DARLENE MCLENNAN: Good afternoon and welcome. Its Darlene McLennan here, the Manager of the Australian Disability Clearing House on Education and Training. On behalf of ADCET and the Australian Tertiary Education Network on Disability, I would like to welcome you to this webinar. Firstly, I would like to pay respects and acknowledge the traditional custodians on the lands on which we are all meeting today and pay respects to the elders both past and present. Today we're very fortunate to have three wonderful presenters from Curtin University, to present to us on the Internet of Things. It is something that I think we're hearing a lot more about in the media today so we're going to hear from Leanne McRae, Katie Ellis and Mike Kent. They've recently done a project that has looked at the implications for students with disability and the project has provided some insights into both the potential risks and benefits of the Internet of Things for tertiary students with disability. Before we begin, just wanting to let you know a few housekeeping items just in case you're new to the webinar. This webinar is live captioned by Bradley Reporting and it will be recorded. The recording will be placed on ADCET and it will be captioned probably a week or so after we put the recording up. The GoToWebinar platform is not as accessible as we would desire for screen reader users. If you're a screen reader user and you have any questions or comments, you can email us at adcet.admin@utas.edu.au. All participants have been muted. This is to ensure as little background noise is received during the webinar. Our wonderful presenters will present for around 45 to 50 minutes and then we're allowing 5 to 10 minute of questions at the end of the webinar. Please feel free throughout the presentation to enter your questions into the question pod and I will be able to ask those to the presenters at the end. Throughout the webinar, if you have any technical difficulties, please feel free to email us on adcet.admin@utas.edu.au and we'll try to sort it out in the backend. Alright so now it’s over to, I think, Leanne, are you starting?

KATIE ELLIS: It's Katie and I am starting.

DARLENE: Okay, great. Thanks Katie.

