 Please stand by for realtime captions.
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>> This is Robbin Bull and we will get started in just a few minutes.
>> I am showing we are at the top of the hour. This is Robbin Bull with NCDB. I want to begin by welcoming everybody and I will go through some housekeeping items before I handed over to Linda McDowell who will kick off today's webinar. All phone lines have been muted to alleviate background noise. During the time of the webinar we will be keeping everyone muted. The question and answer session will use the chat pod and if we have time we might have people coming off mute and Karen will deal with that at that point in time. The question—and—answer session will be at the end of the presentation. You can put your questions in the chat pod throughout the presentation and it will be monitored throughout in preparation for the question and answer session. We want you to know that this webinar will be recorded and archived for future viewing. We will be posting the recording and presentation materials soon after the webinar and I will put the link in the chat pod a little bit later. I will start the recording now and you will hear an announcement momentarily and Linda that will be your Q2 start .
>> Thank you Robbin and it's my pleasure to introduce the presenter for today's webinar Dr. Karen Erickson. The webinar is part of a series of webinars to discuss recent research findings from the field of deaf—blindness adjusting what we know, what we need to know, and what we might do about this as a field. The March focus was on professional development personnel preparation and the April and May focus is on research research—based information to help us in our knowledge of how to best help children who are deaf—blind communicate and learn and a link to past webinar recordings, accompany —— accompanying material and post webinar discussion is chased —— placed in the chat pod by Robbin. I had the privilege to introduce our presenter and that is Karen Erickson. She is the director at the center of literacy and disability studies . She is a professor in the division of speech and hearing sciences and also a Yoder Distinguished Professor in the department of Allied health services at the University of North Carolina at Chapel Hill. Karen is a former teacher of children with significant disabilities. Her current research addresses literacy assessment and instruction for struggling readers of all ages including those with significant cognitive disabilities. As Robbin mentioned in the introductory marks you are encouraged to make comments in the chat pod and if you are interested in continuing conversation on the topic or issues raised by Karen or if you have only been able to listen to the recording and want to join in the conversation please consider an invitation to partner in national efforts to develop qualified personnel and deaf—blindness coming to the NCDB website with it will be a place for ongoing discussion. Robbin is placing in the chat pod a link to join the initiative where

there are already forums that are posted that could use your voice as we seek a solution's for qualified personnel for children who are deaf line. Karen we really appreciate you putting the presentation together and look forward to this time with you today.
>> I am off mute. Can you hear me okay?
>> Yes Karen.
>> It's my pleasure to be here and I see the names and the attendee list and you all know while I never put myself forward as someone who is an expert in DB, I can't do the work I do with the children I choose to work with if I don't do my best to keep up with that all of you are doing. As I talk about Project Core I want to start by making it clear it's not a DB initiative. This is a severe communication and severe cognitive disability initiative and it happens when you recruit a couple hundred children who have severe cognitive disabilities who are not yet symbolic communicators you end up with a pretty nice group of students who have congenital deaf-blindness and other forms of deaf-blindness that we have to figure out what to do with. Our original proposal and work that we saw through, we knew in the back of our minds we would have students who have sensory impairments we had to be thinking through but we quickly realized in our very first site where we've recruited students that we had to learn who had no functional vision and figure out a way for their teachers to
[Indiscernible] in the work we're doing on Project Core. That has quickly snowballed and I have some results from a group of 10 children who were on the state [Indiscernible] that I can share results. That happens within the context of this larger initiative to think about how can we create an implementation model that will allow teachers to be the primary source of building early symbolic communication so when we get access to experts in communication, they can build on a base that is happening every day in the classroom instead of what I know you experience it because I experience it every day, we get called in as communication experts and we start from Ground Zero over and over and over again. I often talk about one of the primary goals is
[Indiscernible] so when we find experts who can help us really support students meeting their maximum potential, we are starting at a different place than we have been starting at year after year after year, particularly with students in highly densely populated areas like urban centers where there are not enough of us and also in rural areas where there are never enough of us to get around and meet the need.
>> Project Core is funded by the Office of Special Education Programs. You are all quite accustomed to the disclaimer but want to make sure people understand there is no official endorsement by the Department of Education for this. I want to reiterate we have just begun year three of this project. Year one of this project is 100% based on development. Year two is more testing out. We're just moving into your three.
>> Overall Project Core has a goal to develop a comprehensive implementation program. We didn't go into this project with predefined really clear intervention that we are testing in some sort of

experimental design. Instead it's a very iterative development process and began by identifying [Indiscernible] on evidence-based practice and [Indiscernible] as evidence-based practice. As the image on the screen depicts it started with a small effort of being able to refine student communication support and take work we had done through the learning map assessment portion to identify highly useful vocabulary words that children could learn to use across the environment, purposes, and communication partners. It takes what we knew from evidence-based student communication instead of empirically derived vocabulary words and begins by creating some communication support for students. We built those supports and then we increased our efforts and worked with a fairly large group of 17 teachers and 71 students with severe cognitive disabilities, creating our first set of implementation tools and training resources that would help teachers understand how to use these munication supports in their classroom. We now have those tools developed in a working model in those tools will now be expanded in a much broader sense this fall as we start working in pilot sites. The four pilot sites will be using the implementation tools and training resources we have created and those are being distributed through a website. As we move beyond the pilot site into our final site, we then will have finally in year five a more tightly controlled approach to investigating how well the implementation model works. As we have been engaging in this iterative process of Project Core is we have been collecting a lot of data and the data is intended to help us understand the iterations and process of development and how well that is working. Beyond that, it is giving us information about what is the impact on children and teachers. I will share some of that data today so you can see some of the beginning of what we are learning in what seems to be working as we continue to develop the implementation model in product form.
>> All of this goes back to what I think is a new were understanding of the need to have more universal solutions that support symbolic communication development among students with severe cognitive disability. For a long time people looked at the [Indiscernible] students who have no symbolic communication and thought that was the group we had to worry about. Through the dynamic learning map ultimate assessment we did a large-scale survey that was intended to provide us with data to help us make decisions in dynamic learning maps about what supports we need to build into our -- our online assessments. Through that process it became clear that the number of children with severe cognitive disabilities who desperately need support in developing their symbolic communication skills is much larger than the 9% we had talked about. In fact there is an additional 23% of children who are reported to use day today AACR sign language. Almost all of those children use only single symbols or signs for extremely restricted range of purposes. There is another large group of students who have single words they use for an extremely restricted range of purposes. In the past children who had some speech had children's -- had teachers who were asked is your child have speech and might have one or two words like mama or more and the teacher would say yes the

