you that are with us. Tropical tomorrow Eta is not going to interfere with serving our children. This session will be recorded and will be on our FDLRS website by the end of next week, if you would like to watch it again, you may access it and if you have any colleagues that are unable to join us today, please make sure you can tell them where they can find it next week. We are so thankful that you are with us today. We have an amazing group of experts to come to share their knowledge with you today. We have Karrie Musgrove, Christy Whitfield and Shannon McCosker. We have Dr. Slinger and she will be sharing information on the brain and dyslexia, something we are most interested in listening to. We have a member of the FDLRS administration project who will be sharing information on dyslexia. Today is jam packed with great information for queue to take back and implement in your homes. We have parent, administrators, discretionary project representatives, so our audience is enterprised from different individuals who provide quality programs and services to students with special needs, so thank you again for joining us. I need to give a big thank you shout out to Tracy of the FDLRS project. Tracy has been coordinating the series for you and our final session will be on January 14, so mark your calendars. The registration is up on our website, for the January 14, the final session in the series. I have a feeling we may be repeating this again next year, we have had great feedback from all of you. Also, we want to give a shout out to the fast fingered team members of the administration project that is Sara, Kim, Shannon and who are working behind the scenes to assist us today and we thank them for that. We know several of you have driven through rain and palm fronds on the road, so making it through the storm to be with us. Glen, we are glad you are here and you will be able to access it at a later date as well. If you would like a certificate of participation of today also session, you will be able to enter your information in a link that we will provide at 11:30. It will be on the evaluation. Stay was until the end and you have the link to be able to submit your information, so you will receive an automatic certificate of participation upon the conclusion of our webinar. It is our pleasure to serve at the pleasure of the bureau. There are 19 associate centers throughout the state covering Florida's districts, in addition to that, we have six multidisciplinary centers and we have two specialized center, one for the deaf and hard of hearing and one for those working with visual impairment, so our FDLRS network is here to serve you. If someone could opportunity in the chat box, our website is FDLRS.org. And you can click on that an if you click on final a center, you can pull it up by your district and it will have your contact information, e-mail, phone number, etc. You will find on the home page at the top of the website, a chat that says recorded webinars and we have been fortunate enough to collaborate with a number of projects in addition to our own members to provide several webinars for educators and parents and we beefed that up since March of last year. I wonder why. Anyway, there are a number of different recorded webinars available to you. Please feel free to access them at any time, go to FDLRS.org and click on recorded webinars and click on the parent tab or the educators tab and you are welcome to view that at your leisure. We are so glad to collaborate with our colleagues. So without further ado, we have a packed agenda. We shall going to turn it over to our first speaker, Dr. Anne Marie Slinger who will switch over to her layout. Anne Marie is located at the University and Director of the center. She is a clinical assistant professor at the department of pediatrics and has been a long-standing member of our organization for years. Dr. Slinger's expertise and commitment and passion for working with children with special needs is second to none and we know you're going to thoroughly enjoy her presentation this morning. We have set up a Q&A session, so should you have a question for Dr. Slinger during her presentation, we ask that you type it in the question pod below her beautiful picture and we will be gathering the questions so when Dr. Slinger is ready to take questions, we can bring them up ready for her to respond to. If you have any questions, feel free to type them in the Q&A pod and she will be responding to them at the end. Thank you for joining us this morning and take it away. >> Dr. Slinger: Good morning, everyone. Can everyone hear me OK? I see comments of audio going out. OK, thank you. It looks like we have a large number of participants and it looks like we have parents and other discretion education projects folks and educators and I'm thrilled to be able to speak with you today about a topic that is certainly one that is generated a lot of interest over the past number of years and which there is a lot of questions, so as you can see from the title, we are going to be focusing on dyslexia medical implications and brain research. Oh, I need to be sure I'm forwarding. Here, you will see an outline of what we will be covering. We will be delving into essentially what we learned from brain research on dyslexia, what the medical implications are and I will be answering questions that come up whether it is a medical disorder and what the role of a physician may be. Something to be aware of is that I'll be including until here terms that might be unfamiliar and the purpose is to ensure that as we're talking about brain research, you have a clear idea of what is being referenced, so as we go along, terms that are important of the broader discussion will be explained. And you will see the slides have a good bit of information and the slides themselves are intended to serve as reference points to anchor the broad threat of the discussion. They are not meant to be the main focus of the discussion and will include more information that we're covering. The focus is what is cede and following the thread of the discussion and my hope is at the end of this talk, you'll be brimming with questions that will inspire you to delve into the detailed resources that will include in the handout that is included in the little handout, file four. If you go to the are references, you will have more information than you could possibly imagine about these topics and I hope you are inspired to do so. That is my hope as we barely scratch the surface of this topic. So, as I think most of you already know, dyslexia means difficulty with words and dyslexia is a learning difficult that is classified by difficulty with reading and spelling words. In fact, dyslexia is the most common learning disability and it affects 5%-20% of school-aged children and of children who are receiving exceptional Student Services there are about sent mill who receive those services, 34% of them have the learning disability and of the 34%, 84% of them are struggling with reading, so it is a common problem. What has brain research revealed about this common condition? Specifically, the questions we will be exploring today, because it is a broad topic are the ones I thought would be most relevant to everyone, what does reading acquisition involve? How does a brain learn to read? Why do children with dyslexia struggle to read? Are the brains of non-readers and struggling readers different? And does the effect of the brain change the brain? For those who do not struggle to read, reading may seem like an effortless process. It is not a skill that brains acquire without considerable effort and instruction. As illustrated here, reading and writing are a means of communication that humans invented only by 5,000 or 6,000 years ago. In contrast, our brains evolve to be able to speak and we develop the ability to communicate using words, about 100,000 years ago, and this spoken language ability and this is a key concept, is the foundation of which written language or reading, spelling and written expression is built. And to understand what happens in the brains and the brains of our students, as we acquire these skills, we need to consider an aspect of knowledge, which is a term that refers to the sound structure of language and more specifically, the part of the language we're going to be focusing on is phone know logical awareness. Phonological awareness begins with awareness of sounds and structure of words, which phonemes. For example, the word chimp has four phonemes, and when we talk about Phonological awareness, we're talking about where we can take apart a word that is a clump of articulated sounds and break it apart and be able to perceive and break apart these words in the most indiscernible units of sound. Why is phonemic awareness important to reading? It is key to grasping phonics, being able to recognize that letters and letter combinations represent the individual sounds of phonemes as spoken language that is why it this is so important. To become proficient readers, we need to be able to recognize and rapidly link all of the letters that you see on this page, all of the representations of letters an sounds that you see here and English is one of though challenging languages where will we have 26 letters that are combined in various ways to represent the 44 phonemes of spoken language. English is more complicated than many of the languages, because the letter correspondents vary. The sound F. may be spelled with an F. as in fan or it may be spelled with two F.'s as in cliff or PH, PH may be the so called graphpheme to represent the word phone. Why is this? Because English evolved from combination of several languages and its diverse origin, so words in English come from Anglo-Saxon roots, as well as Latin and Greek. students, in order to make sense of this, as you can imagine, need to understand and we taught about the structure of language and how it affects spelling if not