SPEAKER 1: Hello everyone, we're going to get started now.

Welcome to LD@school's first webinar! For those of you who are unfamiliar with LD@school, it is a bilingual resource designed to provide Ontario educators with meaningful information to help support students with learning disabilities. Support for production of this webinar was provided by the Ministry of Education's Special Education Policy & Programs Branch. Please note that the views expressed in this webinar do not necessarily reflect those of the Ministry of Education.

We're very excited to welcome our guest speaker, educator Michael Kerr, who will be speaking to us this afternoon about *The Evolution of Assistive Technology – Mobile Learning in a Digital World*. Just to let everyone know, all webinar participants except for the presenter have now been muted for the remainder of the presentation, although once Michael Kerr has finished his presentation, we will be opening up the floor for questions.

If at any point during the presentation you experience any technical difficulties, please contact Shannon Malloch at the phone number provided on this slide, as she will be standing by to help you.

Before we get started, I'm going to help everyone get comfortable with the GoToWebinar control panel that you should be seeing on the right-hand side of your screen. If you don't see the full panel, you should see an arrow, which you can click on to maximize the panel. This same button will minimize the panel during the presentation. Over the course of the presentation, if you would like to ask any of the staff a question, you can enter your text in the box at the bottom of the control panel and choose to send it to staff from the dropdown menu underneath. Finally, the hand raise button can be used to ask a question of Michael Kerr at the end of his talk. If you raise your hand, you will be unmuted so that you can ask Michael Kerr your question personally.

After the webinar, we will be sending out presentation slides, as well as a link to a survey to let us know how you feel the webinar went. In approximately two weeks, the webinar recording will be available and we will send out a link to all participants.

Alright, that takes care of all of our housekeeping, so let's get started. I'd like to introduce Michael Kerr at this time. Michael Kerr has been an educator for the past 22 years with the Kawartha Pine Ridge District School Board and during this time he has worked with students with learning disabilities in both a regular classroom environment and as a resource teacher. He has always incorporated technology in his teaching and has embraced the use of assistive technology since its modern inception. From 2007 to 2012, he was a teacher and Resource Services Consultant at the Ministry of Education, Provincial Demonstration Schools, Sagonaska in Belleville where he worked closely with students with severe learning disabilities in reading. During this time, he successfully established a mobile assistive technology program using iPods at the school. Michael was also responsible for delivering numerous workshops to students, parents, teachers, administrators, and school board consultants. He currently teaches a learning and life skills program with a focus on technology skills in Cobourg, Ontario. And now, I'm going to turn the presentation over to Michael.

SPEAKER 2: Thanks, Amy and welcome everyone to the webinar today. I'm going to talk today about assistive technology with a pretty heavy focus on mobile assistive technology. And I have this first slide showing my email and my twitter handle and feel free to contact me as well if you have questions in the future or about this presentation.

Before I start, I'd like first to get a little bit of feedback from everyone about what you might—what you would like to learn today regarding mobile assistive technology. You may have specific questions and so you can, in the chat section, you can submit thoughts about what you might like to have me cover today and I can gear, especially the live demonstration section, to some of those questions. I'll record them as you go. So I will leave that open for about 20 seconds or so and just down in the bottom of your screen you can put that in the chat. It just helps me to sort of guide the presentation a little bit and customize it—personalize it for people attending today. So we have about another 10 seconds or so. Another few more seconds. And we'll wrap that up. Okay. So I have—

SPEAKER 1: So Michael.

SPEAKER 2: Yes.

SPEAKER 1: Sorry, just one quick thing. We had a couple of questions come in.

SPEAKER 2: Okay.

SPEAKER 1: Sorry… here we go.

SPEAKER 2: I see Android versus iPad.

SPEAKER 1: Yup. Question about problems with printing and sharing of resources with iPads. And smart/wise use of technology.

SPEAKER 2: And what was the last one? Smart…

SPEAKER 1: Smart slash wise use of technology.

SPEAKER 2: Okay.

SPEAKER 1: Okay?

SPEAKER 2: Alright. So I've got those and I'll try and touch on those topics as we go along.

SPEAKER 1: Back to you.

SPEAKER 2: Okay, on this next slide, a couple of years ago the History Channel prepared a collection of people's top ten—top 100 actually-- thoughts of the most impressive inventions of all-time. So, out of the four choices if you use the poll, do you believe that the number one item on this list of the 101 of the top inventions was personal computer for A, B - the television, C - the light bulb, or D - the mobile phone? So the poll is open, so please input your selections. And we'll close that in a few seconds. I'll give you about another 10 seconds or so. A - personal computer, B - television, C – the light bulb, and D

– the mobile phone. The top invention of all-time. And we'll close up that poll. Alright. So we have our responses back. We had 22% selected the personal computer, A, nobody selected television, the light bulb was second at 33, and the top choice was the mobile phone at 44%.

So here's how the list breaks down. Now remember this was out of 101 possible inventions. Light bulb was number 10, alarm clock number 9, phonograph, rotary phone, for those of us who can remember those. I actually showed my daughter one of those one time and she started pushing the little holes thinking they were buttons. She's 17—turned that yesterday. Portable air conditioner, personal computers, the hypodermic syringe, television came in at three, radio at two, and, of course, the smartphone, or mobile phone, it's number one. I think the most interesting thing about this list and the reason I put it in this presentation is that if you take a look at those top ten items, with the exception of maybe the air conditioner and the hypodermic syringe, all ten of those items are possible on the phone. Mine has a flashlight, it has an alarm clock I use every day, I can certainly play music, although not from records. It's definitely a phone, it is now really a computer as opposed to a smartphone. I hardly ever use it as a phone. I certainly can watch television. The Olympics that were just on were actually watched by more people online than they were on television broadcasts. That's a huge contract even to the Vancouver Olympics. Certainly radio stations, and of course, it's definitely a phone. So it really has encapsulated a lot of the technologies that we probably as a society would deem as the top most useful inventions.