KATIE: Good morning, everyone. Thank you. Still morning in Western Australia. So, my name's Katie Ellis and I'll be speaking first. I'm here with Mike Kent and Leanne McRae to talk about our project, the Internet of Things: Implications for Students with Disabilities. So, to give you a bit of an outline, I'll start our webinar today by talking just very briefly about what we wanted to do with this project and a bit of background and what we were trying to find out. Then Leanne will do the main part of the presentation, she'll be speaking to you about the Internet of Things, some issues around the Internet of Things, benefits and challenges and then Mike will wrap everything up by talking about the conclusions we came to at the end of our project after speaking with a number of students with disabilities and doing this research and then what we recommend around how universities and our university, Curtin, in particular, could either use the Internet of Things or maybe delay using the Internet of Things. So to get - oh, my screen's frozen - to get started on things, our project was funded by the Curtin University learning and teaching office. They run a teaching innovation grant every year so this is a funding opportunity we've been focussing on in our work at Curtin with disability and digital technologies and what we try to do with these sorts of projects is try to look at the ways - benefits for students with disabilities could actually benefit the whole student population. So we've looked at captions in the past and presented to you before about the benefits of captions for all students and this project grew out of that project so again we are looking at the ways we can identify the innovative and effective solutions that can support people with disabilities for the whole student population and we were really interested in the ways students with disabilities and all students were using their mobile devices and this new thing at Curtin we were really hearing a lot about called the Internet of Things and how using the Internet of Things could benefit the educational outcomes of students with disabilities. Now Leanne is going to go more into what the Internet of Things actually is but it’s basically machines talking to each other. So our objectives in this project were to assess the educational benefits of current and emerging Internet of Things products, to determine the relevance and implications of the Internet of Things and as it related to the educational needs of people with disabilities, to talk to students with disabilities about what the issues and challenges they saw around integrating the Internet of Things into their learning experience through their mobile devices and, finally, through all this we were hoping we would be able to provide some recommendations and strategic guidance on how the Internet of Things could be used in a university context, particularly providing policy recommendations to Curtin, our university, the broader tertiary education sector and the industry who are interested in the Internet of Things. So, to discover this information, we basically had two parts to our project, the first was a comprehensive literature review and within this we also included a bit of a technology review looking at existing Internet of Things products, what people were already using, the kind of products that were being developed in this space and how people and other projects saw this being rolled out into the educational sphere. So, our comprehensive literature review which Leanne, again, will talk more about, addressed two different points. Firstly, we looked broadly at the Internet of Things as a broad concept so not just specifically within the educational context. And secondly, we were looking at the Internet of Things and how students with disabilities could use these devices and get machines talking to each other to benefit their educational experience. We also interviewed a number of students with disabilities about what they thought the Internet of Things was, how they were already using it in their lives and how they thought their lecturers and the university broadly could use Internet of Things to enhance their educational experience. So, just to give you a snapshot of what our students told us, we kept hearing that, yes, they did know what the Internet of Things was but they thought that the Internet of Things was in a very early stage of development and so because of that they were a bit unclear at the stage that we interviewed them about the possible uses and the practicalities of these uses in their educational environment. An interesting finding we had here at Curtin with our students was we discovered our students actually prefer Android devices over the iPhone system and this was a new finding specific to this project because other projects we've done before we found that people with disabilities actually prefer the iPhone system but within this project we found everyone we spoke to used an Android and what these students were saying is that they had to be adaptable, they had to be able to change their technology to suit themselves. People use technology in different ways and these students were saying they regularly modify their technology to suit their specific needs and that is perhaps why they were using the Android devices because very tech savvy people tend to use Android devices. Our students we spoke to, they were both very willing to try new technology but they were also really willing to give up on that technology if it didn't support them in the way they were hoping it would or the way they required so they would try things out but they would abandon things as well. They were equally willing to do both of those things. Students, as we know, have different learning styles. Some people are visual learners, others are oral learners and, as such, they all require different technology or they use different technology in different ways to suit their learning style. So, there was also a pervasive belief that lecturers were in general unaware of their access needs. For example, something that kept coming up was this view they find amongst their university lecturers is that if information is provided in a digital format, so for example on the eReserve in the library, then their lecturers think that it must be accessible by default and that's not actually always the case. So there was concern amongst the students we interviewed that their lecturers needed further education in this area and if Internet of Things was rolled out, that this was something that needed to be kept in mind, that accessibility isn't something that just happens, it is something that has to be created. They also - interesting following on from that is they were concerned with the Internet of Things, particularly around things like changing control of the temperature in the classroom that the lecturers needed to retain control over whatever changes would take place. So they saw great opportunities for the Internet of Things but they didn't just want lecturers to hand over control to technology. They wanted the lecturers to stay in control. So, an important finding was students that we spoke to already feel very overloaded with information and changes and new technologies and there was some fear that introducing the Internet of Things or jumping onboard the Internet of Things bandwagon would exacerbate that information overload. That's something we need to keep in mind. But there was, overall, a hope and an optimism that the Internet of Things could offer them some flexibility in their educational experience, particularly around managing ways to access their educational materials. So I'll hand over to Leanne, Dr Leanne McRae now, who can speak with you all about the project itself.

