

AAC RERC Webcast Series

Reading and AAC
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The Pennsylvania State University
Audio Transcript

The videoscripts use National Conventions for AAC outlined by the International Society for Augmentative and Alternative Communication, as well as two others.

1. *Naturally spoken elements* are italicized
2. “*Words and sentences produced with digitized or synthesized speech*” are italicized and placed in quotes.
3. MANUAL SIGNS are in capital letters
4. *GRAPHIC SIGNS and PICTURES* are in capital letters and italicized.
5. s-p-e-l-l-i-n-g is underlined and has hyphens between letters.
6. {...} indicates simultaneous expressive forms give ex. {*BALL ball*} would indicate a graphic sign was used at the same time that the word was spoken
7. / / indicates the sound for that letter is produced rather than the letter name
8. - - indicates the letter name was used.

Slide 1: AAC-RERC webcast series

Slide 2: Maximizing the Literacy Skills of Individuals Who Require AAC

Welcome to the AAC RERC webcast on maximizing the literacy skills for individuals who require augmentative and alternative communication. I’m absolutely delighted to be here today. My name is Janice Light. I am on faculty in the department of Communication Sciences and Disorders at Penn State University and the project that we’ll be talking about today is one that is co-directed by myself and a colleague, a dear colleague David McNaughton, who is on faculty in the department of Educational and School Psychology and Special Education here at Penn State University.

Slide 3: Penn State Literacy Team

The project that we’re talking about would not have been possible without the hard work and dedication of a number of students from Penn State, both current and former students, graduate and undergraduate students, and we’re greatly indebted to them for their commitment and their efforts. And of course most of all we are very grateful to the individuals who require AAC systems and their families who participated in this project. We learned a tremendous amount from them and are very grateful for their participation.

Slide 4: Literacy skills are critically important for individuals who require AAC.

We know of course that literacy skills are tremendously important in all of our lives. Literacy is the channel through which learning takes place within our school system and higher education. It is the medium through which teachers assess understanding and performance of students. We know that the overwhelming majority of jobs in North America today require at least functional literacy skills. Literacy skills have become tremendously important as a means for initiating and maintaining social closeness with

others. For example, through email, through instant messaging, through text messaging, all of these are channels that are incredibly important. We also make use of literacy skills in our daily living activities, making lists for the grocery store, reminders for various events and they provide scheduling support, organizational aids, in our daily activities as well.

It's hard to imagine a life without literacy skills. How would we access the internet? How would we be able to get access to all of those information resources that are available to us on a daily basis via the world-wide web? Literacy skills are obviously tremendously important to everyone but they take on an added importance for individuals who have complex communication needs and require augmentative and alternative communication. For these individuals, once they acquire literacy skills, for the first time they are able to have true generative capacity in their language, able to say and communicate anything to anyone. They are no longer dependent on others to provide them with access to symbols, to pictures, or to objects or signs to communicate with others. Rather, they can generate any type of content on their own.

Literacy becomes an important channel for self expression for many individuals who require AAC systems through autobiographical writing, through sharing life stories etcetera. And, of course literacy in our society is a marker of competence. And we have certainly witnessed incredible changes in the perceptions of others towards individuals who require augmentative and alternative communication once they are able to demonstrate literacy skills.

Slide 5: Literacy outcomes for individuals who require AAC

Given the incredible importance of literacy skills in the lives of individuals with complex communication needs who require augmentative and alternative communication it is concerning to realize that currently the majority of individuals who require AAC do not have functional literacy skills. The good news is that there are some individuals who require AAC who do develop competencies in reading and writing, a small number who have very high level literacy skills, but many demonstrate difficulties with literacy and many are underachieving in their literacy skills.

Slide 6: Importance of evidence-based instruction

One of the main factors that has contributed to poor literacy outcomes currently is the lack of evidence based instruction that's been adapted to meet the specialized needs of individuals who require AAC. And it's really this issue that we are going to try to address in today's presentation.

Slide 7: Goals of the webcast

So the goals of our webcast are as follows: First of all, we would like to share with you the results of a research study that has evaluated the effects of adapted instruction on the literacy skills of individuals who use AAC. We hope to describe the literacy instruction program for you and share case examples to illustrate the intervention and outcomes for a range of students of different ages with different disabilities. The research study has

employed a multiple base line design across participants. To date we've involved eight participants and they range in age from as young as three to as old as fifty-four.

Slide 8: How can we better support literacy learning?

We indicated that one of the main contributing factors to the lack of high level literacy outcomes for individuals who require AAC was the lack of effective instruction. And so the first question that we need to ask ourselves is how can we better support literacy learning for individuals who require AAC? Effective instruction is required to enhance the literacy skills of individual's who require AAC. And as we develop these instructional programs there are really three things that we need to think about. First of all, we need to think about what is it that we are going to teach. What skills will we be teaching? This is the appropriate instructional content. Secondly, we need to think about how can we most effectively teach those skills to individuals who require AAC, the appropriate instructional procedures. And lastly, we need to think about what adaptations will be required to allow active participation of individuals who cannot produce spoken responses. Most of our literacy programs to date that are available require the student to produce speech, to produce oral responses. So in our case we need to make adaptations so individuals who use AAC can be active participants in that learning. Let's start by talking about the first of these three components, that's the appropriate instructional content.

Slide 9: Instructional Program

We're going to primarily focus on the transition to conventional literacy skills in this presentation, primarily focusing on the development of early reading skills and early writing skills. The work that we're going to be presenting to you is grounded in literacy research in two areas. The research on literacy instruction for children who can speak but are at risk in terms of the development of literacy skills, so the work summarized by the National Reading Panel in 2000. And of course our work then relies on adaptations for individuals who require AAC. Some of the work that David McNaughton and myself have been involved in and work by former doctoral students from our department, Karen Fallon and Diane Miller and others.

Slide 10: Appropriate instructional content

So what do we teach when we go about providing literacy instruction for individuals who require AAC? Well, there are a variety of interrelated components. First of all, read interesting texts to the student. Secondly, build language skills. Thirdly, teach phonological awareness skills. Teach letter-sound correspondences. Provide instruction in early reading skills. Decoding skills to read single words. Shared reading activities. And of course provide instruction in early writing skills. Let's talk a little bit more about each one of these components starting with reading appropriate and interesting texts to the student.

Slide 11: Appropriate instructional content

It's critical throughout the intervention to regularly be reading to the student. Obviously it's important for the student to have the choice of texts. To be able to choose texts that are interesting and motivating to the student. This is going to establish not only the

motivation for learning to read but also an understanding of the meaningfulness of literacy and of reading. While you're reading to the student, talk about the text with the student. Relate the story or the text to the student's own experiences. You need to make sure that the individual has access to AAC at all times, and encourage the student's active participation and engagement. Encouraging them to talk about the story and how it relates to their own experiences. Encouraging the student to ask questions about the text and encouraging the student to fill in lines, to read parts of the stories, and to participate actively. These types of activities not only build motivation and the understanding of the meaningfulness of reading but also serve to build the student's comprehension of reading texts. Providing repeated readings of texts will allow the student an opportunity to build their own competence with materials, and to begin to build fluency as well.

Slide 12: Appropriate instructional content

In addition to reading texts regularly to the student we also need to continue to build language skills. Learning to read and write depends on a foundation of language skills. If students are going to be able to understand what they have read they need to have the vocabulary, the syntactic and morphological knowledge to be able to understand the words of the texts and the sentence structures and interpret them correctly. Very often in our AAC interventions we focus on building vocabulary and syntactic skills to facilitate functional communication. But when we turn to literacy activities we find that books often include not just functional vocabulary but also additional words that are unique to books and to reading experiences. They may use more complex sentence structures, understanding of morphology becomes more important. And so if we expect our students not only to learn to decode but to understand what they read, we need to be on a regular basis building and expanding their language skills, adding more vocabulary and understanding, and teaching more complex syntax and morphology.

Slide 13: Appropriate instructional content

Now those two components that we've talked about are obviously of primary importance, but what we're going to focus primarily on today are the basic component skills that lead us towards reading and writing. And these are the four components that are listed on this overhead. The first of these are phonological awareness skills. Skills in phoneme segmentation, sound blending, and other types of skills. Skills in letter-sound correspondences. Early reading skills such as single word decoding, learning to decode in the context of shared reading activities. And, early writing skills such as dictating and writing stories, sound spelling activities, writer's workshop, etcetera.

Slide 14: Appropriate instructional procedures

That's a brief overview of the instructional content. We'll come back and talk about each of those areas in more detail as we go through some of the case examples. But once we have established the instructional content, we also then need to think about how will we go about teaching those skills to individuals who use AAC systems. In our case we've based instruction on the principles of effective instruction summarized by Ellis and colleagues. We provide direct and explicit instruction in basic skills, like phonological awareness skills, letter-sound correspondences, decoding skills. And this direct explicit instruction is modeled on the following sequence. Model, prompt, check. First we model

the skill for the student so that they can see what is expected of them, we demonstrate for them the skill. Secondly, we prompt the student to help them learn the skill as well. We provide guided practice, helping the student complete the skill successfully. And finally, we check the student's performance, provide multiple opportunities for the student to practice independently, and provide feedback on the accuracy of their responses.

Slide 15: Appropriate instructional procedures

We are starting out by providing scaffolding support for the student. Support to help them learn the skills, and we gradually fade that support as the student develops their competencies. We are always trying to maximize the opportunities for the students to practice skills and ensure their active involvement. We know from the literature that students learn best when they have numerous opportunities to practice their skills. So one of the things that we're trying to do is to make sure that students have numerous opportunities to practice phonological awareness skills, letter-sound correspondences, decoding, and early writing skills.