I'm going to give you a quick little history of assistive technology. It's kind of good to put everything in perspective. Some of these things have been around that we are just starting to use significantly now for quite a long time.

So this website—I'll just click on it here. And I'll just enlarge it here so you can see. Maybe a little too big…

So, across the top you'll see bubbles that pop-up and these little dots sort of represent a timeline. This was created around the theme of Braille so that's the purpose of the representation of the dots. Back in the 1800s, we were developing some of the first portable hearing aids. And as we move forward, some of the focus shifted to talking books—you can see in 1935. The first speech synthesizer was in 1936—the ability to create artificial speech, or at least speech from recordings. And as we move further into the '70s, you can see '76 the first handheld device with speech synthesizing capability. And, as we move a little further, there's Dragon Systems was founded in 1982—development of speech-to-text software. First computers in the classroom—1981. And a little further for Smart Boards, and Kurzweil Systems, founded in 1996. And of course if we move all the way up to the present, we have the introduction of mobile technologies—the first Apple iPad was in 2010. And of course, that's only four years ago now. Barely. And we have hundreds of different models of tablets now and millions of these devises in people's hands. So that's just a quick overview and it gives a bit of a sense of what's happened.

Now, if we look just in the last few years, maybe from 2008—this is a brief list of some of the things that have actually been developed in that short five or six year time span. So tablets have come into being. Web applications—we didn't really have anything that allowed us to compute online. We had to

download software and install it by CD. Web Apps are much simpler to use. They're inexpensive, they're always up to date. In fact, a lot of web apps are free now. There's a huge range of assistive technology apps now. That list just keeps growing almost daily. We have developed broadband mobile internet—so the ability to go from, you know, being able to have a phone conversation or texting, now we can stream live video. Assistive Technology is being built more and more into the mobile operating systems. We're developing very powerful digital assistants. These are a step beyond speech-to-text synthesis—this allows individuals to basically interact with their mobile device almost as if they would interact with a human. And that's becoming more and more powerful—I'll talk a little more about those digital assistants a little later on. High resolution mobile cameras—not just for taking photos, but also for scanning documents, and for converting documents into speech. Wearable technology is becoming a shift now as well. Google glasses—we also have watches now that connect to our mobile devices, and even items of clothing. Mobile social networking—almost all of our young people nowadays connect and interact on social networks, not on computers but on their mobile devices. Cloud storage—this connects with the broadband mobile internet above and the web applications allowing us to access documents anywhere we have access to the internet, which is increasingly becoming everywhere. Online learning is also a big one too that is coming into being. The compatibility of devices—one of the questions that was asked is Android versus iPad—there's less and less distinction now between these devises. They're becoming more and more compatible in many different ways, and I'll share some of that.

These next couple of slides are just a little bit of some of the research around what assistive technology—about what we know about assistive technology in terms of how it works, or maybe doesn't work in some cases with people who use it.

The first one is ebooks are obviously great for almost anyone. They are particularly helpful for students with learning disabilities. It allows them to access content that's at their age level. And ebooks are the digital books and audio books of course, someone is a real person is reading them. They don't, by themselves, increase comprehension but they do increase engagement. And sometimes when students have given up on their learning because things are too difficult, or they find tasks too challenging, engagement can be a huge factor in terms of getting a student to move forward. We have to remember about the technology that we present to students that we don't judge the technology for our personal use—we may or may not enjoy reading ebooks, but it's where a lot of our students are—especially students with learning disabilities.

The other piece of research that we know is out there is that all readers, all learners expressed an interest in assistive technology. And this is critical when we think about who has access to this technology. Is it just for students with learning disabilities? It certainly is helpful for them, but there's a couple of factors here to think of. One—if we only give this technology to students with learning disabilities, they feel centered out. That may mean that they abandon it or don't use it and then it's almost as if we didn't give them the technology. The other piece is there are a lot of students out there that may benefit, or actually would benefit from the technology that I'm going to show you today, and they may not have a learning disability. So these technologies really, especially around reading, they are beneficial to all.

This slide talks a little bit about speech recognition. You saw on the history timeline that Dragon was founded sometime in the early '80s and this software has been around for a long time. It's not a question of whether this software works-- it does. It doesn't need hours of training for most users. What it does need, to have people use it successfully, is to learn how to speak fluently and to be comfortable speaking to a computer. And that's a challenge for a lot of students. I've seen students go from not using it to using it very successfully because they've learned how to be a little bit more fluent with their speech. We have to think about what we focus on when we teach a program like Dragon or a speech-to-text software, rather than point out the mistakes of the software, focus on the fact that it's very, very accurate.

This last slide under the assistive technology research—this is some work that I did when I was at Sagonaska, and it shows the before and after results of introduction of mobile technology. This was a project where we introduced iPods to the school and we took a look at how students used the technology before and then after they had some training and access to the technology. So under assistive technology use in the bottom, *AT Use*, we went from just under 40% who were aware and actually used some assistive technology on their device, to well over 80%. Reading went from about the same up to somewhere in the 70% range. Podcast, which is essentially an audio presentation, doubled. Organization was one that we didn't even expect when we looked at this and it was how the students used the device to support their organization or sometimes lack of organization. And I'll talk a little bit about that in the live demonstration section shortly. That quadrupled from around 15% up to over 60. And we also took a look at taking notes and photography—now photography in the sense of understanding that the camera could be used for more than just taking pictures of their friends, or selfies, or things like that. The photography could also be used to take pictures of exemplars on the board, anchor charts. It could be used to take pictures of homework samples, and also to capture notes that the student might feel they were going to lose on the way home. So lots of possibilities there.

This next section is just about why is assistive technology changing and how do we respond?

