIA DEPT.
205 Humber College Blvd.
Room MB104
Toronto, ON M9W 5L7
mediaarts.humber.ca/accessiblemedia
Faculty of Media and Creative Arts

May 21, 2021

03 – Hardware

STEVE SAYLOR:

Hello! In this module, we're going to be talking about the hardware side of accessibility in video games. We'll be talking about the software side when we go to The Last of Us Part 2 in a future module, so stay tuned for that, but in this module we're going to be talking about the hardware side. Now, generally when we speak about the hardware solutions for accessibility in video games, we generally are focusing on the motor disability side or at least those who are not able to use a controller that would have come with a console or a mouse and keyboard for PC games. Generally, there are controllers that will allow them to be able to play those video games and will allow them to remap the controls to be able to use them. Now, there are actually hardware solutions for those with other types of disabilities. For example, there is a set of goggles called eSight for those who are low vision. Essentially, it sort of looks like a Geordi La Forge/VR visor that you wear that will allow you to be able to connect an HDMI signal into the goggles themselves and kind of project what is actually being displayed in the console within millimeters from a blind person's eyes and that can be used. It's not

necessarily designed specifically for that, but it is a possible solution for those with low vision that are not able to get super close to a screen in order to be able to play. There also is a, for deaf and hard of hearing, a hardware solution called... Basically, it's a vest that provides vibration and haptic feedback for those who are deaf and hard of hearing that actually provides a sort of feedback that, when it comes to a video game... And we'll talk about this in regards to when we get to deaf and hard of hearing accessibility, but when there's no visualization of sound on the screen itself, the vest will sort of simulate if your character is being attacked from, say, behind you, that vest will vibrate in your back and that will signal to someone who is deaf or hard of hearing that, "Hey! You're being attacked from behind. You better turn around and deal with that enemy." So there is that kind of solution. Unfortunately, I don't have those to be able to demonstrate with you today, but one of the things that I do have is the Microsoft Xbox adaptive controller. You might have seen this or at least... the sort of thing, "Oh, wait. Where have I seen this before?" You might have seen this in the Super Bowl commercial that was done in 2019 by Microsoft that was promoting the adaptive controller. It basically showed several kids being able to play Xbox games with this adaptive controller. Now, this is actually the only commercially available from, essentially, the big three, which is Microsoft, Sony, and Nintendo, this is the

only commercially available piece of hardware designed for accessibility from either of those three companies. There is a Hori controller, H-O-R-I controller, that is available for the Nintendo Switch that does a similar thing as the adaptive controller, but it's not being created or has not been created by Nintendo itself. Sony, as of right now, also does not have a hardware solution for either the PlayStation 5 or the PlayStation consoles in earlier. So we'll be talking about, essentially, this adaptive controller. There are some third-party accessories that are available for this, and I'll get into that in a minute when we talk about accessories, but essentially, what this controller does... It's a rectangular size. I would say about a shoebox size in length controller that, essentially has two very large black buttons on a white plastic box, and it also has a black D-pad with the menu buttons that would normally be seen on an Xbox controller. There is also a button to be able to switch profiles if you have several sort of remappable controls. You can create up to three different control schemes that are used for the adaptive controller. You can be able to... There's a button to be able to switch between those three options. And then there's also the Xbox button that actually will act as being able to turn on the controller as well as being able to connect directly to the console that you're playing with. Now, on the sides of the controller, there actually is a USB port and a headphone port on the right side --

Or sorry, on the left side of the controller. The headphones will obviously be able to output sound, and this sort of USB port is generally used for the left thumb stick, so you can be able to plug in a USB thumb stick into the side of this to be able to simulate the left thumb stick on an Xbox controller, and on the right side of the adaptive controller, there is a USB port for the right thumb stick as well. Now, on the back of the controller there actually is several sort of ports that equal to individual buttons that are normally on... And I have an Xbox controller here... A regular Xbox controller. This is the Elite 2. So each of the buttons that are on this controller actually do correspond with one of the ports that are on the back of the adaptive controller. Now, technically this is a very cool design that was made by Microsoft and several other consultants that did work on this controller. The actual ports aren't normally what you would think of, which would be sort of like a power port or some sort of USB type port, but technically these are headphone-style jacks so 3.5-millimeter jacks that actually will allow multiple different types of accessories to be plugged into here because technically all those ports need is an on/off electrical signal. So that's why a headphone port was designed because it can actually be able to send that signal without actually having to be able to utilize additional power or additional resources or hardware resources for each of those buttons or accessories. The only thing that actually