LEANNE MCRAE: Hello. Good morning, everybody. My name is Leanne McRae and I'm going to be talking to you a little bit more about the Internet of Things and particularly the things that we kind of sought to understand as a result of this project. So, first things first is the big question: What is actually the Internet of Things and what do we mean when we actually use that word? Well, the short answer is that it is machines talking to machines. Of course, this leads to a whole range of complexities and social and cultural anxieties and meanings that we need to kind of unpack a little bit. So I've provided here a very basic definition of the Internet of Things that hopefully will help to clarify it a little bit. So it is the interconnection and interoperation of physical and virtual things. And “things” is one of those words that is very ambiguous but also quite evocative in what it can actually convey. So what I've got written here is “Everyday objects turn into smart objects able to sense, interpret and react to the environment thanks to the combination of the Internet and emerging technologies such as radio frequency identification, RFID, real time localisation and embedded sensors”. What we have here is this kind of understanding of how machines can actually interact with our environment and provide us with information and this is seen as a very positive thing and so one of the very early manifestations, particularly within the consumer market of the Internet of Things, was of course the Internet refrigerator which was - everyone was very excited about the Internet refrigerator, that it could order things for you, that if you ran out of milk it would send a notification to you on your phone to say go buy milk or even better, it would do it for you because it would be so effectively wired that it would just automatically order and anticipate what you actually needed. Of course, this didn't actually work so well because when the Internet refrigerator first came out, our networked environment was not as good as it is today and of course there were some problems with interconnectivity and things like you had to always have the milk in the same spot in the fridge which for some households work but maybe not so much for other households so there were a whole range of problems around that. But what it was designed to do was to connect to this idea that was developed by the guy who coined the phrase “the Internet of Things” who was working out of MIT in the early 2000s, where he kind of framed this idea that computers were better than us, Okay, that humans didn't have enough information. We didn't have enough data to be able to make appropriate, reflexive, timely decisions. And that actually if we could leverage our technology in a far more effective and efficient manner, that we could kind of remove this kind of tendency of humans to be a little bit kind of insecure or under-confident or not quite well informed enough and that the machines could actually provide us with enough information and be able to help us in that decision-making or, alternatively, actually be able to mean that we don't actually have to make as many decisions as we currently have to make, that we could automate parts of our lives and Ashton saw this as a really positive thing, that we did not have to be dependent on ourselves, we could be more reliant on machines and machines were better at gathering data and that if we could leverage that, that would be an awesome thing. And so he created this term and this idea of the Internet of Things. And he says here today computers, and therefore the Internet, are nearly wholly dependent on humans for information, the problem is people have limited time and accuracy, all of which means they are not very good at capturing data about things in the real world. So, that's what he saw as the great benefit of the Internet of Things, Okay. But, of course, sometimes things don't always go as well as planned and Ashton's kind of reliance on technology, you know, it can also lead to all sorts of difficulties and problematics, not only machines are not necessarily always doing what they're told but in terms of humans can also mess with machines and they like to render machines in their own way. So, there's an example here on the slide of accidentally some pornography being on an Internet-enabled refrigerator in a Home Depot in the United States so any consumer walking past unfortunately gets a bad side effect of perhaps some of these relationships. We see this in our anxieties sometimes about the Internet and how we understand technology in general. So this slide here has three images on it, it has one of the computer, Hal, from 2001 Space Odyssey, has a screen shot from War Games, which was that great 1980s film with Matthew Broderick in it which was just a fabulous film, and the last little image is of course of Sky Net which is of course the evil computer system from Terminator. And what these three slides convey is that we have this kind of very binarised relationship to technology very often and that relationship is connected to this idea of technology is something to be feared. Now, originally, in the early 20th century, technology was seen as something very positive, the futurists really loved technology and they saw technology as making our lives better, industrialism was crafted around the idea of the machine and working with the machines, machines making our lives easier, freeing us up as humans to do other things that machines could do for us. But then of course we get to World War II in the middle of the 20th century and all of a sudden we deploy nuclear weapons, we drop bombs on Japan and we have the capacity to destroy ourselves. Technology is coming to kill us and so we have these anxieties around technology and now the Internet is becoming ubiquitous. We have Bluetooth and Wi-Fi and we are constantly networked, this idea of Skynet, the machine becoming intelligent, kind of punctuates a lot of the anxieties that we have sometimes about technology and we see this even recently, a few months ago, last year, we were worried about we had all these media reports about Facebook deploying an artificial intelligence that all of a sudden started talking in its own language and everybody freaked out. It turns out the story wasn't that clear cut, it was something they were expecting the machines to do and they were just - it was just in a language that they had to modify and contain a little bit but it wasn't an AI being birthed in front of us. Importantly though, the Internet of Things is not artificial intelligence because it's not smart enough yet. So, what the IoT is made up of is, it has the potential to develop into an AI and perhaps that's a discussion for a much wider discussion for what we can deploy the technology for and perhaps to think about that relationship, but the AI's actually a layering system that enables machines to communicate with each other. So this slide is a little bit of a complicated slide but it's designed to convey to you the three layers of the Internet of Things. There is the first layer which is what we call the physical layer and that is literally sensors in the environment. We have lived with sensors in our environment for a very, very long time. So an RFID tag, which is the basis of the Internet of Things, is a very basic technology, it's not smart, it's not intelligent, it is a sensor that exists on an object in an environment and it is only able to be read in the presence of a scanner. The thing about the RFID tag, though, is that it allows a greater flexibility so if you imagine like when you go to the supermarket and you now, it used to be the shop assistant but now it's us apparently, we scan the item underneath the red device that sends off a little ping that it's read the item from the barcode and you put it in your shopping bag. Alright? So, what that requires is a direct line of sight between the tag and the scanner. The thing about RFID tags, that is potentially problematic, which I'm going to talk about a little bit later, is that increasingly you don't need to be in the line of sight of a reader for the tag to be read. So there doesn't have to be a direct line of sight so you can read it through walls, for example, but the RFID technology is in our environment and it is a series of sensors that's sending information off into the second layer which is the network layer, off into the Cloud basically, where it can be stored, it can be archived, it can be processed, it can be interpreted and then that information is beamed back down on to us into our device. Okay, so, the second layer then beams information, depending on a series of protocols, to our mobile phones or any other device or our computer, our laptop, and it gives us that information and there's a whole series of possibilities and opportunities that result from that relationship but that's the very basic of the Internet of Things. You have a physical layer, you have a networked layer and then you have an application layer. The physical layer is the sensors in the environment, the network layer is the Cloud, it's Bluetooth, it's all of those transmission technologies and the application layer is your device, your mobile phone, your watch, or, for example, what I've got on the next slide coming up which is the Fitbit. The Fitbit is a very common item, a consumer item, that deploys a very basic Internet of Things kind of protocol. Your device has a series of sensors within it that measures your step rate, heart rate and even your sleep. It then transmits that and sends that off into the Cloud where it’s processed and interpreted and then when you log into your computer, your account has all of your details in there - how many steps you took, how much sleep you're getting, and you can assess and make decisions based on that data. So that's a very basic kind of understanding of what the Internet of Things is designed to do. Some of the issues, though, that we have with the Internet of Things is of course firstly standardisation. So, you have all these different layers, how do they talk to each other? That's the big question. And how do you make sure that they're talking to each other in a language that is easily accessible or easily understood or connected? So standardisation is a big problem. The other problem, as I've already flagged in my description