they are often confused and befuddled by the whole thing. In addition to instruction that focuses on Phonological awareness, they have to be taught about autographic expectancies and the rules of English. Here's one. English words do not end in V., so a word like love, based on the spelling would be pronounced like loave and halve, have this E. that is doing nothing at the end. It is turning into a word that follows the word of English. Again, if a student has not been explicitly told that, our language does not make sense. So, in addition to focusing on Phonology, literacy needs to teach students about, not only sound structure, but word, phrase and sentence structure, as well as the meaning conveyed by the words, phrases and sentences. We need to grasp more than just phonics and what we understand as being crucial components of literacies, Phonology, sound symbol instruction. So teaching reading and acquiring reading, teaching reading is definitely rocket science. For those of you who have not had a chance to look at this, I suggest that you do because it is terrific. So to become a skilled reader, our brains must learn a great deal and what we're taught and how we're taught makes a difference. How does the brain learn to read? Perhaps more accurately, how does a brain respond to being taught to read? So first a brief orientation, so we're all on the same page, the human brain consists of two lobes, there is a right and left hemisphere and illustrated here, you can see, in fact, this part of the brain represents the front of the brain, so if you put your hand in your forehead that is where the frontal lobe is. The back of the brain is called the occipital cortex and that is where vision senses are located. There is a front part of the brain, back brain and the left side and the right side and we call each of these different lobes, hemispheres. If we look below this outer part of the brain, which we call a cortex, we see what is called wide matter that contain nerves that connect the different part of the brain and there is gray matter and underneath that there are fibers that connect different parts of the brain. So, the occipital lobe here in the back of the brain is where we find the visual cortex. The temporal cortex in the left hemisphere shown here, part of a dedicated network for spoken language and is mentioned earlier. Our brains are wired to acquire spoken language, so from birth, we're equipped from the infrastructure and tools necessary to learn everything we need to know to understand what others are doing and just abreast ourselves in spoken words. So, exposure in the case of spoken language, exposure through experience with other humans who are communicating with us and with whom we are communicating of a time is all that is required for our brains to acquire spoken language. Our kids develop the ability to recognize speech and speak by being talked to and interactions that we have with them and the same can be said for vision. The major visual systems are already in place and all that is required is exposure by visual input in the world around us and this is in direct contrast to written language and reading and spelling. There is no dedicated network. As many of you and many of us know as our experience as students and parents, being read to in books that are in print is insufficient for us to develop the ability to read and write. Being able to read and write is teaching about letter and letter sounds and the rules about the letter system. It is through that process that the brain is rewired to develop this new network that connects vision system and our language system and that is what happens as required reading. So, by the time a child gets to school, their brains knew about the parts of the language line Phonology and we have language centers already in place and as described by a renowned neuroscientist and researcher, the acquisition of literacy involves creating a new visual input pathway into our language system. So, learning to read requires a development of what we might consider an interface or means by which the vision system can communicate with the language system. The otherwise, essentially when we think of letters, it is these squiggles or symbols and we have to be able to link these symbols to units of sound or meeting in the language cortex. Teaching students about the letters of the alphabet, letter names and letter sounds sets in place this audio/visual mapping that we really call sound symbol mapping or correspondence, whereby the elementary sounds of the language or phonemes are linked to the visual representation or letters. Highlighted here is a region of the brain often called the visual word form area or termed the brain's letter box where we store, as we acquire knowledge and the ability to recognize letter, that is where the information about letters is stored. The really critical step in learning to read is linking these what we call these representations of letter and letter strings to the Phonological part of the brain. So, our brains develop the infrastructure in order to become readers by linking these areas and as it becomes more efficient, it becomes something that we no longer have to think about as we do it. Overtime, we develop a really detailed reading network that looks like this essentially. This figure basically approximates a figure that you will find for those who are interested in reading more about this, there is a terrific article in which you find the original figure that illustrates the major left hemisphere regions involved in a fully developed reading brain. To summarize, the process starts with a written word being projected to the back of the eye or retina and then being projected to this part of the brain. So, the word comes in and it is routed to the brain's letter box and from there, that information is connected to the part of our brain that stores information about phonemes and the Phonological about language and it is distributed to the parts of the brain that are involved in accessing meaning and to the areas that allow us to sequence the phonemes or sounds in a manner that allows us to articulate if we're reading aloud. So this has to be formed and set up and it requires explicit teaching in order for this to happen effectively that is the basic take home. It is performing connectivity in the language areas and word pronunciation and articulation, as well as information that contain information about word meaning. As I said, this is an article that I can access online that you can find helpful. If we pair inside of the brain, we have been looking at the surface of the brain, what we see here is a change in these white matter, these cracks that can interconnect parts of the brain and for example, there are studies that have shown that individuals develop the ability or start to learn to read there is this track here helps us form efficient, strong linkages between the visual word form area and the area that encodes sounds and phonology. When we look at the brain, what brain research shows is there are changes stimulated by the process of learning to read and we get this wonderful highway that connects all of these areas that allows for efficient reading. So, when we look at a word "book" written on the page, we can decode that and say that word, all of that has to happen in order for us to do that. So, before we go on, I want to see if there are questions that have come up that would be helpful for me to address or anything you want me to review before we get into why kids with dyslexia struggle to read? >> Thank you. That information was fantastic and we appreciate it. We do have one question that came in and it was do you think we will shift away from teaching phonics into teaching reading has contributed to the increase of student was disabilities in reading? >> Dr. Slinger: No question about it and there is an article that I put in the handout that will be helpful in addressing that. Here is why it is really unhelpful a whole word approach looks at word and sees it as an entire unit and it reads it based on the shape of the word. What the brain science tells us is what our brain is doing, it is processing every single letter that we see until parallel and converting each of those letters into a sound in a very, very efficient manner. It feels like we are reading the whole word, we are just seeing it and we know it. In fact, our brain is doing this extraordinarily rapid conversion of letters into sound all at once in parallel to allow for that to happen. For words that are longer that are more complicated, multi-syllablic words, we have top-down activity from the part of the brain involved in executive functioning and tension that holds the bigger chunks in a serial manner to allow us to do a complex task. Whole-word reading does not train the reading circuit that, you know, expert readers use. It is not the approach that is being shown to be an effective approach and I think, especially for kids with dyslexia, it tends to shift them into strategies that leads to real struggles all the way along and not an efficient process. >> Thank you very much for that response. We have had several comments about this information being useful and helpful. Can you talk about the comorbidities between dyslexia and speech disorders, language disorders and early ear infections? >> Dr. Slinger: That is something we will cover in part of the presentation in medical implications, if it is OK we will wait until then. >> How does teaching sight words fit into all of this? >> Dr. Slinger: So I would say there isn't such a thing as being a sight word other than memorizing the shape of. As I said, the brain pays attention to every letter. Sight words are words that have more complex and follow different rules, for example, the words that because the way English words are spelled because of this diverse etymology or origin there are words that don't follow the usual rules. The major of words in