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Smart Technology:  Practical Applications to Support People with Autism

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>> Teri, I want to thank you for the opportunity to speak today about the work that I've been doing using assistive technology for cognition. I've got a gratifying kind of job because over the past several years I've had the opportunity to see how these emerging tools can be really leveraged to people with all sorts of disabilities function better in their everyday lives. One of the difficult things about doing this work, however, is that the technology changes so rapidly, sometimes dramatically in a day‑to‑day basis so what I'd like to think about this talk today, rather than me speaking as some kind of an authority I'd really like to think of this as an introduction, as sort of an invitation to everyone listening and watching to share about the ways that you're using these tools to help the folks that you work with or the folks that you love and hopefully that way our practice will grow and opportunities to work together will also grow.

When I ‑‑ over the last 10 years or so I've worked with about 200 people in research using assistive technology for cognition. And I survey them to ask what kinds of things are you having the most difficulties with. These are the things that have come to the fore primarily. Memory for names, faces, locales. Remembering to do things like take your medications or make appointments. Communication issues, task sequencing, multitasking, dealing with distractions, adapting to transitions and changes in routines, and then dealing with frustration, and I think in many cases the frustration comes from the difficulties people are having with these other activities. Two things here. Anyone watching this broadcast will be aware that for many people, there's not just one problem on this list that they're having, they're having all of these problems or many of them. The gratifying thing and the reason I'm here to talk today is that the use of emerging consumer hand‑held computer technologies, cell phones, smartphones, PDAs, PDAs and other tablets can be leveraged to help people function better who have any of these challenges.

When I go to see people in their homes typically what I see is that they're trying really hard to use low tech tools to manage their memory and attention problems. So typically there will be some kind of a large light board calendar on the wall where people scribble down their appointments and things to do. They'll also be trying to match that up with a pocketbook calendar or a backpack calendar and neither of those strategies typically work very well because you lose track of one thing when you put it on another. So people try to fill the gaps with sticky notes which you then see on almost every vertical surface in a person's house. Keeping track of your activities in this kind of way is not recommended for anybody. And for someone with cognitive challenges, it's a recipe for frustration and failure so one of the powerful things that PDAs have always been used for since they've been around is the reminder calendar section. It's one of the post powerful things they do. I take everything on the calendars and the sticky notes help the person put it on a PDA, on a calendar with the PDA with a reminder alarm appended to it and they no longer need the calendars. Now when it's time to do something the alarm goes off ding, ding, ding, and it's ready to go. That's a successful and powerful strategy to help many people with cognitive problems and it's the kind of thing that comes free on probably every cell phone you can buy today. A couple comments I wanted to make before we move forward. People with cognitive behavioral challenges are the least likely group to use any kind of assistive technology, even though people with cognitive challenges as a group is one of the really growing populations in the disability world. I'm learning, I'm working with folks with autism, that ‑‑ very interesting, for many people with autism dealing with a computer or a PDA or a smartphone is preferable to human interaction in some ways. So for people with autism using a tool like this can be something that people really care about and want to do.

Small AT strategies can be life‑changers. Again, as I mentioned before, just having a reminder alarm that he reminds you to do things on your device can be the thing that keeps you on test, allows you to take your medications on time, to stay healthy and allows you to manage your time in the way that all of us do. Technology is changing as I said before, very rapidly. I'll be talking a little bit about that as we go forward so it's hard to keep up and it's important for all of us to talk and converse about the ways we're using them so we can learn from each other. And I'll just comment on a bias of mine. I'm a real fan of consumer‑based products. The kinds of products you buy at any department store or any electronics store. The reason for that is typically these are mass produced items that are fairly robust. And have been shaken out pretty well before they go on the market. So you can trust them. They're usually less expensive than the mom and pop products that some of us are more familiar with and for these reasons I tend to as we go in that direction when I'm thinking about a product to purchase or get for one of my clients.

You're looking at a picture below my picture of a young man with autism, a 20‑year‑old, whose ‑‑ with a high school certificate and who is almost nonverbal. This is his first job working as a day custodian at a fast‑food restaurant. You may notice on his belt he's wearing a iPod Touch on a belt clip. Very briefly a couple ways he's using that device, he's using it just with the technologies that come with the device, there are no special apps. added to it. He has a lot of difficulty switching from one of his many tasks to another so that he might spend his entire workday just cleaning tables in the restaurant, forgetting that he has to clean the bathroom and sweep the floors and change the condiments and do those sorts of things requiring a lot of supervision by his supervisor to move from one task to another. He now just has reminders that go off periodically during his workday that switch him automatically from one task to another. He attends to that beautifully and moves from one thing to another without the need for supervision.