child has speech. It didn't go beyond that to understand where the children combining the words, could they use them intentionally for a range of purposes? In the end we find there is not just 9% but about 32% and I will speculate it's even more than that as we get teachers to understand more about what communication really means. It's at least 32% we are aware of now who still need systematic communication intervention in order to get to the place where they have language and they are using symbols, signs, and words to combine them in ways to effectively meet a full range of communication needs across a full range of partners and contacts. Part of what led us to think we needed to do Project Core was a clearer understanding of the need with the students who have cognitive disabilities.

>> At the same time there is been an increasing understanding of the challenges of speech language pathologist or SLPs to address the communication needs of these children. When you look at the most recent ASHA survey of speech pathologist to work in schools, those serving students in separate settings where [Indiscernible] right now we're about 70% of children are in separate settings and now I'm blanking on the number. A significant portion and it will come back to me in a minute. They are totally separate public settings. SLPs to work in those settings have only 31 students on their caseload that that is 31 students who all have complex communication needs. When they are working in general education settings like elementary, middle school's our high schools where there might be one or two or a cluster of separate special education classrooms this caseload could be as many as 50 children. Across all of these settings this provides an average of about 23 hours of direct intervention each week. Part of the way you get categorized as a student with significant cognitive disability is you need repeated intensive individualized instruction and it's unclear how that can happen when the SLP is the sole source of your to munication instruction when the SLP has caseloads of this number and increasing challenges in their lives that restrict the number of hours they are able to provide direct intervention. We have known for a long time that SLPs need to be partnering with teachers, but we also know SLPs report over and over again that they are frustrated trying to get teachers to implement their programs. Part of what we are trying to say is let's have it be what the teacher is supposed to be doing every day and then the SLP is able to support and expand beyond that in really dramatic ways. On the team that is part of Project Core [Indiscernible] is the director in SLP and [Indiscernible] is an SLP—A we value SLPs and think ultimately these students can't become communicators without having SLPs in their life that we recognize there is a need beyond what SLPs can do independently. So can we create systems that allow teachers to fill this need so that when SLPs are available to work with children they can build and expand upon what it is the teacher is already doing. We also hold a clear belief about students and that's in regard to the severity of the disability and instructions that will help them develop personal communication skills. We need to help get beyond the idea that of children have become symbolic communicators by the time

they are at [Indiscernible] age they will never be. In fact we must continue from birth through the rest of adulthood and provide ongoing instruction that will help people develop and build on the communication skills they have. We think this is a basic right for all students.

>> We also believe that teachers have the ability to acquire the knowledge, skills, and dispositions they need to help students with significant cognitive disabilities acquire versatile communication skills and we think one of the keys to that is using the core vocabulary approach I will talk to in more detail as we move forward today.

>> The overall intended outcomes of Project Core is we would like to improve student communication abilities and therefore their academic achievement. We would like to increase the frequency and quality of teacher use of what we call the universal core and I will explain that in more detail. And also other elements of the multi-tiered system we are developing through Project Core. We want to have broad availability of a comprehensive implementation model that can be used to support the implementation of mSAL or a multi-tiered system from language.

>> This multi-tiered system for augmenting language is based on what all of us have experienced with either RTI or MTF Avenue, multi-tiered systems of support. We are calling it the multi-tiered system for augmenting language because the core research-based that we drew upon in creating mSAL is [Indiscernible] system for augmenting language. That would fit into Tier 3 of the mSAL model. That SAL, system for augmenting language is an example of a highly individualized approach to supporting symbolic communication development among students with significant cognitive disability and if we had the ability to get that type of intervention with the intensity that is required to every student who needs across the country, we would not be developing mSAL. We would just be probably distribute in SAL. There two huge challenges with SAL that make it so it's difficult to consider scaling it today. Those two things are one, it requires somebody with expertise in communications who can facilitate the team and identify appropriate life individualized vocabulary to address students, and two, it is based on the use of [Indiscernible] communication devices. We continue to have a challenge getting students who do not yet have symbolic communication access to voice output communication devices that might allow them to develop that symbolic communication. We strongly believe in SAL and will continue to support people in speaking about ways that it becomes part of your Tier 3. It also is the case that in the deaf-blind community you have developed really outstanding intensive individualized instructional approaches. Mark and I have had conversations and spent time earlier last month giving me an overview of his how we all learn approach that they use in Delaware and that's an example of an individualized approach that fits in Tier 3 of mSAL. As we move forward today we are not trying to do away with these really important approaches that exist. We're trying to build a base that allows those approaches to be more successful

than our students have access to. We are trying to build a base that allows all students to have something when there is an access to the Tier 3 individualized support for them. As much as we hate to admit it, part of the reason why NCDB is funded and this particular project is funded is we have a need to build more qualified people in order to do that Tier 3 kind of intervention. While we all continue that work and we all have this mission of continuing to build those experts who can provide Tier 3 types of individualized interventions, we also need to be paying attention to what about all those other children and how do we address the need today while we are building that group of professionals who can help us address it more individually in the future?

>> Karen, I'm sorry, this is Robbin Bull. We're hearing a lot of buzzing on the phone when you talk. Then you pick up your handset and see if that will alleviate that Rex

>> Is it better if I talk over the phone.

>> Much better, yes.

>> I will do my best to coordinate that.