the English language, if we are taught all of these autographic expectancies that govern how rules are spelled, we can figure it out. The last thing we want to do is try to, you know, use flashcards and other things to get kids to memorize a whole word without it being -- we want instead teach them the rules that determine how a rule is spelled and pronounced, so you know, we could talk about this for a very long time, but I encourage everybody to look at those articles that are referenced in the handout and that teaching reading is rocket science is probably the most pivotological and it is help informal addressing these questions. I'm going to go on and I will come back. Just as improving reading, it is so easy to look at this and get distracted. If we include in our instruction, I'm going to go back if that is OK. Oh, yes, if we include all of these components in our instruction, oh, dear, if we focus on phonology of syllable instruction, if we teach them about phonemes or small meaning of words that include roots, prefixes and suffixes, if we learn these things, they become efficient, fluent reader's, but if these things are not in place, it becomes very challenging to be a Fluent reader. Addressing these instructions and components leads to fluent reading. Are the brains of non-readers and struggling readers different? I want to be sure I have not lost my place, because I'm trying to make sure I stay on track. So, when it comes to children with dyslexia, the core deficit that is being identified is the deficit of the component of the Phonologic of the language and it starts with awareness of individual words and sentences then the smaller you chunks we call syllables, for example, in the word cupcake, there are two syllables that we can clap out. It then evolves into an awareness of the sound chunks within syllables. They will be called onset and rhyme and the rhyme part is the part of the word that rhymes, so for example, in the word cat, at is the rhyme and the highest, most sophisticated of phonological awareness and the important thing to know about the development of the phonological awareness is facilitated and comes about through reading instruction. If we look at individuals who never learned to read, in fact, and never been to school and we look at their phoneological awareness, they have real difficulty in being able to identify words. Through reading instruction, we need to have this basic phonological awareness in place, through reading instruction, it results in a fine-tuning and fine-grained representation of phonemes all the way to the phonic level, so the two go hand-in-hand. So, why does weak phoneme mic awareness result in problems learning to read and spell? Learning to read and spell means grasping the fact that this relationship, these letters on a page or scientific term are really linked and that's what these are doing. They are representing the sounds in a spoken language and it makes sense that if we have a weak grasp of phonemic awareness and if there has been any, if we haven't received explicit, systemic instruction that helps us map these phonemes to letters then we will struggle to sound out unfamiliar words and will be inaccurate in our reading and disfluent. As a result of that, if we are bogged down in trying to sound out the words and figure out the sound symbol correspondences, a lot of the meaning will be lost. We will be so tied up in the process that we won't be accessing and thinking and processing the meaning of what we read and that is why you see reading comprehension problems in kids that are strugglers readers. This is not where things start, it is a result of word reading, accuracy and fluency and oftenle spelling the most difficult. We listen to a word and we segment that word in our mind, in our brains into individual phonemes and attach those phonemes to the symbols that they represent and to do that correctly, we need to know about the rules that Gove spelling in English. So, if we hear the given word for example, that may have a Latin or Greek root and we hear the sound as in F., we may think in this case, it is probably spelled with a PH, because of the origin of that word. That is why literacy in children teaches this explicitly. What you will see in this slide is a synopsis of all of the findings of the research that has been done to look at the structure and the functional connectivity of the brain. What they have shown is there are differences in the brain structure function and connectivity within the reading network of individuals with dyslexia versus typical readers. For example, when it comes to brain structure, they found differences in part of a brain that is the part of the brain where we encode phonemes, where instead of there being asymmetry in most individuals where it is bigger on the left than the right, you can see it can asymmetrical. Similarly, if we look at brainiacty vacation studies, we see what is revealed is and under activation in the temporal regions here and they are activated until sprinklings dyslexia. We see the area that contains the word form area, as well as the frontal region here that is used to sequence phonemes and it is involved in helping us produce words. The reading net work that we see as individuals engage in reading related tasks as well as reading tasks look different. There seems to be something that is different about the structure, as illustrated before, but also in how these areas connect and their active during the reading process. If we delve deeper into the brain as well, what studies have shown is there are differences in terms of the strength of the connections and this little image here shows what it looks like if you do these imaging studies. You see this extraordinary network of fibers that connecting different parts of the brain and the strength of those connections can be assessed using specific imaging technology that allows us to gain insight into where things are different. What I will quickly mention, what we cannot do at this point is use imaging technology to diagnosis for example, dyslexia, because at this point, we just don't have enough -- there is not enough consistency in findings and for any one individual with dyslexia, it is not that the signal of activity or the structure is going to be diagnostic tool. Perhaps one day. So, does effective instruction change a brain? What I have been asked, gosh, if the brain is different and if the brain seems, you know, abnormal in some way, can individuals learn to read? And what comes up a lot as you read the literature is there is still a question about how much of what we describe as abnormalities or differences in the brains of struggling readers versus typical readers is related to the reading experience and other factors. Certainly, studies have tried to account for that by looking at children who have no reading experience and following them overtime, but we're a long way away from being able to clearly answer a lot of these questions. The bottom line is though is what studies have shown is instruction can yield clangs and yield significant improvement in reading accuracy, if it is intensive enough and if it includes systemic instruction and phonological instruction and decoding and this changes in the brain function, so the brains of individuals with dyslexia who receive that kind of instruction looks more like the brains of individuals who are not struggling readers. Is dyslexia given it involves the brain and lots of findings related to differences in the brain, is it a medical disorder, condition? And what is the role of the physician? Well, dyslexia which really is usually defined as a specific learning disorder is certainly something that is included in the diagnostic and statistical manner of disorders that all clinicians use in making diagnoses. In fact, if you look at the most widely cited definition of dyslexia, it is described as a neurobiological disorder, which isn't a surprise, because everything that has to do with learning involves the brain. So dyslexia, difficulty with words being a neurobiological condition, you might think this is something that needs to be diagnosed by a physician, in fact, educators and instructional personnel are experts in reading and in spelling and problems in reading and spelling words. So, I think is a key take home here and it is something I encounter over the past 20 years or so, all of the time is this myth that dyslexia can only diagnosed by a doctor. Doctors like myself identification and treatment of dyslexia falls predominately in the educational realm. It is true that based on a study that was done quite some time ago, when a child is struggling the school, they are more likely to turn to a parent or a teacher, so they do have a role in helping figure this out. That role involves identifying early warnings and risk factors. Individuals with a positive diagnosis of reading problems is more likely to have issues. Children with language disorders and who have a history of a whole host of other medical and psychosocial problems, as well as sleep disorders are far more likely to struggle in school than individuals who don't and part of the role of a physician is to identify medical problems and social, emotional factors that might be contributing to a child's learning problems and address those to try to Aileen -P crate them so a child can focus in school and benefit from the instruction they are receiving. If we are identifying things that need to be identified further, part of our role is to facilitate a family accessing the appropriate refer cite for assessment and also to help parent involvement in school and school support for their child, because that in itself is shown to play a significant role in a child's educational progress and success. The signs and symptoms that we will be looking for are the ones we anticipate in a preschooler, oftentimes these are kids who have trouble attending to the sounds and words and for example, they