Technology is changing rapidly and there's a lot of factors that are causing that. One of the main ones is that there are more and more people working on building technology and they're able to do that on a global scale now and the devices are simply just getting faster and faster.

How do we respond to this? Here's a few thoughts that I have: I think we have to try and embrace change. Things are always changing. That's going to accelerate and we have to find a way where we embrace the changes that are coming. Quite often we resist for a while and then we realize that, well, this is happening around us anyways and there's not much we can do about it. Try and be an early adopter. There's different stages as many of you might be aware—adopting technology early, waiting a little bit, seeing what happens, and some people hold on right to the bitter end. Allow kids to experiment. Allow yourself to experiment. I often tell adults the best way, and also kids, is to experiment—find applications that work for you. Find assistive technology that helps you, that works for you. Again, find a personal need. We all have to sort of swallow this one and accept—you don't need to know it all when the reality is no one can ever know it all. There's just too much information out there.

We need computers to help us access and make sense of the information that's out there-- there's no way we can do it with our minds alone. And of course the last one is *don't wait to start*.

So this slide is just to, sort of put out there that it doesn't matter which sort of train car-- we imagine the technology train going by and we're standing on the side of the tracks watching it. It doesn't matter which car you get on, although I guess we don't have cabooses anymore on most of our trains. What matters is as long as we get on. Once you're on the train you can move around. You can move up to the front of the train, you can go to the back of the train, you can stay on the car you got on. But we need to somehow get on there.

I'm going to give you a few seconds to put out any thoughts or ideas or things you'd like me to cover before I go into the live demonstration section for the last 40 minutes or so of the presentation. So if you have any thoughts or questions if you can put those out there either in the chat or pass them on and we'll move on in about 10 seconds. You could have some questions maybe about specific applications or specific strategies or needs for students that you maybe working with. Things that you've found challenging—anything like that. Or you can comment on anything that I've covered so far. Okay, we'll close that up now and, we'll take a look at what we have.

SPEAKER 1: So we do have one question, Michael.

SPEAKER 2: Okay.

SPEAKER 1: The comment that came in is that students seem to embrace what's new and she heard a student with an iPad recently wishing for a laptop actually, I'm—

SPEAKER 2: Okay.

SPEAKER 1: That one surprises me a little bit.

SPEAKER 2: *[Laughing.]* No, I actually--

SPEAKER 1: Sorry? Go ahead.

SPEAKER 2: No, that's fine. Okay.

SPEAKER 1: I was just going to say maybe some of the really cool things that you're going to show us will change their minds.

SPEAKER 2: *[Laughing.]* Well I'll make a quick response to that. One of the things that I've always tried to advocate for is that we need to find the right technology for the student. And, I'm not advocating that we shift everything on the planet to mobile technology and that we jump onto whatever's new. But I do think there are many students who would benefit from mobile technology and there are probably some students out there that would still benefit from traditional desktops or laptops. So I definitely think there's a place out there for all of this technology—I'm presenting right now on a large desktop computer. It's my preference, but I also use mobile technology, so I think both are valid and we have to keep that in mind. Our model generally now is a lot of school boards, up until very recently, have been

using a very similar model for many students in terms of the technology -- the student has a learning disability so they get a specific set of supports—a laptop with certain software—and that's, that model, I think, is somewhat limiting because it might not work for all of the students that are out there.

Okay, so the next section is sort of going to be sort of a live demonstration, and I'm just going to quickly go over some of the advantages of mobile technology, and then I'm going to demonstrate some applications. The first is, it's mobile, meaning that it's accessible all of the time—24/7. This has a few features or important things we need to think about and that is, that it's personal. Ever try to take a cellphone or a mobile device away from a young person, they feel like it's part of their body—it's part of them. They use it all the time. They connect all the time. That's basically what this second one is—it's personal and customizable. That's very different then when we give a specific tool and lock it down and say, you know, "This device is ours, but you're going to use it for these reasons at school." It's very limiting. The devices are very intuitive—much more so than a lot of our software on desktops and laptops. The applications are also very simple to learn, and they are also very specific in what it is they actually do. Apps are often inexpensive or even free. Many of the very best apps out there are actually free. Apps are often—have a cloud based component so that the data and documents can be accessed anytime, anywhere. And users can be more efficient with their time. They can do things where, in the past, they would have to open up their laptop or boot up their computer and that might be at home only or only at school. Generally the devices are less expensive too than desktops or laptops. So there's quite a few different advantages.

So this is the real time demonstration and so I'm just going to close, actually I'll just minimize this presentation and hopefully this will work for us.

Now I'm going to be demonstrating using an iPad Mini, which you'll hopefully see on the screen in a moment and the applications I'm going to show you, they do have similar applications available for other platforms from Samsung, or Windows, or Google, for those types of tablets using different operating systems. I'm not going to show all of them obviously, but I will show what's possible on the iPad and I'll comment and you can question how that might work in Android, iPad, or other operating systems.

So we'll just call this up here and you should see it there on the screen. Okay. So, what you're seeing now is a sort of live demonstration of the applications I'm going to talk about today. So, the first thing I wanted to start with is, I want to take a look at how you turn on the accessibility features on whatever device it is that you're using. Remember, as I said earlier, many of them are embedded into the operating system. So, there will be an application that looks like this settings gear here and it allows you to, at some location there will be a tab that indicates accessibility and you can see it right there in the middle of the screen. I can just highlight it with the mouse. So you can see accessibility here and accessibility allows you to turn on many of the features of the device.

So we have VoiceOver. VoiceOver would be generally for a student who is blind, but it could be used for a student with a learning disability. It makes the entire device accessible. So when I turn that on, for example, everything on the screen becomes readable. I can find out what my battery life is, I can find

out what this word is, I can have the time read to me, and so on. So VoiceOver activates basically touching any text on the screen and it will read it to you.