of the RFID tag, is privacy and security. So, RFID tags are not smart, they don't have any computing ability on them, many of them don't even have their own battery. So there's no way to program privacy protocol into it. So that has to happen in what's called middleware, where you have a platform or an application that works across your three layers to ensure security and privacy and that doesn't actually exist yet, really. It's a big problem. A lot of the stuff that I was reading when I was doing this report, there were huge sections in the material I was reading on privacy and the privacy concerns. So, for example, in Curtin University, here in Western Australia, they have deployed some Internet of Things technology on campus designed to have some facial recognition, okay. So, the press that comes out in relationship to this, and on my next slide there's an image of some of the examples of students wandering around campus being passively surveilled, but a lot of the press that comes out about it is really positive about how it helping with class sizes and determining room allocation, for example. So they're really selling it as an assistant for logistics but, of course, we just have to take a step back and take a deep breath and realise that there's some serious implications here about surveillance, about whether we have the right to track students. And its facial recognition, it’s not just tracking bodies in space, it’s actual facial recognition that they're using and, you know, there's some safety issues around that. There's privacy issues around that that really need deeper consideration so this is an ongoing debate and dialog within the IoT literature in general. So this idea, this next slide that I'm conveying here where we've got Apple and Android in a bit of an altercation, this is really an important debate that Katie flagged in her introduction about what proprietary system. So the Internet of Things has to be able to talk to both iPhone devices and Android devices and Apple of course are being very staunch about their proprietary system and about who has access to it and what can be done with it and so for the disability community, this is a very potent debate as we flagged at the start. So, in my next slide it demonstrates that the Deaf community or the Hearing Impaired community tend to favour iPhones, there may not be the case in all circumstances but in the research that we have done it certainly has demonstrated there is a fondness for the iPhone but of course, as Katie said at the start of our talk - and this next slide demonstrates this point - that our students we talk to love Android. They were using Android devices because they could Frankenstein their Android device, they could change it, they could mix it up, they could make their phone the way they wanted to. They weren't limited by Apple's very strict security and proprietary system. So, this is something that needs to be considered when the Internet of Things is being implemented and rather than getting very excited, which we tend to get when we talk about technology, particularly in education and particularly around disability, that technology is this very positive thing - and it is in many ways - we also tend to get very excited about it and it tends to be an afterthought, privacy and security tends to be an afterthought and disability and accessibility tends to be an afterthought. We get excited about the technology and then we have to roll it back and go, okay, how do we make it accessible? How do we secure it? How do we make it private? The Internet of Things offers us an opportunity because it doesn't actually exist really yet, to think about it from the front end, and that's really important. So for students with disability and people with disability within the Internet of Things, that's something that we can think about from the start and this next slide asks us to think about that in a little more detail. So, what it potentially offers, the Internet of Things, for people with disabilities, is that it enables technology to be further integrated. So accessibility and accommodations are not something that marks the individual because everybody uses a mobile phone or an iPad. Because of these technologies that leverage the IoT and the platforms that it's going to work on are so common, it becomes normal, and that's a terrible word to use and I apologise for using it, but it becomes something that is everyday. If a student with disability is using their mobile phone for an accommodation, for an assistive technology, it's not going to stick out like you're using something unusual or strange or different. It's going to be something that is everyday, that everybody else is using as well and so that offers tremendous potential. If we start to think about the Internet of Things at the front end, about how we make it accessible, about how we make it private, about how we secure it to actually integrate this thing called universal design. Universal design is not something you have to leverage, it’s not something you have to advocate for or be an activist to get, it’s something that can be inbuilt into the environment that you're working in and I think that's got tremendous potential. So, for students with disability - and this next slide thinks about that in a little more detail - you can create a great deal more of control over the environment, particularly for a student who is in a lecture theatre, perhaps, or in a classroom amongst other students. They can start to tailor, potentially, their environment to suit not only their learning needs but their disability and to have that be something that's easy, that's not something they have to go through a service, they don't have to go through the lecturer that may not have an awareness of how to do these things or the needs that aren't being met, they can do it themselves and they can do it with technologies that are easily accessible, that are everyday, that aren't a financial burden necessarily or a literacy burden in terms of technology-heavy or technology-heavy to use. The next slide I have is an example of how the Internet of Things can leverage the individual in the environment and the environment to create a more reflexive engagement and ease of movement through that environment. So this is an example of a walking stick or a cane for the visually impaired that leverages the Internet of Things. In the cane there are sensors and in the environment there are sensors so the person, the individual, can get real-time updates on what's actually happening around them, if there's a puddle up ahead that they need to avoid, these kinds of things can be tremendously useful within the Internet of Things. So the next slide shows this in more detail where we have this idea of real-time responsiveness that the IoT can offer to enable assistive technologies. So for students, we have the potential - this idea that we talk about a lot as educators - about being reflexive, about tailoring an environment to the student. I mean, we talk a lot about technology being able to do that, there's been a lot of talk recently about the flipped classroom. I don't know if you guys have ever heard of this idea - the flipped classroom. The idea of making education accessible to students, breaking down what is seen as these very old draconian styles of education where the student is passive and the lecturer is active, the lecturer stands and talks at the student, the student sits there and listens to them, which we'll talk about a little bit if you want to, but the idea of it being more active and being able to tailor the environment, to tailor the experience of education, particularly for students with disabilities, that is tremendously powerful. It has the potential to offer a more enriching educational environment and so it really tethers up to and connects to the idea of this phrase that gets thrown around a lot "student-centred learning." And that's really important and really powerful and the Internet of Things offers the opportunity for this to become a little more of a reality for students. So my next slide is about how we can leverage the ubiquity of computing and the ubiquity of technology, whether the IoT offers for that to be more deeply integrated into the everyday and the way in which, for people with disabilities, how it can serve to disappear the technologies or the assistive technologies that can serve to mark difference, okay. And so there’s a little quote, or two quotes, from Mark Weiser from the early 90s and he says “the most profound technologies are those that disappear”. That's a great idea. “Ubiquitous computing”, he says, “is a method of enhancing computer use by making many computers available throughout the physical environment, by making them effectively invisible to the user”. These are really great ideas and it connects up to the next slide that I'm going to show you now which is the idea that me and Mike have talked about a little bit in the past and Mike is the expert on toaster studies which doesn’t actually exist but we'd love for it to exist. So this is the idea that in the morning when you get up to make your breakfast and make yourself toast, you don't put toast in the toaster and go, "Ooh, technology, isn't this amazing!" It's become so normal that we don't think about it as technology anymore. It's just a device. It's just an object. We don't mark it as technology, it's just ordinary, it's just every day. And that's the potential power of use of technology but it has to be done with forethought, it has to be done with consideration, has to be done with reflexivity and the Internet of Things offers us this opportunity to debate these ideas and to think about them a little bit more. While we're interested in thinking about the ubiquity of computing, the integration of the IoT, we also want to think about these wider ideas about the relationships that we have with technology, the relationships that we have with these wider ideas about what technology offers us, its potential benefits but also its potential problems which my last slide today shows you which is of a Battle Star Galactica toaster that toasts a Cylon into your bread which is particularly awesome. So, I'm now going to hand over to Mike who is going to finish up with some conclusions and recommendations for you. Thank you very much for listening to me.