don't inenjoy listening to nursery rhymes, because they don't get the fact that they are words that rhyme and another early warning sign can be difficulty learning letters an letter names. In a school-aged child, they present more typically with difficulty with letter correspondence, grasping and automating the alphabet principle, trouble with influent and word reading and one of the things that unfortunately tends to happen as a child is not doing well and a child becomes disengaged, instead of being identified as a struggling learner, they may be identified as being unmotivated to or lazy and that results in a whole host of problems. The pediatrician who is involved in that child's life and involved in helping a family is ensure they are aware of these things and guide them accordingly. And this is really what I use and I share with all of the folks that I work with. These are the things that I consider when a child comes to see us and there is a question about their learning. We ask about school attendance, because we know if a child misses more than nine days, which is 5% of the school year and 18 days, which is 10% that is going to affect their learning and school performance. We ask about a history and the factors that might be playing a role in terms of putting a child at neurobiological risk. We ask about psychosocial factors, including something that is relate to what we might be resilient in struggles and we call that mindset and there is a whole host of literature on growth mindset. We look at cognitive factors that might be playing a role in a child struggling in school. This is what the role of the physician would be, to be considering all of these factors that might be impacting a child's learning. A key thing to keep in mind that dyslexia and other difficulties exist in a continuum. It is not like if a child does this then the child has dyslexia and if they don't, they don't. Symptoms may vary and change overtime and respond to the interventions the child has received, so depending on what interventions a person has received, any testing that can be done may look different and this can serve as a host t source of confusion. It is one of the reasons why if anyone has been involved until evaluating a child or a parent, if any of you are parents have referred your child or your child is being referred to see somebody, part of what needs to be included in the evaluation process is we're looking at all of the child's records to see what interventions they have received over what period of time to understand what the factors may be to contributing to a child's difficulties withing difficulties. Certainly, if a child has, for example, attention problems and there is a high occurrence of a disorder with dyslexia, the study varies 15%-40% depending on what populations one is looking at. There is co-occurring symptoms and one has to consider those to ensure a child is best prepared for learning in the classroom. One of the other questions that is one that has created a lot of confusion and misinformation is the question of dyslexia and vision and vision therapy. So the question that gets asked, is dyslexia a vision problem? This led to the American academy of pediatrics and the American association of enThomassology and optometry getting together and putting together a joint statement after reviewing all of the literature. I have basically exited from this joint statement, it says vision problems can interfere with the problems of reading. You can see it wear glasses, and if I don't wear them everything is blurry, children with dyslexia has the same ocular health as children without so much problems. Science does not support that training glasses, prisms and colored lenses and colored over lays there is no sciencic support for the claim that these help kids that are strugglers readers and learners. Dyslexia is no a vision-based learning disorder. It is not to say reading is not a multisensory process that certainly involves linking the visual system with a language system, so it is not that our visual system is not evolved, the dyslexia in of itself is not a problem with vision and that is important because what can happen is if this myth is perpetuated, people are pursuing treatments that and spending a lot of time and research and efforts and resources and pursuing treatment that is not going to be helpful for a child. Why is it that we often hear that kids with dyslexia or reading troubles are flipping letters and seeing things backwards? It makes sense because our brains, in fact, designed in such a way that we recognize objects even when one is and we don't distinguish object where is there is a mirror image. If we see a tiger, whether it is in this orientation or this orientation, we recognize it and see it as the same thing and it is the same thing with chairs. That orientation or this orientation, we recognize it as the same thing. In the case of letters, our brains do that, but obviously that is something that has to change until order for us to become effective readers and spellers. And in order for our brains to learn what we call -- it has to do with something called mirror invariance and in order for that to change requires that specific instruction that helps our brain to start to distinguish a D. and a B. and a P., and a Q. are different even though in all the other instances, it sees them as the same. We don't want them to think it is different. In this instance, our brain needs to be able to do that. What is interesting, I encourage you to read this article. It is available and I can show it here, but if you read this, I think you will find it fascinating. It illustrates through literacy acquisition as the key aspects of alphabetization helps to connect the visual representations with phonemes. That helps to train our brains to start to distinguish letters where will normally there wouldn't be -- we wouldn't be able to distinguish or discriminate between the two are there are left, right orientation differences. As our brain is trained to associate letters with phonemes, as well as with different motor ocular gestures, as well a graphic gestures related to hand writing, it is this multisensory thing, it allows our brain to start to distinguish between D.'s and B.'s and other letters that are mirror images of themselves. And this underscores the importance of multisensory instruction, because multisensory instruction, because if it is dub properly and I encourage everyone to take a look at this short video from Ohio University. Multisensory instruction helps our brain to do what it needs to do here to connect letters with the motor with the sounds, the sounds with the motor auditory in the sounds producing those sounds, our brain, essentially neurons fire together wire together and our brain is able to link all of these things together to efficiently connect them if we receive multisensory instruction that exposes us to these things in a co-her rent way, so eventually for every phoneme represented by a motor auditory gesture. It is linked to the mouths when we make the sound, if we're making mouth movements and you guys can try that at home, AAAHH, we feel what our mouth is doing, we feel the sound and we're getting that back to our brains and as infants will do from the time they are tiny, when they hear a sound and if we are leaning towards them and repeating AAAHH to them, they are staring at our mouths and mapping the auditory gestures that they are seeing as they are hearing the sound and moving their mouths. Phonemes are speech gestures and effective multisensory instruction that links these two help to create the amazing network that we talked about. Keep in mind and this is shown in the video, if we are saying a sound and physical we are wiggling our hands and jumping back and forth that is not linking these sounds with actual things that are relevant for brain structure and function. That is moving a limb, but when it comes to mapping the sounds to the letters and that sort of thing, in that situation, it certainly makes sense to be saying the letter name, the letter sound, writing the letter as we do that and that motor movement will help imprint the letter and link it with the other key components and what studies have shown is that handwriting in the process of helping to teach kids about letter and letter sounds can help with the left, right, orientation issue that some kids can have. So the bottom line is reading is, in fact, and teaching reading, reading is a complex multisensory task that involves mapping these letters to sounds and a whole host of other things. In order for kids to really these skills effectively, they really need an extraordinarily that has this knowledge of language and learning and explicit knowledge of language and learning that is required to be able to provide instruction that addresses all of these components. One of the reasons that for me it's something that I think about probably day and night is that the outcomes for the kids who are struggling readers are not good. They are far more likely to leave school early, to be incarcerated and teen parents and have poor outcomes. So, as a parent, what would we do if we are worried about our child having dyslexia? The multi-tiered system of support. There is a video that helps to elaborate on that as well, what do we do as parents. Certainly, speak to your child's doctor, but more importantly talk to your student's teacher and the school counselor. Share your concerns and talk about what you're seeing, talk about the signs or symptoms, any benchmark assessment your child has completed and discuss any supports that may be beneficial to target these skills that is the key step for parents. So thank you and any questions at all? In the handout, I see Melissa, speech to print second edition is a terrific, terrific resource. >> Anne Marie, you are amazing. I am looking in the Q&A section and I don't see any right now. Ladies and gentlemen, please