>> As we are doing this first two, three, four years the focus is on tier 1. We're really focused on building the Universal TA are and we call it universal because that's the language that's using all the RTI work out there. It's the universal solution everyone needs to have access to as a starting place and when there are students that need more either to continue making progress or because what we're doing is a working for them, we then moved to tier 2 and tier 3. Tier 1 has to be in place because everyone needs something to get started and then tier 2 and tier 3 can be that much more effective and build upon them.

>> Each of the tiers of mSAL include some important features. First each of those tiers include some sort of well-organized core-based AAC system and the system doesn't have to be a high-tech voice output system or computer-based system. It could be a low-tech systems and I will show you examples of what we're using right now. That asked —— that instruction is happening in everyday routines, interactions and environments. Adults are providing lots of models of symbol use and there is a big emphasis on attributing meaning to all behaviors. Whether the behaviors are intentionally communicative or not, helping teachers learn how to watch for behaviors and attribute meaning to those behaviors and overtime model and support students in having more conventional and symbolic means of communicating. These are elements regardless of the tier you are in in the mSAL model.

>> I have explained this already and I want to reiterate at tier 1 we have this universal communication solution delivered by teachers. In tier 2 are the kinds of specialized solutions that SLPs can guide and support. When we get to Tier 3, they are the real individualized solutions guided by teams with expertise in the population and in communication. You can think about many of you who are on state DB projects and other ways you are Tier 3 individuals. We're not trying to change what you are doing but build a base of support that helps with you were doing be more effective in the long run.

>> This core vocabulary stuff, core vocabulary is a small set of

really highly useful words and in fact a number of studies over the last several decades consistently point to a set of about 250 to 350 words that comprise about 85% of what we say. This limited set of words gives us a way to think about could we teach students to use some of these words in order to meet a broad range of communication needs? The vocabulary that comprises core vocabulary is primarily pronouns, verbs, descriptors, and prepositions and there are very few announced that appear in core vocabulary. That presents an interesting challenge for those of us who were trained to work with students with significant cognitive disabilities because our emphasis has always been a concrete representation. And highly representational symbolic teachings allow students to make early connections. Core vocabulary doesn't have those nouns and becomes a key element and differentiator in mSAL and as the first couple of years of data supports it makes a big difference in terms of helping children develop communication skills in areas that they often struggle to develop skills in.
>> We're emphasizing core for a number of reasons but the primary reason is the words that of the core vocabulary words, you can come up with hundreds of reasons to teach and model does every day. Take for example if you put onto someone's communication device a symbol that represented a photograph or textual symbol, but some symbol that represented a favorite person. You had that symbol to represent the favorite person and there are a finite number of opportunities each day for the student to have a legitimate reason to say the name of that person. But if I teach you a symbol for the pronoun she and you use it to reference your favorite person but you also can use it to reference the PT and the OT and the Art teacher and your friend in class and the character in the book we are reading and, and, and suddenly we have taken what was an opportunity to teach a concrete reference for one person and have been able to teach a reference that can be used to communicate in a broad range. When we are using core vocabulary, the context and the partner offer the specificity that in the past we have always thought the symbol needed to represent. Core vocabulary is incredibly useful across settings, topics, purposes and people. When we talk about students that require lots and lots of repetition with variety in order to learn something, being able to use a symbol meaningfully across settings, purposes and people provide the level of repetition with variety that our students need. The specialized and personalized or individualized vocabulary that we are typically thinking about with students with significant cognitive disabilities doesn't disappear but those are things that get addressed in tier 2 and tier 3 and they get addressed there because they need to be taught with more intensity because there are fewer opportunities and reasons to use them each and every day. We have got to have other ways that we think about teaching them beyond having it be a part of everyday interaction in each and every classroom's routine.
>> Our universal core vocabulary, which is the name we've given it, is a set of 36 words. When we started we had what we called our BLM first 40 and many of you may be familiar with that. We had originally proposed to use first 40 as a vocabulary set and when we went into the

first site and did our first round of communication matrices, a little bit more than 80 students with cognitive disabilities in that site, almost all of them had no symbolic communication and those who did have symbolic communication were using single words, signs or symbols for extremely restricted purposes. It became clear to us that some of the decisions we had made in the DLM first 40 we needed to rethink for this group of students who we were targeting in year one of our intervention. In the DLM first 40 we had favored words that could be combined into meaningful two word utterances. For example the word is appears in the DLM first 40. What we figured out as we actually looked up profiles of the first group of students and we needed a system that offered us robust ways to model single word utterances as opposed to combining utterances. We needed to make sure that every time a student uses each single word we had an opportunity to attribute meaning to that effort. We only included words on the universal core that have meaning as single words. These words can also be combined meaningfully but have meaning a single words so that any time a child would select even one, there was an opportunity to model and expand and teach them meaning associated with her effort. They can be combined but they are reduced set from the original 40 and include some things like same and different because of the need for those words in our current college and career readiness standards. Some of the words that are in this universal core are different than other core vocabulary lists you might be familiar with because we took the research in core vocabulary from the AAC field and combined it with a systematic review of college and career readiness standards, the DLM essential elements and what are now be an SSA core content connectors. We did a careful review of all of those to identify the expressive communication demands within there in order to try to make sure we were including enough words in universal core that students would have something they could say in order to at least begin to represent what was required expressively of them in college and career readiness standards and essential elements or essence statements that are often aligned to them for students with severe cognitive disabilities.