MIKE KENT: Thank you very much, Leanne and I note that I actually own one of those Cylon toasters so it was nice to see that on our slides. I suppose that the conclusions that - I think in a lot of respects the Internet of Things is one of those things that has great potential to include students with disabilities in higher education and also that actual realisation of the idea of mass customisation so that each student could effectively bring their own device, in this case mainly Android devices but their own mobile phone or tablet or whatever device they find useful for assisting with technology and have that customised to interact with the Internet of Things enabled campus and classroom, however, our first recommendation is that we don't think that it should be adopted at this stage. The Internet of Things has a great deal more promise than actual benefits. So I suppose that's - and I’m sorry that this comes at the end of this webinar after we've had all this interesting talk about it, our conclusion was it's not there yet. But, having said that, we think there's still some really great potential. We also recommend that if we're going to realise that potential that we need to think cleverly about how the potential of the Internet of Things could be woven in to the pedagogy, so to be made an integral part of learning and teaching. Some of the examples that we came up with when we were looking at how we could actually actualise this was students voting for the temperature of the classroom and stuff like that which really was probably not particularly useful and also possibly counterproductive. So, if we are going to use the Internet of Things, how are we going to use it and how's it going to be woven into the learning process? We also feel that if it is going to be involved - and we draw on that earlier finding that Katie was talking about, at least students' perceptions of the teaching staff's awareness of their accessibility needs - if we do roll out the Internet of Things-enabled learning space or campus, there needs to be - it needs to be accompanied by training, particularly of staff but also of students, as to how to get the most of that and how to use it. That was the second thing. So, although some of this sounds like the most obvious thing in the world when you think about using new technology in a learning and teaching environment it’s something that’s often overlooked and I feel like that's something I would emphasise because I think there is so much potential there that we will eventually see useful classroom solutions coming out of this but not yet. So that would be where I would conclude. Thanks very much to Katie and Leanne for presenting with me and I look forward to joining with them to answer any questions you might have.

