

KAREN KANGAS: All right. It's embarrassing but it's not too embarrassing because a lot of you are friends. We have busy day today. I saw some of you raise your hands that you haven't been in a session with me. What people are basically telling you is I'm kind of out of control. And I believe that in this session, it -- although it's awful that you have to be stuck in this room for a day, we're going to make the most of it. And the reason, I have the God-given gift of gab, but I'm passionate about the work. And -- but the reason I'm passionate about the work is because I feel just blessed that I'm able to work with children and they have been my best teachers. And what's happening is, is that I actually got involved in the field of assistive technology quite honestly kicking and screaming. I would much rather be outdoors. I would much rather have -- be working with kids that are hanging upside down in trees and learning to climb and making big messes and painting, and painting themselves, and opening tattoo parlors, you know, something like that. And so -- but I will say technology has affected all of us and it has been an opportunity for children to participate in classroom environments, which I find is extremely important. I've always been involved with kids who have the most complex bodies. I really started out in Pennsylvania after I graduated from Temple in a -- one of the very first federally funded early intervention programs in the United States. When I was able to pick my mentors in terms of doing stuff and what I found it at that time, I thought by this age, we would've cured everybody who had cerebral palsy or anything because we just handled them correctly, we would -- all would be well. And I'm sorry to say after six months of doing everything that I've thought, I threw everything out and then believed that my college education was just another reflection of the military industrial establishment that stole my money to use for things I didn't believe in and -- see, it's not even funny. You guys are too young here so, you know. Anyway, so politically, you know, so I was, like, that was -- my college education was a political manipulation and the only other thing that's great about all of that is that all my life, I've been with children. And I have millions and zillions of cousins and I have a little kids and I was the one who always did that and I -- and I love children and I love learning and I love being with children and I -- and I do that. And I have to tell you that the only reason you need to know why the '60s fit me well is not because I did drugs. I didn't do drugs but I -- people thought I did drugs. That's my personality, you know, so see, there, you know, that's what I'm trying to tell you so, you know. But everybody else, you know, the -- my radical friends were mad I wasn't radical enough because I was going around to little church groups trying to tell people that we didn't have -- want to have our -- send our brothers -- I was saving money for both my younger brothers to go to Canada. Of course, they wouldn't have gone but I would've had the money saved to send them. But anyway, so just to give you a little flavor of kind of where I am. Politically, I now have to tell you that as you go through stages of development, I'm basically apolitical, do you know what I mean? Like in other words, I'm very happy -- I'm happy we have a handsome man in the office. I'm happy that he is with -- we have a diverse -- some diversity in politics but they all say the same thing and nothing ever happens anyway that we like because it doesn't matter even if I didn't like George Bush, which I didn't. You can tell sort of what my leanings are, but anyway -- which has nothing to do with my teaching by the way. This is just getting introduction so you could feel a little close to me as we get going today. When -- if you

really read the legislation for one child -- No Child Left Behind, we wouldn't hate it as much as we did because actually, it's not horrible. All it was really asking for was that we look at where we are. That's really what it said, is let's look at where we are. And to look at where we are, we then want to change that and we want to see then that we put our money in appropriate places. The trouble is, is in all politics by the time something gets written and it gets translated down to the trickle down where it ends up to your school district people, they have decided -- they do things -- what I've understood is something a lot like a Jewish law. My best friend from childhood was Jewish and so I -- her grandmother was Orthodox so I know a little bit about what I'm talking about. But anyway, just to give you a little story, we all know many of us from a Judeo-Christian background that the 10 Commandments are held up, those are the things we're not supposed to do, those 10 Commandments. And of course, when people -- when people began breaking the 10 Commandments, in the history -- in Jewish history is they left that desert and went -- moved on. The leaders in their tribes decided that to make sure that they didn't get to those 10 Commandments, they would make another layer of laws that if you broke them you still didn't get to the 10 Commandments. And then they made another layer so that if you broke that you wouldn't get to the next to the layer that kept you from the 10 Commandments. So then we make another layer and so if you broke rules it'd be like so if you spit on the sidewalk, you wouldn't murder somebody, that's kind of how it was. All right. So, I feel like that's what unfortunately happens with politics. We could have a beautiful law but by the time it comes down when people have all put their take on it, it's something completely different. Now, what I am about is that we want -- I want us to get back to where that real law is. So I'm still a big believer in the truth, and in justice, and that there is a right way. But a right way doesn't mean there's only one way. What we actually understand is that we need to be righteous, not right. Okay. And so now, it doesn't sound like I'm teaching Religion class, you know, I'm not doing that. But anyway -- but what I'm trying to let you know is, is that we get involved with kids with the most complex bodies and with technology and we deal with many, many misapprehensions. And a lot of those things we actually deal with and think that they're truths and we manipulate them, but children aren't learning and that's what I'm most concerned about. So today, what I'm hoping that we're going to be able to do is that in my practice, in what I do -- although it sounds -- doesn't it sound glorious for those of you who work in the government that I'm private practice trust me, you know, it's not glorious but it is fun and every year is a little bit different but I want to -- I want you to know I'm not teaching you anything that I'm not doing. So this is not from my memory of what I used to do. This is an idealism. I am in the real world and the real trench is with you guys. The difference is I'm not just getting a regular paycheck. That's a part that's no fun. But at any way -- but I do get paid. Okay. So I'm not going to say that. And about a third of my time, I spend teaching like this because the most important thing about this kind of teaching is the sharing that's going to come from it. So that's really me, my practice, and specialties. My history is just that it's crazy and when somebody stands up and says, "She worked for the schools and she also worked in a rehab center and she was involved in a special projects and she also works in [inaudible]." It sounds like I can't keep a job. That's one of the reasons that I worry about it, you know. And instead, what it really means is that

I've never made enough money so I've always had like three jobs, you know, that's what it more means. Anyway, I do want to tell you that when we start talking about kids and learning, I am going to be bringing in some philosophy that is not philosophy, but is in fact some science and that science, I'm going to make as simple as possible but it is -- has to do with the neurophysiology of how all of us learn. So we'll be talking about that. The next thing is, is almost everybody thinks we're talking about switches and last year when I came up -- this is the topic that was requested. People were certain this would not be something I would want to do and I said, "No, no, no please let me do this." People were like, "No, this is basic, this is simple," and I was like, "No, this actually is the keystone to everything that we're doing." And the fact of the matter is, is when it's taught in a basic way and not taught in the context of its importance, I think the important is lost. So I'm passionate about this topic because the switch is not the most important thing. And so it's sounds funny that we came to look at something that we're actually going to make less important but we're going to put it in proper perspective today and that's going to have to do with how we look at, how we use it in school. And when -- a lot of times when people say seating and she's a seating specialist, people think of wheelchairs, you see a wheelchair or you see a walker, and you may say that but you may think seating is a chair and you're like, "I didn't come here for that because who are kids are in the chair." Well, I'm here to tell you that no, seating, and access, and activity, and learning, and switches should be one word. Okay. And they're fluent, and fluid, and dynamic, and ever changing, so we're going to be talking about the complexity of that. The sensory processing and sensory integration does not mean I'm going to put you all in a hammock swing and swing you around, and see if I can make you have nystagmus, we're not going to do that. I could do that by the way and make you all get nystagmus but we're not going to do that today. Instead, what we're talking about here is we're -- is sensory processing and sensory integration is how we learn. It's the neurophysiology behind how Homo sapiens function on planet Earth and how we learn. We're going to talk about some myths and so there is not -- we're not looking for an optimal position because we're not looking for anything optimal in life and we're actually in school not looking for the best. And this is something that although a lot of people think that's what we're here for, I actually really would be perfectly happy with adequate. Okay? So adequate is still wonderful. Adequate. Inadequate is a problem and I'm seeing still a lot of inadequacies. So adequate is a problem. Competency, which we talk about competency doesn't sound like optimal, does it? Competency, that sounds boring, doesn't it? Oh, she's competent. That doesn't sound like you're wonderful when you say you're competent. You know being competent is amazingly wonderful. Okay? So if we talk about mastering competency [makes noise] now we're starting to get important. Okay. So when we start looking at issues of mastery and we start looking at issues of competency, we start looking at issues of adequacy. Adequacy means we're looking at issues of function. So we're going to talk about all these things today. And the next most important thing we need to know and remember all day long is that children are not small adults. And unfortunately, in this field, almost everything that is written about switches, about switch access, about how you test for it, about what you've done has been based on its historical background in this field which was developed in this field not for children. Augmentative

communication devices weren't developed for children. Assistive technology, the access to computer was not developed for children. They were developed for adults who were already readers and writers, who could no longer manage their writing or their reading in the same way. And so what happens is as we got into a paradigm that already looking at adults, we started looking at alternative ways they -- we could help them do something they already knew how to do and that's very, very different when we talk about children who are not yet experienced and so we start looking. We cannot apply paradigms that were developed for adults for developing children but I can tell you one thing that is true of children, all children grow and learn. All children grow and learn. All children grow and learn. How they grow and what they learn, we also cannot predict but we're going -- but we need to give them rich environments in order to be able to learn because we know that's really critical. Now, before I go on after I've told you a little bit about myself which is hopefully a little bit unexpected so you know a little bit about me. And yes, my hair color changes so, you know, you got to get used to it, you know. I mean, it's red this year, it's going to be blonde, it's going to be black, going to be brown. I've been waiting for gray, you know what I mean? My mom turned gray, you know, and my hairdresser is like, you know -- I walk in. "Is this like a good gray yet?" "No, no, Karen." People -- all the industries built on being not gray and I'm like, "I'm not gray yet." Anyway, what I can tell you? So the next thing is, I want to ask you guys to get a little bit idea I'm going to talk to you about your professional backgrounds. So how many OTs do we have in the group? PTs? Speech Paths? Teachers? AT specialists? And if you wear two hats, put your hand up again. AT specialist? Is there anybody I forgot? How many have children of your own? How many have children of your own? Okay. Okay. Now, I'm going to ask you. I want you to raise your hand as many times as this makes sense. How many of you are working with children ages one month to three years old? Three to five? Five to ten? Ten to seventeen? Seventeen to twenty-one? Over twenty-one? Okay. All right. Now, what I want to just to show you is your handouts and I hope you downloaded them. This handout that I have for the equipment trial, I just wanted to make a point that I'm -- that I do -- that I didn't stay on the internet last night and write down everything that's available. What I did is I want you to recognize that on there it says equipment that I use, so this is going to be stuff that you're going to be seeing in slides and we're going to be demonstrating today. I don't want you to think it's a be-all and end-all list, but I do want to point out one thing at the very end and that is, at the very end, I do -- I don't have a bibliography. I always think it's funny, people say like bibliography and like I said, I can't really bibliograph my own work but what I was going to do is I do have -- there is interesting reading that's really important and I would really, really encourage you to get this handout from Linda Burkhart's website, for Two Switches To Success and if you are unused to it and you want to really have -- you are working with a group of people who need a process-oriented approach and they do better if they have an outline and they have steps to follow, this is really a wonderful article. I also want to tell you that I think everybody should purchase this book. I don't care if you're an OT, PT, or not and not interested in seating because this book that was written -- happen to be written by an OT really helps you understand how seating is dynamic and how it affects all parts of our lives and all parts of function. I will tell you, you cannot sit

down and read it. Okay. You'll start to fall asleep. You have to -- and you know why? It's, you know, it's like textbooks. It's not that it's not interesting but it's not made to be interesting when it's really around complex subjects and it's just science. When someone starts telling you, if they're not singing to you that the shoulder bone is connected to the elbow, you know, it's just like, "Oh, good, shoulder, elbow, wrist, " boring. Okay? But so -- but it is really, if you do it in little chunks and then sit back and think about it. You think to yourself, "My God, it is incredible how complex this issue is." So that I would encourage you do it. And I would tell you if you buy it from our website, it's \$15 than from Amazon. Okay. The next one is a little do the I've written -- and by the way, if you're interested, you know, you can certainly catch it from me. I'm working on updating that. And then, here at number six, what -- we're going to -- I'm going to refer to this a little bit but this is a really important article that happened in two sessions of the OT journal but it wasn't written just specifically for OTs. And it really talks about how we're teaching and I'm not going to refer to it later but I just wanted to point out to you that you can guys can download it. If for some reason, you can't get into that because it's in an OT journal, email me and I have it already in an Adobe PDF format and I'm happy to just ship it off to you. Okay. So feel free to do that and feel free to email me. That's the other thing I want to tell you. If I don't answer you in 48 hours, I'm traveling but I really do answer my email. No, I'm not Twittering and I only joined Facebook to get a discount for my dog's herbal remedies, what can I tell you. So, you know, I would -- I would like to but I just don't have enough time so my niece has come and she kind of updates a little bit, anyway. The last thing I wanted to tell you is I was involved in a PaTTAN project, some of you I worked with in that PaTTAN project and we then we had a webinar from that and there -- that streaming video is still available if you want to look at that and it's available at that website that's listed there. So if you haven't seen it or you want to, I wanted to point that out. All right. So, now let's get back to work, so that's your primary handout. The other handout is really a -- is really follows what we're going to learn today. Now, first of all, I do want to as a classic teacher, we've got to do the boring part first before we get to the fun stuff. And we have to just recognize that we have to have a definition of terms. And so we start looking about the definition of access. I want you to understand that when we're looking about access, the definition of access is not switch. The definition of access is how an individual is able to manage an activity of interest with intention independently. Okay? So that could be a switch. It could be my hands, it could be my mouth, could be my eyes. Okay. I've got -- but the whole point here that's key is management, activity of interests with intention independently. All right? The next thing is, is that in assistive technology we get a little bit more specific. Access here is how we manage a particular machine at a particular time for a specific activity which will produce an output. That is not the same. Now, they are related but this one is very specific but almost always we do it -- we are talking about the second one but we pretend we're talking about the first one. Okay? Do you understand how big the first one is? Big, big, big, big. All right? The second one though, if we don't understand that we have to deal with the machine management -- let me give you a simple example with that. Almost everybody -- one of those two questions I get all the time dealing with assistive technology is people say to me, "Well, I don't understand why a child -- why you would want a

child who uses head access? How can they drive their chair and talk at the same time?" Because we walk and talk at the same time. I get that question ask a lot. And I say to them, "I drive my car but I'm not allowed to use my laptop while driving." Okay? Now, it's texting. You can't even text and drive, right?

AUDIENCE MEMBER: That's right.

KAREN KANGAS: Okay. We're not supposed to actually talk on the phone and drive. We actually even know talking while driving is not the greatest. And if you were married, you've known that long time. That talking and driving don't work. Okay. All right. So what happens is, is that we have to understand when you're using a communication device, it's is not the same as talking. I didn't give you a voice. I gave you a machine. And what you also have to understand in the physiology of it, the part of our -- part of our brain that controls spoken language is not the part of our brain that deals with written language. They're in totally different spots in the brain that we've identified. We actually don't understand their relationship. We understand better the relationship between orthography, writing and reading. We understand there's a close relationship between writing and reading but we don't understand yet the relationship physiologically between orthography and spoken language and it's being studied by physiologists today and not in English because they've decided that English is so idiosyncratic that it's really going to be hard for them to identify how that happened, so it's being studied in Spanish. Okay. And we're looking -- going to be looking for results from that, you know, coming shortly. Okay. So when I'm telling you that writing takes a different place than talking and I then give you a machine and in -- and you have this machine that's supposed to be your voice, it's not. It is much more like I gave you a computer that word processes and that's what I want you to understand. If I'm writing, I want to you to think about it, if I've got to write, I have to hold an idea in my mind. And then I have to take arbitrary symbols and I have to put them in a particular sequence that matches or resembles my idea and then I have to produce them. Does that makes sense? What are those arbitrary things? Letters that I've had to put into words that those words are hopefully representing my thoughts, feelings, and ideas, and then I have to produce them and that production can be that I type them out and they came through a computer. That production could be that I hand wrote them and we all know there's motoric issues there, but I had to produce them. Okay. Well, if I actually have to speak them through a device, that vocal output is no different than printing it. So actually, using communication devices is teaching kids to write not teaching them to talk. And what you need to understand is how soon do we write versus how soon developmentally do we talk? Okay. We speak very early on. It's years later that we write. Now, we pretend a lot of writing. I love those two-year-old notes, "Mom, I wrote you a grocery list. Here it is." "What's on there, honey?" Because, you know, your husband will say, "I can't read it." No, that's not what you say to a two-year-old. Okay. Instead you say, "Honey, read it to me." Okay? But every time they read a list, it changes which actually when you get to be over 50, that happens anyway. So, that -- maybe that's my kindred spirit. So, what happens is, is we have to recognize first that in assistive technology we're always dealing with a machine. And when we're dealing with a machine and we're dealing with a machine in a specific circumstance, that machine isn't fluid. That machine has very particular characteristics and behaves in very, very specific ways,