join me in using the emoticon at the top of your screen and giving Dr. Slinger a round of applause. Your expertise and your ability to take a complicated topic and make it understandable for individuals in a variety of capacities is truly second to none. I think I can sit and listen to you all day, so I thank you so much. The team Thank you you and our participants joined in extending appreciation as well. >> Dr. Slinger: In the handout, the take home as well as resources that I hope you find really useful that goes into this topic in a great deal of detail and it includes references that I think -- I hope will be helpful. They are wonderful videos and review this topic in lots more detail and there are books and articles that teachers and parents would find very useful. So, thank you very, very much for allowing me to be part of that. I see a question, what age should neuroreversal stop? Usually, it takes three or four years of reading instruction to imprint and have things that are firmed up, so when we look at letters we can discriminate a B. from a D. and it is usually up around age 8 or 9. It is not unusual to see the process no firmly in place. What is interesting is for individuals who when they do studies on individuals who never learned to read or write, who have not going to school and don't have reading and writing skills, if they continually confuse B.'s and D.'s. Their brains never learn to distinguish between the mirror images. For folks who are struggling readers, we see that persist for a really long time. >> Dr. Slinger we have had a couple of questions come in real quick. What about the connection between dyslexia and hand writing problems? >> Dr. Slinger: I want to know what you mean about handwriting problems. The graphic motor problems, sloppy handwriting is pretty common in kids who have attention problems. It has to do with the dopamine system that controls these things. When I see a child with reading problems who has handwriting problems that is one of the things I'm going to be exploring or looking at. It's a cause of dyslexia, but certainly from the studies that are being done, it appears that focusing on handwriting and teaching kids about letter formation when they are saying the letters and that sort of thing helps, because it is a form of multisensory instruction, it helps to cement these phoneme, graphing correspondences and enhance and accelerate the patrols of discrimination of letters. It is a helpful thing and I know oftentimes that doesn't occur too much these days. >> Thank you very much. Should students be screened for dyslexia and if so, what is the best tool to do so and who should conduct the screening? >> Dr. Slinger: I'm going to refer you to the handout because that is a kind of -- there is not a clearance and anything I would stay in this short time would be short changing you. If you were to look at the references, for example, there are sever Department of Educations across the U.S., including Mississippi, which is the first and they are updating theirs that have so-call dyslexia handbooks. In the hand books, they outline the screening process they use. In fact, some are available free of charge online. There are others that are commercial ones that I will not mention here that can be purchased as screening tools. I certainly do think and schools do this, if you were to look at the assessments that are done within the state of Florida to screen every kindergartener, it includes assessment of a child's phonemic awareness, so that information is being gathered for any child in a public school setting. It has been in place for a very long time now. I do think the screening that is done by the way of benchmark assessments and other tools from the time a child enters kindergarten and it is how that information is used and interpreted and implemented in guiding any interventions that matters. >> Thank you. We have two more questions and we will be moving on. How much time should be spent on phonological awareness and English language daily for first graders? >> Dr. Slinger: I think we should be focusing on that well beyond first grade, because it is something -- because of the complexity of our language and the new things that have to be taught overtime. I really think that is an individual student question, because the amount of time that needs to be spent has to differ with differentiated instruction based on the student and the student population and the needs. The amount of time that needs to be spent is the amount of time that kids need to be proficient in letter. Correspondence and decoding words. I don't think there is a straightforward answer there. There will are guides that "teaching is rocket science" a really good guide. >> Thank you very much. There is the last question, have ENT's begun to alert if parents about chronic if ear infections and also should chronic ear infections be teach t treated more aggressively with tubes? >> Dr. Slinger: That is a difficult question to answer. Remember that phonemes are not simply sounds. They are gestures and you can have a child who has, you know,. Chronic owe tie sis media, can affect muffled sounds and hearing, but if a child has enough in the way of face-to-face input that focuses on the motor auditory gestures and other things, they can develop phonological awareness. If a kid does have a hearing impairment that needs to be addressed. Not that I can say other organizations, I haven't done research on this lately, but will is new guidance on treating this earlier in order to address phenommic. >> Again, Dr. Slinger thank you so very, very much. If you take a look at the file share pod at the bottom of the row where Dr. Slinger's picture is at the top, go to the bottom and you will see files four. The firsthandout is the handout that Dr. Slinger has been referencing. If you click on the handout and download the files, you will be able to download it to your computer. The second item is the assistive technology presentation that will be closing our session today and the third one is the dyslexia webinar session number two, which is what we're going to be transitioning to right now. We are privileged to have Christy Whitfield and Karrie Musgrove will be presenting our next section will be just as much interest to you as this one was. Dr. Slinger, we thank you so much and Christy, thank you very much. >> Thank you. It doesn't matter how long she talk or where she talks, I can sit and listen to her and I always walk away learning something new every time, so thank you again for joining us today. Now, that we have heard of the medical implications of dyslexia, we are going to go into the instructional needs for students with dyslexia. Brain imaging has been used to reveal individuals with dyslexia access different areas of the brain during reading. Research has proven that the areas of the brain that controls speech, language, and reading development are primarily located on if left side of the brain. In the pictures provided here, the colored areas on the brain images represent the areas of stimulation during reading activities for a brain of a typical reader on the left versus the activity detected for the brain of a dyslexic reader on the right. When examining the images, obviously, it is noted a reader with dyslexia is not activating the same areas of the brain as a typical reader. Next slide. If here, we're going to take a poll. Poll number one, so prior to today, were you aware the brain research around dyslexia using M.R.I.'s? Just curious to see the responses. So, it looks as though the majority of us yes, knew it could be done through M.R.I.'s, but I'm glad those of you who didn't now have that understanding there is research there to prove some of those situations. The other question that we have is can a brain be changed by intervention? Dr. Slinger alluded to this in her presentation and we're going to also see it throughout some of the slides that I talk about. The brain does change and it does add neural pathways as children learn new knowledge and apply it. Thank you. So, we know that research has shown when interventions and strategies are provided to students that changes can be made. The image on the left depicts what can happen when a child has continuous exposure to language and print-rich environments. With every new encounter, our brains are continuing to grow with knowledge. The dendrites continue to grow and break off as new knowledge is introduced and the old knowledge is not needed anymore, so it becomes the layer effect, if you will. You may have heard it as brain plasticity and it means our brains can change overtime. The image on the right shows the newly connected and strengthened neural systems after 10 weeks of an intensive intervention, so yes, our brains can change. Next slide. As a reminder, the process that we have to make sure we follow with MTSS, just making sure we're evaluating the effectiveness of the program, the initiatives and the evidence-based interventions, it is an ongoing component of the problem solving process. It is imperative that times be established especially at the district level and identifying the identified interventions as they are needed. One key takeaway here is understanding the difference between intensive interventions of instruction and the implementation of the multisensory strategies of instruction. So here, we're going to have a little chat with our participants if and if -- well, we would like to know, how does your team at the district level or parents as well assure there is time set aside for the the process itself. When we're looking at implementing those strategies of multisensory instruction and the intensive interventions, how does your team collaborate to make sure everything is set aside to collaborate? I see common planning periods. I know many of you have support teams at the district level, definite times set aside on the calendar that are prearaged so those planning times