DARLENE: Wonderful. Thank you to all three of you. That's fantastic. That was a very interesting presentation with the comment around the toaster - before I go into a little story there, if anybody's got any questions, if you could put that into the question pod. Just the toaster story reminded me - I don't know if you three watched Back in Time For Dinner the other night on the ABC but they had one of the old toasters where you had to pull down the side and turn the toast over and I think I certainly was quite appreciative of my toaster the next morning after I saw the woman on the show burn the toast quite a few times in the episode. You do realise how far we've come in a very short time. They reflected on the 1950s in that show so well worth watching. So we've got a comment from someone. "I'm concerned about the comment that tech-savvy people tend to use Android devices. Where is the evidence for this?” I don't know if you guys are both muted or who can answer?

KATIE: I can field that because I'm the one who said that.

DARLENE: Sorry, is that Katie or Leanne?

KATIE: This is Katie.

DARLENE: Have you got your headset on, Katie? You're very quiet.

KATIE: We had a few audio issues just a second ago. Are you able to hear me now?

DARLENE: Not that well.

KATIE: Okay. Maybe you can repeat. We've done some research projects (indistinct) different people with different types of disabilities.

DARLENE: Sorry, we actually can't hear you at all. Not very well.

JANE HAWKESWOOD: Its Jane here, Katie and Leanne. Are you able to put your headset back on?

DARLENE: No, totally lost them by the sounds of it. Yes? Try again.

MIKE: Would you like me to talk to this a little bit?

DARLENE: That would be great if you could Mike, for the time being.