period, that's it. And if writing was so wonderful and texting was amazing, we'd stop talking but none of us do. Right? I will tell you though, all of you who have not yet had teenagers and have the joy of looking forward to it. Thank God you have text because text has no attitude, so text your children. Text them -- text them, "Did you get the laundry in?" Because first of all, they never leave their phone, so they will answer you immediately without attitude. Okay? Which means then you won't get an attitude. This stops a lot of fighting. Okay? So, I don't care if they're next door, text them, don't talk to them. So, stop talking to teenagers. Text only for teenagers, okay? Text them, hug them. Don't speak to them. Okay? And you'll get through fine. All right. So, when we have to manage this machine in a -- generally, that machine is also set up to function in a particular way and then we want -- we have this -- we have to set it up artificially into an activity. I mean, if we really look at laptops and look at computers they were meant to actually be at a desk, okay? And even a laptop was a mobile desk. And even when we look at mobile technologies, I find it very interesting when I travel I tell people, "I'm not emailing you." But when I travel in planes, I travel with a lot of people who have very different work environments than I do. And they are dependent all the time on something sinking and replicating. I mean, I don't care if ever Clouded, you know, whatever. I mean that's kind of a nice idea. And I guess the only thing really I love my iPad cloud I belong to every video book club imaginable. Do you know what I mean? So that I might be able to find something interesting to do because clearly TV is not it, you know. So, when I -- I do that. But when I understand people, mobile environments replicated desk. Mobile environments, everything about mobile technology replicates a desk. Okay? Your phone doesn't replicate Facebook. It's not a device that teenagers use. It replicates a desk, okay? That's in a corporate structure by people who have to manage specific information in a timely way. And when you start to understand that, it starts to make sense why people in their 80s like my mother has no desire to deal with a cell phone or to deal with the structures. She wasn't in an office. That whole office culture doesn't make sense. But those of us who even standardly our jobs are not in an office, an office is kind of in the side for us because we're in classrooms. We're doing -- we also have [inaudible] office. But we have very strong structures of paperwork that we have to produce in particular ways. And so because through our education we had to do that as well, whereas my mom although she went to the University of Michigan for a nurse, she did not have to still produce the levels of work that we have to produce today. Okay? So, one of the reasons, it's not that people are too old to learn. It's that the structures and menus and set ups are foreign to someone who has not lived in a desk-driven, paper-driven environment. And what's interesting is it's paper-driven environment that we still are copying. Okay? And we still copy and paste. We even use -- we still can't get away from the terms of what we would do at a desk. Okay? So, we're always -- we're still looking at ways that we can be able to do that. Now, I'm telling you that because we need to really -- when we -- when we start to look at activities for children, we need to understand that we're bringing adult paradigms to children. And children's first relationship with the world is not a desk and it's not a worksite. And that is not the way they organize their minds nor is it the way that they will develop the organizational tools to be able to manage a desk. Okay? So, I want us to never forget how -- what we're doing when we're starting

to deal with access. Okay? So, the next thing is, is that -- this is -- this is the next big issue but before I get there, I just want -- let me back up one more thing to report. So, when we are constantly talking about how independent somebody can be, we frequently have not recognized limitations of the opportunities that the second one gives you. Okay? When I can speak I have it with me all the time and I can say anything. And the fact of the matter is I do, that's why I have the reputation I do. I didn't need to do drugs because I didn't need -- that door is already open. Okay? So, maybe -- usually that's like open the door. I've been trying all my life to close it a little bit. And my mother keeps saying, "Where is the little bit of tact?" And I said, "Mom, it's okay. I'm 60 now, I know to shut up sometimes." And my mother would say, "Is your face not sick of all that blood from hitting the brick wall?" Like that's me. But, you know, what can I tell you? All right. When we start looking -- so, when we start looking at this machine, if you recognize how tiny the second one is from the first one. The second one is a tiny opportunity. That's almost always predetermined by the machine. Okay? So, the machine already limits an opportunity. Then the machine -- where the machine shows up and how the machine works limits an opportunity. And it's one of the reasons why it's so funny to see -- talk about teenagers again on their phones that they never -- they never leave their side and how the phone is now becoming more of an entertainment feature because they weren't going to carry an iPod and a phone, you know, in terms of doing it because they're using the phone in a very different way. They're using their phone as social context. Okay? It's a social relationship and an expression of leisure. It's all leisure and all social. So, that's very different than this context. So, although, this is the context we're living in and it's the field of assistive technology. We talk about like we're doing number one and we grade the kids on number one. And we constantly say they're not doing number one because this is so limiting that we have recognized if we haven't done it. So, if the only way I gave you to be independent to speak was to give you the device that either you decided what vocabulary was in it or what sequences were there. And I only provided with you certain opportunities and you had only the ability to manage it in certain ways. How much do I really know what you're thinking much less what do I know about what you dreamed about last night? I don't because communication is novel. Communication is variable. Communication is interactive, responsive, initiating. It's not just initiating though. You know, women -- we have only a few men in the crowd but women we really know. I mean, and this also you find out from being married. Particularly you find out when you're divorced but, you know, you do also find out when you're married, is, you know, your husband will say, "Could you please hurry up and get to the point?" Okay? And what you -- what you really need to say, women is, you know, if you keep interrupting me I'm not going to get there because I don't know what the point is until it jumps out. It is a process. So, I have to tell the story when the point comes, "There it is. That was it." Now, if you keep asking me where the point is and you keep stopping me to think then we're just going to take longer. Okay. And then you have men, "Could you just be quiet and not interrupt me once?" Well, women, we talk and listen at the same time. There's no interruption. So, we're talking and listening. We are capable of this. Men are not. Okay? So, it is. You have to like zip it up and, you know, how you learn this from your sons, not from your husbands. You know, so pray your marriage lasts

long enough for a couple of sons. And they'll teach you how to deal with your husband better. All right. So, we do have these gender kind of issues in terms of how we deal with information. And again, that impacts how we deal with number one. But the one thing that's most important is when we are communicating, there is no such thing as an initiator and a responder. There is no such thing as interaction is not someone began and someone reacted. Interaction means always, always. And someone can still be very interactive as a listener. Okay? So, listening isn't always paying attention in a certain way. And so I just want to bring these up because we have a lot of limitations on the equipment we use and I don't want us to be judging our children's use of equipment on judging how independent they are in terms of interest and activity. Okay? Next issue is this whole idea of consistency and efficient use of a piece of equipment. And again, this paradigm is an adult paradigm. Now, again, if you would imagine that someone had ALS and someone had -- so, it's Lou Gehrig's Disease and they were a reader and writer and they're getting weaker and weaker and weaker and weaker. We've got to come up with ways as they're becoming weak, it's very easy to figure out what method of access because they don't have many choices. Because they're weak, so they're going to tell you, "My left hand works. I can hold a pencil for a little while. Now, I'm tired. I can smile. I can move my head a little bit." You don't have many choices. It isn't like I'm walking, moving, and I'm not developing. I'm not growing. I'm losing stuff. Okay? And this is where assistive technology began with people who were losing stuff, people who had -- were in car accidents and had spinal cord injuries. Well, the part of their body is dead. That's what plegia means, non-innervated. No sensation, de-sensate, not getting circulation. And so when I want to look at what's going to happen, if I'm going to use a chin or this or a shoulder shrug, blah, blah, blah. That's all we got. We got like five motions, that's it. And of those when you try and look at which one is the strongest, that still was a mistake one when we did that. If we -- if we really knew technology and we really knew how the body worked, we would understand we need to use everything you have, everything you have. Because none of you -- because you can move your head have given up your hands and because you can use your hands you haven't given up your feet. Okay? And because you use your computers, you haven't given up your iPad. And because you could use your iPad, you haven't given up your phone and to give your phone you haven't given up speaking and you still use a pencil and a paper. How did everybody think this stuff is going to be more efficient? We now have bigger backpacks. And what is this with the 5,000 things being charged? I have to carry now two power cords, you know, the -- and I'm looking -- that's my first hotel. This is what I do. "Okay. Where are the plugs? Where are the plugs? Where are the plugs?" I need next to the bed, I don't care about that. My phone is my alarm clock. I need to plug it in." I plug it in. And so I have like one plug -- I have my phone under my pillow. I have the thing of my iPad over here. I have 14 things plugged over there, [inaudible] that's what you're looking now. The gauge of the hotel room is where are the cords and the plugs. Okay? So, I mean it's crazy. Nothing made us more efficient. It made us carry more things in a different way. All right. So, when we start looking at consistency and efficiency, I need to also give you a little lesson in physiology. And one of them is, is that human -- those are not human terms. Consistency and efficiency are

engineering terms. And they're engineering terms that have to do with physics and have to do with force and have to do with the natural environment but they have nothing to do with the human environment. Because in the human environment, we are inconsistent by nature and we are inefficient by nature. Because Homo sapiens, one of the biggest things we're doing is we make lots of mistakes. We make lots of motor mistakes all the time. We are not efficient in our motor control. But what we are is we're process-oriented. And so we actually develop neuronal pathways based on process that help simulate efficiency. So, let me give you an example. Tooth brushing in the morning. When you're tooth brushing in the morning, you don't have to think about it. You don't have to think, where is the toothpaste? Let me open the tube. Let me squeeze it on my toothbrush. Let me pick it up with my one hand. Let me go across. Let me do -- make sure I've done the back. You just go and brush your teeth. Are your teeth brushed? Yes. However, if you're traveling, you can't use that same neuronal pathway in a hotel room. And you can, by mistake, which happens again, I don't want all my travel items to look the same because then I'm going to be brushing my teeth with hair gel. You know what I mean? So, I want them to be different. I don't want the little bottles. I have to write conditioner, C, and S for shampoo. Because I can't tell you how many times I've scrubbed my hair going, "It's not getting anything." Oh, you just poured the whole bottle of conditioner on your head. Thank you. Okay. So, we don't -- we want things to specifically match because we're incapable -- because we're always attempting to get, efficiency in this neuronal pathway that developed because we repeated an activity with a beginning, middle, and end enough times that we literally developed a path in our brains that said, "This is it." Now, if you stay in a hotel for a week, by the end of the week, you will have a neuronal pathway for brushing your teeth in the hotel. Now, why do you think this begins -- becomes also the butt of jokes when we start talking about routines and we are the butt of jokes by comedians all the time about being married and whether somebody left the toilet seat up or not. Well, one of the problems is, is you have a neuronal pathways for pooping. Okay? And when you have someone who then raises the toilet seat up or not, your poop process is interrupted. And it will scare the poop right back up. That's it. Do you know what I mean? Pooping is important. Now, traveling is a big interrupter. It's a big poop interrupter. Okay? And I don't know who wants to watch themselves poop. I can't stand that I have -- the first thing, mirrors. Mirrors at the toilet? Honest to God. Who wants to see themselves? Okay? All right. So, you know, you are so happy if you get the three Ts, tiny travel turds even when you're poop -- when you're traveling, okay? This is, you know, this is what happens. So, we have poop interrupters. Pooping is important. Now, when you're on your own, you got your routine. Whether you like it to be private, whether you like the doors open, whether you want to have a mirror and watch yourself, no one cares. Okay? It's just by yourself. But as soon as we change that, it's different. Well, that's what happens when you get married. You know, for the first six months, you don't care what the other person does because you're having so much sex, it doesn't matter. So, you're already in the, you know, you're in that [makes noise] you know, you get so many endorphins. It doesn't matter what they do. You'd fall in the toilet. "Oh, I just fell in the toilet." You know [makes noise] you know, I'm so happy. You know, it doesn't matter. Completely rug burned up your ass, it doesn't matter. I

can put on my clothes. You know, all right. That passes and then it's like, "I can't get my teeth brush in the morning because you left the toilet seat up." And you're in there, you know, what's going on? And the same thing happens when you have children. So, when you have children, all of a sudden the toddler is, you know, you find yourself as a parent. This is what -- how you spend most of your life. "Where is the toothpaste? Who took the scissors? Could you -- who was it -- tell me when the milk is done. Don't put the empty thing in the refrigerator." Now, what I am sorry to tell you about is I live alone and I'm still saying this stuff. And this is what's sad about human processing. Okay? So, I had to process all -- it -- the blameworthy worked well. But now it's like, "Karen, it wasn't the dogs. I don't think they drank the milk and put the empty thing in there. I think that was you." Okay? Now, the next thing you learn is when you're on your own, I have now about 65 pairs of scissors because I don't say who's got the scissors. I have them everywhere. All right. So, when we look at consistency and efficiency and reliability, we're interested in that with the machines we work with. I'd like to have a reliable machine like a reliable car but you can't be looking at that in terms of switch access. And unfortunately, when we start trying to teach someone to deal with a machine -- let's look at a communication device. What are we really hoping the person will deal with the communication device? We're wanting them to share a thought, a dream, an idea. So, we actually want them to communicate but they then have to manage a machine that's already been separate from them which we aren't sure how that machine is got to be -- that machine is got to be able to be turned on and turned off. It has to be -- it has a particular display of how it's going to look then there's software in that machine. And then there is a process by which I have to get that out while the whole time holding my thought. Okay? There's a lot that can be interrupted there. A lot that can be interrupted there and there's a lot that can be made mistakes in there. So, what's interesting is, is that we have to understand that we are not going to be looking for consistency and efficiency. Instead we're going to be looking at interest and intention. And people say to me, "But how do I measure that?" Well, you're going to measure it. You first got to create opportunities and you've got to count the opportunities that you've created and in those opportunities then you've got to look at the percentage of time the person is demonstrating interest and when the -- when the frequency of their interest comes close to matching the number of opportunities, you don't have to worry about intention or access. It's much more complicated than counting how many times somebody hits a switch but it's much more close to what we really are looking at in terms of learning. Okay? So, we need -- really the most important thing that we need to know when we're teaching a kid to use a machine is we need to remember that they have to learn how the machine works. But that we're not just looking for machine proficiency, are we? So, we're not teaching iPad users because they can go get a job at the iPad factory as an iPad user. Okay? So, it -- proficiency at iPad use isn't in itself an end. What are we looking at? Why do we even all fallen in love with the iPad? I mean, let's not forget, the iPad really was developed as a leisure tool. It's a leisure tool. Okay? It was developed as a leisure tool which does help you manage other parts of your work but -- and still as we download the hundred and million apps as we stretch it, which those of us who work with children are always stretching, trying to do something, to make something work that's in the environment

work for kids. We need to still recognize its history and how it's going to be manipulated. And we have to recognize the limitations of its machine. And the other thing though that is really interesting as I will tell you and this is where Steve Jobs or it's not -- Jobs, Jobs? Is he a Jobs or a Jobs?

AUDIENCE: Jobs.

KAREN KANGAS: Jobs. Okay. Well, I guess Wozniak got me too early on and called him Jobs. All right. So, he's Jobs. Anyway, he's dead. So, the thing that was incredible about him though and was about the products that came from him or from the people who were with him was how friendly they were for use and how quickly we could all feel comfortable with them. Now -- and I think that's what we -- that's what we interpret that I will tell you. They are friendly for your hand use, they're friendly for how they access things and how they get to stuff easily that you might be interested in, but if you don't have that flexibility, it becomes really a challenge. So, what I want you to remember is whenever you look at a machine, it's really important to know its history because it's always going to work best for those it was done for and then as soon as we start adding layers, it becomes a bit more complicated. Most importantly though, as we start looking at this consistency and efficiency, I want us to also recognize that we can't be counting motor acts as somehow having something to do with learning. The number of performing a motor act has nothing to do with learning. And how we measure cognitive abilities is still hugely controversial -- hugely controversial. Would you not still say that there are large -- lots of controversy about whether you're a good test taker or not is a sign of your intelligence? Right? Okay. So, we can have some people who are actually really good test takers that we will not consider necessarily very functional. I mean, you have people who are very bright, they have trouble taking a test. So, we know -- we have trouble testing, we have trouble and there's tons and tons and millions and millions of dollars constantly spent on -- can -- how do we test what you actually know. But the reason I bring it up here, is that actually the most important thing as a teacher, which is what I consider myself is -- when we're dealing with kids we're all teachers. What we have to recognize is we want to know when there was a motor mistake versus a cognitive error because it's the cognitive error that we want to pay attention to, not the motor error. The motor error is actually not a problem. Now, some people are going to say, "Oh, yes, yes, that's primarily it." No. Even if you're severely motor apraxic. Okay. So, what you deal with, kids with learning disabilities have motor apraxia, people who have [inaudible] have motor apraxia, kids with CP have motor apraxia. Harder to see for those [inaudible] harder to see in those on with CP, but those with motor apraxia and any of you who are tired are motor apraxic. When you stumble and stub your toe in the middle of the night, crap, crap, crap I can't believe I did that. You're -- that's motor apraxia. Okay. You're not functioning on all cylinders. The motor planning isn't working. So, all of us are motor apraxic at any moment in time. Some of us have it as a real processing problem. Okay. So, if we're motor apraxic, actually [inaudible] oh, well, see if just those motor things would kick in to place then I'd understand where they are really smart. No, that motor apraxia directly affects that cognitive function. So, we know that people with learning disabilities are still smart, but we also know that motor apraxia affects how they can demonstrate that smartness, but it also affects their learning, but I need to see what they're cognitively

getting and how do I actually know where someone is cognitively functioning. It almost always can be demonstrated through interest and intention. So, cognitive abilities have little to do with test taking. Cognitive abilities have everything to do with attention. Okay. So, how long I pay attention has a direct relationship to my cognitive abilities and when you look at it, that's what we talked about, kids we're worried that are cognitively challenged, easily distractible, too impulsive, can't seem to pay attention. All right. So, we didn't say, I wanted to see you write three PhD theses and that's a demonstration of your intelligence. Instead, we know that there is a direct relationship to your learning, to your ability to attend to a test. And this is where we've also made a mistake. Attention is not where you start. I don't get your attention, "Oh, I have to just get his attention." See, I have your attention, you know, when I was talking about the poop process, I had everybody's attention right there, "Okay, man, I'm really awake, I can't believe I'm in school just talking about poop." You know, and I -- and you probably were initially saying, "Yeah. I -- what is my poop process? Hmm, I've got to think about that. Others know it exactly, you know, what the poop process is." All right. So, when we start talking about that, when I was saying -- we get attention people think teachers that you're supposed to get your attention, but if I got your attention like I got your attention with that, I'm entertaining you. I got your attention to entertain you, you're passive. This is me, just spouting off, jumping around up here in front. I don't really know what you've done with that information or how you're going to deal it. True attention is self-directed. So, attention to a test comes from intention. Attention to a test doesn't come from the teacher. Attention from a test doesn't come because it's motivating. Attention from a test doesn't come because it's positive. Attention doesn't come because you're competent. Intention drives attention and what drives intention, interest. Let me use an example, I'm sure many of you have in your own educational careers. All of you I'm sure had an automatic love of some subject and an automatic hate. Mine was History, I just hated History, I love to read, I love Literature, I love Philosophy, I love Art, I love Math, I love Science. I do not like History. History [makes noise] everything, [makes noise] I can read, I can [makes noise] there's like [makes noise] you know, take me to museum [makes noise] you know, I'll go to Gettysburg [ makes noise] you know -- you know the only thing good at Gettysburg was climbing on the rocks and, "Oh, there's a tower, yay," Gettysburg it's our History [makes noise] don't even say it like, oh, you know, until I had this amazing prof my freshman year in college. Unbelievable, unbelievable and it was for American History and then the next year, I had somebody from my World Civilization class same thing, two of the most amazing teachers I have ever had in my entire life and I fell in love with the subjects because of their love of them. Their love counteracted my already yuck, okay? So, we can inspire interest. We can inspire interest. We can't predetermine it, we can't mandate it, we can't IEP it, okay? We can't sign a contract for it, but I will tell you if as long as you think that how you're getting someone to learn is by first getting their attention, you've missed the point. What has to happen is we must provide learning opportunities that are -- encourage the demonstration of intention. That intention and interest to keep you involved. I'll tell you something I'm very interested in, but I'm lousy at, art. I have huge interest in lots of different kind of arts and I don't have the gift for it, but that doesn't mean I don't love it and don't want to do it and can't take

classes and enjoy every piece of it, but I'm not going to become Picasso. I'm not driven by the passion of Picasso. You know, but -- and -- but I can -- I can go to art museums and I can really appreciate the strokes, I can really appreciate so many things about it. And where did that come from, it's not driven from mastery and it's not driven that I want to get better that. I'm -- it actually isn't. It's for this -- just there's this -- the colors, the thing, I don't know what it is, it's personal, it's an interest. I don't know why someone would be interested in cars you see. Cars, I mean, honestly, they get you around. You know, I'm lucky if I notice the color, you know. My sister loved cars, you know, she love cars. The hardest thing she told me with ALS, getting -- having ALS, the hardest thing for her was to go with the stick shift. She was like, "Honest to God, you know, that's my hardest thing." A Prius I have to get she said, a Prius. That's what I have to get now. An old lady car. Okay. But...