are coming up. I have a classroom teacher that might want to check into your school leadership and see when those meetings are occurring. Definitely something you want to know about. Good job. Scheduled meetings is the most popular and making sure there is a team that addresses the need of that collaboration piece to make sure the evaluation process if is overseen.. We have one more question, what are the components are essential to making this process occur? So, at district levels and as parents, we know there are pieces and parts that must be in place in order to make it happen, so what are some of the pieces and parts you could share to make it happen. Definitely the data piece that is one of the most important, before getting started, we have to have that data that we know what we're talking about. Planning, scheduled time, teacher commitment, definitely. Connection with home, parents are definitely a part of the problem-solving process. Oh, I like the K-12 reading plan. Thank you for mentioning that. That is a key element and document in the decisions that are made. Good job. So, basically, making sure, too that the process is known across the district or in the schools and parents must be involved in that process to make sure all of the pieces and parts are there to make the puzzle complete. Moving on to the next slide, please. Before we delve into the components, I do need to mention that this presentation references the Florida standards and not the best standards and I want to make sure that is clear before I move the next slides. I do this because the Florida standards are still being taught in classes until that implementation of the best standards, which will occur for grades K-2 in the 2021-2022 school year. I wanted to make sure that was clear before we continued on. However, we know any of the ideas or strategies that are shared today can be used in any type of instructional scenario when teaching reading. Now, we're going to move on to the next part. This is the how. Physical essentially, we know we're going to use these strategies that include the ways that students can learn through student, sound, touch and movement. Before we look at each of these individually, so before we look at these individually, let's look at the components of reading as a whole. So, along the bottom, you see our foundation, which is the oral language piece. It is the first piece that students and children actually encounter with our language and it makes up our reading skills. The oral language acquisition begins at birth and incorporates the receptive and expressive understanding of sounds, words, syntax and vocabulary, so the components in blue represent the skills or the building blocks that when acquired lead to both the fluency and comprehension, so while fluency and comprehension are measurable skills that can be encouraged through specific strategies. We see these two components as essentially the outcomes of all that proceeds. So, all of the other components of reading lead to these flew went city and comprehension, so these make up the purpose or objective of reading or the ability to read and understand what is read. The necessary conjunction of each level, each reader will need the phonological awareness, phonics and word recognize nation, vocabulary, to read the sentence, the cat ran fast. I like to compare this to, I as an adult, would need the same skills to read and comprehension -P a magazine article. I'm still going to need all the pieces and parts, word recognition and vocabulary. So when thinking about a struggling reader, a student with dyslexia, it would almost be like, if you were not in the medical field and someone handed you a medical journal, I have a feeling that I, I know myself would struggle with the fluency and the comprehension of that article or journal until I actually acquired the word recognition and the vocabulary necessary and I probably would have to put that vocabulary into action to be able to let other people know I knew what the meanings of the words meant. We can sort of relay that back to a struggling reader that you hand them a text that is on grade level, but is difficult to decode. Next slide. Foundational skills that are outlined in the Florida standards right now are the print concepts, phonics and word recognition and fluency. So these are the skills that are missing usually or incomplete as a skill when there is a reading deficiency, regardless of the age of the student. What we hear is whether something is for an elementary student or is this meant for secondary students and I would like to say it is for any student that needs the skills and the reputation of the interfunctions. For according to the the skills, they cease to be explicitly taught after first, second or third grade. We recognize older students need these skills to progress, so happy to stay in the best standards there have been secondary foundational skills added to make sure we capture the needs of all students, because we know we have some of the students that get to the secondary level and they are still missing some of the foundational skills, so we were intentional with making sure those were included in the best standards. Today, we're going to focus on the use of multisensory strategies to port students in building these reading skills during the differentiated reading instruction. Next slide.. Oral language, we know is the foundation for reading and there are five components of oral language, if we first learn about language and vocabulary and sentence structure orally and we then make the connections to the printed words. Something we have to be mindful about, oral language and syntax is becoming increasingly neglected as we move into the digital age, so this is not only the most important, but as we as society. you know, capture and start to learn more and more about technology, this is the one key component that we know every child needs of in order to be successful as a reader down the road. Provided after each component of reading, what you're going to see if is a Florida standard and the activity that can be used to teach the component, so these examples give a framework for a child to use more or less if to give a story audibly, if you will. Story bird is a storytelling tool that uses technology to tell a story in arm to of laptops and it is a wonderful activity that you can do with children to increase their skills in oral language. Some of the components of storytelling, we know. Sequencing, elements of literature. details forming and using complete sentences, all of these can be scaffolded in to this skill and into this multisensory strategy that we have here. So, the one thing you have to remember, make sure you are modeling when you are repeating back this multisensory strategy, you want to let the students know that they are being heard and what they are saying and we want the students to talk. This is the oral piece. You see the picture of the Jenga game and this would be an example of a conversation that you can have with the student. The Jenga piece may be tell me about your favorite meal and most often students that are younger will give you a one-word answer, pizza. That would be the opportunity there to more or less have them or give them the example you want, by saying why don't you say it in a sentence, my favorite meal is pizza and have the student repeat it back and that just gives them not only an example, but it gives them practice in that oral piece. Next slide. Let's take a look at syntax or what we know as a sentence structure. We first learn how to comprehend a simple sentence structure. You might say, I caught the ball. As our learning increases, we learn to comprehend compound sentences that contain more than one thought. You might stay, I caught the ball and I high fived my friend and finally, you move on to a syntactical sentence, after catching the ball, I excitedly high fived my friend while celebrating the victory. You can see where it went from the simple sentence of I caught the ball to the complex sentence to much more rich vocabulary, I guess you can say. Syntax and oral language has an impact on the other yawl comprehension piece, which we talked about at the beginning where that was the end outcome. How do we teach it? Well, some of the things we have might want to do is rephrase your rules and routines to model complex text. In the classroom, it might be that you hear teachers say, come in, put your backpack away, turn in your homework, where you could change it up a little bit to say, come in, put your backpack beneath your chair and quietly submit your homework. It's almost like, not really more formal language, but you -- you're using higher words and positional words, more or less, to give them an idea of what you're trying to convey. Another example would be if you're having kids line up, so please stand behind your friends, not beside them or you could use blocks or play like Simon Says, I have seen this in classes to demonstrate practicing prepositions, so you can say hold the block above your head or put the shoulder near your shoulder, but not touching it, so you're getting very specific in a way. Speaking this way to your students or children, it takes practice, because it doesn't come naturally to do this. it is not so much that we need to talk incessantly to our students or children, but we need to be more intentional in the way we speak, so they are hearing that vocabulary and also being given the chance to use that vocabulary, if you will. So to give us a little bit of insight and research on the five key areas of oral language, we have. Mary Walsh who will is our SLP and she is going to goal into more in depth of the five key areas of oral language. Mary? >> Mary: Thank you. Let's take a minute to look at all few research studies that support the evidence for providing intervention in the five areas that the Christy mentioned, and the impact of the intervention in these areas