>> The universal core is available in a variety of formats. It's available as just the straight up 36 location boards. There is a version to fit on a standard piece of 8 1/2 by 11 paper and a version that fits on legal size paper and a version that prints in two inch squares across two sheets of paper but all 36 of the words and pictures are available at the same time. It's also available in a book that has nine symbols on each page and there are four pages in the book. There is a book that has four symbols on each page with nine pages. One of those is set up and looks like the picture is funky here but has four in a grid, so two across the top rope and two on the road below it. There is another four location where the four up your across in a line and that's called four in line and we use that for students who need to use partner-assisted scanning. The partner .2 and says each word and then they wait and goes to the next word and the student indicates when the adult has offered the target word or desired word. It can be used in that automatic way where the adult says a word and

maybe counts to 5 in their head and then goes on to the next word. It can also be used in a two step partner-assisted standing approach -- scanning approach where the student says go to the next one, go to the next one and that's the one I want. That is laid out in line in order to help all the adults and communication partners say the words in the same order every time. When students are dependent on the auditory input, that's important they have the same kind of predictable presentation that students might get who can manage the visual input. All of the layouts are available in high contrast versions. There is an eye gaze version. There are many graphic based visual boards that we have created, all of which can be downloaded from the Project Core website. In fact on the Project Core website if you link to the universal core vocabulary supports you will see there is also a tool we have created that helps teachers who don't have expertise in communication be able to make some decisions about which board might be an appropriate starting place. Our very first question is does the student have vision they can use -- do they see well enough to manage graphic symbols? We are trying all the time to think about the fact that this is a group of children who are very likely to have sensory impairments in addition to the other challenges we are trying to address through this project.

>> As we get started with our project and identified the students in our project who had vision impairments so severe there was no high contrast in the world that would be supportive of them, we came up with the idea of creating 3-D symbols. Many of you know we have been creating symbols that are core-based symbols for a number of years. We took advantage of all the good work that has been done at the Texas school for the blind and at Perkins in creating their tactual symbol library and the supports they provide but many of the symbols in both of those set are nouns symbols. We pulled anytime we could use the rules established in one or both of those and use those same basic rules in our symbols. We had to add to it because we had all these core words that are not already represented. As many of you, we have been using glue guns and felt and we have boxes full of the little bits we use in order to create the symbols. It was great when we were doing our model demonstration project in North Carolina around literacy for students with significant disabilities including deaf-blindness. When we went to take those symbols and use them and put them into classrooms where there was a broader range of students with a broader range of abilities, on the very first day I recognize there was a huge problem and that was a choking hazard. And watched a child take one of our handmade symbols with all the bits on it and put it in his mouth and immediately bite off the [Indiscernible] glued onto the top of the symbol. We had to figure out some different solutions. 3-D printing technology offers us the solution. We have created a system for representing words from the universal core vocabulary using symbols that we create in a 3-D printer environment. These offer consistency. Each one of the symbols has a shape, a color and a texture and the textures around the outside of the symbol that represents the word class. There is a unique raised element on the

symbol, on the top of the block, and you can see it in the picture we have the symbol for like an in the Texas school for the blind library like is represented by corrugated cardboard, the rapid -- the rippled part of corrugated cardboard. We reproduce that as the element on top of our symbol for like. We have included braille on the symbols and primarily for the students in this project what braille is doing is supporting the proper orientation of the symbol. Most of the students using the symbols don't have the motor skills to pick them up and manipulate them independently. We don't have any students who can use two cannons -- who can use two hands to manipulate the symbols and can't use the tactile set that APH distributes. There is a flat side and students use their hands to turn the symbol to get the flat side down to make sure they have the right orientation. We couldn't take advantage of that because our students can't use two hands to manipulate the symbol and get into the right place. I putting braille on the symbols we actually put the braille under the finger pads of the child's hand. Unlike braille which typically would be produced across the bottom, in this case because our children are not putting their hands on top of it and we're putting the symbol in their hand, the braille goes underneath the pads of their fingers in order to get that symbol oriented in their hand in the same way each time we are presenting it to them. The last thing that is on each symbol is and has the printed word stamped in it. We had talked about writing it with a sharpie marker and doing lots of other things and ultimately decided to make sure the name of for the symbol was permanently embedded in the symbol so ever -- so every adult who introduced it were introduced it with a student called it exactly the same thing because consistency is super important.
>> We have created these 3-D symbols. It allows us to re-create your exact duplicates so when the dog eats it or it goes out the school bus window or just gets lost, we can creating your exact duplicate. Once the children have gone through the effort of learning how to recognize a tactual symbol, we want to make sure we can provide them with that same symbol to the greatest extent possible so they don't have to be learned when the original one is gone. We have dramatic reduction in choking hazard and in fact one of the doctoral students is our bite tester and all of our symbols that lots of June time before they go out the door to make sure elements cannot be eaten. Recently we had a symbol that had corners on the top of it and sure enough after a minute or two, you could buy it off. We had to redesign the symbol in order to make sure we're reducing to the greatest extent possible any possible hazard we might create. We can easily create the symbols in various sizes. At one of our research sites we have students who have very significant medical needs, physical disabilities, cognitive disabilities, and deaf-blindness. Many of those students have not developed any motor skills to be able to manipulate anything or to open up their hand enough to put one of these two inch box into their hands. We have created miniature versions and have a couple of students who are just beginning to use those. The exciting thing is we're starting to see students who have not demonstrated any

independent movement of their hands beginning to move their thumbs just enough to explore and find the tiny symbol on a brain we have introduced -- on a ring we have introduced. Most importantly we can begin working on conceptual understanding of language from the very beginning. While we're teaching lots of individualized vocabulary and doing many of the evidence-based things we been doing in the DB world for a while, we can start from day one helping students begin to understand conceptual language that can be used probably to address a range of purposes in a range of environments with a range of partners.
>> I want to share a quick story. This is one of the adolescents in our study. She doesn't have any known hearing loss but is congenitally blind. She has been introduced to three of these tactual symbols as a starting place. Three symbols we are finding are very powerful and we chose these three symbols because of all of the work that the teachers were doing and we found the first visual symbols that students were using were for the words like, not, and go. When we saw the other students with significant cognitive disabilities were learning and using the symbols most quickly out of the 36 it gave us a place to start with these tactual symbols for students who could not take advantage of the graphic symbols. This young woman, every time she expresses delight and this picture shows a side view of her but you can tell by the way her cheeks are raised in her temples are showing that she is delighted in this moment. Anytime there is a sign she is enjoying something or she is happy or like something, an adult will come over and put the symbol for like in her hand and say I see that you like it. One of the girls in our project to his deaf-blind obviously cannot hear us say to her that you like it but we use hand, underhand model for her for a gesture for like which is moving her hand across her chest. We are pairing a tactual symbol with adjuster people are trying to teach her for a number of years to express like. The girl in the picture can hear so we're just saying you like it. Whenever she appears to be disgruntled, unhappy or upset not is presented to her. People are saying it looks like you do not like this or you do not want that. They are trying to help associate that. Then there is the symbol go and the symbol go is introduced every time she is moved. She doesn't have any independent mobility in her wheelchair so other people mover. -- Move her. When she gets more from her chair to the standard or from one part of the classroom to another or is moved to her lift to get changed, anywhere she goes anywhere the symbol for go is introduced. This has been going on by the time this picture was taken about three months. We showed up and on the day I took this picture I was watching as a classroom teacher was doing a fairly typical group where they were saying the Pledge of Allegiance. The teacher was walking around with a message device like a step-by-step and introducing it to each student to give them an opportunity to hit the switch and say a line of the Pledge of Allegiance. This girl had just hit the switch in the picture that you see and she was very happy to do that. When the teacher was across the room the girl starts to vocalize a little bit and we watch her as she reaches out and we see her with the palm of her hand feel each of the three symbols and