Slide 16: Appropriate instructional procedure

Now simply providing instruction and skills is not going to be sufficient. And so we are always focusing on working with students to incorporate these skills into meaningful literacy experiences. And that means that we're trying to always use meaningful, motivating materials for the students and of course having fun because that's what reading is all about.

Slide 17: I went on a ride with mom.

Here's an example of one of the personalized shared reading activities that we have developed for one of our students in the project. You can see here this is of one of the pages from a shared reading book that we've developed for this little girl. It has photographs of her life and some very important and meaningful experiences for her. And then on top of each of the photographs is written in text a short story that becomes a shared reading experience for her with the photographs of the experience she's been involved in. The words that are just in black are the ones that this little girl is not yet decoding independently and so they are the ones that her partner would read for her and help her read. Those words that are highlighted on the page are ones that this little girl is able to read by herself independently. And so she would have the opportunity to contribute by reading these words within the text.

Slide 18: Adapted Instruction for Individuals who require AAC

Now we've talked a little bit so far about what it is we need to teach to individuals who require augmentative communication and how we will go about teaching that. But what we haven't talked about is how we will adapt that instruction to meet the unique needs of individuals who have complex communication needs and require AAC. As I mentioned earlier most of the available literacy instruction programs require students to respond orally or to read orally, and therefore if students are not able to produce spoken responses it's very difficult for them to participate within those programs. What we have done within our instructional program is adapted the procedures to accommodate the unique needs of individuals who require AAC. We've eliminated the need for spoken responses

and provided options for alternative response modes including pointing to AAC symbols, eye pointing to symbols, selecting symbols on a speech-generating device, producing signs, etcetera. We provide external scaffolding support for the student. The instructor provides oral production and rehearsal for the student initially, and we also at a very early stage provide access to speech output, especially at the phoneme level for the students. We've set up, and we'll see this in more detail a bit later, a very systematic approach to data collection, and we're able to use error analysis to identify specific difficulties that the student may be having. That becomes important as we're designing our instruction to know which areas of instruction may require a little bit more practice, a little bit more remedial effort.

Slide 19: First steps in literacy instruction Case #1

So we've provided an overview of what it is that we are going to be teaching, how we'll go about teaching it, and the adaptations that may be required for individuals who require augmentative and alternative communication systems. Let's start by considering an example of one of the children that have been involved in our research so far. This case will walk us through the first steps in literacy instruction. The little boy that we're going to be talking about was four and a half years old when we started the instructional program. He had cerebral palsy, was not ambulatory, was able to select with his fist from about four or six options. He was attending a preschool program at that time and getting ready for the transition to kindergarten. At the time that we started intervention with him he was communicating through some vocalizations and through a variety of communication boards. And he was waiting for funding for his speech generating device which was to come in the near future.

Slide 20: Baseline prior to instruction

When we started at baseline before we started instruction with him he already liked to read stories, he loved sports and was a big Penn State fan. He was able to recognize his own name in print. He knew less than five letter-sound correspondences. He was performing below chance levels in sound blending, initial phoneme segmentation, so not yet had acquired those skills, and he wasn't yet able to read single words as might be expected of most four year olds.

Slide 21: Literacy instruction-First steps

So what did we do when we started out with this little boy? Well, the first thing we did was to teach phonological awareness skills to him, two different types of phonological awareness skills; initial phoneme segmentation and sound blending. We also taught letter-sound correspondences, and of course as we talked about earlier it was critical to continue to read to him regularly and to continue to build his language skills both vocabulary, as well as syntax. So let's start by talking first of all about the phonological awareness skills.

Slide 22: Phonological awareness

Phonological awareness is an individual's understanding or awareness of the sound structure of language. Torgesen and colleague have said it's the ability to notice, to think about, and manipulate the phonemes of words. Phonological awareness tasks include

things like segmenting the sounds of words, blending individual sounds to form words, rhyming tasks etcetera, etcetera. In our particular intervention we focused primarily on the first two of these; segmenting the sounds of words and blending individual sounds to form words. These two skills are highly correlated with later literacy outcomes, and that's our reason for focusing primarily on them.

Slide 23: Instruction in segmenting initial sounds

So let's talk a little bit about the first of these, segmenting initial sounds. Our goal in this case is that the student will match a target phoneme that's presented orally to the correct picture of a word that starts with that target phoneme. The task will go as follows. First, we present a group of pictures to the student, say two or three or four, five, six pictures to the student. We label those pictures orally to make sure that the student knows what the pictures are of and in most cases we're using the individual's AAC symbols in this case so they're already symbols that the individual is familiar with. We then say the target phoneme to the child. For example, /b/. Show the letter, the printed letter at the same time, and the student then needs to point to the picture that starts with the target phoneme.

Slide 24: Segmenting initial sounds-Example

So let's look at an example. In this case there are four pictures, a picture of a *BAT*, a picture of a *MOP*, a picture of a *CAT*, and a picture of the color *TAN*. The instructor would say to the student /b/. Show the letter, -b-, and ask the student to point to the picture that starts with /b/. And in this case obviously pointing to the picture of the bat would be the correct answer.

Slide 25: Specific instructional techniques

The specific instructional techniques that we use with this task would be as follows. First, the instructor starts by introducing or explaining the task or the game to the student. They then model, or demonstrate, for the student how to do the task. Then they move to providing guided practice for the student, helping the student complete the task. In this case, pointing along with the student to the correct answer. At this stage the instructor will start to use a little bit longer time delay, and look for the student to begin to develop the skills to complete the task independently. We'll then move on to providing independent practice. If the student is correct the instructor confirms and provides encouragement. If the student is at any time incorrect then the instructor implements a correction procedure, modeling the correct answer for the student, prompting the student through completing the task with the correct answer, and then providing the student with another opportunity for independent practice to recheck their understanding. And these instructional techniques or procedures that I've just described are ones that are used across all of our skill instruction.

Slide 26: Example of instruction in segmenting initial phonemes

And so let's stop now and take a look at a videotape of Braden, the little boy that I introduced earlier. In this particular videotape you are going to see Braden completing an initial phoneme segmentation task with one of our graduate students from Penn State who's doing literacy instruction with him.

Slide 27: Example of instruction in segmenting initial phonemes (video)

April: ...*listen for some sounds. Here's what I mean. Like this, /t/ /t/, did you hear that sound? Did you hear it?*

Braden: *Yeah*

April: *It says this letter, huh? /t/, /t/. Okay, what we're going to do is we're going to look at these four pictures. This one says {UP up}, this one says {TAG tag}, this one says {NET net}, and this one says {POP pop}.*

Braden: *TAG (points to tag)*

April: *And listen for the one that starts with /t/. Does that one start with /t/?*

Braden: *Yeah*

April: *You think so?*

Braden: *(vocalizes)*

April: */t/ Tag starts with /t/?*

Braden: *(vocalizes and laughs)*

April: *It does! /t/ /t/ Tag. /t/ /t/ Tag starts with /t/. It sure does Braden.*

Slide 28: Example of instruction in segmenting initial phonemes (video conclusion)

So again, that's a lovely example of April providing instruction for Braden. The target phoneme is /t/ and you see Braden very quickly realizing that the word tag starts with /t/ and then pointing to the picture of TAG. And you can see his excitement at beginning to know and be able to complete these initial phoneme segmentation tasks. These tasks are going to be very important for later writing activities where he's going to need to be able to segment out the phonemes to be able to write words using letters.

Slide 29: Instruction in blending sounds

Now obviously instruction in phoneme segmentation is not the only skill that Braden is going to require to become a reader. And so we also provide instruction in a second phonological awareness skill that of blending sounds. Blending sounds is going to be incredibly important as part of learning to be able to decode and read words. In this case the goal is that the student will blend three target phonemes that are presented orally in sequence with each phoneme extended one to two seconds, determine the target word and then point to the correct picture of the target word. So the task might look like this.

Again, we can present a field of pictures two or three or four or five, six. Label them orally to make sure that the student knows what the pictures or symbols represent, and again we're using typically the student's AAC symbols that they're already familiar with. We'll say the target word orally with each phoneme extended one to two seconds and the student needs to blend the phonemes and then point to the picture that starts with the target word.

Slide 30: Blending sounds-Example

So here's an example. In this case we would review with the student that this is a picture of a MAP, LIGHT, BAG, and NAP. And then we would present the target word to the student with the phonemes extended one to two seconds. So it might be something like this /m a p/. The student then needs to be able to blend together those three phonemes, realize that the target word is map, and indicate the picture of the MAP.

Slide 31: Example of instruction in blending sounds

Let's look at another video of Braden, this time receiving some instruction in sound blending. He will be looking at four pictures. A picture of *TOP*, *TOSS*, *BOSS* and *TAP*, and you will see him blending the sounds for /t o s/ and pointing to the correct picture.

Slide 32: Example of instruction in blending sounds (video)

April: *All right, now this time I'm going to say a word long, and I want you to make it short? Okay? Okay. Okay, watch. This is {TOP top}, this is {TOSS toss}, this is {TOP top}, this is {TOSS toss}, this is {BOSS boss}, and this is {TAP tap}. Which one says /t o s/?*

Braden: *TOSS* (points to a choice)

April: *Toss? Does toss say /t o s/?*

Braden: *Yeah, yeah*

April: *Yeah it does! Good! Good! Good job!*

Slide 33: Example of instruction in blending sounds

So again you can see in this videotape Braden having some choice of four pictures, *TOP* and *TOSS* and *BOSS* and *TAP* and needing to make some fine discriminations. April presenting the target phonemes extended or elongated /t o s/ and then Braden being able to blend those sounds together, much as he would have to do with a decoding task. And then indicate the picture that represents the blended word, *toss*. And again it's a great example of seeing his excitement at beginning to accomplish these tasks.