has on reading skills. Instruction on these five areas are where SLP's are highly trained and can support all students, especially student with speech impairment or language um pairment who have reading difficulties. In this first research study noted that there is a strong correlation between phonology skills and reading development. This next research study helps you to see the effect that morphology knowledge has on literacy in three areas, word recognition, comprehension and motivation to read. So, when a student understands the meaning of word parts or affixes, this adds increased level of comprehension, which leads to motivation to read. Next slide, please. In the next research study, we'll find evidence that supports the idea that understanding vocabulary and syntax or the structural features of language are foundational to reading. And the next slide. Semantics or understanding of word meanings are critical for reading comprehension as indicated by the work of Elizabeth Beck. Last slide for me, we have experience with students who is reading on grade level, but the student has reading comprehension deficits. The author of this study shared their findings of case studies of two students. As you can see by the research studies listed here and the evidence, it supports improving oral language skills impacts laterred real estating skills for students. All of these areas of language are where the skilled therapy services of an SLP can support reading with students. It is important for the SLP to collaborate to promote reading success and provide therapy that is educationally relevant. Now, Christy will continue with more information about the foundational skills for reading starting with the understanding of print concepts in young children. >> Thank you, Mary. Before I go any further, want to say something to the multisensory piece of the activities and we know when we are asked to provide interventions and instruction using the multisensory piece, we know that there has to be multiple connections that are being made at one time, so whether it is being said, written, heard, felt, those connections have to be made. Just keeping that in mind and more or less a specific strategy or activity is mentioned. Think about how you could, I might not mention all of the different pieces and parts of how to make it multisensory, but I'm sure that we as educators are creative in that way and we can, you know, layer on other pieces of that multisensory strategy, so just be mindful as some of the strategies and activities are mentioned. Here we have print concepts, which involve the directionality of print, which is top to bottom and left to right for our English language, which it is not the same for other cultures and you have to think about that as we have a diverse population of students around the state. So, fit also entail -- it also entails progression, I know elementary students who have little to know exposure to being read and when you hand them a book to start with, they pretend or they model what they have seen from their caregiver, their parents and they will hold the book. It might be upside down and they might -- they are following along with their finger or however they want to interact, but that is the first step of knowing the print concept is there for a child. They know the book has to be held. They know something is being read or followed off the page. They are not sure where it is, but they are going to point to it. Knowing that is the very first step that has to be mastered. Next slide. So, this is a simple game of bingo that can be used to teach and practice the progression the letters to sentences. You can change it up and use words or letters for the week you're teaching, put in sentences that maybe make sense for certain content areas, depending on what level of students you have, but this is basically a bingo game that teaches the sequence of a word to a sentence. You may want to spend the course of the next few days of playing letter building games. Stop right there. Don't go any further. You might want to work in word-building games. You don't want to play these on the same day, obviously, we want that systemic and says sequential instruction, so you want to progress from the letter to the words to the sentences practicing those, obviously, we know how bingo works. Who has a letter in the green column, you know, of course, you might want to have the kids say the letter, say the sound of the letter, same thing with the sentences. Who has a sentence in the green column, can you read the sentence out to me? You can change, this is one of the templates with the table on Word that you can change up and use however you want to making it relevant for what you're trying to teach. So, here with print concepts, a few multisensory strategy, obviously, forming words like sand or goo is a good way, scaffolding must be provided to make sure the students is saying the letter or word as well as forming the letters correctly and writing the word the correct way from left to right. The focus should be on the process, rather than the product. This is going to be a great time to take those younger students and do the hand over hand or narrate what you are doing, let's make a letter C. and the C. usually says what sounds and have them say it. We also can use old magazines to hunt for different fonts of the same letter. Our computers have the same capability of making different fonts and that can be a fun activity. In print, we know they can look different with the different types of fonts. Collaboration, the teacher and the OT, occupational therapisters, the speech and language therapist may occur for a relationship needed for a complete understanding of providing what is needed from the student. This will might be a time to implement and carry over with the use of a hand grip, a letter board or bracelet of some sorts. Next slide. So when providing students with instruction and phonological awareness, we know the focus is on the hearing of the sounds, not the identifying of the written letter. The word dog is made up of three sounds, if if we say it out loud, we hear D-O-G you can change the first phoneme to an H. and change the word hog and we can manipulate the words with the last sound to make dot from dog. If so, this would be one of the activities that you might want to have out your letters, your manipulative letters and some if boxes. It is a string of blocks, you can draw on a piece of white paper and it helps to identify where the location of certain sounds are in words, and so definitely something that is helpful until identifyingal deficit for a student if they are not hearing certain, the beginning, middle or end sounds, because we know those can be just one of those certain situations. Next slide. So, we at the FDLRS office have a partnership with FCRR and they have had the activities in place, as long as the Florida standards have been there along with our current standards and they provide multisensory, evidence-based activity. They are K-5 focused and they include all of the components of reading. This just happens to be an example for a kindergarten standard focusing on phonological awareness and identifying how many sounds each word has. It focuses on the rhyming, blending, isolating and substituting of individual sounds like we just talked about on the previous slide. Again, these activities are free and available to anyone to use. You can print them off of the website. They do require some printing, cutting and organizing, but for the most part, when you have a deficit that has been identified, there is an activity to hop in and make sure the gap is filled. Next slide. So how can we incorporate multisensory strategies into that phone know logical awareness instruction? Here is a few possibilities that you might want to take away. The tap, clap, or stomp with syllables. These strategies may be used to assess a child for sound knowledge and I mentioned the boxes, you may ask them to touch where specific sound is heard in the word. You might say the word cat and ask the student where is the T. sound and, of course, they would point to the last box, because that is where the last sound is. In relation to the pictures, there are the three happy faces and the T. would be the last or the furthest one to the right that they would be pointing to, so you know they can identify the final sound. Auditory recognition is instructed in grades K-1 and in second grade the auditory recognition of sound is matched to the corresponding letters, so this concept relates to the instruction of syllables rather than sounds. The concept of identifying the syllables rather than sounds become the focus. These strategies, you can arrange them the to modify or help with elementary students or help with secondary students making it relevant again. Phonics is the sounds and letters of the alphabet which is toning of the letter knowledge combined with the phonological piece. When a child sees the letter and can give the sound of the letter, they are connecting the visual with the auditory of the letter. Word recognition is when a reader can recognize a word without having to decode it and remember that decoding piece is oftentimes missing with a student with dyslexia, so this becomes very important. Next slide. While applying multisensory strategies for young and older students, it is important that students can identify the base word or the root word. This is an actual activity. It is pulled from FDRR and it allows students to identify the base word and the affix, the affix is the prefix or the suffix, so the pieces of the word that come before or at the end to change the meaning of the word. So the manipulation of the base word and adding the prefixes and suffixes and inflection will produce the student and provide the student to identify the word parts by manipulating the word parts. They have the parts on cards. They can move them around and they can see and