take the symbol for go and hold it up in the air and wave her hand as she is vocalizing. The teacher says I hear you and hang on and Lakme see what you have there and what are you trying to tell me? She comes over and puts her hand over the girl's hand so the girl can tell the teacher is feeling it and the teacher says I feel the arrow and are you trying to tell me go? Would you like to have another term? The girl laughs and then the teacher Katie -- takes that is confirmation. We are delighted as researchers when we see this happen and later on we shared with the teacher how exciting that was in the teacher said you won't believe what happened last week. Last week we had a substituted didn't know how to use the symbols and came up behind her and went to move her without saying anything to her. And she was moving her toward the bathroom for her changing routine, the girl reached out and grabbed the symbol for go and threw it across the room. That is not our end goal or where we want to get to, but we have a student who people have done pretty traditional [Indiscernible] and she's in a good place. She has had a calendar box schedule and she's had an augmented input dictionary and has had people working with her in her classroom and every transition is marked by a tactual object that is used across the board. She has always participated in those and has learned routines but it has not given her a means of expressive communication to do things other than improved but helped her to know what to expect next and stay organized and oriented moving through the day. As we began to introduce the core symbols to her, we now have someone who is able to comment and request and obtain things in a way that she has not been able to do previously. She is just getting started and we are nowhere near where we want to be but have beginning evidence this is somebody who is benefiting from this approach we are taking. I share that example with you not because I am done but I want you to have a real kid example of the ways we're starting to think about using these 3-D symbols.
>> We have a shared belief that everyone communicates and I am pretty sure if you were on the phone you also have that belief. The challenge is figuring out how to interpret the communication efforts and how over time to help communication efforts become versed increasingly intentional and then increasingly conventionally -- conventional and ultimately increasingly symbolic.
>> We have use the communication matrix is a primary assessment measure from the beginning of this project. In fact have always thought the communication matrix was an important tool and are now so much more convinced than we were before. We are incorporating it in bigger and bigger ways in our implementation model in terms of getting teachers to use it independently and not just as a research tool. It has over and over again what teachers tell us is when they administer one or more of the scales on the communication matrix, it helps them be better teachers because it helps them know what they need to pay attention to and what it is they are aiming for in terms of helping students move forward. I won't spend a ton of time talking about the matrix because I will make assumptions with this group that you are pretty familiar with that but it's an early skills assessment and

especially effective at the earliest stages of communication. It gives us a way to measure all forms of communication, with and without symbol used. It looks across four primary reasons to communicate which are refusing, obtaining, social, and sharing and obtaining information. It in many ways was the perfect tool to use to look at where are we making a difference for children, but over time through the first years of the project we have come to understand it is a really important tool to help teachers be better teachers of communication and gives us important information about students and where they are and how much growth they have may.
>> The communication matrix looks across seven levels of communication ability from pre-intentional to intentional and unconventional communication, conventional, concrete symbols, abstract symbols and language. Many students in the study were at a pre-intentional or intentional behaviors level. We had students who were certainly in control of their behaviors and as adults we could interpret the behaviors to have communication behind them, but students were not using those behaviors with the intent of communicating with us. We had another large group who were unconventional communicators but like the boy in this picture, he is more conventional at this point but they were using behaviors to communicate with people around them. We had very few students who were above a level IV at the place where they could use symbols in any way at all.
>> When we look at these pre-intentional to intentional and pre-symbolic to symbolic communicators over time, I pulled a couple of examples to give you some art the ideas of what we are seeing happen. This is Harold and when we started the study he had intentional behaviors. Our goal was to help him get to the place where he was more intentionally communicating. An example is when we would first show up in his classroom, whenever anyone came to the door or the door was open the very intentionally rolled the wheelchair toward the door. He wasn't trying to say to anyone else I want to go, he was just behaving in a way that we could all interpret that Harold would like to go now. Within a little bit of time that started happening is when you would walk in the room he would go over to you and take your hand and put your hand on the handle of his wheelchair. Really intentionally communicating using a behavior to say I want you to push me and go. By the end of the first year Harold had gotten to the place where he was using the spoken word go in an intentional way to communicate I would like to leave this classroom right now. This teenager went from being a student who had all kind of behaviors to a student who was intentionally communicating to a student who is now beginning to symbolically communicate including the use of a spoken word for the first time in his life.
>> Abagail is a student who if you work with these people you have seen the space before. She is a really difficult student to engage. She would prefer that people left her alone most of the time. She has throughout her school career been presented with choices and people present her with choices and she will often reach out and grab one. It's pretty clear she is not really choosing but just has worked the