The Speak Selection is a little bit more selective and what this one does it allows you to turn on the ability to speak text within a document. So this could be in a website, it could be in a book, it could be a note that you just typed and you want to have it read back to you. So, for example, I would turn this on. I can select voices, and I have different languages that I can choose from, and I can also adjust the speaking rate. Another feature that's often available is the ability to highlight words. So, very much like analogies to this type of task on a desktop or laptop such as Kurzweil, a program that allows text to be spoken; it highlights the words as it speaks, so this would do the same thing.

You can also turn on other selections such as Larger Type. You can change…sometimes the size of the type might be easier to read for someone who has a learning disability. You can also have auto-text, right here, Speak Auto-text. This speaks messages as well as auto corrections and capitalizations. So if a student's starting to type a word and a message pops up saying 'I think you're trying to spell elephant', it will actually speak the word elephant and then the student will know that, yes, that's what I was trying to type, so that must be correct. And then they just hit the spacebar to enter it, and I'll show that in a minute.

So there's quite a few different things you can turn on for different types of learning needs and I just wanted to highlight a few that are sort of specific for students with learning disabilities.

Okay, so we're going to go back to the main screen, and the first application I'm going to highlight, or focus on, is an application that's simply called Study. There's been some research about how students are able to focus in class, or sometimes not focus, and often the noise levels that are in classrooms are so great that some students can lose the ability up to 60 possibly 80% of their ability to actually concentrate and focus and be productive. So this application is called Study and it's a pretty simple one and it simply has the ability for students to put headphones on, and this plays specially developed music that the student can listen to. And you'll notice also in this description that tapping play will start the soundscape from where it has last stopped. Double-tapping play will start it from the beginning and it lasts for 45 minutes. The recommendation, of course, is that the student takes a break. So if I go back to the info here, there's a TED talk from Julian Treasure's presentation that gives some of the background to the research behind how this can make people more productive. And you can see up here that this research, in particular, says that some people can lose two thirds of their capability in noisy environments. Okay, so I do have a bit of difficulty sort of simulcasting audio, but I'll just give it a try and see what it does. Yes, it's going to cut out on us, so that's not going to work. Sorry I can't share the music, but it's very peaceful, quiet music with sounds of birds and other sounds. And it's worth *[alarm sounds]* trying I think.

So the next application I'm going to show is called Inspiration Maps. This, unfortunately, is only available for the iPad. Study is available for Apple and Android; Android being the operating system created by Google, which is on most other types of tablet devices. And, this application, I have under my Memory folder. Inspiration is basically an application that allows students to select a template. It's a graphic

organizer program. It's a tablet-based version of Inspiration, which is available on laptops and desktops. So if I go to the templates, and again, the advantage of this one is it's very simple to use. And it very seamlessly, as I'll show you in a minute, integrates voice recognition into this program. So let's say we were going to select a, let's do a cycle one here, thinking cycle diagram. So, I would select Use the Template and the template pops up. It gives me some instructions and you'll notice that I can highlight those instructions and I can quickly select speak. And again, we may not hear the text, but you should be able to see the text.

Siri: Cycle diagrams are used to identify how items or events are related to one another in a repeating flow. The arrows in the diagram describe the conditions that influence a change from one state to another.

SPEAKER 2: So we can simply highlight text that we need, and that was text created by the program. And we could simply use the same function if we were creating our own map. So let's put a few things in here. I'm just going to do a quick cycle of what might happen in the process of a plant growing from seed. Now when I type—when I select the actual text box there, you'll notice down below here on my keyboard I have a microphone built in. The microphone accesses basically speech recognition. This is web-based, so it's going to take my voice, record it, send it to a computer probably 1,500 kilometers from here and process it and send the text back. And, it's almost instantaneous, but that's exactly what it's doing. Now the advantage to this is there's no training involved in this technology, and also, we're using a computer that's way more powerful than any laptop we would give a student. And of course, the other advantage is this application; the mapping application is not free, but the microphone is built in to the actual device. So I'll just demonstrate this. *[Ding.]* Planting a seed. *[Ding.]* And then I can go back to my map and, say I want to put something into the second box: *[Ding.]* The seed germinates. *[Ding.]* And I can go to my next box: *[Ding.]* Seed begins sprouting and breaks through the soil. *[Ding.]* And you'll notice that I haven't used the read-back function yet, but I could simply click on this to see, is this actually converting my voice to text that I actually said. And in this case it didn't, so I could highlight the text, press speak, and I could go back and I could do some editing right on the fly there. So it's basically a closed cycle built right into the application and it's very simple to use. So I think you get a sense of how that works and if I want to now, up in the top left here, I'm looking at the map view, but I could switch to, what I might like to do in the end, as a final product, is an essay view. So if I tap on this, it gives me an outline, and this is editable now. So I can go back and I can select text and I can make changes and then this is actually ready to put together for an essay. One of the problems with graphic organizers is, I think a lot of students who struggle with learning, they see it as an extra step. They ask us maybe-- we ask them to write an essay, and then we ask them, before that maybe to do a graphic organizer and so they put all of their ideas into the graphic organizer, and then we say, okay take that off that paper and now put it into an essay. Those steps, with the assistive technology built in all in one application, and I think this application is only ten dollars. So that's a quick look at Inspiration.