make new words or the words that you're asking them to, so that would be the multisensory piece of it. Next slide. Here is a few other examples for multisensory strategies for the phonics and word recognition piece. Each of these activities can be modified to isolate a single sound or phoneme or morpheme. The phoneme is a single sound and the morpheme is multiple sounds or meaning. So we have hopscotch or rolling the dice to practice blending. Using giver tables to visually segment morphemes, so the little tabs that you put in a folder that you use to separate sections and you can write the little words on the piece of card stock. And just using something as simple as the build it, write it, say it. That is a manipulative multisensory strategy as well. I think it is time for a poll. Let's do a poll. The what do you think, should spelling be taught by using spelling patterns? What is your answer for this one? Looks like the majority of us are saying yes. I as a teacher would say yes, myself. The more we can see those patterns, the more we can predict what the sound is going to be. Obviously with the differences in patterns, we can teach the students or the children to recognize what sounds are made whether it be a long A. or short A. and looking at the word structure to be able to see the pattern for what the sound should be made. Good job. Next slide. If number 25. So, the concepts pertaining to the foundational reading skills, including phonological awareness, word recognition and spelling are those skills that occur in the areas that we identified were stimulated or where will stimulation was not occurring during reading activities for students with disabilities and with dyslexia. How are we activating these areas and incorporating the multisensory strategies for students with dyslexia? You can see here this is one of the visuals, if I'm not mistaken that Dr. Slinger used earlier. We have to be diligent in the planning and implement and assessment. These along with the identified needs of each student must be considered for every student for them to achieve their highest potential, so if it is missing, we need to give it to them. Vocabulary refers to word choice in both the oral and printed language. Vocabulary is a critical component for comprehension, word recognition is the first step of understanding what the word means that then leads to the comprehension and understanding. So let's look at how vocabulary is acquired. We know a student may begin a lesson -P with new topic with no knowledge, we have all been there. Once the student is introduced and begins to use the vocabulary more, there is a vague recognition and receptive understanding because of the use and context, so it would be like us learning a new word and being expected to use the word at least two or three times a day. We've got vague recognition, we're able to put it into context and use it in a sentence correctly and that is sort of how we want to introduce vocabulary to students. When the student becomes familiar with that word, because of the understanding and the meaning then they begin to use it expressively in conversations with others and the students can access the vocabulary word in the future, because they know the meaning, they know how to use it and so then it becomes more or less an everyday word instead of the tier three words that we as educators being content specific. Next slide. So morphology, which basically is the skill of breaking a word apart to not only read the word, but putting the meanings of the parts together to identify a word's definition. This is impactful for our typical students, as well as our students with dyslexia. Much like we do at the beginning. we could look at the word dyslexia and if I'm not mistaken, Dr. Slinger broke the word apart and three syllables and that means difficulty with words. Greek an Latin parts help give us clues as readers for what the meanings of the words are. Breaking down the morphology of the word teaches that word, but then also numerous other words that share the same pieces and parts that our students can look at and say, I will know that T-R-I means three, so if I have tricycle that means an object that has three wheels that kind of thing. When they can identify pieces and parts of words that has meanings, it helps them with that vocabulary piece. Next slide. This will is just another way to be able to breakdown a word, if you will, and I use this as an activity where I took the pieces and parts and cut them and did a puzzle, if you will and it can be done with vocabulary words, with content-specific words and it helps with the understanding of the actual definition, so fun activity, especially for secondary. Next slide. We know vocabulary is learned through fencer or exposure and instruction and we want these to be varied and we want it to happen a lot. Without it happening a lot, they are not going to have the exposure needed to use the vocabulary in conversation, so this concept is sort of related to the previous suggestion of using more academic and informal language. Remember when we said, come in, sit down, turn in your homework and we turned it into a formal sentence and this creates the experience and multiple exposures that will lead to the understanding piece and expressive use and eventually to the pragmatic selection, it is the ultimate in sentences, if you will. These are a few activities that can be done, matching synonyms that help expand their vocabulary, because it takes the piece they already know and they have to match it to a a new word. This is how we respond to a child in conversation. If a child says watch how fast I can run, follow up with something that says, wow you can run so quickly. Just being deit will in the conversation that you have. Now we're going to do a quick activity, so if you will do me a favor and grab a pencil and paper, a piece of paper and a pencil and I'm going to give you one word and I'm going to give you 10 seconds to write down all the words that you can think of that are related to this word. So the word is night. Write down as many words as you can that are related to the word night. That should have been 10 seconds. We are going to take a poll and I want you to identify which of the nights did you think about? We know what a night is and we know what a knight is. In our thinking, some of us are thinking night in time and some of us are thinking in knight lives in a castle kind of thing, I guess, so it is interesting even in our situation here, we didn't know the context. We didn't know some of the specifics that we needed to understand what night are you talking about? So that is a perfect example. When you heard the word night, your brain went with one over the other and began to recall the connected words that were firing off in their neurons that we talked about earlier, so this is how we want our students to begin assimilating the vocabulary that we're teaching. I know we're at 11:30, how would you like for us to proceed? >> Thank you. I think that would be a great activity to end with. We certainly have more content to cover, but we're going to go ahead and move that over to our January session. We're going to be respectful of everybody's time, so we're going to move over the evaluation layout, so people can start working on that. A big huge round of applause to all of our presenters today, Dr. Slinger from University of Florida. We appreciate you and all of your knowledge. Christy from Just Read Florida, you presented for us last time. We appreciate you and Mary Walsh from the Department of Education, we appreciate you presenting for us today. I think you will be back, except for Dr. Slinger, I don't think you will be back with us in January, but we have added her contact information, so she is always available to connect with for additional questions or support, so make sure you reach out to her. We appreciate all of you for attending today, especially with the tropical storm that hit us. We are glad we did not have to cancel and you were able to attend with us this morning. We hope you gained a lot of information. We think we addressed most of your questions, but we did not be sure to hold on to them and bring them with you to our January 14 session. If one of my fellow colleagues could put the registration, thank you, Mary Anne, you're on top of it. The registration for the next session. During the next session, we will talk about some of the Florida Department of Education technical assistance technology. There were also some questions in the first session related to assessment and eligibility classification, so we do have our colleagues from the Department of Education coming into that third session to answer those questions. Make sure you tune in, bring the questions back with you and we will see you in January. Have a great holidays. The recording as always will be posted on our FDLRS website with ww.FDLRS.org. Give us about a week to get that information up for along with the documents from today's session. again, we wish you all very, very well. Stay healthy, stay safe, enjoy your holidays and we will see you in January. >> We would like to thank Tracy for all of her hard work in coordinating the second webinar. She has worked with our presenters and taking care of the platform and all of the organization that goes behind the scene. Don't forget to go to the certificate completion link. A couple of you are saying it is taking you part one. We will make sure if you enter your information, you do receive a certificate for today. Complete that link and we will make sure you get a certificate of completion for today. If there is a typo on that, we will get that changed. We look forward to seeing so many of you at number three, you are already registering and that is exciting. We will see the D.O.E. representatives and Shannon on assistive technology, plus more information. We look forward to seeing you in January. Have wonderful holidays and stay safe.