AUDIENCE MEMBER: [inaudible]

KAREN KANGAS: I know. I know. We can all be eco-friendly, but let's face it, it's not a sports car, you know. So, I mean, we have these personal things. I mean -- and so, you can make me take one of those mechanical classes, I don't care if I know what -- I can know the word transmission, I know the word carburetor, I actually know the word tire, but I actually don't care that any of them can be interchanged. You could put the tire where the carburetor is, that would really be fine with me. Okay. So, that's what I'm trying to say is we cannot ever predetermine the gifts and interests and talents, but everybody has them. We can inspire interest by sharing our love and passion of an activity and those are our best teachers. Our best teachers inspire us by creating opportunities we would not normally have fallen into with interest, but when we start looking then at trying to deal with all of these, what I am always looking for is interest. And then I'm going to see the use of that interest through the demonstration of intention and as that is -- and as that occurs, I don't have to worry I will have access because that's how human beings develop access. We don't develop access because someone put a pencil in your hand or coloring book -- and you're -- the day you color within the lines. Was that written in your baby book? Hey, she made it in the lines, okay. And I also think it's really funny, you know, a good -- a classic example of Jean Piaget, one of the still few scientists that I admire, there aren't too many left, but he's one. And you know he shows his three-year-old the tall cylinder and the little short squat one and has two measuring cups and pours water in and says, "Which one holds the most?" And the kid always says the tall one. He's like, "But look at this, see, here they are." "No, it's the tall one." What day did the kid realize there was the same volume? See, if we actually put in our baby book those days, those would actually be intimations of the future to come, not when you took your first steps. Okay. So, did that happen by him repeating it and punish, "Well, if you're not going to do it right, no supper." But that's how I think we are in education. I know I think it sounds a little outrageous, but I think that's what we do. So, you know, "This is the tall one, this little short, fat one, see these two, I'm doing it again, now watch. I've done it eight times. I'm going to try for two more you better have it 50% of the time." Okay. So, the kid finally thinks, "Holy crap, fine. "Are they the same?" And thinking to themselves, "Still the tall one has more." Okay. So, I don't want the kid just agreeing with me, I want to see cognitive function and I also want to tell you,

no matter how many of you fed your little baby saying, "Be a doctor, be a doctor, be a doctor," that was one of my friends. I'm like, "You think this is going to help?" You're supposed to be saying like, "The helicopter comes with the applesauce" and she's like, "Be a doctor, be a doctor." I said, "I'm going to tell you right now, that kid is not going to finish college." You know, you -- you know -- and what -- the reason I say that is if you haven't figured out in your own life, in the life of your children, in the life of your neighbors, in the life of the kids you served, you cannot look at someone and tell them what life is going to bring them or how they're going to demonstrate their life or how it's going to come out, you cannot do that. But what we know we can do -- as teachers what we know we can do as a community in terms of supporting the growth and development is we need to provide rich opportunities, so our children are interested in life. So, our children are interested in life. Interest is everything. Interest brings intention, demonstrates intention, and intention brings competence, okay? So intention brings competence. I know this is an example that some of you have heard me use a lot of times, but I haven't -- I sometimes think when I'm teaching, I didn't make these up and I didn't put them on cards, but some of them were just -- when they came to me were so valuable and so human that I think that I -- so those of you who have heard just bear with me in terms of repeating. I will never forget when -- I have two kids, I have a six-year-old and a three-year-old, it's Friday night, Pizza Hut night. "I don't want to cook, let's go to Pizza Hut." Okay? What we forgotten is that everybody else is at Pizza Hut, too.

AUDIENCE MEMBER: Uh-hmm.

KAREN KANGAS: You know, everybody's having the same Friday night. So you go there and you're like, "Oh, God, look, now, we have to wait." The only thing I wanted to do was not wait, I'm hungry, the kids are hungry, we're here. Okay. And over there is a little machine. One of those little video machines that has a steering wheel on it and things were making sounds and hopping around and then your three-year-old goes over on their tiptoes and with steering wheel goes, "Look, mom, I'm making it go," and the six-year-old says, "You are not, you have no money." And so you as the parent that you are say to the six-year-old, "Go outside with your dad." Okay. Now, who was right? The three-year-old or the six-year-old? They both were. At the developmental stage the three-year-old got the steering wheel has something to do with the stuff that's happening here and up on my tiptoes as I turn this, something's happening, but the six-year-old realized that's kind of the advertisement and that really you've got to put the money in to control this in a particular way, right? So, it didn't make anyone less right, it didn't make -- did the three-year-old want to continue to do it, the activity? Yes. Did the six-year-old -- that's why you send the six-year-old with the husband because you already know how many quarters you're going to have to put in there before you finally get your table, all right? So, that's just being a frugal mom as you send them outside. But the other thing is, is that kid would stay at it. So, see what happens is, is intention drove that activity and how was the three-year-old accessing? Well, they weren't really accessing, they kind of knew that steering wheel had something to do with what was on the screen and they knew they had to get up on their tiptoes to reach it and they knew they had to turn it. Okay. But I can't now put a quarter in and tell them how to make the thing turn to make it go. That has to happen as they remain interested. Okay.

So, intention and interest brings access and competence. All right? And that's what we really need to support. So, we need to understand, we don't look at errors, we're not looking at things being mistake proof and we're not looking at motor acts in terms of measurement. Instead, we want to be looking at how we demonstrate interest and intention. Okay. So, when we look at that, and we still recognize that we're in school and as much as we would like to be in school and not have to be seated and everybody would like to think that we could learn running around, but the fact of the matter is we don't learn running around. When we're running around, we're running around and if we could learn running around, you know, that's why people are trying to text while they're driving because -- and you can't do it. And that's why we make the joke, "You can't chew gum and walk at the same time." Now, some of us have mastered that. Okay. Because some of us can chew gum doing anything. All right? But I was going to say is in general, as human beings we're not doing. So, how are we set up? How are we set up to try and spend enough time at an activity to demonstrate our intention, to increase our time with that activity to develop competence and access? Well, you have to understand for us to really do that if that is a concentrated activity, it's all based on us being seated. Okay. So, a seated posture is what helps set you up for focused attention. Okay. A walking around posture, isn't for focused attention. Walking around your eyes are going to be -- looking at the environment, they're going to be checking out what's going on because the main point of walking around is to find a seat. That's the only reason that you walk from one seat to another. Now, some of us are in our seats in our cars too long which is why it gets boring because the activity of driving is very boring especially in big cities because you aren't driving, you're sitting some place. Now, when I was in Seattle, I thought to myself, I could, you know, when you just get to look at those mountains, it's not bad to be in a traffic jam in Seattle. Look at that, this is what I got to see, but the people in Seattle, they're already tired of that, they forgot that's there, you know, it's not funny, but anyway. So, what happens is, is seating is a posture that is critical to learning but I want you to understand what it is. It's not a position, it's a range of postures and once again here, independently controlled, situationally specific, task defined and individually preferred. Now, when I say individually preference, it's not a wide range of individual preferences. In other words, I don't get to say, "Well, I'm so sick of sitting on my butt today, I'm sitting on my head." I'm just -- that's it. "I'm just sitting on my head all day, my butt is tired." Someone will say, "Well, my individual preference is an elbow, I'm going to just sit on an elbow." No, those individual preferences have to do whether you like your legs crossed at the knee or you like them crossed at the ankle or whether you like to hang over on one side or those are your individual preferences. Okay. Then these individual preferences, there's not a wide range of them, but what is really important is to understand as soon as we move into a seated posture, our eyes become ready to pay attention -- our eyes become ready to pay attention. As we move into a seated posture, we limit the range which they have to be concerned about, so as we move into a seated posture, our eyes become ready to converge, they become ready too. When we're wandering around, our eyes and our mind is daydreaming, wondering, wondering but as we move to a seated posture, we become focused and that's how we were meant to be as a species, that's how we feed ourselves, that's how we do work,

everything we do as human beings especially is countered and moved around as being in a seated posture because we were as a species meant to have our hands engage with our body in purposeful activity. Okay. So, we have to really understand this component. Now, for OTs and PTs and by the way, speech therapists, you don't get to escape this when you're involved in assistive technology. Teachers, too, I should have put teachers in there. Seating is also a treatment technique. Okay. So, as a treatment technique, let me talk about that. Okay. Speech therapists, you know a treatment technique would be teaching someone that would be dealing with some specific mechanisms that you're going to deal with the stuttering or some specific mechanism you do for strengthening somebody who had a bit of dysarthria. Okay. For OTs and PTs, we know that a treatment technique could be splinting. This is a very easy one for understand. Okay. Well, I am not going to choose a splint, mail it to you, tell you to put it on, and wear it all the time and then expect things to be better. A treatment technique means that I must on a regular basis be watching your use of it. And then it's going to work in particular circumstances and that it's there as an assist that you may or may not need for a period of time, that's how seating has to be viewed. Seating isn't that I gave you a chair. Seating isn't the chair. Even at least it's interesting to me, this is a relatively new conference center and I find it interesting that they've given us chairs that can vary in height. Okay. They still have given you chairs that they think are a little bit more comfortable and they are a little more comfortable than others. But they're still not totally suited. Yeah, we'll talk a little bit about that. But they are -- but they at least have figured out taller and lower makes a difference. Okay. Now, what'll happen is, is that the taller and lower though should also relate to the table surface, okay. So, instead, I still think it's a patriarchal look at it because it's looking for a long-legged men to be able to be better. But it's not looking at short-legged women who when we make our seat tall enough so we have the right distance between our body now our feet are swinging. You see what I mean? So, if we really wanted an enlightened environment the table top and the seat surface would both change so we could alter them. And by the way, they would alter also based on your activity. They wouldn't just be this is the way Karen wants it for Karen. It would be based on what I was doing. Okay. So, when we're looking at seating for task performance. So, task performance means that intentional engagement in activity. We have to be looking at the seating as well. And that seating cannot be the kind of seating that we used to come in on the bus. That seating cannot be the seating you're using to drive a car. That seating cannot be the lounge equipment you're doing sunbathing by the pool. It requires a much more active state. So, when we start looking at seating is a human characteristic. Now, what's interesting is most people think as a human characteristic, they think of opposable thumbs and they think about upright ambulation. But just as valuable, in fact, more -- only more -- far more valuable than upright ambulation because -- you know what upright ambulation is? Upright ambulation is a transitional pattern to -- from one seat to another so that the opposable thumbs can work. Okay. Seating is critical to our sensory organization to extend our time at a task to master it. Seating is a critical component to mastery. So, if I haven't led you to believe yet the complications enough when you came to talk about switches because, again, we have a switch that's got to work to a machine, that machine also has some arbitrary components to it then we

got to look at the components of seating and we haven't even talked about what we're trying to teach. Okay. So let's just review a little bit of what I've talked about so far so we can get into the swing of this. And this is the beauty because now your boring life of pulling out 500 switches to see which one is going to work is over. Okay. Because actually, you can use one or two or three. All right. So, access to the activity and assistive technology is to be assessed first. Isn't that what you were taught? We're going to - - we're going to figure out access. Oh, I have this kid and I can't access anything. Their hands don't work, they're non-speaking, they can't hold themselves up. I want them to -- what do you -- I want them to use a communication device. You -- but, you know, when I say people they don't actually say I want the [inaudible] I -- when I go, when I ask people, "What are you hoping this kid will going to do?" I want him to tell me what he's thinking. So, I want him to use a communication device. So I want -- I want to tell him that actually those two are opposing features. Because if you don't think that a communication device is an easy way to tell somebody how they thought, you haven't used one for a day. Okay. So, access for children to activity in assistive technology was -- access first? No. Assess first? No. No. We're going to leave that paradigm behind. We're going to find the optimal sight. No. No. The only reason optimal ever came into it was because of engineers who were looking at efficiency of access because they didn't know anything about human movement, who were dealing with people who had degenerative disease who already knew the task, were readers and writers and we were looking at them managing a computer or a communication device in a different way. Now, when we develop things for children we have to understand and please lose this one. Teaching cause and effect. I want to spit when I hear this because we're teaching it in a stimulus response way. If you are a Homo sapien on planet earth, you have cause and effect. No one teaches you this. And it's not understanding that a switch makes a dog bark. Okay. And you cannot measure cause and effect. When you are looking at what you think is cause and effect, you're measuring stimulus response and very quickly it fades. And this is why you have the same IEP for six years and the kid has not progressed. Okay. We should be sued for malpractice for that. I don't like IEPs as contracts but I'm telling you, if your kid hasn't changed and moved, that better be on some ownness on you. All right. Unless they've gone through some medical emergency. So, stimulus response. How many times -- if you were saying to me someone consistently hit a switch seven out of ten times, you're dealing with stimulus response. You have nothing to do with cause and effect because I don't care how many times you hit the switch. The switch is controlling something. And in that something, that something has to control something in it. So the switch is controlling the hardware, which is controlling the software which I hope will represent your thought. What is the activity in that paradigm? The thinking. Okay. That's what I'm looking for and if you've got to get through it by this arbitrary use of the software through the arbitrary use of the hardware that I then have set up, that if I'm measuring counting times you're hitting a switch then I'm talking about stimulus response. And if you know anything about behaviorism and cognitive therapy, it is very good for a tiny little single phobia. Okay. But it doesn't generalize because that's not how human beings learn. Okay. We do not learn -- we're not made up that way. We develop neuronal pathways based on our interest

and attention and frequency of use of it. And we make motor errors all the time. What we need to know is how to repair it. Do you think when I'm talking I never make a mistake, not only in my thought or my words? I mean, there are times -- aren't there times when our tongue gets tied? We talked about that I'm tongue-tied or I said the wrong thing. But also, don't we also make mistakes, like, we actually say something we didn't mean because it just came twisted the wrong way and we have to use words. Well, so many times we talk with each other and we don't know what we're saying. Isn't that the weirdest thing? You know, you say something and someone heard it in such a different way. "Well, you know, that offended me." "Offended you? Holy crap, I wasn't even anywhere close to that. I was just, like, it's a bad hair day and I offended you. Oh, good Lord. You know, like, I'm really, what am I going to do and repair this?" Okay. So actually, human beings spend more time repairing errors than being competent. All of us. Because that's what's process-oriented. We make huge mistakes. Would everybody agree in this room that athletes have to make money off their bodies?

AUDIENCE: Uh-hmm.

KAREN KANGAS: They have to make money off of motor performance. Would we not agree? An athlete has to make his money off of motor performance, right? Can he anticipate or she anticipate when she's going to do her best? Can they say, "This is a money-making here, baby, I'm in it. This is -- I'm going to be making so much money. I'm going to be hitting like you can't believe." No. What happens? Because motor performance cannot even be anticipated by the most well-educated, well-trained, practiced, you know, who else? Is -- all motor performers are hugely superstitious. To one, dancers, actors, musicians and athletes. All of them, hugely superstitious. Big gigantic rituals, I have my favorite underpants. I put on my clothes in a particular way. I have to do this. Do you know why? It's a precursor to maybe this will assist the outcome. This ritual, I'm hoping, will assist the outcome of my performance. But, you know, we're all -- we -- in fact, you know what's even great? When somebody tells you, you messed up, half the time human beings don't even believe you. You know, I mean, another in your marriage. I mean, like, half the time you want a video tape. I said that, no, you didn't. I did tell you, no, you didn't. I did tell you no. No, no, no, no, no. Play it back. I want rewind. Okay. We can even remember things correctly because our perceptions are engaged. Okay. So, one of the things lousy about human beings is motor performance. We not only can't do it, we can't remember it, we can't anticipate it and so we spend a lot of our times repairing it. Now, that's a behavioral paradigm of right and wrong. I made a mistake, I repaired it. Now, I'm going to make you a shift so let's go to physiological. Physiological is righteous, not right and wrong. Physiological says this is the experience of being a human being. A human being always is attentive to multiple issues at multiple times and our sensory processing systems are rich and lead us on interesting journeys. Very different way to look at it, isn't it? I love this book. And it comes in an audio book too. By a guy -- I should remember his name, called A Perfect Mess. And he is one who's tried to look at the science of organization. And there was a lot of stuff that's going around that psychobabble. There is no evidence that a neat desk is a more efficient mind. In fact, there is evidence that a...