So I'm going to go on to another application here. There was a question early on about sharing and printing. I'm going to kind of put those two together and sort of show that and to do that I'm going to open up a Windows—or a document on Internet Explorer here and I'm going to go to…I'm just going to shrink this down. I'm going to put it way over to the side here so that you'll be able to see a little bit of it

over on the side of the screen, hopefully. And, I'm going to open up Google Docs. Now Google Docs or Google Drive, as it's known now, is actually an application. It's a web-based application and it allows us to…let me just move this over a little bit and expand this screen a little bit, so we can see. Okay. So, I'm going to create a new document. So on the left-hand side of your screen, I'm working on Internet Explorer and I'm going to create a document. I'm going to create a document, basically just a word processing document. And I'll just give it a title. Let's call it LDAO Newspaper and I'm going to hit OK here. Now, I can share this document, so I'm going to share it. Right now it's private just to me. I'm going to share it with the iPad, which is over here. So I'm just going to, I have this iPad called iPad1 and I'm going to send that document over to this device here. My iPad just went to sleep, so I'll turn it on again. Now, on the iPad I have Google Drive, the app. So I'm going to click on Google Drive the app and I should have, here it is, the LDAO Newspaper, which you can see has popped up. Let me just move this back onto the screen. Actually, I'll keep it off to the side. So on the left I have a web browser that's working on this document, and on the right I have the mobile device, which is working on this document. So I'm going to open it up. So you're seeing the same document on two different devices and you'll see a little tab that says who is actually typing. So if I type in here, what is actually happening is, the person who's working on the iPad could be on another part of the planet. They're actually seeing what I'm typing in real time. So it's a collaborative activity where two different people are sharing the same document. If I go to the iPad now, and say I decide that I'm going to write something, but the person using this maybe has a learning difficulty, learning disability, and they are going to use the microphone. So I'm just going to hit the microphone. *[Ding.]* Hello this is a test of Dragon Dictation, period. *[Ding.]* And you can see that it pops up on the iPad first and then a short second later it popped up on the web-based version which someone would be looking at on a laptop. Now, so in answer to the question about sharing documents, this is an amazing way for students to share documents. They could create it on Google Docs, share it with their teacher. The teacher could access that on any device: an iPad, a desktop, at home, at their cottage, if they happen to be going down to Florida, wherever they happen to be. And they can view and edit the documents. Now if you look back at the share section here, when I share it, I have the ability to change whether the person can edit, comment, or view the document. I can also delete their access at some point as well. Now the advantage to all of this is, suppose a student was using a tablet and they needed to print. What they could do is work on their tablet, use Dragon, use their read-back features, anything that they needed to produce that document using the technology that helped them. Then they could go and log on to their account on a computer that is hooked up to a printer and all they have to do is open that document and hit print and they're ready to go. A lot of mobile devices are designed to be that: mobile devices. They weren't really designed to be computers and print. It is possible to do, but it's not as easy to do as it is on a desktop or a laptop, but it's certainly very possible. This is the easiest solution that I have found in terms of sharing documents and printing. This technology; I'm using Google, which means it works on the iPad, it works also on an Android device. It would work on a Samsung device. The application is free. You get free online storage, and then all the built-in assistive technology that someone with a learning disability would need is built in to the tablet device.

So, we'll just minimize that and we'll come back to our iPad. So that was a really quick sharing of Google Docs. I'm going to move on here to another application. By the way, there is lots of cloud storage

options. Google has Google Drive. Microsoft has SkyDrive. Apple has iCloud. Dropbox is available to everyone. And all of them give free storage, so you basically have unlimited storage options if you sign up for all of them. You could access, you just have to remember where you put your document, I guess.

So, the next one I'm going to take a look at is, I'm going to take a look at some of the organization tools. So let's say we had a student who is finding it difficult to write down homework, remember homework, those kinds of things. So let's take a look at some of the options we have here.

So here's the first one that you could easily show a student and that would be to have them remember something and there's a variety of ways of doing that. One of them is to use Siri. Now Siri is for the Apple, but there are also digital assistants that are available for Android, and Samsung has one called S, and Google has an assistant called Google Now. So, they're available on all the devices, they just have different names. They basically do the same sort of thing. So when I press and hold the home button, Siri pops up and asks me what I want—what I want help with. So here's an example. *[Ding.]* Remind me today at 5:00 to do my math homework: page 76, question 1, 2, and 5. *[Ding.]*

Siri: Here's your reminder for today at 5pm. Shall I create it? *[Ding.]*

SPEAKER 2: Change. *[Ding.]*

Siri: Okay, just tell me what you want to be reminded about. *[Ding.]*

SPEAKER 2: Remind me today at 5:00 to do my math homework: page 76, question 1, question 2, and question 5. *[Ding.]*

Siri: Okay. Your reminder now says: remind me today at 5:00 to do my math homework, page 76, question 1, question 2, and question 5. Shall I create it? *[Ding.]*

SPEAKER 2: Confirm. *[Ding.]*

Siri: Okay, I'll remind you.

SPEAKER 2: So Siri will now have a pop-up to remind me of what my math was. It didn't quite get what I said there, but you obviously have the ability through voice to correct. You can also turn on a setting where Siri will actually read back what the message actually says so that you don't have to try and read it yourself.

The other possibility is through a voice recording and this one is a little different and I'm just going to show what that looks like. I have a voice recorder on here called VoiceRecorderPro and we just lost our screen when I launched that one. But basically I get a big record button. I can hit record and I can hit stop and I can just have that message played back later and it would be very similar to what Siri just did.

So I'm going to just try and get our screen back up here. Hopefully it'll come back once I close the application. There we go. Alright.

So voice recording's another possibility, and of course the camera would be another very useful possibility. Take a picture of the homework that's written on the board, if that's where it happens to be.