way to make you go away is to reach out and pick one of these things
you are presenting. Early in the school year we watched the teacher
and they were doing an activity and Abagail was asked to choose that
she wants green paper or yellow paper. Without really looking she
reached up and grabbed one and through it. We have a clear I will do
this in order to make this stop as opposed to I am intentionally
communicating a choice with you. In this case our big goal with
Abagail was helping her learn to use some of the symbols in order to
communicate the intended message which is stop and I don't like this
and I want to go and I want you to leave me alone.
>> Another student is Wilson. He is a kid who intentionally
demonstrates his interest throughout the day by doing things like
smiling and vocalizing and using his body and leaning in and looking
at you when looking at something else in looking back at you. He has
lots of ways that he is able to communicate through his behaviors. As
his teacher started introducing Santana gave him ways to access the at
Core on a regular basis he started realizing I'm supposed to use this
symbol in order to communicate something. He is trying to do something
and the teacher is trying to build on whatever it is he is doing. He
might reach out and touch get or turn without trying to communicate
that at this point but he understands that I'm supposed to be pointing
to the symbols. We are delighted when in the context of an activity he
reaches out and puts his hand on turn and the teacher is able to
attribute meaning to the effort and help them learn the symbol he has
just touched is a symbol that has meaning. Through lots of
opportunities to use it throughout the day, he will get to the place
where he will be able over time to know the meaning of that symbol and
use it more intentionally to communicate with others.
>> The principles of instruction in Project Core are that we are
encouraging but not requiring communication from students. We're not
waiting them out until they finally touched something. Abagail was an
important example of that. What she learned the people forcing her to
respond was do something quickly and people will leave you alone.
Teachers are encouraging and supporting but not requiring
communication with the symbols. Teachers have universal core with them
and with the students at all times. In fact the principal in our first
school walks around with the core vocabulary attached to a lanyard on
his belt and a PE teacher has a posted on the wall in the gymnasium.
There is a huge banner of it on the playground that students use when
they are outside. Little ones have it on a lanyard around their neck
and those in wheelchairs have it plastered onto their tray. The core
is available all the time. People are reminded to use it all the time.
We are helping people remember to be patient and provide sufficient
time for students to respond and importantly a point or modeling
doesn't mock —— doesn't count if no one sees you do it. You have to
make sure you are giving the student the opportunity to visually or
tactually interact with the symbol that you are modeling. That's if
you want them over time to understand that particular symbol has
meaning. Another principle as you will attribute meaning whenever
possible. To symbolic and non—symbolic and intentional and non—

Intentional Communication, one of the big things is helping teachers learn to trust themselves and stop learning about if a child really meant to do something or not and take it for what it is an attribute meaning to it to model a more sophisticated symbolic way of using the core. When you see a student smiling and reaching and vocalizing, the teacher will say I see you telling me something and I think you are telling me you like it. You can tell me you like it and present the like symbol or visually point to the like symbol for the student. Trying to constantly attribute meaning and then a response to attributing meeting, model, repeat and expand using the core vocabulary. Our teachers are out presenting themselves and am very excited about what is happening. They say we had to learn to talk core and they do lots of this model, repeat expand throughout the school day.

>> For the students with the 3-D symbols, we have started at a lower level and I will honestly tell you it's because we have struggled with getting past concerns of DVI. Teachers of the visually impaired in all three of our primary sites have expressed great concerns as have several of you on the phone call about our choice to use symbols created on a 3-D printer. We agreed with our first duty to start with three symbols that were the symbols used most often by the students who had vision and were using the graphic symbols. We used an approach that this TBI calls sandwiching which is common where we came up with poster boards that were sandwiching it and helping the intervener teacher and others who work with us for student think about how they would say which the words go, like, and not into naturally occurring events throughout the day whenever the student would move or was expressing pleasure or refusal or displeasure. You are pairing the symbol with this thing that is already happening. You are attributing meaning and you are helping students by helping them see that here is this other representation for this message that I am interpreting from you right now. The symbol is paired with a gesture when the student cannot hear the spoken words for goal, like or not. In fact that very first girl, what has happened is she is not using the symbol for like, having the symbol for like allowed her at 13 for the first time ever to start using the raising her hand across her chest gesture for like. And it makes sense because we know having multiple modalities is important for developing receptive understanding. That student got to the place where she now has an independent gesture she can use whether the symbol is there or not and we would be delighted if that ends up being what happens. We are starting with just these three and we have 13 of the core vocabulary words represented in 3-D symbols that are available as STL files to download and start using.

>> We incorporate core vocabulary throughout the entire day. When we started trying to help beyond getting people familiar with the uncomfortable principles, what was happening word teachers were sticking to one time during the day that they would pull out the core vocabulary and use it. In February of the first year when we started in October we had training plan where we planned on focusing on incorporating core across the day. We were going to focus first on

instruction. The teachers could not be there and life happens in school settings and they were pulled to go to a district required training. We ended up with all the PK teachers and the whole school, all of the teaching assistants and other paraprofessional support folks worked with them to identify what our routines you engage in every single day that are noninstructional routines that we know teaching assistants are in charge? Things like arriving and departing, personal care, lunchtime, pre-timed, moving from one situation to another so going to media or PE or something else. We got adults to think about what are things you do and say. We had them list routines they are engaged in and choose one. For the one they chose, Inc. about all the things they said during that routine. Then think about how they could say those things using the core vocabulary. That was incredibly successful. In fact what happened was when we came back the next week there were posters all over the school that they had made that gave them visual support for how they should be using core to model hello when kids got off the bus. A greeting for children getting off the bus. Or putting their bag away when they got in the classroom and those kind of things. That move to maximizing use within instructional routines and we started with heavy emphasis on literacy because we are the literacy center and we're building instructional routines around math also because that is a required part of what teachers need to do every day.
>> These instructional routines, the five routines have a planning form available on the Project Core website. We have created a model that can be applied to other routines and lesson plans. For example when teachers are teaching social studies or science or if they have an instructional routine around a nonacademic area but still has some features of a lesson plan, they have access to this instructional planning support we have created for them. For each of the five ELA routines we have the self-evaluation and observation forms. They are allowing teachers supporting their reflection on the use of mSAL and the universal core vocabulary. These also support peers, coaches and administrators enable -- in being able to observe one another. Having self-evaluation and observation forms allow teachers in the beginning of the year to use them to reflect on their own practice. You probably can't see this tiny model on your screen because I can barely see it, but it is the self-evaluation for shared reading. It says is the first piece of evidence that all students have an individualize communication system that meets their access needs. The next one that says content and complexity of the book is appropriate for the age, grade, and ability level of each of the students. Before the reading, the adult connects the book to previously talked information and experiences. These statements of evidence allow teachers to evaluate am I doing all of these things? Am I consistently commenting while I am reading using the communication system that the student needs to be using each day in their own communication? What is happening is the teachers are using these and once they feel comfortable when their coach or administrator wants to schedule an observation, the teacher is in control of saying here is what I will do it here is an