MIKE: Okay, yeah, it was an interesting finding because with our other research looking at technology and students with disability, we actually found there was a preference for the iPhone so that statement is a little bit of a reflection of an unusual finding, I suppose, in the context of our research. But it also was trying - the point that Leanne was making about the Android Frankenstein sort of thing, there tends to be more options in Android devices for customisation and I suppose, if you like, hacking devices for accessibility, whereas the IOS or Apple operating system tends to be more locked down. We find that when we're developing accessibility apps and things like that as well, we tend to have a few more options sometimes when we're dealing with the Android app than the iPhone app. Having said that, yes, it is obviously a generalised statement and certainly I'm quite tech savvy and I’m very happy with my Apple devices. I hope that helps answer the question.

DARLENE: Thanks for that, Mike.

SPEAKER: Can you hear us now?

DARLENE: Yes, we can hear you. That's perfect.

SPEAKER: Good. We got it sorted.

DARLENE: Good. Love that little moment of panic.

SPEAKER: We're not the tech-savvy ones.

DARLENE: Anything both of you wanted to answer?

SPEAKER: No, I think Mike's covered that really well. This was - this specific project, it was just a real surprise to us because in all of the other projects that had been run there were a ubiquity of iPhone users and we couldn't get iPhone users to interview. That was just a really interesting anomaly.

DARLENE: Fantastic. One of our funny people, just on our question pod has just asked what happens when the batteries go flat for students and the learning environment?

SPEAKER: Well, the idea of the IoT is that it doesn't run on batteries, it runs on other Wi-Fi ubiquitous technologies so, yeah, it’s a good question though. Devices always fail us, don't they? That's something that needs to be built in to the frontend of it.

DARLENE: Yeah, and it's interesting, the same person's reflected here in the questions around when the technology doesn't work especially in a lecture, that that gets called off because there's such dependency and reliance on technology these days for a lot of the education that we now offer our students.

SPEAKER: Yeah, absolutely. I mean, technology is so often rolled out as the panacea for education more generally and in the wider pedagogy debates, this idea that we're worried about the employability of our graduates and the opportunities for our graduates and very often we find the rhetoric and the ideology kind of gets very heavily impacted upon a flexible learning environments getting relevant - relevancy into education and that's usually connected to making it more technologically available, making more – you know, integrating more and more technology when a lot of the pedagogy theory in particular is saying that's great, it’s great to be excited about technology and technology can offer so many interesting things but it's also got to be tempered with “is it actually good for education? Is this technology facilitating education?” I don't teach anymore but I've spent many hours in lecture theatres and you've got a sea of laptops in front of you and that's great, you know students are taking notes, but you also know a good chunk of them are on Facebook. So, there's this interesting relationship that we have to technology that also needs to be brought into account.

DARLENE: Definitely. Well we haven't got any more questions but I suppose it's made me reflect - actually, there's another more kind of a reflection that someone's heard a great quote, or read a great quote, this morning – “if the tech is not providing a solution to a problem then it is just a distraction”. That's quite a nice quote. It's been great to hear the presentation today, especially for me just reflecting throughout your presentation of where we will be in a couple of years. The university that I sit in is in the process of building a significant, or a couple of significant new campuses in regional towns and this is something we discussed at a meeting yesterday because we're trying to make the campuses, because they're being built from the ground up, as accessible as possible and I just wonder in the next two or three years where the Internet of Things will be and in the discussions and when we're getting to that build how that will impact on the students going forwards. So thank you for allowing me to reflect and think on that.

SPEAKER: You're welcome.

SPEAKER: Thank you.

DARLENE: Excellent. So just to let people know we have got another webinar that we haven't advertised yet that's coming up on 26 June which is “Digital Strategies for STEM” which will be presented by Texthelp’s Greg Connor. We'll close off now and I just want to thank our three fantastic presenters, Leanne, Katie and Mike. It’s fantastic. Mike and Katie have presented for us before which was fantastic and Leanne is new but it’s great to be able to share your learnings and your knowledge with us so freely to the sector. I think we're often hungry for information and you certainly have done that generously so thank you, all three, for that. And just finally, I would just like to thank Mal, our fantastic captioner. You girls spoke very fast but Mal kept up beautifully so I want to acknowledge her great work today.

SPEAKER: Sorry, Mal.

DARLENE: Thank you, everybody, for joining us. I hope you found it useful and helped you think about the future as well and we'll be sending out an evaluation and look forward to your feedback. So, enjoy the rest of your day. Thank you, everybody, for joining us.

SPEAKER: Thank you.

SPEAKER: Bye.

SPEAKER: Thanks very much.