I'm going to move on to another application, and this application is called Prizmo, and I'm just going to have to go mobile here, so I'm picking up the iPad. I'm just going to walk over to a spot in my room here with a light. So I'm going to shout across the room here. So I'm going to take a picture of a document and here's the application. It is under my Reading tools and you'll notice in the bottom right, right here, an app called Prizmo. Now Prizmo is, unfortunately, only available for the iPad, but there are similar programs that are available for Android devices, and they are developing these as well. So I click on the application and I'm going to take a picture. So this is a book I'm reading right now. It's called *The smartest kids in the world and how they got that way*, and I'm just going to just take a picture of the first page here. So, if I wanted some help reading this…I'm just going to try and get it flat. I'll put the stapler here to hold it. It's important to have pretty good lighting and all I do is press the button on the right where my thumb is, the little white circle. *[Camera snap.]* So it took a picture of that document and it comes up and on this next screen I crop it. So I just move these little buttons in the corner around so that I can just get the text that I'm really interested in. So it might be that. Now remember if someone with a learning disability was traveling this would work on signs, you can translate with this, and so on. So in the top right here, I just hit apply. It scans the document and this is now turned into text. So that took probably a few seconds. I slowed things down by talking about it and at the bottom now, I can press Read, and the Read button, I can select the language, and I can hit Read.

Computer voice: For most of my career at Time and other magazines, I worked hard to avoid education stories.

SPEAKER 2: And you can see that it does the highlighting. It also has the red dot for each line as it goes *[Pop sound.]* and this is now editable text. A really handy feature of this is I can copy this text, put it into another document, and I could use it elsewhere. So that's called Prizmo, a very handy document scanner program.

I'm going to move on to a couple of other applications here. We're going to take a look at iBooks. So this would be a tool that would be very helpful for students with reading and there's quite a few tools built into the iBooks application. You'll notice I also have Kobo and Kindle and Play Books. Play Books is Apple's, or sorry, is Google's bookstore. Kindle is Amazon's bookstore and Kobo is Canada's Indigo Chapter's bookstore. iBooks is Apple's bookstore. All four of these have different features, such as changing fonts, changing line spacing, changing background colours. Some books allow the text to be read and others don't. So I'm just going to show what iBooks looks like and some of the features available built in with this. So I'm going to go back out to the library and I'm going to select a book. So, I can scroll back through the pages of the book and, say I want to have this section read to me. I can simply highlight that text and I've shown you already you can speak the text just by hitting the Speak button, but there are several other features here. I can highlight this text. I can define a word. I could put a note in. So let's select Note and I will dictate a note. So notice I still have my microphone at the bottom here and I can put a note in here saying: *[Ding.]* This paragraph is proof to help support my answer for question three, period. *[Ding.]* And that goes into the little post-it note, and if I tap to close

the note, you'll see that over to the right-hand side, that note has shown up as a little post-it and the text is highlighted. If I go back up to here, I can go back to the Table of Contents of this document and this is the contents of the book, chapter one to nine. These are bookmarks that I have placed in the book, and then over here are notes and I can see the notes that I've included. This one was from today. Here's what was in the text, what page it's on, and here is my note that I posted. So I can actually have all of these…I can pull this text out of this book and use it in another document if I was to write another, if I was writing using Dragon or in a notepad, or another word processor.

So the main advantage is that because these tools are built into the operating system, they are available across all of the application platforms. So I showed you earlier the Inspiration application. I showed you, or I told you, that you could use this in a web browser, looking in a document, and you can also use it in books that are built into the device. So if I go back to my book where I was, you'll notice other features I have. I can adjust the font size and I can also change the type of font. So simply selecting the button makes the fonts bigger. I can change the font style to different possibilities and the reason all of those are important is I have come across students, and I'm sure others have as well, that different fonts sometimes are easier to read, different line spacings. All of those features can be customized for students and it's helpful to take a look at some of the possibilities. Alright, so that's a quick overview of iBooks. Now I'm going to move on to another application here.

So I'm going to show an example of an application that's really been developing for quite a while now. You may have heard of Kahn, who created not the character from the Star Trek movie, Wrath of Kahn, but the Kahn who created Kahn Academy, and Khan Academy started out as just a series of videos. You wanted to find a specific support on a certain topic, you'd click on a video and that would hopefully explain what someone writing on a computer screen somewhere explaining how to do something in mathematics. So I'm going to just use Siri to launch Kahn. *[Ding.]* Launch Kahn Academy. *[Ding.]*

Siri: Which app would you like to use? Kahn Academy or Codecademy? *[Ding.]*

SPEAKER 2: *[Ding.]* So I launched Kahn Academy and I just have one of my students that's logged in here and take it to some of his exercises here. And Kahn Academy is a great math learning tool and I found it very useful for students with learning disabilities because it gives them visuals as to what they're learning. So if I look over on the right-hand side here, this Mission Progress box, which you can see right here. This shows sort of all the math mastery that this student has completed. Each one of these little squares represents a specific math topic. You can see that this is rolled into a game format so he's earned 100,000 energy points. He's earned several badges as well. He's very proud of this one; this one's hard to get. And as he completes tasks, he will see his mission progress continue, so he's getting constant feedback. You can see he has 11% mastery of skills that he has challenged himself with. If I go down to the bottom, he can find and add a skill, and I can help him to do that. But he also can take a look at his progress. So over here on the left-hand side, he can take a look at what he's done recently, and what badges he's earned, and so on. And in the last 30 days, you can see what his mastery has looked like. So he's attempted two-digit addition, four-digit subtraction with borrowing, and you can see his different attempts at all these different challenges. You can see, comparing with multiplication, he needs practice. So this gives constant feedback to the student and if we go back to his dashboard and

we maybe start a challenge. Let's do multiplying one-digit, well let's do recognizing rays, line segments, and lines. So we hit practice. And what this does, is it's possible for him to have that text spoken to him, so he can click on there. He also, down below has access to a scratchpad; so it's sort of a finger doodle pad. He can click on here and he's able to write on the screen if he needs to. And here at the side, he has some prompts for answers. He can check the answer. He can, down here, Show Me How, so he can ask for hints and then of course, if he's really stuck, he can go to the Kahn video, which is how all of this started and he can watch a video to try and explain what he's supposed to do for this section. It makes it very independent. Independence is really critical for students with learning disabilities. They're very bright often, and *[Chime sounds]* they also need, they also need some of that constant feedback, and this is a great program for doing that. So, let's say that he needed a hint. He can click on Hint and it will give some feedback. He's got two more hints left, and eventually it will give the answer and, of course, once you have the answer, you have to select it over on the side and Submit. You'll notice up above that it shows how many you got correct and what attempts you've made so far. Great program and it's come a long way from just a video series so far. Alright.