A second thing that he is having trouble with was whenever he became frustrated or anxious at work, he tended to stand in the middle of the dining room floor slowly spinning in a circle and humming to himself. This worked really well for Thelonious Monk, the famous jazz pianist, not so good for a fast‑food worker. We programmed in ways he could manage that kind of behavior when he became anxious, but as it turned out, he hasn't really needed it because having the task cues to switch from one task to another along with notes that step him through each of the sequences of the tasks that he's doing on the notepad part of this iPod Touch have allowed him to feel less anxious so he doesn't tend to do that anymore. He's succeeding very well using the device and he's increased his work hours since we did this intervention.

When I ‑‑ when I work with people the first time I meet them typically I just ask them do you have a cell phone? And the reason for that is your basic cell phone that you get for free with your monthly cell phone plan is a very powerful assistive technology in its own right. People carry it everywhere. They're speed dialing on it, text message ‑‑ calendar reminders, contact information, many of them have cameras and even video cameras. So this tool itself is something that you may have in your pocketbook, you carry it around thinking of it only as a telephone but it really is a personal digital assistant as well and it may be the tool you need to function better in your everyday life. The drawback to using cell phones is that for many of them their interfaces are not particularly user‑friendly so it may take a lot of taps to find yourself to a place where you put in a calendar reminder. For people who find that difficult many people have a cell phone that use only as a phone and they care a iPod Touch or another PDA as their cognitive aid. That's a kind of thing that people need to sort out on an individual basis.

The tool that I've been using are PDAs and of a been using these for 10 years and they've evolved a lot over those years and there's been a huge shakeout in the PDA market last decade down to where we're really looking at two platforms. One on the left, you're look at one of the very last Microsoft based PDAs, there are a couple companies out there that are making those devices now, this is made by pharaohs and my go to device, I'll put this caveat in right now I don't work for Apple, they don't send me any money, I buy mine more the same price you buys yours from, these are versatile, $200, do a lot pour my client, I've used in my research and will probably do so for some time. We'll talk about why iPOD touches are so powerful. All PDAs, whether Microsoft based, android based, Apple based include a calendar with reminder‑alarm prompts, to‑do list, audio recorder, a program that allows you to write notes to yourself, a contacts‑address list, an‑alarm clock, a photo album of some sort, the video ‑‑ the opportunity to play back video, and in many cases screens that learn as you tap them. So a person who hits particularly hard will be able to ‑‑ it will respond to them in a different way to someone who taps likely, it learns how you tap as you move forward.

Things that PDAs can help with, scheduling and reminders, time management, wayfinding in the community or in your own building or behavior cues and, of course, many other things. I'm going to focus this morning in the brief time we have together on these ways that the devices can help you.

The iPod Touch 4, the new iPod Touch, it's been out for about six months now, really what this is is a iPhone without the phone attached, that's really what you're looking the a, you can get one that allows you to surf the web wherever you go or a wi‑fi that is cheaper. That's the tool I use, I don't feel like I need a monthly service contract and most of my clients don't feel like they do either. Front and rear facing still and video camera which allows people to do face time video calls to anyone else who has a device like that, built‑in microphone, voiceover accessibility like Apple iMac computers have, background running program capability so if you're playing a game, a reminder message can still pop up and interrupt the game for a moment to remind you to take your medications or to go to an appointment. There are application folders so you can organize your device and not get lost on your interface if you have lots of apps. and there's games interactivity so if another person has a iPod Touch you can play a game with them whether they're in the room with you or connected by wi‑fi anywhere else in the world.

The Apple iPOD 2 which has just hit the market and for most people still isn't available, there's a long waiting list and there probably will be for the next month or so and the previous Apple iPods are really like iPads. It's like the iPod Touch. Dexterity challenged, visual impairments that make it harder to see the smaller screen. Also an important part of the paid that makes it different than the iPod Touch is that it's got a louder loud speaker and that can be a very important thing if you're using the device as an argumentative communication tool. The accessibility features on iPhones, iPods and iPads are taken from iMacs, the accessibility features include being able to read any text on screen out loud, you can zoom into a texts by touch, black on white, or white on black, mono audio and one of the features I think people who use these devices and families will really appreciate is that let's say you have a person in the family who needs accessibility features and another user of the device in the family who doesn't need the accessibility features. Simply by clicking a button at the bottom of the screen three times you can toggle on or toggle off those features without having to go in and reprogram them all the time. Android tablets on the market now, the two that I know of, are the Motorola Xoom and the Samsung Galaxy that you're looking at on the screen here and they'll the be the competition in the near future I think for the iPad. The problem with these devices is no wi‑fi. In order use it need to buy monthly phone contract. The word is sometime in the spring of 2011 that will change, there will be a wi‑fi version available. They tend to be a little more expense than iPads at this time. That price may come down. And as you probably know, anyone who uses a Google android device will have access to a different set of add‑on apps. than the group of people who use Apple devices. My hope is later on in the year I'll be presenting on another one of these talks on the pros and cons of using one program android versus Apple over the other.