AUDIENCE MEMBER: Thank you, Lord.

KAREN KANGAS: There is evidence that a messy desk is a more efficient mind.

AUDIENCE MEMBER: Okay.

KAREN KANGAS: Okay. So, what happens is there is an industry that he finds hysterical. That we have this industry built on organizational things that include money-making of closet organizers and hiring a professional organizer, somehow believing that if you're more organized, you will be more efficient. But he actually says you will spend more time organizing than you then will spend living. Okay. So, there is a certain level of organization that has to take place but neatness and having everything organized just like the other thing he's pointed out on sciences that long-term strategic planning never works and it's a waste of money. Long-term planning is impossible to do with human beings. It has never worked in any industry. Tons and tons of evidence, never worked on any industry. And everybody will say they want to know your long-term plan, your long-term goal, your strategic planning. And in fact, human beings aren't capable of doing that because we can't take in all the factors on this interesting journey. So, it's a very, very interesting book about a perfect mess. You know, now of course, those of you who are super neat next you're a little OCD what can I tell you, you need therapy. Those of us who are a little messy, not that we didn't need therapy, we just feel better reading it, so all of us -- all of us are perfect messers, I join you. Okay. Okay. I'm a very messy cook. I'm a very messy cook. My mother cannot be in the kitchen with me because my mother cleans up along the way that makes me throw up just thinking about it, I can't cook. If I cleaned up, it would interrupt the beauty of my meal. Okay. But maybe that's why I get along so well with kids because no mess bothers me. Because no mess is too big that can't be cleaned up because I have made it. Okay. I've made that mess. All right. So anyway, so when we start looking, this is a paradigm we're going to leave behind. So, we're going to leave behind looking at access first. We're going to leave behind looking for the optimal sight because all children grow and learn. So, what are we going to pay attention to instead? We're going to first recognize that the use of access is going to come last. Okay. We are going to recognize that the child needs to know the activity first, know the activity. Notice, I didn't say expose to, know the activity. They need to know the machine, they need to know the software, they need to know how a method of access works by seeing it work. They need to know what the beginning, middle and end of the activity is and they need to know this by having repeated the activity in frequency rather than in length of time. So, what happens is, the way we develop a neuronal pathway so that we can demonstrate anticipation and task engagement is by knowing the beginning, middle and end of a task. Okay. So, we need to know the beginning, middle, end of a task. And the way we develop extended attention is by -- as we know the beginning, middle and end of a task and we can repeat the frequency of the knowledge of that beginning, middle and end of a task, we ourselves will extend it. However, if you as the teacher start the person by getting their attention, put them at a task and as they seem to be interested keep going, keep going, keep going until they get tired, they have never -- they will not be able to develop a neuronal pathway or be engaged in that again. You'll start all over the next day.

Okay. And when you start all over the next day you run a risk of it being brand new or boring. Okay. It's not anything in between. So, the way in which children actually extend -- all human beings, how we extend our attention to task is first we have to know the beginning, middle and end of it so we can anticipate that. It has to be under our control as well. So, first, we'd like to anticipate that. So, we need to work -- when we start -- and this is what we're going to be looking at as we start teaching the use of assistive technology. And as we start teaching the use of a task, the other thing is when I pointed out that motor learning article, one of the things that happens in there is as human beings, we do not carry pictures in our mind of ourselves being incompetent, you know. Now, if you do, you need therapy. Okay. So, I mean, get -- the OCDs are already getting therapy. Well, would be you too if you got that picture in your mind of incompetence. Let me give an example. When a child says they want to ride a bike, a two-wheeler, they don't have a picture in their mind of them learning to ride. They have a picture in their mind of them riding. They see themselves riding. They don't see themselves falling, they don't see themselves learning, they see themselves riding. They have a visual picture in their mind of what it's like to be on a two-wheeler and they see themselves doing it. And that's how they learn to do it. They must have that picture in their mind, a visualization and they must, in anticipation of the task, have a mental rehearsal of that. What it's like to get on the bike. Now, although they see themselves riding, they had never really figured out -- they had never really had a picture in their mind of getting on the bike. So, you have to help them get on the bike. So, that's where we have to help them. We help them get on the bike then go on the bike and then stop the bike. And as we're doing that we have to lie. Okay. So, one of the most important features of being an extremely good teacher is lying. Okay. And you know, it's very important, and also we manage our teenagers quite well too by the way. Toddlers, you've already figured it out, that lie is so white, it doesn't even count. You know, they get to be big whales with your -- with your teenagers but, you know, you got to -- got to -- got to shove them down. I know some people think, "Oh, that's horrible," but, no. That little two-year-old, I mean, that kid riding the bike says, "Mommy, promise me you'll never let go." You look him right in the face and say, "I promise." Knowing for a while it's a lie. "I promise I won't let go until you're not looking." Okay. And then they fall off and they say, "Don't let go." And you think to yourself, "I should let go a little earlier." But what do you say? "I promise." Liar. Okay. So what we need to understand is when we want to teach we need to understand our kids need to have a visual picture of confidence. So, if you are not using the equipment you have, why do you think the iPad is being challenged in every environment because children see it being used. Okay. It was easily embraced in the world. So people had to ask that question, "Why can't we use an iPad?" Now, we didn't have lots and lots and lots, we don't -- you really have to veer to have this discussion. Okay. About why our whys work because our question is it's not iPad use, it's the -- it's what's in the iPad. Okay. That's the thing that's so funny. People say to me, "I want a communication device. I don't care. I don't care. I want what's in it." Okay. And I actually don't want what's in the device I want what's inside your head. That's what I want. I want what's inside your head and I want what's inside your heart. So, we may have this vehicle over. We're going to be able to do it. So, what happens is, is that how were our children

developing a visual picture of competence? Now, we used to -- again, role modeling is a behavioral point of view. I'm going to role model because it sounds like you're going to copy. I'm going to do something you're going to copy me. That's actually not who we are. You know, we kind of can monkey see, monkey do, that's true. But the fact to the matter is, is that when you read and what's going to happen is, is when you read those articles about how human beings learn they must have a visual picture of competence. Now to see that visual picture they have to see a lot of things going on. So, yes, our children do pick out where they can talk, how they can talk but they don't use the same language as you use in those situations. You know, I hope you don't go around saying, "Me do it too, momma." Okay. "Me want that now, momma." And isn't it really hysterical when the kid chooses the wrong situation to say the wrong thing. You know, I was very open with my -- I helped raise my best friend's kids. And I'll never forget, you know, we are both really open with them and I'll never forget when Emily -- we're in a grocery line, there was a woman behind us very, very pregnant. And we're squashed in the line, she turns around, she says, "So, is that hole big enough yet for the baby to come out yet or are you still waiting?" Okay. I don't know her. I don't know that child. She just wandered in. Okay. Maybe I was a little too specific. That how the baby's come out. At least, she didn't say, "Let me see." That probably would have been worse. Okay. So that's the things we joke about. That's kind of inappropriate and yet when you stand back and say, "No. She was just doing a fact. She noticed you had a big belly. You're somehow ready, the baby's going to come out, there's got to be a hole for it to come out, a hole had got to get bigger." She had all that there, but in a grocery line to a stranger? You know, okay. So, it's the same kind of thing though, is that we need to -- and I cannot -- I cannot tell you to do this enough. We must have the technology we are supporting and use regularly by ourselves and our environments. And if you want children to learn they need to see it being valuable. How can they develop a visual picture when I'm telling you and, you know, this motor learning practice didn't happen when I'm looking with kids with disabilities. You know, where it started with us looking at athletes and sports who need -- who make their living by getting better at what they need to do. And we discovered they must carry a visual picture. And they can't just be told what to do because the fact of the matter is every huge, amazing athlete will tell you. Let's imagine a tennis player and if you imagine me as a tennis player it was going to require a very big imagination because I am very bad at anything in the air. Now, field hockey, I can play. Soccer, I can play. I can't hit a ball with a darn, you know, with the baseball bat but tennis okay. So, we're going to imagine. And let's imagine that there's a big tournament and I keep dropping my wrist on my second serve and I'm double-faulting too much. And my coach sees that. So, when we go to practice my coach is going to scream as I go to the second serve, "Don't drop your wrist." Is that going to help me? And he's going to try and get it right in there right way? No, we actually found out that doesn't work. In fact, it doesn't even work when he tells me afterwards that, "You know what, you're dropping your wrist on your second serve," because now, if I concentrate on not doing my wrist, it messes up everything else, okay? So from athletes, we know, even if we see something clearly being the problem, that is a distal part from the body, it's not different from the whole way of getting up to serve and doing it. So the person has to carry in their mind,

"I'm not going to drop the wrist," but they can't have to be conscious, because if they pay attention to only not dropping their wrist, their footwork will mess up. And they'll actually be worse at serving than not. So when a -- when we in fact want to improve our motor performance, it will always be worse first. And the last thing you can do is tell me how to change it. You can suggest it but that suggestion will never be carried over by happening the next day. Instead, the best encouragement is, is to expand the activity. Okay. So, here, when we look at -- we're going to talk about when we start looking at kids, how do we develop the beginning, middle, and end of an activity? How do we -- how are -- how are we -- how are we setting up that learning, okay? Because our kids don't know the machine, we manage the machine. We place it in front of you. We tell you to do something specific with it. By preventing you from having any control over that beginning, middle, and end, just shoving you right into the midst of an activity, that will always generate no competence. It would be like me asking you to skydive. I'm going to dress you. I'm going to carry you up to the -- up in the plane. I'm going to have you sit in the seat, and you're not even going to know we're in the plane. Only when I open the door, I'm throwing you out and you're supposed to be okay, okay? Your preparation getting up there is what helps you manage to dive. Otherwise, I just threw you out and your chances of me throwing you out is like an emergency. So your chances of hurting yourself are big, your chances of hurting -- because you're out of control so you'd be freaked out, you're going to be so freaked out, you can pull in, you're going to be so freaked out you can be so adrenalized and you can hurt yourself. So what's the process of skydiving in your first time? That you clearly know what the checks are, you clearly know how to get ready, that you'd get yourself ready, that you'd get up there, that you know what to expect, that you see other people, you know what's going to happen when you get down there. Now, you've got to go through that. Are you ever any good at the beginning? Some people accidentally are, you may have some of those people, you know, beginner's luck. Do you ever love when you play a board game or brand new game and somebody like does really well, but you can never repeat that, that's why we say beginner's luck, okay? Because it is like accident. But, you know, when it is you that has the beginner's luck, do you know what you say? "I'm smart." See? You see, we always presume immediate motor performance instead of luck is intelligent, which is not, okay? It has nothing to do with intelligence. It has to do everything with luck. All right. So there is that lucky part because something in the karma was all right with the world. You know the saying "In the zone?" I tried to explain this in New York, you know, people understand that. But in the United States we know that and in the zone, it's something that we use with athletes. He's in the zone and you know what the person in the zone would say, "Don't talk to me." You're going to ruin it, okay? How do you know how long you're in the zone? "Shut up, I'm in the zone already." And what is in the zone mean? I don't know why for some particular point in time everything I'm doing is going right, okay? Everyone of my intentions is performing efficiently. And what -- how long does the zone last? How many times can a person reach the zone? How does the frequency of the zone? Uh-uh. And that's how we all work. I know it's like -- I sat there, you know, and some of us have gotten old enough to not feel too superstitious about what's going on but I should've known yesterday. Yesterday, I brought my dogs down to the kennel before I

drove up here because I had too much stuff in my car. And I couldn't do both tasks at the same time. And when I went down, I realized I just stopped for gas and I go to stop for gas, I don't have my purse. This is very rare, if you know me. My purse is generally attached to me. It might as well be another limb, and I have the kitchen sink in there. I have everything. So I have cash, I have credit cards, I have anything else, you know, and I have nothing and I'm like -- I don't have my phone. Who can I call? Call my mom and tell her to meet me, I don't have a phone. Okay. I quickly put a \$20 bill in the cubbyhole now, so you don't have to worry about me. From now on, I'm going to keep that there. And so if you -- if you need a \$20 bill, find my car, but anyway. So I'm sitting to myself, thinking, "Okay. I'm on fumes. I don't have a -- I can't call anybody. I'm on my way there. What am I going to do?" So I get to the kennel and I said -- well, I walked in the door I said, "You guys know me. I've been here for years. You got to give me \$20." Two young girls, "Cash?" "Yeah." "I'm good for it. I'm good for it. My dogs are here, you can hold them hostage, really." You know, okay? And so I'm thinking to myself, "Now, I got the 20-dollar bill. Do I really need to spend like -- maybe I want to get myself a coffee." And then I thought, "No, that'd better go --I'll go for gas." Okay. And the whole way home, I'm hyperventilating now. "I don't have my purse. I don't have my purse. I don't have my phone. I don't have my purse. I don't have my phone. I might get in an accident." Shut up already. You're only going to get in an accident because you're worried. Put that on cruise controls or cover up, "I don't have my license. I don't have my -- oh my God, I don't have my insurance. Oh, what would happen to me? If something happened -- oh my God, oh my God, oh my God." The, you know, really and then you just finally, "Okay. Calm down." So when I get home, I start loading the car and think to myself, "I hope this isn't like the precursor of that day I'm teaching tomorrow." Sure enough. I woke up this morning, I had two favorite outfits, I didn't bring them because I don't have to pack because we were going on a plane so I just brought them in the car. I didn't bring those. So I'm stuck with this, you know what I mean? So I'm a little off my game. It'll -- it will start to warm up later on. I'm responding well but, you know, when you teach -- men, I don't know why, they can have those same suits and same shirts, maybe because their clothing is also boring, it doesn't -- they don't have really favorite. But women, you know, somebody says I only need to bring -- you're only have to be there three days, you know, that means ten outfits, you know, you know. You know, if I'm teaching - - now, I'm telling you no. If I -- if I am like a tourist, I can have it down -- pair it down to two with sixteen pairs of underpants, but I can have down -- and don't tell me they'd dry overnight, uh-uh, I'm taking no chances, I want sixteen pairs of underpants, you know. But I will -- but I can do two. But when I'm teaching, I can't wake up and wear that outfit I decided. Not in the mood. So, you know, I'm telling you, you're taking your life in your hands with me with a cell phone on today. All right. Now, the other thing we need to know about children is switch sides develop. So wherever you're beginning is not where you're ending. So, we're not looking for an optimal sight. We want children to have an experience, so our responsibility as teachers is to provide them with a rich environment to increase their repertoire of control and experience by providing opportunities for them to learn. That's our job. That's our job. So switch sides are going to develop and their increase so yeah, we knew -- we need to pick a starting spot. And I

would hope we'd be able a little bit better at our starting spot. But the fact of the matter is, I'm not looking for one spot and I'm not -- because any more than I'm -- than I gave up my paper and pencil when I couldn't use the laptop. I didn't give up paper and pencil. I still write my grocery notes. I mean I still -- I can't -- I don't write a grocery list, I don't care if it's on my phone, I'm not pulling out my phone at the grocery store, shut up. I have a list. You know, it's part of my process, it's in my pocket, I pull it out, it's all wrinkled and crampy. But if it's in my phone, I can't read it. It says eggs and I'm not going to forget, you know, it has to be there, okay? That hand scribbled note. So, we need to also understand that no matter where we begin with scanning or direct selection. What is with this? I'm so in love with direct selection, scanning is always, "Oh, you're -- too bad, you're a scanner. Oh crap, a scanner." you know. Now, here's the direct selector and a scanner over there. Well, you already they're low, they've got a scanner, you know. I wish they were smarter and could be a direct selector, but they're a scanner. Now, she's a smart scanner but scanner, you know, what's a future with a scanner? Now, I want you to understand that prejudice and understanding how difficult it is to scan, okay? So the scanning, there is righteousness to your scanning because it's not the way you choose. "Hey, I'm going to give you two switches instead of that Ipad. Don't touch it. Just give me these two switches, baby." Yeah, right, okay? Put your hands behind your back, I'm giving you your head back, okay? Now, what you have to understand is, is that it is true, we want to deal with direct selection and kids are always going to choose to touch things. We're human beings we're meant to do that. But we also know as we touch things just like the three-year-old trying to do the steering wheel at the Pizza Hut who actually can't make that game work. There's a point in time when you can do some of it and you can't do other parts of it. So, we need to really be recognizing that we're looking at a whole repertoire of control. And that no matter where we start, we shouldn't be thinking that's where we're ending. And it shouldn't be under our control. So what's going to happen is, is that we need to understand that scanning can very easily read lead to direct selection. If someone -- but direct selection isn't necessarily fast and actually scanning isn't fast. And I'm here to tell you I want you to give up speed. Speed has nothing to do with accuracy. When somebody says to you that they can type a hundred words a minute, what do they really mean? Are they creating a document? No. They're copying a document. Who does that anymore? So typing efficiency was based on secretaries who copied handwritten notes or somebody's notes, but who does that anymore? Uh-uh, okay? So speed and accuracy only come from copying. Now, if you are building or having all your students that your goal in their life is they're all going to be the best copiers in the world, then you should be presumptive to it. Instead what I am concerned about is the only thing a person cares about is accuracy. And accuracy doesn't have to be perfection. And if you don't believe me, I challenge all of you, which by the way you should do. I want you to use a full-blown communication system for one week. Now, I'm not going to make you do it all day. Even in that one week I'm going to say where you start on Monday and Tuesday, we're just going to have -- it'd be five days, Monday, Tuesday and Wednesday, I want you to start out with the beginning of your day Wednesday, Thursday, and Friday, I want you to do it from lunch on. Monday, Tuesday, and Wednesday, carry around a communication device, you may only