does need additional power would be in regard to the USB ports for the left and the right thumb sticks. But these ports were designed specifically to allow, at the time when this controller was released, to be able to actually utilize a lot of the buttons and switches and joysticks that would normally be used for other sort of homebrew style controllers that were sold online and sold through websites and sort of a DIY-homebrew kit that would kind of try to create a hardware controller for playing video games. So these were designed and sort of created as a universal port so that those controllers and accessories will still work with the Xbox adaptive controller. It's kind of an ingenious design actually, from my perspective, because even though I don't utilize this controller specifically, it was kind of genius where, essentially, I didn't even realize that technically, yes, all it really needs is an input/output to let the controller know that, okay, yes, this button is being pressed and it's based on these ports. You can remap every single one of these ports to whichever you like if there's any sort of signal that's plugged into them, so you don't necessarily have to sort of plug in a thing into the LT port. That doesn't necessarily have to be remapped to the LT. You can be able to go into the Xbox accessories app on the console or on the PC and you can actually be able to remap that to whichever you wish. That's kind of one of the great things about the adaptive controller is that it can be any sort of accessory that's plugged

into here, or any of these buttons that are on the controller will actually be able to work and be remapped however is needed for someone with a motor disability. Now, what's great about these is actually, as you obviously can tell, the only two buttons that are actually on the controller itself that actually correspond to the controller is actually... If I can remember... Yes, is A and B, which is the two large black circle buttons. Now, they actually are buttons. They're not touch pads. As you can be able to hear, they actually are just very large buttons. Now, it was kind of designed this way to be for those who have very limited movement, and they can be able to at least reach one of these buttons. Now, they did this on purpose because, essentially, it does allow additional accessories to be attached. Now, I mentioned already briefly that there are buttons, there are foot pedals, there are switches, there are joysticks, there are toggles, there are multiple different types of accessories that can be plugged into this adaptive controller and will allow someone with a motor disability to be able to utilize what works best for them. There also is actually a hardware solution for some motorized wheelchairs that actually can use... There actually is a little bit of a hardware box that you can be able to connect directly to this and the wheelchair that actually can utilize some of the wheelchair controls that you would normally use to move around with those wheelchairs. You can actually be able to utilize as sort of inputs

into the adaptive controller which is really cool. Now, I mentioned in regard to the third-party accessories you'll be able to get... Right now, Microsoft does sell accessories for this. They can be a little bit expensive, but Logitech actually has an adaptive accessories kit that you can be able to get that you can be able to purchase that does come with several buttons, switches, and pedals which essentially can be utilized with this controller. Now, another sort of additional thing that you will be able to do with this controller is utilize a system that is on Xbox that is called Co-pilot. Now, Co-pilot, what it will allow you to be able to do is if you have someone that... if you know someone with a motor disability or you yourself have a motor disability, you can be able to have someone be able to play along, play a game with you, using an Xbox controller and, essentially, these two controllers can work hand-in-hand and act as one controller. So the way it works is... We'll use an example of Force of Horizon 4, which is a racing game on the Xbox, and I've actually utilized this myself where you can actually be able to remap the controls so A is accelerate, B is break, and you can have someone with a motor disability or someone who is using the adaptive controller can be able to control the accelerate and breaking of the car, but someone else on a controller can actually be controlling the steering and the gear shift and everything else that will be normally used this controller for. It just will disable the A and B button so

that it can actually be used on the adaptive controller, which is actually really cool. So it allows sort of a co-op play style and it sort of will allow someone with a motor disability to be able to enjoy playing video games with friends but also being able to play video games if they don't have as many accessories for this, they can be able to have someone be able to play along with them with a regular sort of Xbox controller which is really cool. I really did actually kind of appreciate that that is something that is available. Now, as of this reporting of May of 2021, essentially, this is actually also used on the brand new Xbox consoles, the Xbox series X and S. Microsoft actually did make it part of the update when it comes to each of these controllers that are actually backwards compatible, so you can be able to utilize this on the Xbox consoles for the Xbox 1 all the way up to the most current version of the consoles. So that is really, really cool. So that is kind of a brief sort of overview of what is available on the Xbox adaptive controller. I hope that can really sort of show you at least a little bit of a really cool side of the industry that is amazing. I love the fact that Microsoft has this product that is available right now, and also as well, if you want to be able to know a little bit more behind the scenes of how this controller came about, I will leave on this page... There are actually two episodes of my podcast that I created called Access Granted where I talk to Bryce Johnson who is on the Microsoft Inclusive Tech Lab,

he was one of the co-creators of the adaptive controller, as well as Steven Spohn from AbleGamers. He was actually one of the consultants that was brought in to help sort of create the adaptive controller. I'll leave the links to those podcasts on this page below. All right, so that's it. That's kind of, like I said, a brief overview of the hardware side of accessibility. I hope you enjoy that and I'll see you on the next module. Okay, thanks.

Transcript provided by
The FMCA Accessible Media Department
mediaarts.humber.ca/accessiblemedia