Here's just a touch on the issue of this time management and reminder prompts, again, I want to show you a couple pictures that tell my story better than I can. There's a woman I worked with who has, was trying to run a home business. She has severe memory impairment. You can see on her desk top she has about 65 sticky notes. That's how she's keeping track of the things she needs to do. She's a doll maker and she needs to buy products to build the dolls and needs to be able to send them out to her clients. She was failing miserably by her own admission at that. All we did was take down each sticky note, put everything on the sticky note into her reminder prompt on her PDA and when she needed to the device would go off saying it's time to do this or that. Couple months later she sent me this picture, she stripped down her desk top to two or three sticky notes and everything is working for her, she's succeeding at her business, and is much happier camper. This is ‑‑ to me this is one of those pictures worth a thousand words sequences that shows just by using reminder prompts you can change lives.

Task sequencing is one of the difficulties that a lot of people at school, on the job and in the community have problems with and there's some really straightforward ways you can use PDAs to help people with those things. One way is using simple PowerPoint. If you know how to make a PowerPoint, this is what you can do. Take a picture of each step in the sequence. Load that into a PowerPoint. You can also type in reminder prompts to go along with the pictures like you're looking at here. On the new versions of Microsoft office for both Mac and for windows computers, with one click you can save your PowerPoint as a movie and then export that directly to your PDA. I'm just going to show this video in a moment here. There's a young man I work with who works in a hospital and his job is to stock intensive care unit crash carts. Very important job. If there's an item missing, someone can die. So we put together a PowerPoint that shows each drawer of a crash CART and what goes in it. He is able to play and pause that as he stocks the CART to make sure that he does so successfully. I'm going to run through that slide show now just to give you a flavor of what he does.

This slide show went through fairly quickly. As I said before he can pause and play it as he goes by tapping the screen. Second software called visuals, each one he looks at is on a list, he taps the screen to check that off as he moves from one another so at the end of the day he can show his supervisor that he's completed his task for the day and filled all the crash carts. Another kind of task sequencing strategy is simply using a video. If you have a device that has a video camera that's a very easy thing to do. Allows you ‑‑ and what I typically ask people to do when they have the video loaded is to preview the entire video before they do the task. Play and pause it during the task if they need to as they do one step after another of the task. And then review after they've done the task the video one more time to see if they feel they've done it correctly or in line with what the video showed them doing. This is a tried and true cognitive strategy for helping people remember to do things and eventually scaffold their way off of using the video at all. This is a video PowerPoint that just shows a person how to make a cup of coffee.

>> Fill the carafe with water up to the number two at the sink. Pour the water in the back of the coffee maker. And replace the carafe. Put filter in coffee maker. Scoop two tablespoons of coffee into the filter. Close the lid. And push the on button. Don't forget to turn the coffee pot off and enjoy your coffee.

>> As you can see using the ‑‑ this video the person can simply play, pause and forward with the task. A person may have five, 10 even 15 of these small task sequencing videos on their device ready for them when they need it to do in their everyday activities.

Another way to use video is for wayfinding. Many people with cognitive challenges find using GPS devices difficult because the maps that you see on screen don't match the real world that they're looking at when they're trying to find their way. Also many people get lost in buildings and GPS can't help you in a building so it's a very straightforward strategy might be to just make a video that shows a person walking from one place to another in the building or wherever they need to go so they can find their way without getting lost. Here's a quick video that shows how to get ‑‑ for a person working in a cafeteria, it shows this person how to get from the cafeteria's place to the bathroom they're supposed to use. This young man intended to go to the customer bathroom and we were trying to encourage him to use the worker bathroom and this is how we made the video very quickly, I put it on his iPod Touch and he uses this to find his way where he needs to go.

>> If you want to use the bathroom, use the private bathroom in the kitchen. Walk down the hallway. Turn left. And on the right is the men's toilet. Go on in. Turn on the light. If someone is in the men's room, when you go in, wait until they come out and then use the bathroom. Good job.

>> Again, as you can see he can play and pause if he needs to as he's finding his way around.

Another way to use videos on your PDA might be as a behavioral prompter. Very quickly let me just show you a gentleman, a young man with autism who works as a medical supply clerk at a hospital, he stocks closets. He uses his PDA as a reminder just to get to work on time, take his breaks on time, take his medications as he needs to and uses them very successfully and independently in that way. One new way that we discovered that we could help him, he was accosted by a teenage girl at the hospital one day, who thought it was a lot of fun to tease him. He tried to ignore her and eventually said to her "you know, you're being rude." She did not take kindly to that and called her mother in and eventually the hospital administration was called in because of this. We made a video of him telling himself how to do what I might call the McDonald's rule which is what do you do when someone bothers you on the job. And here's him telling himself the McDonald's rule on this video.

>> A.J., when somebody bothers you, what do you do?

>> I take the high road ‑‑ I say I'm sorry, I walk away and I call Alissa, my supervisor.

>> That's the high road.

>> Yes.

>> That's a good plan.