have all of your conversations with that. I'm going to tell you, 201, you will all resort to spelling and I won't take it away from you. Yours are the spelling, you will quickly give up on the -- on the icons. You will resort to spelling. And in fact, when you start looking at word prediction, it may change your thought, see? That's --but that's a woman. Men, it won't ever change. They don't need word prediction and don't need word prediction. No, they do need word prediction but it's very predictable what the word prediction is. Actually, word prediction works very well for men, for women it just changes our idea. I started here, however, whom -- "Oh, oh, I'll change my whole thought. I didn't want -- I can't find however, whom was okay. All right. Whom does it concern?" Now, from however I was going to do that, I mean, you know, see, we -- I just rolled with that. All right. Children also will, okay? So children will also -- it's very interesting word prediction will actually change the idea for young children. So instead of them holding a thought in their mind, they see those list of words and then they -- and something else may come out, which is also fluent and wonderful. There's nothing the matter with that. But what I'm trying to say is you will resort to spelling. I'll guarantee you. You wouldn't even make it through the first day before you resort to spelling. And the next thing you'll do is you will not look at your communication partner, okay? What you will do is you want to get out what you wanted to say and then you are happy to produce it a hundred times. You will close out everybody around to get out the production. Because if you're using this, what you care about that it says what you wanted it to say. And when you're in that process, you will not be bothered by anybody else intending to do that. And so what I want to say to you is, is if we start to understand that's how we will use the devices, we have to understand that's how our kids are going to use them too. And when they're in the process of learning you've got to understand that this scanning can sometimes get in our way, this is the part that disturbs me. Not the scanning itself or oh, that you're a scanner or the oh, that you can't be a good scanner. What bothers me is that we haven't done good task analysis at looking at where the scanning is and what that activity is. All right. So, where did scanning come from? Again, it came from somebody who already could read, who already could write, who now has weakness. And they only have a limited amount of time but they already could read and write, so how does that make different when we have kids who aren't reading and writing? Because, actually, to scan, to single-switch scan, it requires rhythm, single-switch scanning requires rhythm. The arrays have to be long enough that rhythm can be anticipated and the displays and the scans have to be specific and unchanging and alphabet is a simple example. So, the best scanners, single-switch scanners are spellers with the alphabet in a specific array. Some may have an efficiency of frequency of access, some may have them alphabetical, some may QWERTY. We actually haven't found the difference in that. Although we like to think the efficiency of access is going to happen faster, we've never been able to teach two people at the same time with the same activities, you know, blah, blah, blah, by the time somebody uses it, they're just used to it. So what I will tell you is what you're used to -- and this is example to me. I was a big alphabetic user, I -- why would always have everything have to be QWERTY until I got my GPS. I cannot spell out a thing in that alphabetic array. Where the heck is it? You know, and even some of the touch typists -- I don't touch type texting. I don't touch type texting, you know, and I

keep saying to myself, well the thing is, is there a cognitive issue if you're learning -- if you're learning in array, there's a big cognitive issue about learning in array. And it's one of the reasons why we deal with alphabets with young kids because if they learn the alphabet, then they can anticipate where the next letter is going to be in the sequence. QWERTY doesn't. It's very arbitrary, so you have to have a lot of experience with a QWERTY keyboard to know where something is when you're trying to hold onto a word. Whereas with alphabet, if I'm trying to spell my name I know the R is closer to the end. And it's going to be near an S, it's going to be near with T, you know, I can -- and I can even say it in my mind really quick, A, B, C, D, E, F, G, R, you see? I can find it. But QWERTY, how -- where do I -- just like the R is next to the E, which is on the top line, which -- where was that. And my K, where the heck is it? So, I got to look, look, look, look, look, look, look, look, look, all right? Now, once I'm very, very familiar and knowledgeable with it, I still will make mistakes. Do touch typist make mistakes? Do texters make mistakes? Okay. So to do single-switch scanning, you have to develop a rhythm. The scan has to be long enough that a rhythm can be established. That's how it started. So someone who had weakness could deal with and that display was generally an alphabet. Okay. And that's where scanning came from. Where did we choose scanning? We chose scanning when a kid could not use their hands well. And then we tried to use a mouse and the mouse didn't work. And then we tried to use multiple switches and multiple switches didn't work and, "Oh God, here we are down to single switch." Okay? So they're unfamiliar, they -- and you know how we got there? Can't do, can't do, can't do, can't do, oh crap. That's where we are, one switch. Okay? Now, I don't think that's a very supportive learning paradigm by opinion, but this is the honest to God truth. This is what happens, can't do, can't do, can't do, can't do, one switch. So one switch, now, I'm going to give you an array. When I give you an array, you're unfamiliar with it, okay? So if it's a long array, you're waiting, waiting, waiting, waiting, waiting, waiting, waiting, and I prompt you to hit the switch, for what? Have I taught you what this is, what this array is? No. Just so you know an array, I'm going to then decide, "We'll, that's so much waiting that I'm going to shorten the array. And I'm going to lengthen the time between the choices." Oh good. Here's the rhythm, yes, no, maybe. "How are you doing today?" "Yes." "Are you sure?" "No." "Should we try it again?" "Maybe." "Should we get to work?" "Yes." "Oh good." "No." "What about this?" "Maybe." I mean, so, if somebody has a few choices and it's predetermined time, how do you learn timing? How quick is it to learn a musical instrument? How quick is it to demonstrate rhythm? It's not hard to hear it, okay? Rhythm we actually hear very well, very easily. We here it in the womb, we understand rhythm, we love rhythm, we love listening to music. But to produce rhythm in a musical instrument takes a long time. Why did we get there? Because we'd looked at the technology and we were forced into a switch. And what happened is our kids could not repetitively hit a switch. That's really why, we chose one. Because what happened is, is that instead of worrying about cause and effect, what we should be supporting is a one-to-one correspondence. Now, one-to-one correspondence is the foundation of all the rest of your learning. It's a foundation in Math. It's a foundation in Science. It's a foundation in reading. It's a foundation in writing. One-to-one correspondence, one of the strongest suits we should be

supporting. And how would we do that one-to-one correspondence? If we had -- if each switch hit made one step, step scanning, so if I -- if let's imagine an alphabet, just in terms of an array because it's easy for you to remember. And so if I hit the switch once, I got A and I hit it the second time, I got B, and the third time I hit it, I got C, so three hits equaled C, one-to-one, A, B, C, D, okay? That's actually where we need to be cognitively with children. But why aren't we doing that with a single switch? Because they can't repetitively motorically hit the switch, and that's because we used mechanical switches that required force and we started with the hand. And we were dealing with kids who could not hold themselves upright in their chairs, whose sitting is not appropriate and we haven't been able to figure something out. So, what happens is, is that we should be always looking at dealing with two switches, because two switches is one-to-one correspondence, two switches allow us to manage arrays. Two switches allows me to move along my A, B, C, D, and this is my select. And the reason I like two switches is because it manages this scanning technique, this moving along making a selection and finding something I want, finding something, and I want that, finding something and I want that. I open up the closet in the morning, I look around, that's the shirt I want. I open up my drawers, there are my underpants, that's the one I want. I go to the grocery store, I scan along, that's I need -- that's the quart of milk that I want. When we look at a calculator, look around -- that's the number that I want, okay? So, this kind of scanning is something that we do cognitively, visually, and empirically as a species. Look, look, look, look, look, there's a group, that's the one I want. Look, look, look, look, look, that's the one I want. All right? So what we're going to do -- that was just timing for you guys to take a 10-minute break. What we're going to do when we come back is we're going to start talking about, how do we get better at that scan that would be natural. Okay. Go take a break. Are most of us back here? All right. So, when I start talking about -- let's just remember the paradigm we're leaving behind is we're not going to deal with access first, we're not going to be looking for an optimal site, we're not going to be looking at cause and effect. We're going to -- we're not worry about access, that's going to be last. We are going to recognize the child must know all these things, machine, how it works, how the software works, how the method of access works and that's going to be by seeing it so they can have a visual picture. They need to know the beginning, middle and end of the activity, we're going to be talking about that a little more later and the repeating part. Now, when we get to these switches with these new paradigms. Somebody came up to me and said they weren't sure what all the scanning meant and I apologize. I know some of you are novices and others here are either very experienced so I -- when I looked around, a lot of the faces that was really very experienced. For those of you who are novices, first of all, I am going to tell you to get some of this definition down clear, AbleNet and PaTTAN and most of the manufacturers do have archive webinars that delineate that, that you can quickly get to, okay, that are free in terms of you getting it to the webinars and looking. But let me just give you a simple example of what scanning is in a device. A scanning in a device is somehow a predetermined automatic -- the device is making the cursor move or is making a selection move around whatever you have on the screen. So, scanning means something automatically is happening and that you have to move around the screen in a particular way. It's not open-ended like

you touching it with your fingers anywhere you want to go or you moving a mouse to go wherever you want to go instead there's a predetermined array that's going to happen in a particular way. Generally, those arrays go left to right. Generally, they go to -- I hate the term really row column because really what I would like to say is that we're making group and individual selections. So, I like that we're identifying groupings and then from that grouping, we're choosing a group and then from that group, we're choosing an individual selection because row column gets confusing. Row column really only is a row and column if you've got your array set up in rows and columns. So, that you're choosing rows then I get to this row and what's funny is when you get to this row and you're moving along, you're moving along it actually is a column but if you'd ever say that to a kid that you're moving along a column, they're not moving along in a column, they're moving along the row. So, it's row, row single. Okay? And that's actually how I teach. So, although a row column means if I had -- and let me just give another example. Let's say that I had a hundred items on a page. So, I had a hundred blocks there. Okay. And so they're 10 to a row and 10 rows across. So row column would be the first I'm going down the row, down the row, down the row. I choose that row. Now I'm going across, that's the column and then I'm going to make a selection there. Okay. So we tended that'll still do instead of trying to do that and all those rows, we then do groups. So, there could be four groups, group, group, group, group. First I'm going to choose my group then I'm going to go down the rows, then I'm going to go across the row and make a selection. Okay. So scanning is how you've configured those groups in rows. I tend as I say because I am a teacher and because even if I'm dealing with the most involved kids if I'm at some point talking about how their device goes, I'm not afraid to use the word row, row, row, row and row select. I use those terms with those kids. I will say we're going here, here, here. This is the one we want. I mean I will use generic terms and I will also use formal terms. But I talk to babies not like they're babies, same thing. I believe that's what we should be doing. So I don't like the row column. I've lost the word column because it doesn't make sense when you're trying to look because you don't see a column. It's actually row, a big row then you're going across the row and so to me it's row, row, select. That's just me. You guys can choose your own teaching techniques. Anyway, what I want to make the point is, is that switch sites develop. And the next point I wanted to make is the reason that we didn't do two switches is because -- and the reason we weren't doing step scanning which one hit meant one selection and I was going to move around my array is because our kids couldn't repetitively hit. And the fact of the matter is the fact that we would use the term hit is telling us something about the kind of force the people were using. So, we were talking about -- generally, we have two issues with children with complex bodies. One, they have too much tone or they have too little. Okay. So, the kids who had too much, they hit a switch. You saw him do a big wind up and bang which is how the term got in hit the switch. Where else in the world do we say hit in school? We actually say no hit except if you're disabled hit, hit that. Hit it again baby. Did you hit it eight at all ten times? Did you hit it really good? Okay. So, it's so funny to me because we were responding to the force that they were using in terms of that hit. And then we have kids who couldn't do it because they are weak. So, if they had little tone, they couldn't repetitively hit there. So, what happens is -- this is what I

want you to understand is when we talk about hitting and force, it has a lot to do with the equipment we are using. So, although we have lots of different kinds of mechanical switches -- a mechanical switch is something that requires force and it has moving parts in it. Okay. And see I can hear that there's a little mechanical part in there that's making this go. That's not an auditory beep. That's actually the switch moving. So, whether it looks like this which by the way this chain -- you know, you can have a switch that requires that you hit in a specific spot. Okay. Now in this one, it can be anywhere on the orange part. On this little guy, it has to be that I press the middle of that for it to go. If I'm on the edge, it won't work. I have to press in the middle. These round ones, most of them now you can hit anywhere on them. You don't have to hit in the middle. You can hit any place along that they're going to go. And when switches first started in the old days, okay, which is how old I am, you know, we used to -- how much force does it take? And, you know, I used to love -- this is the switch we would give kids who hit a lot so -- because only because they couldn't break it. Okay. But what I like is to hit it I also had -- see that? All right. And I don't like switches with smiley faces and ones that bright colors and blah, blah, blah, because guess that's the switch. The switch is not important. The switch is not the activity. So, if you make this the focus, this is what the kids are going to be paying attention to. This must quickly become transparent to the activity. The longer this is the focus, the less time the child has to learn what they're controlling to then be able to communicate, to read, to demonstrate, to explore, to move through whatever arrays are and whatever lesson you're dealing with. So, what happens with a mechanical switch, no matter which ones you choose and they could be in lots of different ways, they still require five actions to function. And those five actions require graded movement. Any -- did any -- any activity that requires more than one or two functions. It means we have to grade movement and guess who's bad at grading movement, children. Graded movement comes from controlling experience. So, graded movement -- if you don't have graded movement, it means you over or under target. You've misjudged how much force is required. If you don't believe me, go watch Pee Wee Baseball. It is so funny. Okay. The only thing they're really good at is imitating the large guys. Don't you love it? They go up to a plate and you see them going like this, acting like they're chewing, you know, they'll knock down the bat and bring it up. Can't hit the thing for [inaudible] but they got the whole little ritual in front. I love that. Well, anyway, so when using a mechanical switch, it requires five functions. One you have to locate it. Almost -- always that location is visual then you have to touch it then you have to press it, then you have to hold it, then you have to release it. The hold depends upon the activity. The hold if you have to -- if you're in inverse scanning, the hold as if you're driving a power chair or the hold can be quick if you're just making a quick simple selection on a communication device. So -- well, all children know they don't have graded movement which is why they hit the switch because they move directly to for, wind up, bang, hold. Now the trouble is, is that really young children quickly can release because although they don't have graded movement, they do have equally pretty decent release. Kids who have tone problems, low or high, can't release. So, then -- so because they can't release, we started doing a lot of fake stuff. Okay. The fake stuff we did was, limit the array. Okay. So we aren't going to give you 10 words. I'm going to give you

two. I'm not going to have the display go fast. I'm only have it go slow. Well, now that I've made it so boring that I cannot anticipate what's about to occur or you can't possibly ask me those switch. And you know what else is really hard, please tell me -- introduce me to the group of children who have already perfected waiting. Single switch scanning requires waiting. That's the rhythm. I have to wait and in timing know when I need to initiate the action. I have to wait then initiate the action and the action has to be close to my need to know that's what's going to happen. So I have to be ready the slot before to know what's going on and the one thing I can't do is to pay attention to the switch. I must be paying attention to the visual array. And I have to keep my eye on not it moving. If I keep my eye on it moving, I will never be on time. I must look, I must visually scan the group, find what I want, keep my eye on what I want until this comes then hit the switch. Is that how you're teaching your kids? No. So what happens is the scan has to be fast. And then when it gets to the switch, that they have to keep their eye on the ball, it's coming, coming, coming, hit it. Keep your eye on the ball. It's coming, coming, coming, hit it. Keep your on the eye on the ball. It's coming, coming, hit it. Do Pee Wees do good with this? No. Why are you doing it with them? Because you're using mechanical switches. Okay. So, in the field of electronics, we're going to use an electronic switch. Now, an electronic switch just simply means that it needs a battery. It has zero force and it requires two actions, location is its activation and release. Location is its activation and then there's release because the next thing you have -- to have about with young children is, although they are trying to reach out to use their hands, let me tell you this, to use your hands, you must see your hands. To use your hands, you must see your hands. None of us do things without looking at our hands. Right now, you all guys are writing, you are watching your hand write. I don't tell you close your eyes and write a grocery list. I tried that in the car, not driving closing my eyes, I try not to look at the list. I'm not looking, I'm not looking well just a quick pick. Okay. So, what happens is, is for your hands to function they must be in view of your eyes because your eyes help control your hands, which is why we want you to touch type. As soon as I take the hand out of -- as soon I take it and touch typing and you become familiar with the -- with the board which is as soon as you become a musician, you don't stare with your hands anymore. When you know the octaves, you don't look anymore. When you become really familiar of what's going on, you don't -- and that means your hands have become transparent to the test which means you now can listen to the song, you can extend the time engaged with the activity, you can read the music, cognitively read the music telling the hands where to go. Look how experienced you have to be. That is exactly the same paradigm you need to use with switches. That's why your kids aren't growing and aren't developing -- aren't developing ease of access. Okay. So first of all, we're going to -- next when we start hitting on the sitting, we're going to be talking about why hands can't be first with many of our kids instead we're going to have a head, but I just want to show you an electronic switch. So here we have a mechanical switch. Oh, I'll show you with -- I'll show you on a video. All right. So let me just -- when I was showing you those switches, if an electronic switches, my location is its activation so that means I just have to get near it and I can have it at your head and if I get near it and all I have to do this and it's activated, this and it's activated, this and it's activated, this and it's

activated, this and it's activated, this and it's activated, this and it's activated, this and it's activated, this and it's activated, this and it's activated. Do you think I could go through the alphabet without hurting myself? Am I hitting? No, I'm not hitting. No force, just motion. No force, just motion. Motion activates the switch. No force. I don't have to pull in any power. As soon as I use an electronic switch, I can now take out the timing. Okay. So, as soon as I take out the timing, I can give you one-to-one correspondence which I want you to learn anyway. And as soon as I can give you one to one correspondence, I can then immediately set you up with two switches. Because what will happen is, is you're going to move along, move along, move along, move along, that's the one I want and I've got two switches. Move along, move along, move along, that's the one I want. As soon as I set you up with two switches, it's not very long before I can give you three switches and if I give you three switches, I can give you a mouse and three switches. Huge in terms of access. What does the mouse do? Lots. How much can a mouse access? Anything on your laptop. Okay. So when we've been spending time, I'm telling you I don't want the time to be the perfection of the switch. The time should be on the lesson. It needs to be on what I'm trying to share with you learning wise. The switch must be transparent to the task. And as it is, we need to support one-to-one correspondence. So, we know that it's controlling the thing because what I need to do is be teaching you the machine and teaching you the software so that you then can play the instrument. And that's how then you can have a novel communication with me. All right. So, scanning can in fact lead to direct selection and direct selection in scanning can be used simultaneously. So, direct selection just means I have my hands right in it. Direct selection means I have my hands in it. There is one way that you can also have direct selection with your head. What is that? That's using something we call a head mouse or if we're using eye gaze is another form of a direct selection technique with your eyes. Okay. Now my problems with both of those, is it's not that I will not use those. If you haven't figured out with children, children need all of these experience with all of these. Who should really be choosing the technique, the child. But everybody says to me, "Well that's why I'm using the hands because the child is using the hands." Yeah. Well, if I talk to two-year-olds, they'll tell you that they can also use my chef knife. That's doesn't mean I like them because that's what they prefer. "No, mommy I want the really big knife that's sharp, I can do the carrots." Tough shit, buddy. Okay. So, what happens is, is that's not the preference I'm looking for, we're adults. Of course kids are going to look for what they think they want in terms of hands but they also want to be able to do activity. So what -- then what I'm saying in terms of what's going on is I want -- I want hands also to be able to be engaged in doing real things with their hands as well. So, I never am not looking at all methods of access. Now why do I tell you I'm hesitant with eye gaze or with a head dot looking for a reflective camera because both of those require calibration. Calibration means to manage this machine, I have to maintain a predetermined area of control or it won't work. And guess what, it's invisible. How do we know kids get invisibility? Where does the child move from object permanence to understanding invisibility? It really varies on the activity, not just the age developmentally. When we talk about kids, we're moving from concrete operations to non concrete operations, from formal to informal. It isn't a matter of if they started on