observation form so you know what it is I'm trying to accomplish and know what you are looking for. We talked teachers all of this stuff through a series of about 14 hours of professional development. We were granted by the school all of the afterschool professional development time they had in this first year. We have face to face with our first school and delivered all of the professional development face to face and taught them how to use tools like this. As we move forward our professional development is all now available through a library of self-directed and facilitated modules that you can access through the Project Core website. The self-directed modules are for an individual teacher that doesn't have anyone around to help them. They can go in and hear people from my team delivering training that is video and audio based and done it in an interactive format. There are activities for them to complete while they do the training. The facilitated modules are set up for people like most of you on the phone more ready do a lot of training of adults and might want to do a training around Project Core but might not have expertise in this particular approach. You still use our audio video training materials, but you are in charge of starting the video, stopping it at predetermined places and there is a blue screen that appears that says pause the video now, and then you pause the video and engage the group in an interaction using materials we provide for you. There are 14 modules that are completed and on the professional development website. We delivered each of those live and revised it and delivered them live in our second site. Then we created these packaged versions and now in our third site we have been studying what happens when coaches are delivering the training instead of us. As we move into our pilot this next year, the coaches will be delivering all of the training in each of our pilot sites and we will be able to test how well the implementation model worked when there are not experts like us around.
>> In review our goal for Project Core was working with his partner schools to develop, evaluate and refine the mSAL system. We had to gather data to inform the design but as we gathered the data it also gave us some really good descriptive information that gives us reason to be positive about what is happening and what we're finding. In our first school we have 51 professionals sign up. There were 18 teachers and 16 teaching assistants and a bunch of other people from the school. The 18 teachers are the important ones and there were 17 classrooms with one teacher changing midyear. There were 71 students with a large group of pre-K and the rest of the students dispersed amongst elementary, middle and high school. There is a broad range of disability categories represented and the two largest groups were developmental disabilities because we had so many pre-K students and multiple disabilities given this particular school. A really nice diverse ratio in ethnic representation which actually reflects the school system that the school is an. And interestingly a much bigger group of males than females.
>> We administer the communication matrix to members of the research team and all of us have some expertise around communication and

students with complex needs. We were each assigned a group of students to administer the communication over several weeks that pretest and then we were assigned a different batch of students who we had not spent time with during the year at posttest. That was in order to complete the communication matrix during the same window of time we selected as opposed to having the matrix be informed by ongoing knowledge of the student and ending up with students who we knew looking like they did better looking like they did better than students we didn't know as well.

>> Here is an example of one of the boys in the study who at the beginning when he refused something, his only means to refuse was an often missed effort to push people away with his hands. By the end of the study he had developed a really clear head shake no and now that he has the head shake know his teacher is working on [Indiscernible] scanning for him to access a four location communication board. The school has much more highly trained group of teachers and teaching assistants. They took advantage of the larger sized grid instead of the four in line even though he uses partner-assisted scanning.

>> This young man Neal has never had any symbolic communication opportunities in his life. He has a super complex body and very significant visual impairments and unknown auditory issues that have never really clearly been understood. He is now very successfully using partner-assisted scanning with the four in line in order to use abstract symbols in order to communicate.

>> When we look at change over time for this group of 71 students, we have statistically significant gains from October through March in refusing, obtaining, and social in terms of overall level on the communication matrix. Number one, having a study with 71 children that all have significant cognitive disabilities is crazy and number two, heading statistically significant gains on a measure that we agree is valuable is very exciting. We don't have statistical significance and information but if you are familiar with the matrix you know you have to be at a level four to actually score on the information and we only had 15 students who could score on the information scale at pretest. There is not a lot of children who we could compare pre-and post in that particular group. Overall we see this nice change in average ability level.

>> We were able to look across and see this change in the numbers of students at each level. This is a fairly busy bargraph and hard to think about how to carefully represent the data and for refuse, obtain, social and information there two bars. More dark is better. Level I is represented by a light gray all the way up to level VII which is black. The more that the bar from pre-to post includes darker color, that is a nice indication there are more children who have moved into more sophisticated level of communication. At the same time it means you want the lighter color portion of the bar to get smaller and that also is happening in each case across the refuse, obtain, and social. We're very excited we see very few students who continue to be where we have nothing or at a level I. We see this nice change from pre-to post across each of those purposes that are measured.

>> Out of the 71 students there were four who are on the DB Census and pretty consistently across the board we don't see a ton of changes in refusing which is within the scope and across the whole group. We see nice changes in obtaining and we see nice changes in social interactions also. That increased engagement and social acumen to peers and teachers and it seems to be an important finding across the students in the study and shows up within these four who are the DBE students.

>> We just literally a couple of weeks ago finished doing the posttest in our second site. There is no opportunity to finish all of the data collection, but I pulled the six students from the DB Census in the second site so I could end up showing you what's happening across the 10 children with DB across the two sites to get slightly higher numbers. We see in refusing, we have a larger group of students who are at level IV, five or six in refusing. In obtaining there are dramatic differences. In social there are also really important differences. We have an increase in the number of children who were able to demonstrate skills within information and observing. We literally are just finishing this and many of you know Claire Greer, and she and I are going to write a paper just on these DB students because we recognize we just don't have enough published research about them and to have information that shows how they can be successful and respond to the kind of stuff that classroom teachers can do as part of their everyday instruction. I want to make sure people here that this is 14 hours total of teacher training without any specific DB kind of training. Think about what you all do in the skills you have and if you were walking into a classroom where most of the students were now using conventional gestures in order to intentionally communicate with others and what a difference that would be to then be able to build on that. Then if you are walking into classrooms where the large majority of students at West had intentional behaviors but were not using those behaviors in intentionally communicative ways.