>> Again, what he's going to do, he's going to preview this when he goes to work in the morning, he plays and pauses it whenever he needs to if he's in a bad situation at work and he can review it with his job coach or his supervisor at the end of the day to talk about how he did during the day in managing situations like this.

One last video about behavioral prompting, a little bit different kind of thing, a young woman I work with with Asperger's and obsessive compulsive disorder who was living in a group home for Asperger's here in Richmond, Virginia, had begun to use her telephone as a prompter. She had ‑‑ for the past several years had been calling her mom who was in Atlanta for up to six hours a day in order to check with her to find out was it OK to do the thing I want to do next and I'm not feeling too good about this so what should I do next and basically disabling her own life and her mother's life because of the need to be on the phone all the time. It's kind of a long story but the short version is we came up with a strategy where I sent her mom in Atlanta a flip camera and asked her to videotape quick ‑‑ brief messages in response to the typical questions this young woman asked. She sent the camera back, I programmed the short videos on to her daughter's iPhone and asked her daughter whenever she felt the need to call her mom to simply go to her iPhone, cue up the video that seemed to answer the question she wanted to ask and play that back instead. She's been very successful at doing that. She calls her mom twice a day now for about 10 minutes each time and this has been going on for about a year and a half now and it's given her mom and her back those six hours a day. Let me just show you the video for a second and I'll going back ‑‑ go back and cover it in a medicine. This is the video of her mom one of those questions that she tends to ask.

>> Hi, Janey, I just want to give you some advice on what to do if people make you angry and upset. You have to remember one thing. Don't let them see that you're angry and upset and you need to take some time to cool off before you say anything. Oftentimes you say something that sometimes isn't nice. And because you're mad. What you need to do is go to your room, quiet down. If you're going to cry, then you have a little cry, wash off your face and then think about what you're going to say to them before you say it. I think if you handle things in a calm manner, things will be better. I hope that helps. Bye.

>> When this young woman uses these videos, she is able to do what her mom says on the video just as if she was talking to her own the phone, she doesn't feel the need to make the phone call. And one of the real exciting things about this particular story, because she got back those six hours a day, and because she has begun to feel more in control of her life, because she can manage herself without having to call her mom she's moved out of the group home, she's living on her own independently and she's seeing an occupational therapist to manage, learn how to manage her social engagement in the community and also home management skills and community reentry skills. Many of those skills are also being supported now by her iPhone. Very gratifying to see this happen.

I mentioned in the last slide I'm using a flip camera. If you're using a smartphone or a PDA that doesn't have its own video camera, for a couple hundred dollars you can buy a flip camera and these are very easy to use video cameras. Typically what I recommend people to do before they start videotaping a behavioral prompt is to script the task and rehearse it. Some research shows that when a person sees themselves performing the task they do it more successful than if they see someone else modeling it so I like to have the person performing the task on the video if at all possible. It's important to do these videos in bright light in closeup because the person's going to be watching them on a very small screen and you want them to be able to see what they're looking at. When you plug this device into a computer, the software on the flip camera pops up automatically, allowing you to edit it in a fairly easy format. You save that in a readable movie format that your PDA can read, download it to your PDA and you're good to go.

I want to talk for a few minutes about apps. As we all know, there are thousands of apps. on the market and many, many more coming on the market every day both on the Apple platform and android platform and windows platforms. There's no way that any of us keep up with all the things that are happening. I wanted to talk about some of the varieties of apps. available, some of the ones I've been using successfully with my clients, I hope as we continue this conversation down the road we'll begin to share success and difficulties that we've had with various apps. so we can all learn which ones tend to work best for people with different situations.

Step‑by‑step task list, person locators, seizure tracker, turning your PDA into a cell phone without necessarily having a cell phone contract, cognitive challenge games, behavior trackers and cuing apps. and argumentative communication apps. Let's just look at those for a couple minutes. The one on the slide here that you're looking at is called Four‑Square. This app. was designed for people to be able to send messages out to their friends saying, hey, I'm at the bar, come meet me here. But I've learned it's a very powerful app. to be used as a personal locator for people who might get lost in the community and need help or someone being able to find a person in the community if they're worried about where they are and needs to go help them.

Step‑by‑step task lists, I mentioned a couple of them as we've been having this talk, the two I tend to use most often are Visules and home routine, both of them cost $4.99 and are downloads from the Apple app. store. The one that comes with iPod Touch is a notes program which allows you to write a task list that you want as a note to yourself. Visules is shown on the screen here a couple that are available. On the left you're looking at the screen that allows you to create a customized task prompts or task sequences, you can link those to photo sequences so the person not only can see what they need to do, but see how to do it. And that's not that difficult a task to do. It involves a little bit of programming to make it happen. But for the user, once it is programmed, it's a very straightforward and easy‑to‑use tool. Home routine is very similar in the kind of things it can do and you might want to compare the two and see which ones you like best in your practice.