Monday and I did it on Tuesday and it's in every area. When you are first learning anything whoever you are you're concrete. As soon as it becomes mystical, you can't figure it out. I can put any of you right in here if you've never done a head -- a head access or eye gaze and you weren't -- you don't like it, you're going to try and put your eyes on it. Wait. Wait a second. Let me put my eyes together there, there. Okay. I'm going to -- I'm going to get it with my head, all right, which you won't be able to make it work doing that. You're going to, can I just touch it? Take my eye like that. Okay. So I know for children not interested in doing something invisible. That's my reason so they -- if they turn their head and get off and -- oh, then I have to say this, "Oh, it's not working. We have to fix it again." So, I have to recalibrate with them. So unfortunately in the very beginning if you're doing something really new with those -- with these guys who don't know anything, you are going to be spending more time recalibrating which how interesting is the child going to be then in the activity. What's the activity now is recalibration, that's the activity because to a child wherever you spend the most time, that's the activity. So, if you're spending time recalibrating -- now, that doesn't mean though that I'm not going to look at that. How the window I want to look at eye gaze, the window I want to look at head tracking access, when the person is familiar with the material. Okay. Familiar, I would actually prefer if they were fluent. So, familiar can be different with different ones, familiar. So, they need to know how the game, they need to know how it works and they do that and then they're going to go after it in a new way, then they're going to understand when something doesn't work. So, if something doesn't work, the only way they know it is because you said so, see? And all of your calibration looks secret too. So, that's one of the reasons when we're looking at -- so I'm always want to be looking at direct selection scanning because with our kids, they need a lot of experience and what's important is so do we. All right. So, we need to get to this part and then we'll talk - - we'll be talking more about switch stuff. Sitting for function is the other thing that's not a really big problem and those of you who know me know this is definitely where I -- where I am and when I come to see you, this is where I always start. And this is the biggest challenge, is almost everybody thinks sitting is done. Okay. And for your kids what it means is they got a high back on their chair, they got a headrest, they got footrest, they got leg rest, they got trunk laterals, they got hip guides, they got a pommel, they got a chest harness, they got a seatbelt, they got straps everywhere and they're only tilt-in-space chair. Okay. And if that were how you will learn then I'm going to start handling out the straps because you guys apparently need them. What is that good for? That's gets them safely to school. What we've done is we have created a car seat and strapped them in safely enough that's restrictive, that's a restraint, those are belts so they can't move, so they can come safely to school. Body restriction restraint will never encourage learning. Okay. As long as the body is held separately, you don't say to yourself, "Wow, I just need to learn those new apps in the iPad. Let me go in the car and put my seatbelt on because there I'm going to learn." Now, if only I had a tilt-in-space chair and a headrest, I could get this. Okay. Here's the clue. Headrest. What's the head doing? Headrest, there is the clue. Headrest, footrest, armrest, backrest, okay. Does that sound like learning? No, that sounds like college. If I lay back and put the book behind my head, maybe I'll learn. Now, all right. So what happens is, is that this is

the biggest challenge, is that when we start looking at equipment, we have to have kids have to be in positions of being able to learn. And because our kids, most our kids are unable to deal with transitions and are not independent with using their bodies. And by the way, that goes for kids in the spectrum. Oh, those kids were ambulatory but they are not great at transitions and they're not good at seating down and they're not good at moving through space and they're not good at controlling their bodies posturally in different activities. So, what happens is, is that is the key, control of seating, active seating is what says to the body, pay attention to the task and you can extend your time here to truly learn something. And that has to be without -- that has to be that the child is not restricted. So, under restraint, we are not going to do anything but daydream. We may need some support but we need another different switch restraint with support, okay. So, these are usually the things I hear all the time. The seating for this child is perfectly right. We got it done at the seating clinic or we just did it. If only the student could hold up their head, then we could get to work. The student wants to use their hands. Now, what I want to say is of course, everybody wants to use their hands. I think that's great. But I'm here to tell you this, if you don't have head control, your hands won't work. Now, some of you may have forgotten development. Some of you didn't have to go through it but I'm going to tell you, we grow cephalocaudally, head to tail. And that doesn't mean, in the womb, the head just grows and then magically, the tail jumps on. Now, the central nervous system grows from head to tail but simultaneously. And then it grows from proximal out. So, it goes proximal, distally. So, head to tail, close to the body, out. All right? So, control of the hands comes from control at the shoulder but control at the shoulder comes from control at the pelvis. And control at the pelvis means head control is demonstrated. So, if we look at developmentally how we grow, let me give you this as a piece of science, between six and ten months of age, the amount of head control you have is what you will have the rest of your life, between six and ten months of age. You can be a professional soccer player but you don't get to decide, "I'm a soccer player. I'm going to be able to turn my head completely around and see back there." You don't get to do that. This is the range you get. Now, you may become more proficient at a headbutt. You may become a bit stronger but the range and control of your head is between six and ten months. The range and control of your lower extremities is between six and eight years so the range and control of your lower extremities. So, that doesn't mean that you won't get longer legs, you won't get bigger muscles but the range and control you have with your legs at six and eight years, is what you'll have for the rest of your life. And for your upper extremities, it doesn't happen until puberty. At puberty is when you then have the range and control of your upper extremities, you're going to use the rest of your life which is why we don't tend to teach crocheting to three year olds. Okay. Which is why even so kids can color and paint, they can't really do finite things and work with tools until really they're teenagers, doesn't sense of mental competence. They don't have that. So let's look at -- so we have head at six months, hands at thirteen. So, you're starting with the kid who has no experience at their hands. That's the same thing as you're telling me that you're starting with the communication device when -- and they are speaking thinking that they're speaking but you're asking them to write which has required many, many more skills to understand the whole part of writing in

different part of their brain. So, what needs to happen is we need to be looking at head, butt, then where the legs are, then where the hands are. Now, that doesn't mean I'm asking for the legs to then be methods of access because the other thing is, is that we need to have this developmental paradigm. That's how we work. So, when we start looking at kids, it is true that they have some issues medically or pathology that -- pathologically that get in the way. So, we're going to -- we're going to look at that but these students want to use their hands. Of course, they want to use their hands. We are going to use their hands but I can already tell you, if they're really young and already have limited head control, the place we're going to start is going to be at the head. And that will ensure that we can get it to use the hands. That doesn't mean I'm not going to ever let the hands work but I'm here to tell you this, if I want you to use a communication device, if I want you to use a computer and why would I want you to do that in school? Because believe it or not, I'm still looking at reading and writing. Okay? That's why we need computer access, that's why we need communication devices. That better be the easiest thing and I've been at re-planning for lots of growth. So, the activity needs to --the switches need to be as transparent as possible. I need to have the widest range of control as quickly as I can and then it can grow. But for playing a board game and telling you it's my turn, that's when you use a hand. Okay. Let them bang it at one single little communicator thing, it's my turn. Move the thing, three things. Okay. Are they using their hands? Yeah. And is it a part of the game? Yeah. But letting them spell their name? That's not what we're doing. So, I have never had a kid say, "I'm not using my head because you don't respect my hands." Not me, ever. Because what's going to happen is this, I want hands engaged as well. You should never be looking at something to substitute or take the place of. Your activity should be so interesting, every time you have a switch within activity, if I ever see -- come to see you and you have a switch and a toy, I already know you're in trouble because it's not enough. So, when we start looking at some of these activities around, every time you have a communication device, it should not be just a communication device, unless the person is already competent and you're looking at extended mastery. And this is what I mean by that. I want you to now use compound sentences. I want you to understand where the icons are for you to make negations. I want you to be able to develop what interjections are and I'm teaching you grammatical structures. Then we're going to concentrate on this with communication device. But if you have a communication device, you better have toys. You better have activities. You better have fluid materials. You better have other things. You better have all of those there at the same time. So, we need a communication device. We need a computer but not just a communication device and a computer. We need to have something else that we're playing that we're learning about that we're doing and guess what, we also need books. And even from using electronic book, I like to have a physical book too. So, when we start looking at the richness of the environment, we've got to look at that. So, let -- when we start to talking about this though, this is the hardest piece. And this is the piece I get called in a lot for and it is the hardest piece. And -- but that is the piece that really allows the children to be engaged. So, if we want the hands to work over time, we've got to look at the head. And let's now start looking at some kids. Okay? And that'll make things a bit more clear. All

right. Don't worry you guys. I'm showing all kids from out of state. So, if you're sitting there going, "Oh crap, she did come to see me. And she might be showing something I don't like." Now, one of the things I do want to tell you if I come to see you. And those who've worked with me know that I'm never there to say you did wrong anymore than I am to tell you that you did right. You know, we're dealing with complex kids and we're dealing with lots of issues. If you think that I like the equipment we have, you're out of your mind. Okay. We don't have the right seating equipment. If in general, I had to tell you what my biggest problems are, we don't have the right seating equipment. We don't have equipment that let's us do stuff and what I was going to say is I'm going to talk about some different ways we can use some of the stuff we have. And some of the stuff, it's time to have a bonfire. Okay. Or in other words, send it to the Soviet Union and tell them to only, you know, that they're -- that they can -- that they can get to use it or third world countries, okay. Because the only thing it's better than as a ditch but at any rate, communication devices are still too big. Why do you think in the world of us wondering around with our phones is thing getting -- things getting smaller. And then as those of us, maybe when [inaudible] aged, they're getting bigger. I love that. Doesn't it funny? Everything is first going to be on the iPhone. Now, it's going to be on the iPad. We all love that. Now, we have to get the iPad is going to get smaller. And so we're going to have these tablets and then we're going to have like -- they're going to get a little bigger again because you know what, we just have to have that range. And if you think I'm giving up my laptop, sorry baby. Although my laptop has already become my desktop so I did give that up, you know, who knows? All right. Here, I'm going to talk about when we have -- we are -- so, we're dealing with environmentally unfriendly devices. And I just want you to know that upfront. That doesn't mean we're not going to use them but I don't want you to pretend that they're great because I have problems with then us believing that. Okay. They're the best we have for right now. Here is Desiree. And Desiree is 14 years old. And I've been asked to see her because they can't get consistent switch access to her. She has cerebral palsy. It is questionable where she's functioning cognitively. They are using Dynavox. Please don't turn off the lights because what's going to happen is they're going to have to see me too. I'm sorry you're going to have to live with it. I'll point it out. But lights go off and on and you got to see me and see her. So, just, you know, live with it. I've already tried that. Sorry. And when we get to some videos, if we need to turn the lights out, we will. But anyway, so here the other thing is that she's gone through -- she's been in the hospital six months and she's just coming out of the hospital. And when she's in the hospital, she had a pneumonia that then developed into a septic situation so she was vented. She came off a vent. These are things that we deal with everyday. If there's -- probably no one in this room that hasn't a kid that's like this. This is -- there are kids we think cerebral palsy are kind of not medically fragile but she one of those that then become. You know, you go through a big thing. So, six months, she hasn't been in school. And so what's interesting is, is that she has shoulder flexion contractures, elbow flexion contractures, wrist flexion contractures. She has one hip dislocated. They're not going to do surgery. She's too -- it doesn't seem to give her pain because the other hip is dislocated. She's got both knee contractures and ankle contractures. She's got a spinal scoliosis. So, she's got a molded seat. So,

people say, "Well, this is the seating we have. This is what she has to be in so she has a molded seat." And that's what I'm told. So, what the issue was, is that we're having trouble with her being able to consistently hit this switch. This is wobbly. Okay. Right here the mount is wobbly, all right? So, that's why they want me to see her. We want you to make this easier, okay. So, it sounds like a simple solution. The fact of the matter is, I want you to understand the complexity of what you're asking. So, first of all, just for you guys who aren't therapists, those of you are therapists, you should know this. Your functional range so everybody in this room know what range of motion is? Range of motion is, you know, this is a hundred and eighty degrees of shoulder extension. I can raise so this -- I'm looking like I'm going a straight line, all right? So, functional range, the range of motion I have in my joints to do functional tasks is one third of my active range. So, the reason I want to be able to move my arm all the way up here is not because up here is functional. There's nothing up here except maybe I can wave my hand. But if I'm able to move this whole range, it means I have this much of a range to actually do work. If I can only move my hand like this when we get older and if I have a kyphosis and I can only move my hand like this, that's why I can only do this. Okay. So, my functional range is one third of my active range. Okay. Active range isn't with force. It's just range of motion. So, I have the potential to use the third of my function range, my third of my active range. Okay. So, right now here, I'm here to tell you that Desiree does not even have 15 degrees of shoulder extension. So, if she doesn't even have 15, and if she had 15 and that's me, wishing she had 15. So, that's me being extremely kind by even imagining she has 15. She would have five degrees to use. How big is five degrees you guys? You know, it's a blink. I mean, I'm hoping I could see five degrees of movement. Then, what do you think she's doing to have ever expected her with five degrees to be able to hit the switch? Well, you know what she's using? Will power. You know what will power is? Adrenaline. Okay. Will power is an amazing thing. And this is why I have huge respect for the children I work with. So, she has to will that five degrees up to where the switch is. Now, I already told you she had contractures. What does a contracture mean? A contracture means a fixed limitation. That fixed limitation can be skin, ligament, muscle, bone. I don't know which -- any of those are and it probably varies in those ranges. But when you hold your hand like this and you're 14, this is not a CP hand, this is a normal hand position because it's the one I'm using right here. But what is the position of disuse? That's what this is a position of. And when you see then kids like her that are 14, it's a sign of also with contractures of disuse atrophy. Atrophy means, I've got some muscles that are no longer being innervated to tell you what to do. So, I have a limitation in range. I have a disuse atrophy. And that's where you chose to put the switch? Okay. So, with sheer will power and adrenaline, she tries to push up to get it. With all that -- all those limitations, she tries to get up and get it. How many times do you think she can do that before she's going to get exhausted? Because I'm going to tell you right now, everything else is strapped in. And she doesn't have much range, okay. So, she can't move off. She can't move her hand. She can't do it very much. Now, the next thing I want you to imagine is, let's look at where that switch placement is. Who in their right mind believes your arm moves like a lever up and down? It doesn't. We don't move in degrees of 90. Okay. First of all, every part, every part of

our body is on a rotational skeleton. You are not a stick figure with dowels and two tennis balls for a shoulder. Only an engineer believes that. You, in fact, there is no long bone even in the longest people, if there is even an inch, where the circumference is equal because you are rotated towards the center. So, your arm is meant to come in like this, come in like this. So, how are you going to punch it up? Okay. And then where you place the switch, so you're imagining that with that limitation of range, you're going to punch it up. Well, she actually isn't. It's going to be coming in like this, each movement. One is going to come in, it's going to come a little like this because it would with you too because we're meant to come in like this. That's how our bodies are made. So, if you haven't figured out, there is nothing good about this decision. Okay. And why is it a problem? Well, they think the problem is, it seemed working with her, is that this lever arm so we've got a knob here, a knob here, a knob here, a knob here. Yeah, that's what switch mounts look like. And I -- that it takes a lot -- you know, so we have the lever here, the lever here, the lever here and people will switch them and say, "See, you can put it wherever you want." Yeah, if you never move. Okay. So, what happens is, is that it wiggles. Now, this is physics. This isn't physiology. If you have a long arm, that has a whole bunch of movement built in that you've tightened with knobs, on a clamp that's arbitrary, it's not going to stay still. It's going to wiggle. Okay. Oh, tighten that up, tighten that up, tighten that up. Do you sometimes feel like all you do is do this? Tighten that up, tighten that up. Okay. There it is. Oops. Oh, that's -- oh, tighten that up, tighten that up, tighten that up, tighten that up. Oh, we didn't want it there. We wanted it over here. Okay. Loosen that up, loosen that up. Okay. Okay. Oh, wait a second. We didn't want it that way. Oh, we wanted it over here. Okay. Wait. Tighten that up, tighten that up, tighten that up. Honest to God. All right. So, what happens is the other wiggle. And then, while I'm doing this, then the team says -- oh, also by the way, see where she's looking up? Is there a mount that we could put our communication device on that could be really high where her eyes are? Yeah. I was thinking like about an IV pole with maybe like a, you know, like one of those extendable ladders. We'll climb up and put it on. Have it hanging. Let's try an \$8,000 device hanging off of an IV pole. All right. So, that's what people are saying to me. So, I'm already like having a heart attack because these questions are making two underlying assumptions. One, that this is an okay position. Two, we're starting with her hands. So, this is what I'm going to do. So, what's going to happen is, I'm going to take her out of her seat. You cannot evaluate children in the same seats they come in. So, yes, speech therapists, teachers, you're going to have to have your OTs and PTs involved. OTs and PTs you don't get to abdicate this experience. And I know there are many that do. Okay. And I'm sorry they do and if you have trouble with that, please call me. That's what I'm here to try and help, light a fire under people's butts but that's preaching to the choir meaning because most of you here don't need a fire lit under your butt. What did I do here? Well, what I want to tell you is, if in fact, we're actually asking to use our hands. There are a couple little false things you've been told. One of them is that somehow you work in the middle. We actually don't work in the middle. We don't come to the middle to work. We actually move across our middle to work. And that's because this is not innervating. So, for me to have power to reach and to look and to pay attention, I have to ask gravity to be involved which is why when you look at