Slide 34: Letter-sound correspondences

Now, just having the phonological awareness skills will not be sufficient for Braden to become a reader because he doesn't yet have the link between the sounds and the graphemes that represent them, or the letters that represent them. So, we also simultaneously are providing instruction in letter-sound correspondences. This refers to an individual's understanding of the sounds that correspond to specific letters, and the letters that correspond to specific sounds. Now the task is becoming a little bit more complicated because we need to have not only phonological processing, but also now an orthographic processing of the written letters.

Slide 35: Instruction in letter-sound correspondences

Instructions in these tasks; our goal is that the student will match a target phoneme presented orally to the correct written letter. Again, the task may present four letters or five or six, a field of letters. The instructor is going to say the target phoneme, for example /b/, and the student must point to the letter, the written letter that goes with that target phoneme.

Slide 36: Letter-sound correspondences-Example

So here's an example. Four letters presented to the student. The instructor says /b/ and the student needs to point in this case to -b-.

Slide 37: Example of instruction in letter-sound correspondences

Let's look at a video again of Braden receiving instruction in letter-sound correspondences with April. You'll see him in this tape going through a series of three different letters /t/, /a/, and /s/.

Slide 38: Letter Example of instruction in letter-sound correspondences (video)

April: *All right. Which one says /t/, /t/?*

Braden: *T* (points to -t-)

April: *Good, good! Good job! Okay, are you ready? Which one says /a/?*

Braden: *A* (points to a -a-)

April: *Good, good. Which one says /s/?*

Braden: *S* (points to -s- several times)

April: *Good! Good job! Good! Hmmmm.....Which one says /t/ /t/, /t/ /t/?*

Braden: *T* (points to -t-)

April: *Is that the right one? That one? The - t-? Does a- t- say /t/? Yeah it does, good!*

Slide 39: Example of instruction in letter-sound correspondences

So again, a clip of Braden and April working together, learning some of the letters and sounds. You can see her changing around the response options that Braden has in the task to make sure that they're in different positions each time, that there are different combinations of letters that he needs to choose from, and also providing repeated trials with each of the letters and sounds so that he's getting lots of opportunities to practice those skills.

Slide 40: Progression of instruction

Now how do we go about deciding what letters to teach to Braden and when to teach them. Well, we follow a number of rules in deciding how to go about teaching the sequence of letters, and many of those rules are based on the sequence of letters that have been proposed by Carnine and colleagues. First of all, we teach lower case before we teach upper case. The reason that we do that is because most words in books are lower case letters and therefore they are going to be seeing those letters more frequently than uppercase letters. We teach the letters that are used most frequently first and the reason that we do that is so that very early on kids can begin reading words rather than waiting until they know all of the letters and sounds. We teach letters that are dissimilar first so we don't teach the fine discriminations together like /b/ and /d/, /m/, /n/. We teach them separated out so that there won't be too much confusion for the children. We teach short vowels before long vowels. Again, because they're going to be easier to read in the short words using short vowels. We teach blends only once most single letter-sound correspondences are mastered.

Slide 41: Progression of instruction (continued)

We introduce the letters incrementally, as the student masters one letter we'll introduce a new one and we always provide regular review of known letters. We do go about selecting the foils or the incorrect answers that are provided to the child very carefully. We'll start with a small number of foils that are dissimilar, and as the child develops competence we'll include a greater field, or a larger field, of foils, maybe five or six

options, and ones that require finer visual and auditory discrimination, such as –b- and –d-. As the student begins to really develop their competence, we may begin to transition and have them choosing letters from a keyboard that's been adapted to meet their needs.

Slide 42: Literacy instruction-Next steps

The next steps in literacy instruction. Once Braden is competent with sound blending, once he knows about six or seven letter-sound correspondences then we're going to jump right in and begin to teach him single word decoding. This single word decoding requires integration of knowledge of the letter-sound correspondences as well as skills in sound blending. We're going to then not only provide instruction in single word decoding but give him lots of opportunities to use his single word reading skills, or decoding skills, in meaningful contexts. Reading books with him so that he can really begin to experience the opportunity to be a reader.

Slide 43: Literacy instruction-Next steps

We will, even once we begin some decoding instruction continue to teach more letter-sound correspondences, and as the student learns new letter-sound correspondences we'll begin to include new words for decoding that use the new letter as well as old letters in combination. We're going to continue to practice phonological awareness skills. Our goal here is really to build automaticity so that the student does not have to devote a lot of working memory/cognitive demands to that task, but rather it's fairly automatic. And we're going to of course as we've talked about before, continue to read to the student and always continue to build their language skills adding more vocabulary, building understanding of more complex syntax and morphology.

Slide 44: Instruction in reading single words

So let's talk a little bit now about instruction in reading single words. Here our goal is that the student will decode/read a single word that's presented in writing and then match the word to the correct picture from a group. The task again, like the other tasks we talked about, presents a group of pictures or AAC symbols to the student, for example four pictures or symbols. It presents the target written word to the student, and the student must then read the word and point to the picture of the target word.

Slide 45: Instruction in reading single words

So it would look something like this. Here we have a picture of a *MAP*, a picture of a *MOP*, a picture of a *MAT*, and a picture of *NAP*, and underneath we see the printed word map. The student needs to look at the printed word, translate the graphemes into the phonemes for each of those sounds, /m a p/, blend them together and then indicate the picture for the word, in this case *MAP*.

Slide 46: Error Analysis

Now you'll notice if you look at this particular slide that we have systematically selected foils to allow us to analyze the student's errors and to identify what parts of the word the student might be having difficulty with.

Slide 47: Error Analysis- Example

As you will see in the picture one of the pictures is the correct answer, in this case *MAP*; one of the pictures is an initial phoneme substitution, in this case *NAP*; one of the pictures is a substitution of the medial vowel, in this case *MOP*; and one of the pictures is a substitution of the final phoneme, in this case *MAT*.

Slide 48: Error Analysis

By looking at the pattern of errors that the child produces we may be able to identify if the child is having difficulties with medial vowels or final sounds, for example, and that these might be areas where we need to do additional instruction.

Slide 49: Example of instruction in reading words

Now let's look at a video of Braden working on decoding, again in this tape he'll be with one of our other graduate students, Line. They are going to be working on decoding simple consonant-vowel-consonant words that are regular. They are going to be using sports to motivate the activity. They have a carrier phrase with a different sports character like a basketball player or a football player, and he regularly sees something. And, Braden will need to decode the word and then indicate the picture from a group of four choices.

Slide 50: Example of instruction in reading words (video)

Line: *Okay, let's read what the basketball player sees. The basketball player sees a...Look at the letters. Listen to the sound they make in your head. Is it {PEN pen}, {CLAP clap}, {PET pet}...?*

Braden: *Yeah* (points to *PET*)

Line: *Is it pet?*

Braden: *Yeah*

Line: *Yes it is, good job! Good job! We've got ourselves a football player. Look at him, he's even got the ball. He's even got the ball!*

Braden: (vocalizes)

Line: *Wow! Okay, let's see what he sees. The football player sees a...now look at the letters and listen to the sounds they make. Now is it {TAN tan}, {Pan pan}, {PIN pin}, or {PAL pal}?*

Braden: *PAN* (points to pan)

Line: *Is it pan?*

Braden: *Yeah*

Line: *Yes it is. PAN shows pan. Good job Braden.*

Slide 51: Example of instruction in reading words

So, I love that tape of Braden. The intense concentration, and then of course the joy when he is able to decode the word and correctly select the picture.

Slide 52: Reading words in context- Shared reading of books

Now in those tasks, although we've used sports to motivate the interaction and to motivate the task, Braden is primarily reading single words in isolation, and practicing his decoding skills in isolation. We also want at this stage to be providing him with lots of opportunities to use his decoding skills during shared reading tasks, and for these we'll

take and adapt existing books or develop books particularly for the student. As we go through the book we'll highlight target words for the student. These will be regular consonant-vowel-consonant words that we know that the student will be able to decode independently. So for example in this story about a pig who is trying out for a basketball team there is a line in the book that says "Hooray for pig," and we know that Braden would be able to decode and read the word pig since it's a regular consonant-vowel-consonant word and he knows those letter-sound correspondences. The instructor would read the sentence aloud and track the words with her finger, and then pause at the highlighted target word. So, the instructor would read "Hooray for..." and then indicate the word that Braden is to read. The student then needs to decode the highlighted target word and then select the picture of the target word from the communication display or the speech-generating device, participating in the shared reading activity.

Slide 53: Reading words in context- Example

So let's look at the example. Here we go. Here's one of the pages from the book. We can see Pig dribbling the basketball down the court, and Line would read "Hooray for..." and then wait.

Slide 54: Reading words in context-Example

And, Braden would need to decode the word pig and then select the picture of the *PIG* from the choice of options.

Slide 55: Example of shared reading

So let's look at a little clip of Braden and Line reading together from the book Pig at Play.

Slide 56: Example of shared reading (video)

Line: *They think they're tough. They don't scare me. I steal the...*

Braden: *Ball*

Line: *Yeah. Good job, ball. He steals the ball. I sink a three. Wow look it. They're saying, Look at that guy. He's like...oh no, oh no, he's sinking a three. Hooray for...*

Braden: (vocalizes)

Line: *Look at letters, sound out the word. Which one is it Braden?*

Braden: *PIG* (points to pig)

Line: *Is it pig?*

Braden: *Yeah*

Line: *Yeah. Good job! Hooray for pig. Now I am hot. I dribble down. I make the shot. Wow, he's jumping up. He has the ball in the net. Wow. I cannot miss. We win the game. Yay! Look, he's saying, Yay, yay! They won the game. Basketball pig is my name.*

Braden: (giggles)

Line: *Yay! They won the game.*

Slide 57: Example of shared reading

So we see the tremendous joy on Braden's face as he begins to be able to participate in reading activities and that shared reading where Line is helping with the text, but Braden is able to participate and contribute using his speech approximations and then also indicating by choosing from a group of AAC symbols which is the correct word.