Again, about person locators, Four‑Square is the one I just mentioned, another one which is free is called Instamapper and most smartphones have GPS locator devices on them. If you're going to use the stand alone smartphone GPS program you're going to have to go to a police station and file a missing person report. That's not something that's available to everyone to just access for obvious privacy reasons but if I have Instamapper or Four‑Square programmed on to your PDA, then, with that you can broadcast your location to anyone that may need to know where you are. A parent, a caregiver, a job supervisor, anyone like that. Here's the problem with these and it's something to think about. They're going to be broadcasting your information as some kind of a text message or a computer prompt on a periodic basis every three minutes, every five minutes, every 10 minutes. You're going to need an unlimited data plan to make that happen. So make sure that you've got a pretty robust text messaging plan on your phone before you start using one of these softwares.

Many of the people I work with have brain injuries or have autism and as an overlay with those conditions have epilepsy. A couple softwares that are apps. that are interesting and useful, I think, one is Epdetect, this is an app. that connects, that utilizes your accelerometer on your PDA or cell phone, accelerometer is a motion tracker, if you carry your cell defies and have it on if you go into a seizure it detects that and sends a text message saying "Tony's having a seizure," it keeps track of how long you've had a seizure and the intensity of the seizure, that's something you can share with a medical professional down the road. A second app. that is that you can see on the bottom here is called my epilepsy diary, this is customized for people with epilepsy, allows you to keep track of medications you're taking, when you have a seizure, how long they last and over time track seizures for you to figure out is there an antecedent that may lead you to have a seizure and provide that to the caregiver and medical practitioner.

Any cognitive practitioner will tell you that one of the most important things to do in cognitive rehabilitation is to find out if a person has sleep problems and address that. There are apps. that can help you do that that are sort of mini sleep labs. One of them you're looking at on the bottom by a company named Neo is called a Zeo, for $150 you get a sort of a desk top radio which is actually a computer and this forehead band that you wear around your head when you're sleeping it tracks your sleep habits, how deep you sleep and sends that information back to a desk top device. When you wake up in the morning, you can program that into your computer and get coaching tips about how to help yourself sleep better. A really inexpensive, 99‑cent app. called sleep cycle for iPod touches r touches and iPhones provides a rough version of that. You turn the app. on, stick the device under the sheet next to the head of your bed and it tracks movement of the mattress during the night giving you a sense of when you're in a deep sleep and when you're not. Another sort of ‑‑ that's information you can use to be in thinking about how well am I sleeping and what can I do to change that.

Using your PDA, you can use it as a cell phone if you have wi‑fi access and some of the ways you can do that, Skype is the most famous one probably which is a free app., it allows you to do videoconferencing or talk conferencing, line two at $9.95 a month is another version, Fring is another version, as I mentioned before if you're talking to someone who has an iPhone, iPod Touch or PDA you can use Apple's face time software to have face time video for free across the Internet.

Behavioral apps. are beginning to grow more and more popular. There's a company named iCounselor that makes a variety of these for people who OCD, anxiety, fear or depression and they're making more. Each one of these costs about a dollar. And what you ‑‑ when you turn one of these on you get the screen in the middle of the screen that you're looking at which asks you to weight how much you're feeling this particular problem at this moment. You tap continually, frequently, occasionally, fleetingly, whichever one of these numbers you feel that you're feeling at this moment and it gives as you can see on the far right a cue that helps you manage that particular problem. If you don't like that particular cue you can tap go to next step and get a second cue or a third one until you get to a place where you're getting a cue or reminder or behavioral message that you care about. For professionals who are dealing with people who have behavioral challenges there are a number of apps. that can help you very quickly in a portable way, in a computerized way that builds a database while you're going, behavioral tracking. Behavior tracker pro on the left allows you to track behaviors for several people across your day so if you're a schoolteacher or someone working with several people at once you can track individualized behavior across their day, across their week. Skill tracker pro on the right is a similar software but what it's designed to do is to help you track how well a person's learning and performing new behavioral skills that you're trying to teach them. These are not inexpensive apps., they're about $30 at the app. store but they can be time savers for people who have typically been using paper based apps. to help track and manage behaviors for the people they care for.

One of the most powerful ways that people have begun to use PDAs and smartphones over the last year has been in the argumentative communication field. And really that's because some very inexpensive and powerful apps. have come on the market that are challenging the freestanding and very expensive argumentative communication tools that we've all known about for a long time. Before picking an app. one thing I'd like to comment on it's probably a good idea to confer with a speech therapist to determine what the right app. might be for your child or four yourself. It's also good to talk to an OT to decide which device that app. might best reside on so you can access it correctly and easily. Sometimes an app ‑‑ an app. on one of these PDAs may not be the right choice. Sometimes one of the largest, freestanding tools is the right choice for you. And sometimes those tools may be available to you as a school legacy tool or something you'd learned to use in the past and like that you want to continue to use. That said, there's lots of opportunity now for very inexpensively try out smartphone‑based apps. for argumentative communication and see if you like them and if they work for you. Let's look at a few examples. People who are hearing impaired for a long time have been using the power of texting and instant messaging to communicate with people who do hear and with other nonhearing people. And, again, for most cell phones they come with a device and as long as you have a texting plan you can do that.