young children, we don't have them sitting in chairs like this. Which is why if you look at them coloring, you'll see one leg pulled up. They are over, they're leaning over. They're coloring hard. You see this rotation. The more rotation and the closer the head and the hands are together, the more focus there is. Not being upright. For you to actually identify being upright and having your elbows at 90 and for me to be able to see where my hands are and to pay attention to this, I not only can't be 13, I have to be 20. It's not until you're 20 years old that you're actually able to do this. When your -- when your molar teeth come in. When you're considered totally mature. You have to be completely mature for you to be able to deal with this distance. Otherwise, your head has to come to your hands not your hands to your head. So, it isn't bringing my hands up here and giving me a slant board, that doesn't help my hands. I then have wussy hands. It is that I have to move and as I take my trunk and my head towards my hands, now my head and body are holding themselves so my hands have an opportunity to have some graded control. Here, they don't have graded control. Okay. So, what I'm going to do is -- so most kids that I see, I'm asking them, I'm trying to look at them in a seat. And get their feet on the floor so they have their feet on the floor because the biggest mistake we've made with kids in disabilities is their feet on the floor because who do you need your feet on the floor? Because that's where gravity is. Gravity speaks to your body through the ground to your pelvis to give you power to your intention. Okay. So, power is what you have to give you strength in an activity. Strength used is power. Power comes from gravity. And that comes from your feet being on the ground. So, how much of the day are your kid's feet on the floor? Okay. Right there you've already caused some head control. Okay. Feet not on the floor, you've caused an experience at feeling gravity. What is the first position that we actually feel gravity in? Prone. What's the biggest problem? If you think we got fat kids in the United States, it's nothing compared to what we're doing for the next generation. And I'm going to tell you why, because we're carrying kids around and my nice name for it is the Freaking Easter Basket, which is the portable ergonomic handle car seat, all right. Because guess what, your first position for dealing with gravity isn't prone. Well, we don't put babies to sleep in prone anymore because we're afraid of SIDS. I don't. I see a baby, they're on prone, okay. So, that's how you develop gravity. I feel gravity through my body, I lift my head up, I see and I reach out with my hand. When you're on your back and your hands come, they're wussy hands. There's no power in the hands. Your eyes are daydreaming and I'm entertaining you. You're in a passive position in recline. So, what happens when you're passive and I'm entertaining you, the only way to extend your attention is to make the entertainment bigger, okay. Which is why many young kids get video games, can tolerate tremendous violence, sound, and lots of change and quick movement because they all -- because it's so passive. Even so you think they are still being involved, it's so passive in terms of their engagement that it needs to get bigger and bigger and bigger to keep their interest long enough to be able to play the game. So, it happens as carrying around kids in these baskets like this because what -- if you have, like, baby, put them on your body. And you know why? Because you can't stand to keep in one position, every time the baby's position is changed is an opportunity to have a relationship with gravity. So, every switched movement is a relationship with gravity. So, you move them from one hip, you move them to the

other hip. You move them facing forward and then what do you do? You hand them to your husband. That's why you got married. Here, take the baby. This is why you have an extended family. Have family gatherings, pass the baby around, okay. You take him, you take him, you take him. Every time they go around, once on their belly, land on grandma's lap, one's up over the shoulder going like this, one's turning around, hop like this. Every change in position is an opportunity for the person to experience gravity, okay. Babies need to be in prone. So, our kids come to school, feet not on the floor, in a reclined position, tilted position and they're there all day. And we're raising babies now. That's what we're doing too. "Oh, I can't wake the baby. It's sleeping. So, I carry it in." And if the baby wakes up, our babies are going to be really, really, really crotch driven. That's where they spend their life down there, just seeing everybody's ass or crotch. I hope we're going to have crotch and ass terms for the alphabet because that's all they've seen now for five years. They've been checking out everybody's butt and crotch. Okay, zipper, how do we make zipper in a, okay. All right. Then we put them on a table like this. How are they reaching -- and yeah, people like it because you manage your child, you're managing them. That is true, they're managing them. It is harder to manage a child, but I'm saying to you, if you got a kid, don't manage them. They need opportunities to have control. And so when you have that seat and then anybody, if -- and the other thing is, who do you think that carrying the baby in that thing is good for? That's real -- I don't care even if you're the strongest man. It's not good. You don't -- you don't say, "I'm carrying the baby." Well, you got to have twins then.

AUDIENCE MEMBER: Yeah.

KAREN KANGAS: Even on your biceps, here baby, "I got twins, okay?" All right? No, you know, I don't want that. And so -- and the other things is, is then the kid's eyes are always here, okay? So, there's too much glare, too much -- so, they will either learn to squint early or close their eyes, but most -- in most encounters, so we're already going to have visual problems, we have problems with -- but guess what? Attention comes from a relationship with gravity. Attention comes from a relation with gravity. So, when I move into a position of gravity, my eyes can focus because I won't get visual -- visual convergence does not occur except upon intention with gravity. Now, you guys were very experienced, I can have visual convergence in an activity you're used to, but your eyes will tire very quickly if you don't use gravity. So, our kids aren't in positions of gravity, of being able to use gravity just by the fact that their feet are on the floor and they need to come forward. Now, you're going to say, "Well, I didn't bring her forward." Now, what I want to tell you is, is she has a scoliosis. It doesn't look like she has it here. But if you look at her hips, you're going to see that one of her hip bones is up here and it's also retracted and the other one's like this. And one of these hips is -- and it's the right side that's out, okay. So, what happens is, is that I'm going to take her and put her on a seat that's flat, not the seat that she's in, there's no arm rest there. I don't have a mat table on her bench. So, I'm just putting her on a flatter seat. And then I'll place her where her pelvis goes, which her pelvis is actually -- to place her here, I'm crooked, okay? So, I'm going to place her, if this is still the chair facing forward, I'm just not sitting on the chair so you guys can see me. I'm going to place her where her pelvis is, which her pelvis is no longer facing forward, it's here. So, I'm

going to follow that and as soon as I put her here, move her slightly forward, she does this actively, okay. Which that's a writing reaction, okay. So, what happens is, is that the writing reaction for most of us is, we sit here and then we rotate to pick up our pen, see what I mean? So, it looks like we're leaving center. Well, I've actually done the same thing. The only trouble is, is that I've just done it differently. I placed her here. And she's done the same thing, oh, here's the activity. So, she's actively come here. As soon as she did this active movement, which she has, she now has head control and her eyes are where they need to be. Now, I'm still not going to use her hands because you can really see that disused position of them there. So, I'm going to use electronic switches that are in a headrest, and the only reason I say a headrest, not for the headrest, but they're on -- they're in here so they're soft, they look like this but they're in here. And when I see a kid who -- when I'm seeing a kid in another state, the one thing is, is by one access to an activity, the activity has to be of interest to the child that they want to participate in and they should be fluent in it. Well, that's hard for me to do when I meet somebody and they -- and I don't know how much they know the vocabulary. The vocabulary is in there, because you're telling me they don't use it well, so we don't know if they know it or not. So, it's very hard for me to first look at a communication device, which is why I frequently use a powered chair. Because what'll happen is with the power chair, I can set it up that when I'm first looking at is, are you actively holding yourself? Then the switch activation is going to be that you can look around the room where we are. So, it's not circling, it's not teaching you to drive. It's you being able to and I'm going to place the switch directly where you are, not some place I'm guessing where you are. So, where your head is, the switch is going to be right there. And as soon as I turn the chair on, it's going to move like this, okay. So, what it's going to be is like this. Oops, sorry. Okay. So, oops, got to be engaged. Sorry. Now, this is three times as fast as hers, okay. So, see how I just have to approach this? See how I just have to approach this. I'm not even there, so I approach it, go, stop, go, stop, go stop, go stop. That clicking is not the switches, that's the motors in the chair. There are two motors. So, when one goes one way, the other one has to stop, okay. So, imagine this half the speed and when she stops, so I say -- they're looking at, what's your name?

MARJORIE: Marjorie.

KAREN KANGAS: Marjorie. Marjorie is right there. Okay. And then when she goes a little bit over here, oh, and then we're looking at -- oh, you can see the wall over here, because our kids never get to look around the room. And what they immediately do to one is go and stop. Which is what they're actually doing, making the switch go and releasing it. Making the switch go and releasing it, okay. So, what can happen is, is that, she very quickly could manage all three switches, the switch behind her head and two on the side. She didn't have a lot of movement. She had -- already had graded movement. We didn't know that at 14. In her head, she already had graded movement. She was 14. I was then able to take those same three switches and plug on a mouse emulator. Okay. Can you guys see where my cursor is here? And what we are able to do is -- okay. See the mouse moving? Okay. Okay. So, we -- she was actually able to do mouse movement on the communication device that she had. And she didn't know all the vocabulary. Huge difference. Now, what I was going to say is not everybody is Desiree, but what I

want you to understand is, is that -- look, that's where we were, look where she is. By the way, when she's in that picture, she doesn't have any straps on and people say to me all the time, "Oh, I can't believe you're doing no straps." Well, the fact of the matter is, is I need to -- I need to figure out how the body is holding itself. And it doesn't mean I'm not going to use any straps. And other people say, "Her leg is hanging outside the frame of the chair." That is true. That's the 11th commandment and not even under Jewish law. If you have cerebral palsy, thy leg may not be outside thy frame of thy chair. Okay. Does anybody or any of you ever sit on a chair with a leg out? Of course. Is that a human position? Of course, it is. Okay. Now, does that mean I'm substituting the position she had for this one and this is the one she's going to be in all the time? No. Okay. What it means is, is that we have to begin to understand, not only do we need to change positions from the position you were coming in from school, because are her feet on the floor? No. Her feet still aren't on the floor. And for her at 14, she actually already has a very good understanding of where her body is. Not everybody I see can do all this right away. But I wanted to show you. Look at the difference. Now, I was -- people -- I was told, we don't know if she knows anything in her device. She can access anything and I'm already, like, "You don't have enough vocabulary." Okay. Because she can do everything. And what really was the problem? Could I have just put those switches, that headrest on her chair? No. Even when they've manual managed it. So, she actually had been paying attention and now could demonstrate her knowledge, which we can't always know. We can't always know. But I am here to say is, is that this is still the same place that I'm going to start, okay. So, when people say to me, "Where are we here?" I say to them, "That's still our beginning point." So, what I'm going to do is we're going to work on not -- the center is not the optimal position. What's the optimal position? More than one. Okay. The optimal, if we look at optimal, but I didn't say I'm looking for optimal, I want multiple seating positions. And seating is control of your own control of range. So, I need to have positions that you have control of yourself. And those aren't just static postures. They have to be positions in which you're able to demonstrate control of your body. But this is our start. It was a very good start with Desiree. Okay. But now, let's look at Cassidy. Cassidy has a severe cerebral visual processing problem. And I was also told, secretly whispering in the ear, "She doesn't like to do anything either. She's unmotivated and doesn't do anything." Okay. So, where is the switch? Here's Cassidy. This is where she is usually located all the time. Where's the switch? Over here. And they say, "Actually, she's better on the right side," but we put the switch on the left so we make sure if it's really hard that we'll know she intended to get it. If you think that's the first time I've heard that - - where did that come from? I'm not sure you could do it, so I'll make it harder? That's exactly a teaching technique I used with kindergarteners. That seemed too easy, make it hard, so I know you meant it. This is the kind of stuff that is being -- that we're doing around. And -- okay, so what I'm saying is you always start where the person is. You don't tempt them and prompt them to go some place where they're not because guess what? Where you're starting is not where you're stopping. You have to start where they are. So, I have to have -- I'm interested in the activity, so I start where they are. I put the switch where they are. I start where they are, not where I want them to be, okay. So, the next thing is, is let's look at

what she was doing, okay? So, I told them to do the -- show me the activity. This is the activity. I said, "Is this a set up?" I said, "We're in a different room?" No, no, she doesn't see so she doesn't even have to have a thing in front of her because she doesn't see. I said, "She -- I thought she had processing problems, not blind." Well, no, but she's -- you know, that means she's blind. No, it actually doesn't mean that, but I'm not going to argue. Okay. And this is what the array said, "One was a song, the red and the other one is blank," and this is what the display says, blank, music, blank, music, blank, music. Okay. I'm going to now poke myself in the eye. I now, the nonviolent person I am, wish that I had a weapon and I'm ready to mow down the whole group. And the reason I show you this is because we all do this. I would like to say that I never did this, meaning, I will -- I can't say I've never done this. I can't say that. But in terms of the lack of understanding, first of all, what does blank even mean? We wanted it to be one choice but we wanted the teacher switch so we need to have a second one but we don't think she can understand two things so we're only going to give her one. And so when it says music, I say, "What did you decide with music?" "Well, she likes music." No, no, no, I -- this is another thing, I'm just offended by this. Nobody likes music, I hate opera completely. I did -- thought I hated all country western. Now, there are a couple I like, okay. And there -- even in rock, I don't like rock. I mean, rock, I sort of lend to, you know. Well, I have favorite artists, and in those artists, I have favorite songs. I thought I love the Dixie Chicks. Hey, I like four of their songs, what can I tell you? Four, that's it. I sing the four. The same thing with U2, you know, you would think, "Oh, I love them -- oh crap, five songs for them and that's it." The Beatles, everything, it's -- I'm old. I love all of them, but I'm sick of them now, so I don't want to hear it anymore. I've heard it for life. I don't want to hear it when I'm 90. I don't want to hear it in the -- during - - I don't want to hear it in the store. I don't want to hear it today. And Jim Morrison would dance, would -- he's got to be crying. They play Light My Fire at Chuck E. Cheese. Don't you understand? This was a man with leather pants. This is -- and at Chuck E. Cheese, you know, "Come on baby, light my fire," you know, I'm thinking, "This is for the children?" Okay. So, that music, if you're choosing music, I want to know what music. And I want to know what parts of the song. Don't you have favorite parts of the song? Don't you listen to a song over and over again that you like? Don't kid yourself. Every music aficionado does. I don't care if you love opera. I don't care if you love classical music. I don't care if you love hymns. You have favorites, you have favorite parts of it, and you the favorites, you will sing or listen to or sing-along again and again. And there's lots of other stuff that can be background music and there's some other stuff that kind of just be okay. So, what happens here is not only that, we had board maker and this is what board maker was made, blank music. And in the music is one song and when the song finishes, so does the scan. So, she hits that switch, hears a song and it's gone. Why would you use music as a selection? Because when I turn it on, I listen to it. If you're going to use music, then you better have a whole array and what the person is doing is choosing the artist then finding the song, okay? That's how you make it at school. Here is a list of all the artists and you don't just get to listen to music now. You're going to choose what songs you like. And then what? We're going to listen to it later because this is this school. We're not -- didn't come to school to listen to music. We didn't come to

school to make some choices. I don't have a problem with that, that's why we're making choices to begin with. I -- but that didn't -- we didn't come to listen to the song, "Oh, but they have to hear the song or they're not going to" -- are you that stupid? No. I don't work with anybody that's solo functioning that if I don't hear the song immediately after you say the name, I'm going to completely lose interest. What were you thinking? Okay. So, the other thing is, is that -- then they tell me by the way, "She's extremely light sensitive." So I said, "So, do you ever dim the lights?" "Well, we can't dim the lights. There are other children in the room." Do you think I'm kidding? Okay. Do you think then her posture is in anyway demonstrating some of the things that she's coping with? All right. So, what's interesting is, is that for -- I mean, I just -- really, I just wanted to poke my eyeballs out, you know, commit Hara-Kiri in front of the group and say, "You don't need me, where do I start?" Okay. And I then said, "Well, we're going to start at the head." Well, yeah, but see, this is where her head is. Well, the other thing is, is that actually when I handled her, she has an opisthotonic reaction which is a involuntary reaction that causes a huge surge of tone when you are inadvertently or inexplicably or unanticipatedly touched at the -- your occiput, back of your head, scapula or sacrum. So, guess what? Being collapsed prevents that involuntary pattern from happening. If you're light sensitive, you don't keep your eyes open in the lights. You drop your head to close your eyes. Now, the other thing that's interesting is, if all of you put your chin on your chest, which you can do now or later, your eyes will automatically close, okay. And although you're perfectly capable of lifting your head up just with your neck, see? My head is down and up. Generally, that only happens when you're falling asleep in the sermons sitting next to your mother. Oh, yeah. Okay. Because actually, we pick our head up, as soon as our head drops, our trunk collapses, because this is relaxed. And we'll prop it and then to lift it up, we make a shift in our butt to bring our head up. So, we make a shift and then rotation to bring our head up. Because our head is controlled by weight bearing and when we become overly collapsed, in order to come up we can't just lift our head up. We have to make a weight shift to come up. So, because our kids are seatbelted in straight forward, they move their head probably intentionally where they want but they can't recover because they're strapped in. Okay. Because your head doesn't just come up because you were prompted with your head, so, what's going to happen is, I have to -- I had to figure out a lot of this stuff. And what's going to happen is, is that I also wanted to put her in power. And when we started dealing with her, I couldn't bring her a lot forward because she was 12 years old. And the one thing she has done is, she had lost finding easily her writing reactions. That means, she had literally overcome those by saying, "I'm down here, it doesn't matter. I'm out of will power. I'm going to pay attention." So, if you go into a position that normally would be a rest position, but you say to your body, "It doesn't matter, I'm paying attention here." And you say that over and over and over and over and the body always gets what it wants and it just develops neural pathways that are right there, because that's what you're saying. The body is going to do what you ask it and the body is always right, it's not wrong. So, she's coping there, so I can't bring her here and have her come up. She could, but she wouldn't maintain it. It was too far and -- so what happens is, actually, I had to shift her to something I don't normally do, but I will do. Shifted her all the way back, okay. Still knees