>> We did 114 classroom observations and tracked over time teacher behaviors and changes in the frequency of their attributing meaning, of their using graphic symbols, and of their modeling of core in general. We see the kind of trend we would like to see from the beginning of the year teachers really modeling core 14% of the time when they got it but in March when we observed 81% of the observations were seen using court to model. Attributing meeting at the beginning of the year was only about 50 prep -- 57% of observations did we see teachers attribute meaning and as we got to March the number was around 84%. Teaching using graphic symbols and using them to communicate in September was only happening 60% of the time during observation and that 94% of observations in March.

>> See a big difference in student access and use and during our observations we track how often the student had access to core vocabulary symbols and how often they had access to any kind of graphic symbols. In September they only had access to core on 14% of observations and they had access to any graphic symbols in only 37% of

them. At the end of the year there were getting access to core 67% of observation and having access to some sort of graphic symbols 87% of the time.
>> We assess teachers and asked them to fill out a report on their own views and ask them to respond to the statement I understand how to use a core vocabulary approach with my students who need AAC. At the beginning of the study there was one teacher who strongly agreed and the rest were on shore or disagreed. That posttest they all agreed or strongly agreed with the statement.
>> We asked them to respond to I feel comfortable and confident in my ability to use AAC with my students. At the beginning of the study only two -- four agreed or strongly agreed and by the end of the study all but one of them agreed or strongly agreed.
>> We continue to do this work. We are continuing to refine this mSAL implementation model. This fall we will be in four sites and expect to have somewhere in the neighborhood of 250 students enrolled which is a little scary. We will be in year five scaling up to 10 dissemination schools. Part of what happens this fall as we begin to build a community of practice that allows the coaches who are involved to have access to one another with our support to help them address challenges they are facing. All of our resources are currently available through Project Core and we hope you will spend some time looking at them and accessing them.
>> For example, I have mentioned the symbols and the vocabulary format and instructional planning guides and checklist. We have copies of our conference presentations. This particular presentation I did today will be distributed through NCDB and we will also posted on our site so you can spend time looking more carefully at the numbers on the charts and what they mean.
>> I will see if I can't backtrack because you guys win the awards for posting questions during a webinar. It made me know there were people out there and I appreciate that. It sometimes hard to do webinar to know if anyone is listening. Mark asked a question about the communication experience of the young lady and I'm sure Mark was referring to the ones who had the 3-D symbols. She had the difference why the previous symbols didn't work and these did were the words being represented. What the other symbols that have been introduced to her in the past, what they did is they were marked the schedule for the day or represented choices she was being offered to make a simple choice between two activities or to food items or two things concrete. But chains that she now had access to these words that were more conceptual and beginning to allow her to communicate in different ways. She did learn them faster or better and they're not better symbols but the issue is how do you represent this conceptual vocabulary in a consistent tactile way and how do you teach it with the kind of repetition and variety that is needed in order for that conceptual understanding to get beyond choice making and requesting or modulating your day and what that looks like? The next question is of the 250 to 350 core words, how many are nouns?
>> The list is posted on the center for literacy and disabilities

website along with the white paper showing exactly how we generated the list of words and what our ranking was. What I can tell you is very few. Less than 10% are nouns and that may be an overestimate. The 36 we selected came from the 60 highest ranked words on the core vocabulary list that you can get from the literacy Center website. They were selected because they were used in face-to-face communication from a social communication aspect but also were highly ranked because of their need in an academic setting and we are after all funded in order to help students maximize their academic achievement so we need to think about that. Some specific questions about why some words and not other words, I will invite you to post those questions in the forum post because they will require more than a couple of minutes that I have to try to address them. All of the communication boards are available but are available in PDF format so people can print and use them but they are also available in source files from board maker, SymbolStix and you are able to get into those tools and modify them in ways you need to in order to maximize visual contrast and other things your students might need.

>> There is a comment about a student who raked her hand across her chest, she didn't have any form of symbols prior to implementing the system that people had been trying to teach her that gesture the way you would be if you were a sign but did not have physical skills to be able to make the ASL sign like by pulling away from her chest so they did a modified sign. They have been trying to think about teaching her that for years and years. When they parent with the symbol they allow it to make a connection. The 3-D symbols that we produce, you can get a version of the 3-D extruded plastic which is the same material they used to make Legos. As you are thinking about 3-D you want to look for the one that they use for Legos. That gives you a sense for what it feels like and how heavy it is. Do we have more concrete symbols or do we start with this level of representation? When we have people there able to support concrete object symbols we put them on also but we are starting with all children from the beginning but we are starting with people from the beginning. We understand we are giving up concrete but we are dramatically increasing opportunities to increase in learned. Our data shows us students are able to learn these abstract representations when their teachers are teaching them everyday.

>> This is Robbin and we're pressing up against the time that we had allotted and we have the captioner for just a few minutes more. And you are doing a great job at the questions but I'm wondering if we should review the questions and possibly answer them in the forearm. We can transfer them to the follow-up for a man answer their to make sure people know they can go there for the answers you have. Is that a plan?

>> That is a great idea.

>> There are a lot of questions.

>> There are still a ton.

>> Okay that works for me.

>> All right. That would be great and then we can let people go and get on with their date but this is a great presentation and I really

appreciate it. A great job explaining things.
>> I'm glad you gave me an hour and a half. Thank you. [Laughter]
>> Karen, thank you so much. This is Linda and I encouraged people who have questions in the chat pod to go to the top of the chat pod and get the link to where to find the forums and Karen I will get that to you personally and I will notify when I see Chad so they can hear from you.
>> Thank you so much Karen.
>> Thank you.
>> [Event concluded]