People who need speech creation device, sort of the most fully featured of those softwares apps. on the market right now probably is Proloquo2go which you can get from the Apple app. story, it costs $190 it's not inexpensive but fully featured, you can create libraries of single word and sentence prompts, link to pictures if you need that, and very quickly customize for yourself the kind of argumentative communication speech generation product that you need in your own life.

A version is Voice4You which costs about $30. Voice4You works like Proloquo2go. You can see on the screens you're looking at in the middle there's a list of your library of prompts. You can customize that, draw pictures, use the prompts, use your own voice or someone else's voice as the voice that's generated when you tap the screen. Whatever ‑‑ whatever prompt you tap gets said out loud by the device.

Another I'll comment on is called Speak It! This software, which is only $1.99, this app., is not primarily created as an argumentative communication tool. It's really a text reader. A PDF reader. But what you can do with this is if you can type you can type in any word, any sentence, any phrase and have the app. speak that out loud for you. Again, you can create, if you look at the screen that I pit on this PowerPoint slide on the left you can see there's a library of phrases waiting to be spoken. You tap that library of phrases and it says that out loud. You can customize that. So for someone who can type this is a great espionage generator. And as I said before, only $1.99, that's very inexpensive.

Dragon Dictate works differently this is free on the android and costs 99 cents for Apple device. In this situation you want the text created for your and you're speaking so you speak to the device, your speech is sent off to a server in the cloud and a text message comes back to you printed out, ready for you to use as an e‑mail or as comment for some content that you're editing. I wanted to comment on smartphones, there are a number of those out there, they're very complex, very powerful computers, not just telephones at all, as you know. The most common ones that are on the market right now, just walk from left to right, the palm Pre is an inexpensive PDA and it uses the Palm IOS which is a really intuitively easy‑to‑use platform. That said, this product is struggling in the marketplace against the others and may not be around that much longer. I like it. Easy to use, especially for folks with cognitive challenges. Next to that is the iPhone which is the giant on the market now which I probably don't have to say much to you about. The Blackberry Curve next to it is primarily a business device and because of that it's really focused on high‑energy business users, may prove challenging for folks with cognitive impairment. The real competitor I think in our field for the iPhone and the iPod Touch are the droid devices, the HTC Droid Incredible is a very powerful tool and, again, easy to use, easy to customize, has a different set of apps. than those for the iPhone. As I said before, I will ‑‑ I hope will be presenting on the differences between the two kinds of platforms in a talk down the road. If you're going to use an iPhone, an iPod Touch, any other smartphone as an assistive technology there are a number of challenges you're going to face. The most important one, especially if you're using this as an argumentative communication device is the speakers are really tinny and really tiny.

So a person may not be able to hear the speech generated from the device. A second problem is that if you download many, many apps. you may find yourself with so many choices on the screen that you can get lost and pick the wrong choice and find yourself confused. Where do you put the thing if you're trying to work? If you carry it in your hands how are you going to use your hands while you're working? Let's talk about ways that can happen and what you can do about that. The device itself is a distracter, there are lots of games you can put on this thing and people can find themselves very drawn into those games when they should be working or should be doing their school work or whatever. Finally, these are powerful, in some cases expensive devices and they're very fragile so it's important that people learn, figure out how to protect the thing so it doesn't get damaged on the job or wherever you're using it.