Slide 58: Results case #1- 5 years old; After 7 months of instruction

So where did we get to with Braden? Well, by the time he was five years old after seven months of instruction he had acquired phonological awareness skills, greater than 90% accuracy with initial phoneme segmentation, greater than 90% accuracy with sound blending. He knew all of his letter-sound correspondences including the short vowels and he was in the midst of learning the long vowels. He was able to read several hundred regular words including consonant-vowel-consonant words, vowel-consonant words and consonant-vowel words. He was able to decode novel words that he had never seen before provided those words used known letter sound combinations and provided they were regular in their spelling. And, he was beginning to work on learning to read longer words consonant-vowel-consonant-consonant words and consonant-consonant-vowel-consonant words.

Slide 59: Results case #1

He was participating actively as you saw in shared reading activities, beginning to read simple sentences on his own independently, and the exciting part he entered kindergarten as a reader. His skills surpassed most of his same-aged peers, and he entered kindergarten fully included.

Slide 60: Transition to book reading Case #2

Now as we talked about in Braden's case, one of the key things is to be able to take the decoding skills that individual's have learned and to incorporate those into book reading activities. And so the second example that I'm going to share with you really focuses on that transition to book reading. The little boy that we're going to be seeing in the next set of video clips is three years, one month old when we started with him. He has a diagnosis of autism, good motor function. At the start of instruction he was communicating through signs and gestures. He used graphic symbols, primarily PCS symbols that he had been using in a PECS system and now had some communication boards. He had been totally non-speaking a few months before we started intervention with him. At the time that we started to work with him he had developed some speech, primarily echolalia.

Slide 61: Baseline prior to instruction

He was very interested in letters and books, and his parents had done a wonderful job starting to teach him the letter names, but he didn't yet know the letter sounds. His phonological awareness skills were about 50% accurate, so he was demonstrating some early awareness but by no means yet had acquired those skills as would be expected with any child this age, and he had very minimal single word decoding skills.

Slide 62: Instruction- First steps

The first steps for instruction with Michael involved teaching phonological awareness skills, sound blending, initial phoneme segmentation, and we went about that in the same way that we had with Braden as you saw earlier on. We also taught the letter-sound correspondences and again, we did that in a similar way as you've seen in the earlier tapes of Braden. We were always building language skills, vocabulary, syntax,

morphology with Michael, as we talked about earlier, and of course always reading to him interesting and motivating books.

Slide 63: Results-3 years 2 months old. After 1 month of instruction

Michael learned very quickly these early tasks in literacy, and by three years-two months after a month of instruction he was over 90% accurate with letter-sound correspondences and over 90% accurate with sound blending, 80 to 90% accurate with initial phoneme segmentation. So you can see he made very rapid gains in those areas.

Slide 64: Instruction- Next steps

The next step for instruction was that we worked on teaching single word decoding skills. We tried to integrate those decoding skills into a variety of shared reading contexts where the instructor would read parts of the book and the student would have responsibility for decoding target words in the book. We continued to review in order to build automaticity, phonological awareness skills, letter-sound correspondences, continued to read and build language skills to ensure comprehension. And, in Michael's case we began to use written language to really help to build some of his spoken language, and to encourage speech production skills.

Slide 65: Example of instruction in reading words

So let's take a look at Michael. This is in the very early stages of teaching decoding. You're going to see him involved in a guided practice activity where I'm going to be helping him do the task and decode the word. You're going to see him working from a group of four symbols; one is for *RED*, one for *BEG*, one for *MAD*, and one for *BED*, and the target word in this case is the word *bed*. So let's take a look at Michael and I working together in guided practice, with he and I working together to decode the word and then indicate the correct picture from the choice of four.

Slide 66: Example of instruction in reading words

Janice: *All right. Let's see what our pictures are. Ready? What's this picture?*

Michael: {*RED Red*}.

Janice: *Good. What's this one?*

Michael: (vocalizes)

Janice: *This is {BIG big}.*

Michael: {*BIG Big*}.

Janice: *You should know this one?*

Michael: {*MAD Mad*}.

Janice: *Mad*

Michael: *Muscle*

Janice: *Muscle, does Muscle Man look mad? And what is this?*

Michael: {*BED Bed*}.

Janice: *Bed, good for you. Okay. I'm going to cover up the pictures now. I'm going to cover them up and I'm going to look at the letters and say the sounds. So look at the letter /b/.*

Michael: */b/ -b-*

Janice: *What letter?*

Michael: -b-

Janice: /e/

Michael: /be/

Janice: /d/

Michael: /d/.

Janice: /b e/

Michael: /b e d/ {BED bed}.

Janice: Now let's look. Way to go. Good job.

Slide 67: Example of instruction in reading words

So again you can see Michael and I working together, to look at the written word, identify each of the sounds for each of the letters in the word, blend them together, and then indicate the picture. And, you can see how access to the written word is beginning to facilitate some of his speech production, with him being able to produce some of the words and begin to use speech to communicate successfully with others.

Slide 68: Transition to book reading

Now obviously with Michael we want to be able to transition to book reading. It's very important to infuse those early decoding skills into meaningful reading experiences, and one of the first things that we often do with the students that we're working with is to make that initial transition by reading some of the I Spy books. These are great books because they pretty much take the same decoding task, but now just change a little bit the context and put it into a book reading situation, but they aren't overly demanding in terms of a story narrative yet.

Slide 69: Reading I Spy Books

When we're reading I Spy books our goal is that the student will decode a single consonant-vowel-consonant word that's presented in writing and match that word to the correct picture in the I Spy book. We present the written phrase ending with the target word so I would read out loud, "I spy a..." and then pause. I'm going to wait and allow Michael to decode the target word, and then point to the picture of the target word from the array of pictures in the I Spy book.

Slide 70: I Spy

So let's look at an example. Here on this page we have two separate ones. The first is "I spy a..." I'm going to say that and then the target word for Michael to decode is the word pin, and once we've done that one we're going to move and do "I spy a..." and the target word for Michael is man.

Slide 71: Example of reading I Spy books

In this particular case again you are going to see some guided practice with me helping Michael decode the target words and provide him with some support for successfully blending the sounds into the target word.

Slide 72: Example of reading I Spy books (video)

Janice: Let's start here. We're going to read I...

Michael: *spy a /p/...*

Janice: */p/*

Michael: */p/ -i-*

Janice: */i/*

Michael: */i/, /n/*

Janice: */n/ Good. /p i n/*

Michael: *Pin.*

Janice: *Good for you. Look hard. Do you see it? Do you see it hidden here? Look, there it is. Just like, was it Patty or Miss Anita that had a pin? There it is, right there. Do you see it? Good job, way to go. Are you ready? Here comes another one.*

Michael: *I spy /s/...*

Janice: */a/*

Michael: */a/...my*

Janice: */m/*

Michael: */m i/*

Janice: */a/*

Michael: */a/*

Janice: */n/, /m a n/, /m a n/*

Michael: */m a n/*

Janice: */m a n/*

Michael: *Man.*

Janice: *There it is. Way to go. Excellent. Good job.*

Slide 73: Example of reading *I Spy* books

So a wonderful example of Michael taking his decoding skills and begin to infuse them into a simple book reading activity. You can see him actually using the written text to prompt his speech to produce the “I spy a” carrier phrase, and then to begin to decode the words. You can still see a little bit of interference with him calling the letter names rather than the sounds, but him starting to work on blending the sounds together and then indicating the target word. Obviously from this tape although Michael is definitely building some literacy skills, early literacy skills, we want to continue to build on his fluency and independence in decoding so that he doesn’t require guided practice and that it’s not quite so effortful for him to decode words.

Slide 74: Example of instruction in reading words

So, let me show you another clip of Michael. We’re going to be working on independent decoding in this tape, where he no longer requires my support to decode the word. We’re going to be working on decoding some novel words that he has never seen before and actually some vocabulary building activities as well to expand always his vocabulary beyond just the simple functional communication words, but into more of the language that we may see in a variety of different books. In this case he has a variety of different words and the pictures that he is choosing from a picture of *HAM*, *HUM*, *HUG* and *YUM*, and the target that he is going to be reading is the word *hum*. So let’s see him. We’re going to see that there are some of these words that he’s still learning like the word *hum*, and us providing some instruction to build vocabulary as well.

Slide 75: Example of instruction in reading words (video)

Tina: *Great job*

Michael: {*HAM ham*}. *What's that?*

Tina: *That's HUM. You got to hum (hums).*

Michael: *Hum*

Tina: *Hum*

Michael: {*HUG hug*}

Tina: *Right*

Janice: *Hug*

Tina: *Yum*

Janice: *Mmm, yum*

Tina: *Yum. That tastes good*

Michael: *Yum*

Tina: *Like ice cream maybe. Is ice cream yummy? Yum, Yum Yum*

Michael: *Yum*

Tina: *Can you show HUG?*

Michael: {*HUG hug*}

Tina: *And can you show me HUM?*

Michael: {*HUM hum*}

Janice: (hums)

Tina: *And how about YUM?*

Michael: {*YUM yum*}

Tina: *Good job. Okay, look at the letters.*

Michael: /*h u m*/

Janice: *What is that?*

Michael: {*HUM hum*}

Tina and Janice: *Right! Great job! Way to go!*

Slide 76: Example of instruction in reading words

So in this tape we see, first of all, introducing and reviewing the vocabulary with Michael, explaining new words that he may not know, making sure that he knows what all the pictures or symbols represent, and then a really nice example of him looking at each of the letters, retrieving the sounds for those letters, and then being able to blend them to produce the word. A very interesting case of beginning to see how the written language is actually fostering and supporting his speech development and him beginning to be able to say and produce and use more spoken words in his communication as well.