forward, allowed her body to organize around her shoulder and head only. Okay? So, when she's weight-bearing at the base of her shoulders, now she starts getting head control here, here, here, here, here. Now, if I take this and I'm over here, look where her head is. Okay? So, I'd be asking her to come up and do this, too much for her. So, we're just going to start. I'm going to move her back here and I'm going to say, "Okay. You're not paying attention to rest of your body. I'm going to accept that, and we're going to start here." This is going to be the base. Okay? I'm going to ask you to actively pay attention and you're going to start to move here and when you start getting up here, then we're going to move to shifting you here, here, here and then we're going to move here. Okay? We're going to gradually get you up to where you can start take -- find your writing reactions in an upright position. But right here, she can drive and assimilate. Okay. And more importantly, what's going to happen is when she started driving around the school -- that was the one thing that happens, everybody change their opinion of her because they start being independent. And the other thing you have to understand is for vision to converge and stay attentive. Movement in the body is required. Okay? So, we don't move to a stayed position and hold ourselves there, because when we hold ourselves our eyes begin to wander. Stillness always has the eyes wandering. So, it has to be an active engagement. So, when you move forward, you have to hold yourself, your eyes pay attention and if you're involved in a long task or work at the computer, you'll find yourself kind of going back and then coming forward again, and kind of going back and coming forward because every time you come forward you can keep your eyes paying attention. So, what's going to happen is that when she is here, although her eyes are down like this, she did start to move but she is driving all around the school and people now are seeing her be independent. And it is a challenge for us to take that switch access to be able to, you know, put it to a communication device because it's hard for her with cortical visual problems to see the display. It's hard to see the display. But what I was going to say is the movement towards the display is what organizes your vision. So, although you think you get someone to pay attention by you saying their eyes locating and you swing something in front and say, "Oh, you're looking at it, now you're ready for it." That's not actually what we do. We actually first see something of interest from a distance but as we move towards it our vision focuses and then our hand comes into play. In this process we additionally listen. So, it isn't see, listen, it isn't listen, hear me, pay attention and then see. These are happening very closely together but they need to happen with movement. So, kids with visual processing problems, I'll show you another in a minute. I really like to use in power chairs because the movement through space organizes their vision. And what I wanted to tell you is these are the kids -- so what are we forced into if we deal with communication devices with these guys. Auditory scanning, what's our biggest problem with auditory scanning? So, I have to listen to a list. I have two of that lists, choose one of the categories, in that categories I have to move down into that category and find something else. The biggest problem I have with auditory scanning is not that a kid hear something to choose it, that's simple. But how do I categorize? How do I teach categories for someone that I want to have things together? I did work with a teacher once who took some of her kids. She decided that she would choose the paradigm of a room with a bureau and in the bureau were some

boxes and in the boxes were the jewelry. And so she was able to then say, "We're going to go in the room. We're going to go over to the bureau. We have these choices of drawers. Each drawer holds something else. In the drawers are box and she put words there then. Okay? So, we're coming into the room, so we have this big thing of boxes. In the box we have something. So, those words that then relate to this drawer that this drawer relates to this room. Then we have another room and in there instead of a bureau, we might have kitchen cupboards. And so in these kitchen cupboards we have other vocabulary. And one of the reasons I say that to you is we tend to think of scanning as either menus that are categorized in group or think of it as a tree with branches. But if somebody hasn't seen a lot and if they haven't climb a tree, how do you talk about a tree with branches for somebody that don't understand a tree with branches that then become, you know, and the leaves are on -- I mean, somebody has to have a visual picture of what they're going after. And it can't just be these multiple lists. So you have to -- in the beginning, you have to be smart enough when you're teaching auditory scanning that you begin your vocabulary in groupings and please come up with a physical paradigm that you can start to go after that vocabulary physically. So, literally, you'd have that room, you'd have that bureau, I'd open that bureau, I'd open that box and there are those words. Those words relate to that drawer, that drawer has a word, that drawer relate to that bureau, that bureau has a word. So then I'm going to go find those words. Now, that doesn't have to be either one of you. But you're understanding we need something physical. That work for this kid and I thought it was brilliant and I have used it on three others since then and it really makes a lot of sense because everybody has bureaus, everybody has a cupboard that can have a box in it that in the box resides something else. Okay? I had another person that who said they actually drove through the school and went outside for to be the community went to, like the lunchroom for it to be social. So, the kids were in the lunchroom and she put the social vocabulary then. When they went to the lunchroom that's where they found the names of the kids which then they talked to which I think -- isn't that kind of smart, you know? And then they went outdoors to see the school bus to find the driver and how we were going to go home? So, we're going to go home, find the driver when we went outdoors. So, she started to build her groupings based on physically taking a child to those areas that she could then add those groups that then she would identify. Is that making sense? Okay? So, that's where we have to be with Cassidy. All I can tell you is Cassidy's relationship has changed dramatically with her classmates and with her speech therapist that she's driving because as soon as you demonstrate some competency, there are people who believe in you. And our biggest problem with many of our kids who were so involved is we never get to see any demonstrations of some competency, which we're going to talk about more this afternoon. We have -- oh, we still have a few more minutes to lunch. Hold on. Okay.

AUDIENCE MEMBER: Karen?

KAREN KANGAS: Yes?

AUDIENCE MEMBER: I'm so sorry. One quick question, I believe. You mentioned the child has light sensitivity or they said that she had.

KAREN KANGAS: Yeah.

AUDIENCE MEMBER: So, considering that position then how did you...

KAREN KANGAS: Well, what's going to happen is, is if you understand again anything about the eyes, anything about light sensitivity. All of your sensitivities are less sensitive when you are engaged in an activity of intention and your relationship with gravity. Okay? When are you the most sensitive? When you're resting, okay? So, when you're doing nothing and I'm trying to help people but I don't have time to teach you sensory processing course. But essentially at rest, it's only at rest that you itch and when you itch if you scratch it, the itch always grows. Okay? Because we have a protective reaction that any single point or pressure when we're at rest is going to get bigger because it's going to tell us we need to move because in olden times when we were at rest it was a dangerous time. So, if something touched us or itched us, we could be lying in poison ivy or we could -- something a predator was reaching we -- it would get us to move. So, it wouldn't stop with just an itch. Itch would start to get bigger and soon enough you'd start to be getting up and it would tell you to move. Okay? So, that's really where that came from. Well, what happens is, is if you have any sensitivities, when you are moving intentionally on your own and engage in activities, not that you distract yourself from that, it's that you're moving to an intention and when you move to intention sensitivities are less sensitive. Okay? And when you -- and you don't itch when you're moving. You only itch when you're at rest. Which is why when you put off going to the bathroom to get the calamine lotion, you should have got up earlier because if you got -- getting up would already make the itch less but what can I tell you? Okay. So, let me just show you Spencer which his teacher came up with same thing using the same kind of ideas. Spencer, although his label is having cerebral palsy. He had a really challenging birth. He's got a tremendous seizure disorder. He's another kid who has long periods of illness. He -- people weren't sure -- again, a cortical vision impairment which is now being called cerebral visual impairment, so at least with CVI, we can still be correct. And when he has a seizure he's actually can -- need to be resuscitated. He's been resuscitated three times already. So, people hover over him, if you don't know, you know, panic that he's going to seizure. Now, what his life in school was, really he was -- he would hum, put his hands in his mouth and drool and join his hands and then he was given a little chewy toys and he could stick those in his mouth and hum and drool. And everyone -- someone else -- somebody they think they heard a word. Okay? But nothing there. He wouldn't pay attention to things visually, didn't seem to -- you know, they couldn't give him toys and they basically were like, you know, we're -- we need help. We don't see him paying attention to anything. And this is what it kind of looks like. All right. Right there. All right. So, I'm going to change his seating system that he's in. Take off his headrest. I'd already worked with him a bit. Take this off, take off the -- the trunk laterals have dropped down, take the armrest out and this seat now is more appropriate for him to at least be in school with but, you know, that's a -- that's a bit more. The big thing I'm going to do --

and I purposely took this picture because, yes, his head will go back some, but that is not a sin. It's not now the next sin. If I have cerebral palsy that I should never put their head back unless there is a headrest on. Okay? You will put your head back -- if you're sitting in a chair. Okay? And I get really tired, I can put my head back here. Is anybody having a having a heart attack? Go get her a headrest. Get her headrest. Wait a second. It's just the back of the chair. Get the headrest. Okay? So, he's not hurting himself, but what will happen if the headrest is always there, guess what the head will always do.

AUDIENCE MEMBER: Rest.

KAREN KANGAS: Rest, okay. So, we need to be taking headrest soft. They need to be on. They need to be off right now. What I'm going to do with Spencer is I'm going to just show you when I first took him out of his chair because I was totally -- did not have head control. He had no visual tracking. He was not paying attention and he couldn't hold himself up. So, they couldn't possibly imagine what we're going to do with his head. I know these pants are atrocious, they're a fashion violation. Oh, my God. My niece and I thought they were cute when I got them. I burnt them right after this video. I didn't burn them. I wanted to burn them. I actually gave them to Goodwill. Somebody else would be walking around in those. Okay. Or they burnt them, who knows? All right. So, I'm not allowed to work in this preschool. This was a busy day. The teacher wanted me to work in a gym and all I'm doing here is I'm just wanting to demonstrate to people that he does have writing reactions and he certainly can hold himself up and there's no reason to believe he can't. And what happens here is I'm going to -- there's nothing to do. It's not very exciting. His leg position, I'm not over holding him. It's just -- it's showing me with his legs sticking out, it's not that he has too much tone, he's ignoring them. So, he actually has an active dyskinesia. We'll talk about it later. He has head control, right? Trunk control, right?

AUDIENCE MEMBER: Uh-hmm.

KAREN KANGAS: Yeah, see it right there? Well, now look at him visually track over here left of you to the camera. Okay. See, it's subtle, you're doing -- you could miss it -- you could have missed it. That was like this, all right? Now, he hears her mommy talking. Okay. Here's the camera. Could you see him looking over here?

AUDIENCE MEMBER: Uh-hmm.

KAREN KANGAS: Okay. Never been demonstrated with a test because the test has been at rest, all those tests have been there, okay. Now, what's he going to do? Relax on me, why wouldn't he? He's four years old.

AUDIENCE MEMBER: Uh-hmm.

KAREN KANGAS: Are we doing anything? No. Is it totally natural for him just to lean back on me like furniture? Absolutely. All right. So, what's going to happen is, is that -- I don't have time to go into a long stuff. But I'm actually going to assist him in finding gravity and we're going to do that through the use of

an orthotic vest that I make. But I'll -- if there's more interest in that -- if we have time later, but today we're focusing on switch access. I just want to show you, this is the kid who usually uses his hands in his mouth humming and singing. As you can see he keeps his head over to the side and consistently it's there. So, that is the side I'm going to put the primary switch on and what I'm going to do is I'm going to put a switch here. It's the -- going to have these three switches but forward is not going to be in the back pad, forward is going to be in his left pad. And I'm going to then orient him because he has visual processing problems and I get mixed up if we got any orient -- orienting specialist in this world. I get mixed up between travel and tracking. But anyway, what it is, is I'm going to put him -- this is the side he leans on. So, I'm going to put this as forward and I'm going to put him right next to this wall. And I'm going to have something here for him to visually at this line of vision because when I turn the chair on whether or not he does anything, it's going to be moving because he's leaning there and he's going to be moving along. Okay? Why am I going to do that? Because movement will help organize the vision. Why I want him to feel where he is? If he were blind would I give him a white stick and drop it in the middle of the gym? No. Wouldn't I put him over to a wall where he could touch it and feel it? So, these guys who have processing problems, you have to understand we've got to orient them. Sitting in their chair with around nothing with space all around them is not helpful. So, we have to get them some place close. So, when I was talking about this, I tried to ask them what is he interested in and people were saying, "Really? We don't know because he's never demonstrated anything. Whatever we feed him, he eats. He doesn't seem to even have preferences. He kind of, likes any kind of food we're doing." He's got a twin sister though. She has some strong preferences. They do share a room. So I said, "How about you go to their house and get a couple of her favorite books that he hears at night?" And then shamelessly copy them or give them to me and I'll shamelessly copy them without permission. And we will hang them on the wall and I want you to read him the story there. Okay? While that electronic switch is on that side and you are going to -- and we'll see what happens. Okay. We'll just look at this and then you guys can go to lunch. All right. So, I just need to turn on my sound here for a minute. Okay. They've done this once before that's what I know and they're showing me what they're doing.

WOMAN: Hey, I'm trying to switch this on. Let's see what animals you're going to get today. Let's see which ones. There are some lions and the giraffes. Yeah. The lions. Can we get them out of our cages?

WOMAN: Hi. I'm taking your picture while you're looking for the lion. He says, "Come and get me."

KAREN KANGAS: Spencer, you might want to get a little closer with your head first. Use your head first and then your hands can help. Yeah. Get a little closer with your head.

WOMAN: Move closer.

KAREN KANGAS: You guys look. Allison will help.

WOMAN: Switches.

KAREN KANGAS: Allison will help, that's what -- that's what we mean. There we go.

WOMAN: Okay. Let's drop them. We got one lion. We got one lion out of his cage. I see another one in there.

SPENCER: Okay.

WOMAN: Uh-hmm. We're going to get your [inaudible] This one in with the other lion. All right. The giraffe is next. Uh-hmm, the giraffe is next. Is that giraffe?

SPENCER: Oh, giraffe.

KAREN KANGAS: Giraffe.

WOMAN: Oh [inaudible] okay drop, okay. Oh-oh. The lions fell out. The hippopotamus is next.

SPENCER: The hippopotamus.

WOMAN: The hippos. Here we go. Drop them in, very good. I see you have a purple hippo. Oh, you're going to leave that one there today? Oh, cool. We still have the monkeys.

KAREN KANGAS: Okay. So, what happen is what I want you to see is -- there are some thing's right and some thing's not -- could be improved in terms of doing this. But what I was going to say is first of all, the teacher is too interested in him picking up the things and putting them in the container. All right. So, the other thing is, I think, the pictures are too far apart. And I've made the understanding I thought I would read the story, so I could see what was happening and the story is going to say and now the lion is going to. I think he was trying to say the words and once again we're asking questions. So, instead of telling the story, when you ask questions, you've asked the person to take their mind off the activity and pay attention to you. And one of the most important things I can tell you to do is you can still make choices by not asking questions. How would you do that? You're not going to say, "Did you want this or that?" First of all, with kids with tone a question always increases tone. So, when I ask you did you want this or this, you come up, it increases your tone. But for kids who have increased tone, we don't want to be doing that. All Right? So, instead I say I have the milk, I have the pudding. I wonder which one you'll choose, the milk or the pudding. Look at the one you want. Did you want this or did you want this? Did you want this one or did you want that one? Would you look at this or that? See what I mean? That has a whole part of the range. So, if I want to keep you in the activity, I need to speak in statements. So statements rule. We have to focus on the keywords of what's in that activity. I've -- so that's why I wanted to say -- and the other thing I -- but there are several things that I found out about him right away. First of all, he understood directions when I said you need to move your head closer to the wall. I didn't say within the headrest, so interesting he moved. So, he also had a lot more range of control of his body than any of us expect it because you just see he went all the way outside there and did that. The other thing is when he was tested, he's got a wonderful OTMPT but when he was tested he has range of motion and both of his arms seem exactly the same. But it's not until you see him engaging activity that you clearly see his left

side is his dominant side and his right side is more involved. Until he was engaged in activity, people are presenting things both ways to him. He is organized to the left. He uses the left, that's where we're going to go in terms of looking and stuff. The other thing is, is that I think, he was saying words and I do want you to identify when he's saying words, don't just say uh-huh. If you're not sure what it is, don't say I'm not sure. How about you repeat what the activity is. So you -- I might want to say when I heard that, yes, the lion, we picked up the lion, we're now after the giraffe. This is no different than what we do with young children in terms of -- in terms of an activity. But I will tell you, he does talk, he does function very much more like a kid with a brain injury -- with a brain injury than he does with someone who has CP which, I think, frequently some of our kids do especially when they have seizure disorders and they have other medical issues, you know, or diagnosis doesn't know we dictate what's going on. But I will show you when you come back from lunch. I'll show you a quick clip of him now using a communication device. So, it took him in power for -- he thinks to get organize, he actually worked on his teacher said, "I have no problem. I'll just work on the flannel board out here with him against the wall and I can usually bring another kid along and we can walk along and I will teach him in this method. He did get a power chair which I'll talk to you a little bit more about that his family was in terms supportive of. And then I'll show you him two years later using a communication device when you come back from lunch. So, guys get an hour, have a good lunch. See you when you come back.