Speaker solutions. Here's a couple that are not expensive. On the right bottom you're looking at a device from a company called Cyanics that costs about $20 or so, you can buy it on Amazon. It's a case that protects the device but you'll also see it has these popout ears that are actually speakers that improve the sound volume coming off the device by a factor of five. Making the device as an argumentative communication tool a lot more useful. On the left you're looking at a less expensive, about a $15 Wal‑Mart product called the iMainGo. It's a large case that makes the iPod touch or iPhone a little bulky but the speakers are attached to the back of the case and, again, increase the volume by about a factor of five. That's a bulky case so some people aren't going to want to use it but I found that for younger people, preschool age, elementary school age having a bulky case can actually be an advantage, small hands, it's easy to manage it, you can sort of brace on it on your legs and tapping on it to your heart's content on it while you're sitting on the floor. Some people that can be an advantage to have that bulky case. Dumbing down the screen. How do you keep from getting lost in the interfaces and all the opportunities and all the apps. that are on your screen? One way you can do that is by using folders. And folders is a feature for both iPads and iPad touches and iPod phones, it allows you to separate the apps. you want to use for home, school and play. You can also separate your apps. by putting different apps. on different screens in the same way. Finally, there are people I've worked with who prefer to have a fun PDA and a work PDA or a school PDA so one device only has apps. that they use when they're at work, the other has apps. when they're having fun. That's sort of the ultimate but expensive way to answer this question how do you keep from getting lost in the interface and how do you keep from getting distracted from this cool and fun device. Want to talk about carrying the PDA briefly, the ways that we know of, obviously stick it in your pocket, that's one way. You saw a gentleman before wearing his on a belt clip which allowed him to keep his arms free while he was working. Having one carried on an arm band like people use when they're at the gym can be a good idea again because you can keep your arms free and the device is closer to your ears so when an alarm goes off even in a loud environment you can hear it. You can set it up on a desk top for office workers in the same way as a picture frame and some carry it on a lanyard or necklace rope around their neck. These are choices that you would have to try out, individualize, figure out in your case which one seems to work best for you and the needs that you have and what I like to do is carry a kit of those around and let people try them out on their own to figure out what works best for them in their real‑life. Finally some cases that you might want to consider and this is just to protect the device primarily there's a wonderful company called Otterbox which is well‑known for creating waterproof and shockproof cases for computers. They also make devices for different kinds of smartphones and PDAs you're looking at one they call the Defender for the iPod Touch. This is shock‑resistant and water‑resistant and works really well for people who are working at busy job sites for about $30. Again, a cheaper version, about a third of that price at Wal‑Mart, there's a multi‑‑ multicolor choices to buy a Colortunes case which is worn as a lanyard around your neck or worn as sort of a shoulder strap and, again, for younger people this is a sort of a go‑to way to carry your device around. And, again, allows you to hold it and carry it easily without dropping it so often.

Briefly I want to talk about what you can do if you can't afford an iPhone, an iPod Touch an Android device. For less than $100 and even for free there's lots of ways you can use technology as a cognitive aid. For people who only need reminders or for people who have severe impairments who don't have a caregiver to help program or maintain a more complex tool here are some suggestions. Medication reminders. You can buy a pill dispenser which has a reminder alarm on it that goes off and says it's time to take your pill. Some of them also are multifunctional medication devices that can check your pulse, can check your blood pressure. The best place I know of to find out about these medication dispensers is a website called epill.com. It's sort of a clearinghouse for all the different kinds of medication alarm reminders that you can buy.

Audio recorders typically cost around $50 and sometimes less. A digital audio recorder typically comes with a really cool feature which is you can time stamp reminder messages to yourself. So at 10:00 in the morning the audio ‑‑ the digital audio recorder goes ding, ding, ding and you hear your own voice saying "it's time to take your medicine." This is good for note taking, too. Typically they can take two hours of notes or more. Pretty easy‑to‑use. Lots of differ manufacturers out there. You're looking at one made by Olympus. Online there are strategies that are linked to your cell phone that allow you to get text reminder prompts. One of the softwares that does that is oh, don't forget from, oh, don't forget.com. This is a free web based text reminder system and what you basically do is you go to the website and you see the screen at the bottom of the page here. You type in a phone number, a date and a time when you want the prompt to go out and the message that you want to be on the prompt, you click submit and at the right time of day that you've programmed in, that text message goes to the person's cell phone who needs to use it. So, again, medication reminders, activity reminders, these can be easily done for free as long as the person who's receiving the message has a cell phone and a text messaging capability.

You can also do that in Google using Google calendar, excuse me, it's hard for me to say that word. All you need to do is if you have any message on your Google calendar, you can tap on that message and append to it a text message prompt, type in the phone number that needs to have that message sent to it and when the time comes, that message goes out to your cell phone. It's a good idea for a lot of people with cognitive challenges to have every single reminder on their calendar appended to a text message so they're constantly getting those reminders out to their cell phone. So if you're a service provider, a special education teacher a therapist a caregiver what you want to think about are with all these different devices, all these different apps., the different kinds of situations that the people I'm working with have to deal with in their everyday lives, how do I manage this and that's not really the topic of what we're here to talk about today, it would take a lot longer than we have to make that happen but very briefly in one abbreviated slide it's important, as you know, to assess your clients' needs, the tasks that they want to perform in their everyday life and the environments they're going to perform those tasks in. Then you need to take the time to learn the devices and the apps. yourself. And today's sort of an introduction to starting that process. In order to figure out what the best fit for your individual client might be. Some people might just use a smartphone they have in their pocket. Some people might need an application that's only available on an iPod or iPhone. Those things you have to figure out with your client and figure out as you go. I like to train clients and caregivers so if I'm not available to troubleshoot someone else at home can do that and I think the most important thing to remember is not to give this device to somebody and walk away. That's a recipe for failure. What you really want to do is help them figure out how to use this device in their daily organizational routine. Quick way to do that in the beginning is to just program in a few reminder prompts for things that they really want to be able to do, that they keep forgetting to do, that they keep getting nagged about by people and let the device be that nagger for a while. That helps people say they now have control over their day and leads you down the road to be able to add all the other things that you might want the person to be able to participate in by using their device.