Slide 77: Shared reading of story books

Now obviously we want to move beyond just reading I Spy books and so we're going to be moving into a greater range of different types of story books. In this case our goal is that the student will decode single consonant-vowel-consonant words presented in the context of a story and then we'll say or match the word to the correct picture on a communication board or a speech-generating device. We're always choosing books that we think will be of interest to the student. We highlight the consonant-vowel-consonant

words that the student can read, and adapt the text as required to include additional consonant-vowel-consonant words.

Slide 78: Shared reading of story books

So, we introduce the book to the student, present the written text with the target words highlighted, read the sentence out loud and track the words with a finger and then pause at the highlighted target word. And, the student then needs to decode that word and either say it if we can understand their speech, or select the picture from their AAC system.

Slide 79: Big Bear, Small Bear

Here's an example. Michael really like the Berenstain Bears. So here's a book that's been adapted about the Berenstain bears. "Can baby bear sit on Daddy's lap? This boat is big."

Slide 80: Big Bear, Small Bear

Oh no, Daddy Bear fell! Will he get wet?" And we're going to see in the next clip Michael in a shared reading task with this book and him decoding the words that are highlighted in yellow on these pages.

Slide 81: Example of shared reading of story books (video)

Michael: /l a p/...lap

Tina: *Right. Can Baby Bear sit on Daddy's lap?*

Michael: *Yeah.*

Tina: *We'll see*

Janice: *Maybe, we'll see what happens.*

Michael: *Watch out!*

Tina: *Oh no, they're going to get wet!*

Michael: *Watch out Daddy!*

Janice: *Look at him!*

Michael: *Uh oh!*

Tina: *Oh no!*

Michael: *Oh no!*

Tina: *Daddy bear...*

Michael: /f e l/ *Fell. Watch out Bear!*

Tina: *He fell. Will he get...*

Michael: /y/

Tina: /w/

Michael: /w e t/ *Wet*

Tina: *Will he get wet?*

Michael: *Yeah, watch out Bear!*

Tina: *Watch out*

Slide 82: Video 9

So this is a wonderful example of the total joy and engagement that you can get from reading activities, and you can see Michael thoroughly enjoying his ability to be able to

decode and participate in the reading experience. You can also see the development of his speech over the course of the intervention.

Slide 83: Results-3 years 5 months old

By three years-five months after four months of intervention with Michael he had 90% accuracy with his letter-sound correspondences. He still had some confusion with –b- and –d-. Phonological awareness skills, 90% to 100% accuracy with sound blending, 80 to 100% accuracy with initial phoneme segmentation. His single word decoding skills, he was reading well over 100 words, about 150 words consonant-vowel-consonant words, and consonant-vowel-consonant-consonant words with 80% accuracy. And, he was able to decode novel words that he had never seen before.

Slide 84: Results- 3 years 5 months old

He was participating actively as you saw in shared reading activities with a wide range of books, decoding regular words, familiar and novel words with a high level of accuracy and he was reading with a range of partners. We also saw, and I'm sure you've seen from the tapes, significant increases in his speech and language skills. He went from a child who had minimal access to speech and who required dependence on signs and pictures to communicate, to being a child who was able to use speech to communicate functionally with others. And, who began to develop a wide range of language skills, both syntactic, vocabulary and morphological skills. The written language was really fundamental in providing him with supports for his speech production. He could see the letters and those provided prompts and cues for him to produce those sounds, and the use of writing was really instrumental in terms of developing his understanding of syntax and morphology. And, in fact we used writing to teach him things like possessive and past tense where he could actually see the morphological endings. We have continued to work with Michael and just over a year later at age four years he's actually reading fluently at a grade two or three level, able to answer a wide range of wh- questions including higher-level inference questions. And, he is beginning to write simple stories with a beginning, middle, and end with very good language skills including the functors and parts of speech as well as pretty good sound spelling. So it's been very exciting to see him being able to learn those reading skills and also those typing skills.

Slide 85: Adapting instruction to meet complex needs- Case #3

Sometimes we encounter students who present very complex needs for us, and this was definitely the case in this next example that I wanted to share with you. This little girl was nine years old when we started to work with her. She had a very rare genetic disability that had resulted in her requiring a tracheotomy at birth. She had been ventilator dependent. She was now weaned from the ventilator but continued to require suction to facilitate respiration and breathing. She had a visual impairment, and also a bilateral sensori-neural hearing loss. She used a power wheelchair for mobility, and was communicating when we first started to work with her with sign approximations, some gestures, some idiosyncratic signs that she had developed herself. She had some vocalizations that she used to get attention, and she was using a speech-generating device to communicate basic needs and wants and to answer simple questions.

Slide 86: Baseline prior to instruction

Prior to instruction she was interested in books, she knew some letter names but not the letter-sound correspondences. She had not yet developed her decoding skills. She was able to recognize a small number of written words, such as her name.

Slide 87: Adapting instruction to meet complex needs

We had to adapt our instructional procedures to meet her complex needs, both her motor needs as well as her sensori-perceptual needs. We used highly motivating materials with her to really get her engaged and interested in the reading process from the very beginning. We had to provide her with very large print, very large font size, to accommodate her visual impairment. We adapted instruction in letter-sound correspondences and modified the sequence to accommodate her hearing loss, and we provided her with visual cues as we began to teach the letter-sound correspondences using finger spelling as well as the oral production. We incorporated instruction in sight words as well so that she was able to have access to reading as soon as possible, and she was both learning to decode words as well as building a sight word vocabulary. We also made use of written words and signs as we interacted with her to augment input, as we asked her questions, as we made comments during our instruction we would write them out for her, show her the words in writing, sign for her so that she had that added support for comprehension, and also so that she could see writing and reading used to support communication in a wide range of ways.

Slide 88: Example of instruction in reading words

So I'm going to show you a videotape of instruction with Krista. The activity that you are going to see is a decoding and reading activity. She is going to be working from a field of about six or eight pictures, her AAC symbol sets, the symbols that she knows. I'm going to be presenting to her in large text words for her to decode or read, and she then needs to match them to the pictures. This is a matching game that Krista really enjoys and it will give you a sense of us building reading vocabulary at the word level very quickly with her to allow her to get into shared reading activities early on.

Slide 89: Example of instruction in reading words (video)

Janice: {B-A-T /b a t}. {B-A-T /b a t}.

Krista: *BAT* (points to bat).

Janice: {BAT bat}. *Good for you* (claps).

Janice: {B-A-T /b a t}. *Look at Janice.* {B-A-T /b a t}.

Krista: *BAT* (points to bat).

Janice: {BAT FOR HALLOWEEN *Bat for Halloween*}. *Ooooooo. Okay, ready? Here we go. See them? Okay, look carefully.*

Krista: *DAD*

Janice: {DAD *dad*} *You're right. Hooray* (claps). {DAD, HOORAY *dad, hooray*}.

Hooray! Good job, excellent work. Okay, we're going to do about two or three more, okay? Then we'll be all done. Okay, here it goes. Ready? Here we go.

Krista: *CAT*

Janice: {CAT *cat*}{CAT *cat*}

Krista: *CAT* (points to cat)

Janice: {CAT cat}{CAT HOORAY cat hooray}. *Okay, we've got a couple more. All right, next one. Which one is...?*

Krista: DOG

Janice: {DOG dog}. *You're right. Hooray. Good job, excellent. Okay, which one is...?*

Krista: MOM

Janice: *Good job.* MOM. {M-O-M /m o m/}.

Krista: *MOM* (point to mom)

Slide 90: Example of instruction in reading words

So in that clip you see Krista looking at the words decoding them, in many cases producing the sign. Those of you who are signers will have recognized her signing the word dog, cat, Mommy, and a variety of other words as she's read those words and then matching them with the pictures in front of her. Now as I indicated what we wanted to do with Krista very early on was to get her involved in reading activities so that she would really understand the purpose of reading, really be motivated and really see how meaningful it could be for her. So we developed a wide range of books for her often about her life experiences, and we're going to watch a clip of her in a minute in a shared reading task reading a book called Krista's Summer. It has photographs of her in a variety of summer activities. Again, as with our other shared reading activities you're going to see that some of the words are highlighted. Those are one's that she's able to produce and read, and then other words are not highlighted and those are ones where she's dependent on her partner to read the text for her.

Slide 91: Personalized books for shared reading

So her book looks something like this. We see Krista's Summer.

Slide 92: I went on a boat with Dad.

"I went on a boat with my dad."

Slide 93: I hit the ball with Mom

"I hit the ball with Mom."

Slide 94: I fished with Pappy.

"I fished with Pappy."

Slide 95: Mom helped me fish.

"Mom helped me fish."

Slide 96: Amanda was at our cabin.

"Amanda was at our cabin."

Slide 97: Mom, Dad, and I went on a train.

"Mom, Dad, and I went on a train" and this story goes on.