SPEAKER 1: Michael?

SPEAKER 2: Yes.

SPEAKER 1: It's Amy. I just wanted to let you know we've hit, sort of, the end just before the Q & A.

SPEAKER 2: Okay.

SPEAKER 1: If you wanted to finish up with your last couple of slides. And I just wanted to let everybody know that if you have questions at this time, you can start typing them in while Michael finishes up his presentation. Okay?

SPEAKER 2: Okay. So I hope that that live demonstration sort of gave you a range of some of the possibilities looking at supports for students with learning disabilities. The assistive technology is very powerful now and it's embedded throughout all the different types of applications across different subject areas.

I'm just going to show two more really quickly and the first one is Fit Brains. Fit Brains is an application that allows students to work on fairly simple problems that help to develop working memory. It helps to develop processing speed. It works on problem-solving, and if we just take a look at the games here, they're actually listed by topic. So they're processing speed, focusing on a task, working on visual memory, and working memory. And so there's quite a few different activities here. So I'll just show one quickly. Let's do a perfect pattern. We'll do the patterns one, beginner level. *[Background music.]* So this one is what's the pattern: three, two, one. And this, of course, is based on speed and you'd go through and you can select as you go along *[Ping.]* and you get the idea. So there's a whole bunch of these built in. At the end, and I won't go through all of this just because of our time, but, it gives the students some feedback as how they did compared to the last time that they logged in. So that's one.

And the other one that I wanted to share with you is taking a look at coding. Programming is something that is done sort of behind the scenes all over the world for all of us and it's a pretty critical piece I think that's missing from a lot of our education. This is something I found a lot of students with learning disabilities really, really enjoy doing, and it helps with problem-solving. It helps with sequencing, and I'll just show one of these very very quickly. This is Light-bot and Light-bot allows the student to sort of learn the very basics of coding. Some of these could be used with kids in grade one all the way up. So let's start with the basics. We'll just do level one. You have three commands and basically you have to program this robot to move to a certain square and you can press done when you're all finished. Good luck. So here's our commands, for any of the robot to move forward once, forward again, forward again, and I'm going to hit run. And you can see I get prompted to re-try because that wasn't enough. I have to move this one and put the light bulb and then I can hit Run and it's successful, and then it moves to the next. And this is very guided. It takes the students through the whole process of programming and then now it introduces some more programming commands. I can turn left or right. So I have a few more commands and I can go forward. I can turn right. I can go forward twice, turn right again, and then forward, and then turn on the light bulb, and of course I can hit go, and my robot makes it there.

So I'm going to finish up with that and I hope you enjoyed the presentation. I just have one last slide in my presentation here. I'm just going to close my iPad down here and go back to the presentation.

So, I just put a few thoughts down about where things are going. I believe in the future there's going to be a greater range of mobile assistive technology tools. There's no way that that's not going to happen; we already have seen a huge explosion in the last few years. They'll become more powerful. They'll also become more integrated in our lives. I showed you a little bit of the voice assistants. Those are incredibly powerful and the list of what is possible is growing all the time. More access to powerful land-based processing. Instead of having the actual powerful computer at your home or your school, you'll have access to that powerful computer through your mobile device, so the device can remain small and the processing power is just going to increase. Teachers are going to be able to have access behind the scenes. I didn't show you this on Kahn Academy, but Kahn Academy was collecting a huge amount of data about what that student did, how much time they spent, what videos they watched, what skills they mastered, and as a teacher tool behind the scenes, I think this is going to be something really big. And instead of sitting down and assessing a student face-to-face, they can do some of these and collect that information behind the scenes in a way that the student is not as aware. We can still certainly share that with them, but I think the data will probably be more accurate, and the student gets much more immediate feedback. We'll develop extremely detailed profiles of learners, far more so than we have today, using these tools; it's possible today, we just haven't set up the systems. I also believe the technology will become very seamless.

Thanks a lot for joining today. I hope it was helpful and we have a question period. I just want to leave with this slide here, that mobile assistive technology in everybody's hand, especially students with learning disabilities, will allow us all to communicate, comprehend, and learn. The key part about the mobility is this is anytime, anywhere. Learning disabilities don't go away when you leave school. Thank you.

SPEAKER 1: Okay, thanks Michael. That was a great presentation and it was a really interesting topic. So if anybody has any questions right now, please feel free to send them in. We have a few. So the first question I want to start with is 'do you have a website or document that lists free or affordable apps that teachers can download on their tablets or smartphones?'

SPEAKER 2: I do—I do have a blog that I have kept over the years and it has quite a bit of information about applications that I've explored and used in the classroom. My blog is the same as my twitter handle and it's—it's just a funny take on my name. Instead of 'collaboration' it's 'kerrlaboration'. K-E-R-R-laboration at blogspot.com. I'm not sure if we'd be able to put that somewhere on there or not, Amy?

SPEAKER 1: I don't think I can throw it up right now. But it is--

SPEAKER 2: Okay.

SPEAKER 1: —It's on your—it's on your first slide, I believe,--

SPEAKER 2: Yes.

SPEAKER 1: -- So when we send out the PowerPoint presentation, people will have it.

SPEAKER 2: That's true.

SPEAKER 1: Okay, so I have another question here. This is from Wendy. She's wondering if there's a way to teach herself about what you showed in Kahn. She—she uses it a lot but she—she had no idea about all of the tools that you showed. So is there—

SPEAKER 2: Okay.

SPEAKER 1: -- maybe something that would help her out?