You're going to need to do follow‑up consults to make sure that the person's still using the device, it's working for them, to see if there's other ways you can use it and then, overtime you're going to want to gradually diminish your supports as you would with any assistive technology that you're providing.

The strategy that I like to think about when I'm using one of these devices with my clients is a strategy that looks at not just the person and how they're functioning in their everyday life but also the environment they're functioning in and the tasks that they need to do. Sometimes you can use a strategy for thinking and memory and there are games that people tend to like to play that are available as apps. that they feel help them with those kinds of things. Sometimes you want to teach a strategy using a video or some prompting ‑‑ other kind of prompting tool on the device that can help them learn how to function better. You can adapt the environment around the person so they can function better. This is off device but that's an important tool that you can use. And using these AT supports on a cell phone or a smartphone you can help similarly phi tasks by providing task sequencing prompts or reminder messages.

Like any other AT that you provide, a motorized wheelchair, any kind of AT that you might provide you have to think that for some clients this device will not work. Things that you want to consider before you think about prescribing a device might be does the person have functional vision. Will the accessibility features on the device work for this person. If they do have vision problems. Do they have functional hearing, will they hear a reminder alarm go off or would they need a vibrating alarm to remind them to do something. Do they have the dexterity that allows them to interface with the screen. Either they're using a stylus or a finger touch. Here's a really important one:  if an alarm reminder goes off do they have the attention and the understanding and the comprehension that allows them to know that this reminder is telling them to do something and then go ahead and do that. Am so people are not at a place where they can do that yet and for them a reminder prompt simply will not work.

The issue of frustration tolerance is important. People will ‑‑ if a person gets frustrated and they have one of these devices in their hands it can end up against the wall, right? That's when you want a very protective case. Typically what you find, however, is people really like these tools, they care about them, they want them to work for them. And they spend a lot of time protecting them. I've had to replace very few of thieves devices over the past decade because people really do tend to like them and recognize how important they are in their daily lives.

Finally, it's important to think about does the person you're working with understand that they have any problem, that they might have a need that the device can meet. You have to help people develop the insight into recognizing that, you know what, I could use some help and this device can help me get there if I let myself make ‑‑ let that happen. These are all the kinds of things that therapists have to think about in any AT they provide but for these particular products you also have to keep them in mind. This is an assistive technology so think about it that way.

One of the things that I've done over the years is try to keep track of how much time it takes to train someone to use one of these devices successfully in their everyday life and it's been gratifying to see that for most people you can get by with two or three interventions, two or three hours of working with them. What I like to do is go meet the person, get an assessment done about what their needs are that the device might be able to meet. I'll load software on their computer if they want me to do that and then I'll teach them how to use the calendar prompting system which, as I said, I think is the most powerful tool we have in a PDA. I come back for a second visit in the same week and maybe work on adding some other feature that might work, a video prompt, another app., learning how to use any kind of task sequencing project that they need to do, memos to themselves. I come back one more time the second week, troubleshoot what they're doing, see if the tool's been working for them in the past week and maybe add another app. if that seems to be appropriate at that time. Third week I come back, one more hour of troubleshooting, is everything, OK? They're good to go. For most people that's all the intervention they need to get them started. Maybe a phone conversation down the road will help you keep track of how well they're using the device and you might then step in from time to time as devices evolve, as new apps. come on the market and as their needs on the job or at school or in their community change.

Finally, I just want to talk about post‑assessment. And one of the things, any AT provider needs to think about is how ‑‑ here's the message that I think this AT's helping with. Has the AT reduced the need for supervision in everyday life? Can you make that? That's the important thing that you're trying to figure out. And if it has, what new goals may you pursue? Want to go back to the young woman who was calling her mom six hours a day. When she got those six hours back, wow, what am I going to do with my life now. So there's a huge opportunity there for her to take steps to change her life and become more independent, whole new sets of goals for her to pursue because the technology was helping her get there. Another thing to think about is are there other technologies that may help. Are there other apps. that may help. Are there other tools available that are off off device that can help a person. It's a great idea for all of us to keep our eyes open and to continue to converse with each other about things we're learning about as we go forward. And finally, something that I think is really, really important, if using a strategy like the ones I'm talking about today don't work for your particular client, very important to sit down and think about why did it not work? Don't typically blame ‑‑ just blame the device. Think about the strategy you used, think about the person's life that they're living and consider is there some way to help make that device work for them. We learn from the mistakes we make and that's how we move forward in our careers.

I want to thank you for the opportunity to speak with you this ‑‑ today. I put up one more slide of references from some articles that we've written over the last decade about using these tools for people with different kinds of props in their everyday life. And I hope that we'll talk ‑‑ we'll talk after this chat online and I'm looking forward to that, too. So, again, thank you so much.

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