Slide 98: Example of shared reading using personalized stories

In this particular tape of shared reading you're going to see that I've introduced highly motivating situation for her. As we start out I'm actually going to cover up each of the photographs, as Krista and I look at the text together. I'm doing that so I can really get a feel for how much she's decoding without the contextual support of the photos. Then later once we've read the sentence we're going to reveal the photograph and have a chance to look at it. I'm going to read the text and pause at the highlighted words for Krista to read, and she's going to sign, and for those of you who know sign you'll see that she does use some sign approximations because of her motor impairment but those are definitely recognizable to people who know her. We'll see her in this tape signing her name, we'll see her signing I, we'll see her signing ON, we'll see her signing DADDY or an approximation of that, MOMMY which she signs over here, BALL, PAPPY and we'll see her signing HELP as well. So let's take a look at Krista in the next video.

Slide 99: Example of shared reading using personalized stories (video)

Janice: *You're going to read? Okay.*

Krista: KRISTA

Janice: {KRISTA *Krista's summer*}.

Krista: SUMMER

Janice: *Look at that. Okay. Ready, here we go. "I {WENT went}*

Krista: DAD

Janice: (pauses, points to on)

Krista: ON

Janice: {ON A BOAT WITH *on a boat with*}

Krista: DAD

Janice: {DAD *Dad*}

Krista: I

Janice: {I HIT THE *I hit the*}

Krista: BALL

Janice: {BALL WITH *ball with*}

Krista: MOM

Janice: {MOM HIT *Mom*} (boom) {I FISH WITH *I fished with*}

Krista: PAPPY

Janice: {PAPPY NOT DADDY SILLY JANICE *Pappy not Daddy silly Janice*}

Krista: HELP

Janice: {HELP ME FISH *Helped me fish*}

Krista: FISH

Janice: *How good you are, helped you fish. {A-M-A-N-D-A WAS AT THE *Amanda was at the*}*

Krista: ON

Janice: {CABIN *Cabin*}. *The cabin. Who's that?*

Krista: MOM

Janice: {MOM *Mom*}

Krista: DAD

Janice: {DAD AND *Dad and*}

Krista: I

Janice: {I *I*} *What's this word?*

Krista: I

Janice: *Look at this word. Look at this.*

Krista: ON

Janice: *On {A TRAIN a train}.*

Krista: TRAIN

Janice: *Choo-choo. Choo-choo.*

Slide 100: Case # 3-Results, After 7 months of instruction

So again we see in this tape a great example of engagement, her interest and motivation. She carries her books around with her everywhere, and anyone she sees she wants to read with them. She has a wide range of books now, twenty or thirty or forty that she reads from, and loves to share those with other people. So after seven months of instruction she knows nine letter-sound correspondences and those are listed below. She can identify those with greater than 90% accuracy. Her single word reading and decoding, she reads over 25 words independently with greater than 90% accuracy, and she's learning to decode novel words.

Slide 101: Case # 3-Results

She participates actively in shared reading as you saw from the videotape with a wide, wide range of books, and she's able to read target words fluently without contextual support. She reads with a wide range of partners, and she is highly motivated with this task. We've seen significant increases in her language skills as a result of her involvement in the literacy program. The use of written language has really helped to scaffold her language development, expanding her vocabulary and helping her to develop basic syntax, and we've seen a big impact in terms of much higher expectations in her school program as a result of her beginning to learn literacy skills.

Slide 102: Writing instruction

Now so far we've focused primarily on reading, but reading is not the only part of literacy. In fact literacy instruction needs to focus on both reading and writing, and very often writing is neglected in terms of literacy intervention especially with individuals who require AAC systems. The development of writing skills is actually a complex process that requires integration of knowledge and skills from a variety of domains. It requires world knowledge, some understanding of world experiences. It requires language skills, knowledge of vocabulary and syntax; and narrative skills, how to put together a story with a beginning, a middle, and an end. It requires phonological awareness skills, specifically phoneme segmentation skills so that if I know I want to write the word cat, I know that that's actually made up of the sounds /k a t/, and it requires knowledge of letter-sound correspondences so that once I know it's made up of the sounds /k a t/ I know that I need to select the graphemes -c-, -a-, and -t- to get those sounds. And then of course it requires knowledge to writing tools.

Slide 103: Learning to write

So the fourth case that we're going to talk about, or example, is really to illustrate the process of learning to write. This is a little boy that we began to be involved with when he had just turned two years old. He has cerebral palsy, has a tracheotomy, is not

ambulatory, has limited function with his hands although he can select from a group of about four or six, has limited facial expressions due to low tone, and he was using aided AAC to communicate; both light tech symbols/PCS symbols, as well as using a speech-generating device with Speaking Dynamically Pro software, the Mercury.

Slide 104: Baseline prior to intervention

At baseline prior to the beginning of our intervention he loved books. He read regularly with his parents who were incredibly supportive. He knew some of his letter names but not yet the sounds, and he hadn't yet developed phonological awareness skills or decoding skills.

Slide 105: Letter-sound correspondences

When we first got involved with him we encouraged family, and they were already doing this, to read, read, read with him constantly to build his language skills; vocabulary, syntax, morphology and to really do a lot of that through modeling the use of AAC symbols to communicate. We taught him phonological awareness skills with the support of his family, as with the other children that we've seen, both sound blending and phoneme segmentation, and we also taught letter-sound correspondences.

Slide 106: Literacy instruction First steps

And clearly, this little guy was also involved in learning to read and we've already seen what that reading instruction would look like. But, I want to focus in this case primarily by talking about the writing instruction that went on. And, these are the components of our writing instruction; First of all, we need to engage the student in interesting experiences. We want to build their world knowledge and their experiences so that we can ensure that they have something to write about.

Slide 107: Writing instruction

We need to provide opportunities for them to engage in meaningful writing activities, initially telling stories to adults and later engaged in patterned story telling, writer's workshop type of activities and that they always have the chance to publish the books that they're writing, use the books for reading activities, and have the opportunity to share those books with others.

Slide 108: Ensure access to writing tools

We need to ensure access to writing tools, and here you're going to need the involvement of your occupational therapist, your physical therapist to make sure that they have access to writing materials. We may require adaptations to pencils, to markers, to paintbrushes, that we also ensure access to letters and sounds through AAC systems or through traditional computers and keyboards or adapted keyboards, and that that output needs to be phoneme level output so that we select the -b- and get the sound /b/ or we select -m- and get /m/ not letter names. And, we're going to be providing access to word banks, lists of words that are really highly motivating and of interest to the individual but are very difficult or irregular to spell.

Slide 109: Writing instruction- First steps Patterned story writing

So what are our first steps in writing instruction, where did we start with Gareth? Well, by two and a half we already had started some literacy intervention with him, and the writing instruction that occurred was starting to build his idea, his knowledge of a story schema and his ability to begin to produce a story. We read familiar books with him and started with reading ones that had repeated patterns in them, such as Brown Bear, Brown Bear. We then used those as a jumping off point to build new stories with him that followed the familiar pattern of the book that he already knew and was familiar with. Within this new story we first modeled the writing process for the student and then provided slots for the student to write their part of the story. We were providing a lot of scaffolding support in terms of the development of the narrative structure. We allowed the child to choose the content but the structure of the story was already set. We then published the story, and scanned the story into the child's AAC system so that they could read it with others and have repeated readings independently themselves.

Slide 110: Purple Monkey, Purple Monkey

So in this case for example we're going to watch a videotape of Gareth. He's going to be writing his own version of the book Brown Bear, Brown Bear, and he's going to be choosing the animals he wants in the story and the colors of those animals. So his book isn't Brown Bear, Brown Bear but rather he decides that he wants a monkey to start the book, and it's going to be a purple monkey. So his story goes "Purple monkey, purple monkey what do you see? I see a..." and now Gareth's going to have the chance to fill in the next slot by deciding what animal he sees and what color that animal is going to be. And, you'll see him using both his light tech symbols/low tech symbols, to make those selections as well as his speech-generating device to make the selection of the colors. And, at the very end you're going to see him deciding who he wants to color the picture in the book.

Slide 111: Example of patterned story writing (video)

Janice: *Purple monkey, purple monkey what do you see? I see a...*

Mom: *What's going to come next?*

Janice: *Now what, we have a {HIPPO hippo}, or we could have a {MOUSE mouse}, or we could have a {ZEBRA zebra}, or we could have a {LION lion}, or we could have {SOMETHING ELSE something else}? Which one?*

Mom: *Which animal?*

Janice: *I see you looking at the lion.*

Mom: *Touch the animal you want.*

Gareth: (reaches toward zebra)

Janice: *You like the hippo? Is that what you want?*

Gareth: *ZEBRA* (continues to reach toward choice and taps zebra)

Mom and Janice: *Or the zebra*

Janice: *The zebra, okay, the zebra. Okay, I see a zebra. Now we need to decide what color our zebra's going to be. What color are you going to use, one of these or something else? One of these colors or {SOMETHING ELSE something else}?*

Gareth: *SOMETHING ELSE*

Janice: *Something else. Okay. One of these colors?*

Gareth: *"Pink"*

Janice: *You're going to do a pink zebra? I thought you might. That would be very funny.*

Mom: *Silly.*

Janice: *Okay, we will get the pink zebra. Who's going to color this one will it be {MOMMY Mommy} or {GARETH Gareth}?*

Gareth: *"Maggie"*

Mom: *You think it's funny to say Maggie*

Janice: *Maggie is not here and she cannot color.*

Mom: *Maggie can't color your picture. You're being silly.*

Janice: *You're a funny boy. Who will color?*

Gareth: *"Gareth"*

Mom: *You're teasing.*

Janice: *You're being very funny, can you see your cat coloring?*

Slide 112: Example of patterned story writing

So this is a great example again of an early writing activity. You can see Gareth really engaged in the activities, sitting on his Mom's lap using his low-tech symbols to indicate that it's the zebra that he wants next in his story so that the purple monkey's going to see a zebra, and it's not going to be a red, blue, or green zebra but rather a pink zebra that he sees. And then you see at the very end Gareth telling us that he'd like his cat to color the picture and thinking that that's quite funny and then changing his mind and deciding that he'll color the picture instead.