SPEAKER 2: The website's actually very user-friendly. If you—if you look at Kahn Academy—it's first of all free for teachers to use; it's free for students to use. You can set up an account for a teacher and then you can populate that account with the students you want to use it with. And you can login on your account as a coach, and the students would login as a learner. And in the coaching side, you can manage accounts, you can take a look at the data the students have—have supplied you with or the program has collected from them to see what is it that they worked on, how much time they spent on each topic, whether they've mastered—all that information is available when you go into the coach tab. So if you go into the desktop version of Kahn, in the top-left when you login there's a *Learn* button and a *Coach* button. If you click on the *Coach* one, you'll see where you can set up your classes and also where you can access all of that data that's collected.

SPEAKER 1: Okay. Next question. She—this is actually from Wendy as well. She's wondering if you have—if you can just remind us of what the other coding apps you had were. She said she's used Hopscotch before.

SPEAKER 2: Okay. A good place to start—there's more and more apps coming along. Hopscotch is a very neat one I've started looking at recently. There's Light bot. A lot of the ones from the—last year just before Christmas—code.org started a program to try and get kids from all over —well, people from all over the world-- learning to code, and I started a club in my school back then and we just went to code.org and there's all kinds of starting points from there. Many of those do work on the mobile devices—there might be a couple that don't. And they're from kindergarten literally up into college/university level. Everybody could access something on that site. So code.org—C-O-D-E.org. That's a good place to start. Other than the Hopscotch one, I haven't come across too many other ones with specific apps, but the code.org website does seem to work on the tablets.

SPEAKER 1: Okay, that's great. Thanks, Michael. I just have a couple of people here asking if the slides can be saved for future reference, so I just wanted to remind everyone that we will be sending them out following the webinar—if not today, then definitely tomorrow, so you will be receiving the slides soon and if you're looking to relive some of Michael's demonstration, you'll be able to access the recording of the presentation very soon.

I just have a couple more questions here, Michael.

SPEAKER 2: Okay.

SPEAKER 1: One of the questions is 'what advice would you give for those of us who are within schools who do not have tablets readily available in the classrooms?'

SPEAKER 2: That—I always seem to get that question.

SPEAKER 1 AND SPEAKER 2: *[Laughter.]*

SPEAKER 2: I think—I think we're really at a stage—I know not everybody has technology but a lot of students that have access to a computer nowadays, than in the past, a lot of them have access to a tablet or they have access to a mobile device, like an iPod or a phone. And, you know, if we don't—if we don't invite these into the classroom and have students use them with us, and not only can we not learn but they're only going to use the device for what they find it useful for. And I have found over and over that students who are allowed to bring their devices into school, they are very respectful of the rules of the classroom and they are trying to use the applications that I show them. So I will share that with them. The other way to look at this as well is if we keep asking for this technology, eventually someone's going to hear us—someone's going to hear that this is something we need to have available. There was a question earlier about the smart and the wise use of technology and choices that we make. A lot of the equipment that students are given now in schools is worth several thousands of dollars, including the software. If you think about a laptop SEA equipment claim for a student with a learning disability, it might be a two thousand dollar expenditure. From what I just showed today, you could access all of those tools for probably around three to four hundred dollars, which means you can provide four or five of those devices to students. And again, it may be that some students need a laptop, but I think that there's an awful lot of students, especially younger students—we often don't give the technology to students at a younger age. We usually wait until they're much older—grade 6 often or even later—I

think that's far too late. I think they need it earlier. But I think what we could do is certainly ask—certainly allow the devices to come into our classrooms and show the students how to use them for learning. And I think the other possibility that's happening is a lot of psychologists and boards' professional staff that are making recommendations are starting to realize the power of these devices and are making those recommendations now that a student needs access to a tablet.

SPEAKER 1: Okay, great. So I just have one last question for you and—

SPEAKER 2: Okay.

SPEAKER 1: The question kind of relates a little bit to where you started with that thought about the use of Smartboards versus personal or bring your own device--

SPEAKER 2: Yeah.

SPEAKER 1: -- that's more personalized. The question is 'is collaborative learning still valued for students with learning disabilities?'

SPEAKER 2: I think very much so and I believe in many ways you can collaborate much more effectively with a mobile device than you can with a Smartboard. Remember, if you're using a Smartboard in a classroom, sort of, setting, it's all eyes on one set of text unless you use it as a centre. If you're using mobile devices, you can have several different groups within your class working on different tasks at different levels using different applications. And remember, each of those students now has access to a tool that can read to them. They have access to a tool that can write for them. And they can be a part of whatever is going on right there in the classroom instead of going to a resource room or somehow looking at a Smartboard saying 'I wish I knew what that said'. So I really think the money that we are spending—if you think back to the first slide or one of the first couple of slides on the history—Smartboards have been around for a long time and they're great technology, but I also think that the tablet technology now is probably going to replace in many ways what we do in a classroom with a Smartboard.

SPEAKER 1: Fantastic. Thanks, Michael. So I just wanted to say thank you to everyone for joining us. We've gotten a lot of positive feedback along with our questions, Michael, so I think you did a great job of kicking off the LD@school webinars for us, so thank you.

For anyone--

SPEAKER 2: Thank you.

SPEAKER 1: --out there. Sorry? For anyone out there—

SPEAKER 2: I just said "thank you".

SPEAKER 1: *[Laughter.]* If you have any further questions, you can email us at info@LDatSchool.ca and we'll ensure that any further questions get answered.

So again Michael, thank you so much and thank you to everyone who joined us today. And don't forget that we'll be sending out presentation slides, notes to go with them, and a short survey following today's webinar. And we would also really appreciate your taking the time to fill out the survey so we can use this information to inform us when we're conducting future webinars. The link for this recorded webinar will be available in approximately two weeks. So thank you again everyone for joining us and have a wonderful day!