Slide 113: Writing instruction- Next steps

Now at two and a half Gareth's engaged in those types of early writing activities and already is beginning to develop a library of books that he's written using his AAC symbols, and these books are scanned into his AAC system so that he can independently read them back to himself, read them to his mom, or read them with others who come to visit. The next step is to move him into a little bit more complex story telling, and what we do at this stage is read familiar story books that have a fairly repetitive plot, but have a little bit more complex story schema. The book we're going to use as an example in the next videotape is PJ Funny Bunny, for those of you that don't know that story it's the story of a rabbit, PJ Funny Bunny. He decides that he does not like to be a rabbit because he does not like to have big ears, he does not like carrots, and he does not like having so many brothers and sisters. So he runs away and joins various groups of animals, and each time he joins a group of animals he lives with them for a little while but eventually decides he does not like living with them because of something that they do. So what we're going to do in this case is now build a new story with Gareth following that familiar story schema. We're going to model the writing process for him, and provide some scaffolding support for story writing as we did before, and in this case Gareth is going to choose the content, so what animal does PJ Funny Bunny go to live with and then why does he not like living with that animal.

Slide 114: Example of writing using familiar story schema

You're going to see in this videotape him deciding that PJ Funny Bunny is going to live with the horses and that he does not like living with the horses because they're too fast, he does not like that. You'll also notice in the videotape me modeling for Gareth the use

of more complex language structure so that he can see how words and symbols are put together to build language and to build written stories. So let's look at the videotape of Gareth.

Slide 115: Example of writing using familiar story schema (video)

Janice: *He might want to be a {SHEEP sheep}, baaaa, or something else?*

Gareth: *HORSE*

Janice: *To be a {HORSE horse}. That's very exciting. Why? {WHY DID PJ FUNNY BUNNY NOT LIKE Why did PJ Funny Bunny not like} the horses? {WHY WHY WHY DID PJ FUNNY BUNNY NOT LIKE Why, why, why did PJ Funny Bunny not like} the horses?*

Mom: *You see lots of new words on there, are you trying to say them?*

Janice: *Why, why, why? Sleeping, they were all sleeping and PJ Funny Bunny did not like that?*

Gareth: *FAST*

Janice: *They were too {FAST fast}! They were galloping around and poor PJ Funny Bunny he did not like that. They were too fast.*

Slide 116: Example of writing using familiar story schema

So again a great example of Gareth writing his own story, deciding that PJ Funny Bunny is going to go and live with the horses, but then he does not like living with the horses because they are too fast.

Slide 117: PJ Funny Bunny

His story goes on as you're going to see on these slides, PJ Funny Bunny then went to live the monsters, but he did not like living with the monsters because they were too silly. So PJ Funny Bunny said, "I don't want to be a monster, I want to be a...

Slide 118: PJ Funny Bunny

...pig." And PJ Funny Bunny goes off to live with the pigs. Again, as you can see from these slides we've taken his story that he wrote, scanned it into his computer system and it's there so that he can read it independently, that he can read it with others, and have that shared reading experience.

Slide 119: Writing instruction: Next steps

Now we obviously want to move on and expand writing experiences so that Gareth is able to share his own experiences, talk about imaginative stories, etcetera. We use photos, we'll use the student's experiences, a variety of pictures as prompts and encourage the student to write stories. And this one that we're going to see is with Gareth at age three and a half so about a year after we started writing instruction with him. You're going to see us modeling the writing process for him. By this stage he knows a lot of his letter-sound correspondences, and we're going to see him starting to use letters and sounds to write. We're always accepting sound spelling at this stage so we're not concerned with it being absolutely correct, but does he have the main sounds or components. We'll provide a word bank for him with irregular words, difficult words, some of the sight word vocabulary that he's developed. Provide him with opportunities to write his story and

create his story, and then opportunities for him to revise that story. Again we're always publishing them, scanning them into his AAC system and providing opportunities for repeated readings.

Slide 120: Alphabet Board

So let's look at the videotape of the story that Gareth's going to write. He's going to use an alphabet board now to write it, a low-tech board. You can see this alphabet board is set up with seven different blocks that he can choose from. Each of the blocks has somewhere between four and six blocks in it. He's going to first indicate the block that he wants and then with partner assisted scanning indicate the particular letter that he wants. And, I'm going to show you this is right before Halloween, and this is the story that he wrote.

Slide 121: Funny Waj

It's a book about a witch and he decided that the witch's name should be Waj and so the story of the book is Funny Waj by Gareth.

Slide 122: Instructor models

I started out the story and modeled for him "Once there was a witch called..." and then Gareth spelled out Waj, *W-A-J* he selected.

Slide 123: Gareth writes: "and a c-a-t"

We're then going to go on to the story. He selected this picture as the next picture in his story, and then he selected the sight word *AND* from his word bank, and then spelled out /a/, and then spelled out /k a t/ by selecting *C-A-T*, and so I recorded "and a cat."

Slide 124: Gareth writes: "and a b-a-t a r-a-t"

He chose this picture next, selected the sight word *AND*, and then the letters /a/ and then /b a t/. I recorded the letters b-a-t; /a/ and then /r a t/, and I recorded the letters r-a-t; "and a bat a rat."

Slide 125: Gareth writes: "and the b-a-d b-r f-l a-r"

And then he selected this part of the story, and he wrote and selected the sight word *AND*, *THE* and then he spelled out /b a d/, bad, and then he gave me the letters /b r /, and I knew it was /b r o/ and I could guess from the context that it might be the word broom, and he gave me *F-L* and I could guess from the context that it might be flew, and then he gave me *A-R* and I could guess from the context providing him with some options to choose that it might be the word around.

Slide 126: Funny Waj

"And then they all crashed on the cat..."

Slide 127: Funny Waj

...and they all laughed," the end of the story. And again, we scanned this into his system so he could have access to the story to read by himself or with others.

Slide 128: Example of expanding writing experiences

So here's the video of Gareth selecting on his alphabet board and writing the story Funny Waj, and this is him at three and a half.

Slide 129: Example of expanding writing experiences (video)

Janice: *Once there was a witch called Waj. I love that, a witch called Waj. She looks like a Waj. And a...*

Mom: *What comes next? You're going to spell next and to talk about the picture.*

Janice: *You want to see it again.*

Mom: *What is that? Do you want to talk about that?*

Gareth: (reaches toward c)

Mom: *Are you pointing to this one or going up?*

Gareth: (reaches to c)

Janice: *Something here. Is it this one?*

Janice: *Gareth is it this one? You need to put your hand down for a second and wait until I touch the one Gareth. Is it this one, is it this one, is it this one?*

Gareth: 'yes' (reaches toward C to indicate affirmation)

Janice: *Yes, okay, /k/. And what's the next letter, just a minute. Is it this one? You need to look.*

Mom: *Eyes looking.*

Janice: *Is it this one?*

Mom: *Is it the /a/ sound next?*

Gareth: 'yes' (looks up to indicate affirmation)

Janice: *Okay, I've got it.*

Mom: *Can you move your hand off now?*

Janice: *Okay, so I'm going to look and see what I've got. You need to look. And a /k a/...*

Mom: *What's the rest of that word?*

Janice: *We need one more part to that word.*

Mom: *What's the end of that word? Do you know? I see you looking for it.*

Janice: */k a/*

Mom: *What letter comes next. You want to pick your hand up and show us.*

Janice: *Good job. Is it this one?*

Mom: *Let's move hand back.*

Janice: *Is it this one, is it this one, is it this one, is it this one? Should I start again?*

Mom: *You're hand's stuck on your toe.*

Janice: *Is it this one, is it this one, is it this one, is it this one?*

Gareth: 'yes' (alters his breathing and reaches hand toward T to indicate affirmation).

Janice: *You want to try and get up there? Okay, can you touch?*

Gareth: *T*

Janice: *You got it, good. /k a t/. Good. And a cat, and a cat*

Janice: *You might be talking about the {MAT mat}, or maybe the {BAT bat}, or maybe the {RAT rat}.*

Mom: *You need to tell me which one you want.*

Janice: *Which one comes next?*

Mom: *That's right get it up there.*

Gareth: (reaches toward selection)

Mom: *Yep, let's get right on it.*

Gareth: *BAT* (points to selection)

Janice: *You want to do that funny one. Okay, all right, we'll paste this one in. Let's read our story so far. Once there was a witch called Waj, and a cat... Do you know what you want to say next about this picture? Once there was a witch called Waj and a cat...*

Mom: *Do you know what word you want to say?*

Janice: *Going up here? Way up? Okay, go way up.*

Gareth: (reaches to selection)

Janice: *Up to here?*

Gareth: *AND*

Janice: *And. Okay.*

Gareth: *A* (points to A)

Janice: *And then you're going to here. Is it this one? Is that the one you want? And a...*

Gareth: 'yes' (taps the board)

Janice: *Okay, let's get that down before Janice forgets. He's doing beautiful writing.*

Mom: *Mommy is very impressed.*

Janice: *Once there was witch called Waj, and a cat, and a...*

Mom: *What in that picture do you want to talk about?*

Janice: *What are you going to say next?*

Mom: *I see your arms going. Can you find the letter you want?*

Gareth: (reaches toward b)

Janice: *Is it up in here, okay?*

Mom: *Can you move your hand back please?*

Janice: *Is it this one? Is it this one? I see you getting ready. Can you look, you need to look.*

Gareth: 'yes' (taps the board to indicate affirmation)

Janice: *Okay this one, and a /b/. What letter comes next, /b/?*

Gareth: (reaches toward a)

Janice: *Up here again? Okay is it this one?*

Gareth: 'yes' (taps board to indicate affirmation)

Janice: *Yeah, okay. /b a/. Go to the next letter, you're almost done.*

Mom: */b a/*

Gareth: (reaches toward t)

Janice: *Good. Is it this one? Is it this one? Is it this one? Is it this one? Whoops, I see you're not looking anymore. We need to go again. He's actually almost getting on the letter. You know what I mean? I know it's helping his access too.*

Gareth: *T* (points to t)

Janice: *Yeah, you're right on it. And it's a /b a t/.*

Slide 130: Case #4-Results

Now, as you can see from this video Gareth with the support of his parents in the instructional program, made significant progress. By age three and a half he knew all of his letter-sound correspondences. He's able to blend sounds with greater than 90% accuracy, able to segment out sounds. He's able to decode words, regular three and four letter words, those with long vowels and silent -e-. He knows some sight words that are

difficult to decode, participates in shared reading activities. He's able as we saw to write a simple story with a beginning, a middle, and an end, and he's using sound spelling and sight words to do that writing.

Slide 131: Teaching older individuals Case #5

Now sometimes in our intervention we're not always working with young kids. Many of the tapes I've shown you so far have been of preschoolers, but very often we have students who are older and who never had the opportunity to learn to read when they were younger. And so we have been involved with a number of students who are older, and the individual that I'm going to share with you now is an adolescent who is thirteen years old. She has cerebral palsy, is not ambulatory. She's able to point with her index finger and we first got involved with her when she was being home-schooled after some significant surgery. She had previously been attending a life skills class. She uses some speech to communicate, which is dysarthric and difficult for unfamiliar people to understand, and she also uses a Dynamite.

Slide 132: Baseline prior to instruction

Prior to our instruction she was able to recognize her name in print. She knew many letter-sound correspondences, most of the consonants, but had difficulty with short vowels, and she had developed some phonological awareness skills but was not yet competent in phonological awareness, and she was not yet able to decode words.

Slide 133: Case #5 Baseline – Single word decoding

Here's a tape of her at baseline. You're going to see her trying to decode the word jog, and decode the word fan, and at this stage she's performing at less than chance levels of accuracy. So clearly she's a great candidate for literacy instruction to enhance and improve her skills.

Slide 134: Case #5 Baseline – Single word decoding (video)

Jennifer: *This is a {JOB job}, so you can see he is going to his job. This is {DOG dog}. This is {JOG jog}, so another word for running is jog. And this is {JUG jug}, like a milk jug.*

Sandra: *{JOB Job}* (points to job)

Jennifer: *This is a {FAN FAT FOOT fan, fat, foot}, and {VAN van}.*

Sandra: *{VAN Van}, van* (points to van)

Jennifer: *Point to the picture, good for you...*

Slide 135: After 20 instructional sessions

After twenty instructional sessions, our instructional sessions are somewhere between half an hour and an hour so we're talking about somewhere between ten and twenty hours of instruction Sandra knew all of her letter-sound correspondences. She was able to demonstrate phonological awareness skills, she was able to read more than seventy words independently. She was decoding novel words that used known letter-sound associations. She was participating actively in shared reading tasks and beginning to read simple texts independently.

Slide 136: Example of instruction in reading words

And here's a video of her now after twenty instructional sessions. You'll see her in this tape decoding with confidence and independently a regular consonant-vowel-consonant word that she hadn't seen before, the word cap, and her doing it quite proficiently.

Slide 137: Example of instruction in reading words (video)

Sandra: *Bed*

Jennifer: {*NAP nap*}

Sandra: *Nap*

Sandra: *Cup*

Jennifer: {*CUP cup*}

Sandra: *Cat*

Jennifer: {*CAT cat*}. *What's this?*

Sandra: /k a/

Jennifer: *What's this? {CAP NAP CUP CAT Cap. Nap, cup, cat}, and {CAP cap}. Okay, let's say the sounds.*

Sandra: /k a p/

Jennifer: *Say it again.*

Sandra: {*CAP cap*}

Jennifer: *Cap. Are you sure?*

Sandra: (nods)

Jennifer: *It's not cat?*

Sandra: (shakes her head)

Jennifer: *You're right. Way to go. Oh, you read fourteen words and you're fourteen years old. Oh my gosh! I can't believe it Sandra, you are so smart. Last word, do you think you can get it? Let's try really hard. Wow. Even if you don't get it you still got fifteen words right!*

Sandra: *Man, jog*

Jennifer: *Not jog, ran*

Sandra: *Ran*

Jennifer: *Ran, he ran away. {MAN RAN Man, ran}...*

Sandra: *Rug,*

Jennifer: {*RUG rug*}

Sandra: *Rat*

Jennifer: {*RAT rat*}. *Okay, let's say the sounds.*

Sandra: /r a n/

Jennifer: *Say it a little faster.*

Sandra: /r a n/, /ran/

Jennifer: *Which one?*

Sandra: *RAN* (points to ran)

Jennifer: *Ran. You got it! Way to go Sandra! You did so well today! Go tell our Gram.*

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Slide 138: Example of instruction in reading words

So that's a nice example of the gains in terms of her single word decoding skills.

Slide 139: Example of shared reading of story books

As with all of the individuals that we've been working with we're also looking at incorporating those decoding into shared reading, and this is a little clip of Sandra engaged in a shared reading activity. She's reading the book The Cat Sits On the Mat with Jennifer.

Slide 140: Example of shared reading of story books (video)

Jennifer: *Help me read the title of it. The*

Sandra: *The cat*

Jennifer: */s/ What word is that?*

Sandra: */s a/*

Jennifer: *Sat on the*

Sandra: *Mat*

Jennifer: *You read the title. Wow! That says it's dedicated to these people. To Sheera and Zolar. Wilma the witch has a crazy broom. It likes to fly around the room. She also has a fat... What word is this?*

Sandra: *Cat*

Jennifer: *Cat. And a pet...*

Sandra: *Rat*

Jennifer: *Rat. Wilma loves her pet...*

Sandra: *Rat.*

Jennifer: *Rat. She calls the rat my little brat. Does anyone call you a little brat? No, me either. The... look at the letters and say their sounds.*

Sandra: *Fat cat*

Jennifer: *The... you have to say the sounds.*

Sandra: */r a t/*

Jennifer: *Say it a little faster.*

Sandra: *Rat.*

Jennifer: *Good. The rat hates the...*

Sandra: *Cat*

Jennifer: *Cat.*

Slide 141: Research to practice

So again I hope it's clear to you the very nice gains that Sandra's made in her reading skills, and now that she has that foundation and has really become a reader ready to move on, develop greater fluency and really build her knowledge and her pleasure through reading and writing activities. So just to summarize we've talked a lot about our research. Obviously the important point is to translate that research to practice. We believe strongly that students who require AAC can acquire literacy skills when they're provided with effective instruction, and I think that we have demonstrated that to you today by showing you case examples of kids at a wide range of ages with various types of disabilities. We have focused on teaching them phonological awareness skills, letter-sound correspondences, decoding skills, engaging them in shared reading activities, teaching them writing skills, engaging them in a wide range of book writing and story writing activities. The research is available to help to guide in planning and implementing literacy instruction.

Slide 142: The Art and Science of Literacy Intervention

There is a science and an art to literacy intervention. The science is what we've talked about, the implementation of evidence-based instructional procedures, monitoring the effectiveness of those procedures, and always evaluating results so that we can ensure that individuals that we are working with are successfully acquiring the skills that they'll need to be functional and literate.

Slide 143: The art

But equally important to the science is the art of literacy instruction, and the art is the belief and the commitment on all of our parts to the right of all individuals to express themselves fully and to seek their full potential. And, that means providing them with opportunities to learn to read and write, and having appropriately high expectations for those individuals.

Slide 144: The commitment to literacy intervention

I wanted to end with a little clip of Sandra talking about her experiences in the literacy instruction. You're going to see her interacting with Jennifer, commenting about what the program has meant to her and the changes that she's experienced in terms of her own self-esteem and perceptions of others.

Slide 145: The commitment to literacy intervention

Sandra: *How long you helping me?*

Jennifer: *How long have I been helping already? I think we started in May, but we had a lot of breaks in there? Like you had all of June off, and then all of August off. So we really only started reading for maybe two months now. And in two months you've really learned all these words. Isn't that amazing?*

Sandra: *Yeah.*

Jennifer: *Yeah, wow. That just goes to show how smart you are.*

Sandra: *They said I'd never read.*

Jennifer: *I know they said you'd never read, and now you just proved them wrong. Isn't that cool?*

Sandra: *Yeah.*

Slide 146: The commitment to literacy intervention

So I thought it best to leave Sandra with the last words. She says, "They said I'd never learn to read" and Jennifer responds, "Well, you just proved them wrong," and so she did.

Slide 147: Lindsay, 1990

Peter Lindsay has said that teaching literacy skills is the single most empowering thing that we can do for individuals who require AAC. It provides access to a wide range of educational opportunities, employment opportunities, access to the Internet, increases communicative competence in individuals who require AAC, and most importantly builds self-esteem and enhances competence and changes the perceptions of others.

Slide 148: www.aac-rerc.org

Thank you so much. For further information please feel free to visit the website of the AAC RERC and the website is listed on the slide or if you want you can get in touch with me individually if you have any questions. Again, thanks so much for joining us, and good luck with your literacy interventions. Thank you.

Slide 149: Selected References

Slide 150: Selected References

Slide 151: Literacy Webcast Production Team