

Web-Based Radio Show

Series on Learning Differences, Learning Challenges, and Learning Strengths:


Motor Planning and Sequencing

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Good morning. Welcome to our web-based radio show. This is Stanley Greenspan and thank you for joining us this morning. As many of you know, we have been talking about our approach to children with learning challenges and learning differences, and even those with learning strengths – an overall approach to learning. Many children with special needs become very good learners if they have had an effective program. So, these principles that we are announcing are especially appropriate for children who have had a history of processing problems. But, many children come to our attention for the first time when they are having trouble learning to read or write or do arithmetic or in organizing their lessons or their homework, or carrying out the plans that teachers give them as homework assignments, and so forth. So this really is for almost all children and these principles are the very same principles for gifted learners as well as those with learning challenges.

Now in the past, we have used the metaphor or an image of a learning tree, where the branches are the actual reading, writing, arithmetic, organizing skills, the tree trunk are our thinking and social skills that we need to participate in school and to be affective at the specific skills we need for reading, writing, arithmetic and organizing our ideas and our behavior. And, then we have the tree root system. These are our fundamental processing capacities – how we process sound and sight, plan movement and action, because this determines how well we read or how well we are able to write an essay or how well we can discuss our ideas in class in front of the group. Lastly, we began talking about the root system. Before that, we had been talking about the tree




trunk, which is the critical thinking skills and social skills. We showed in prior weeks how the tree trunk, as we strengthen it, actually strengthens the root system as well, as well as giving birth to the “branches.” But we can directly strengthen those roots also, and that is what we started talking about last week. Last week, as you know, we talked about how to strengthen the capacities for both language and for reading – those auditory processing skills, the ability to discriminate sounds and match the sounds to the shape of letters to learn how to spell and to read, and how we give meaning to the words we read and to the phrases that we read.

Today we are going to amplify on that a bit more. We covered most of it last time, but there are a few more thoughts I wanted to share with you about language and reading, and then if we have time beyond that, we’ll go to another part of the root system – how we plan our actions - sometimes called motor planning and sequencing; closely related to what we call executive functioning. But we’ll talk about that as well today if we have time. Bear with me for just one minute, and we’re going to start talking more about our root system, particularly auditory processing and language.

What I want to do, as we talk about auditory processing and language, I wanted to introduce a special concept that will run through really all of our discussions of the root system, and when we get to the branches, our discussion of the branch system as well. And that is, the concept of experience-based learning. We are going to start off with experience-based language and reading, but we’ll show you how that applies to visual spatial skills and mathematical skills as well.

By experience-based, we mean to build on the child’s existing experiences, on what the child is already familiar with; what the child already knows about. So to give you an example of an experience-based approach to language, let’s say we’re working with a child who has some language challenges, and isn’t learning his or her words, or to speak in phrases or sentences easily. It could be a child with an autistic spectrum disorder, or just a primary language disorder, or a child with other problems – oral/motor problems, having a hard time pronouncing words although he or she knows what they want to say.

There are many different ways of approaching it. We can have the child memorize words using cards and pictures. We can use words from a list and try to have the child sound them out and then match the picture to the object, or just memorize the words on the list and hope the child uses it in the correct context. Or, we can use it in




an experience-based approach, which I favor, where we select those words that the child is already familiar with, but doesn't know the word for. Let's say the child likes to go outside and always bangs on the door and points. Well, the child is already familiar with the concept of getting the door open or having it closed as a way of getting outside. So introducing the word "open" or "close" or "help" certainly would be based on experience the child already has. In other words, the child already knows what the word means, but doesn't have the label for it. So once we help him say "op, op" for "open," and get the word "open" it generalizes immediately. He has immediate understanding and immediate comprehension. But also, equally importantly, he's very motivated to learn that word. So it connects up with his emotions, his affect, and gets his whole mental team working together very rapidly.

Now, another consideration is, is this a sound that is easy for him to make? Maybe if he has oral/motor problems, the "op" is hard and he has an easy time with "eep." Alright, we might start with "eepen" and eventually work to "open." So, we don't have to have a perfect sound match right away, as long as he has the concept that a series of sounds conveys a symbol that gets him an action that he wants, he's learning to use symbolic thinking and language and knowing what it means, and we can gradually work on the oral/motor issues as we help him expand his vocabulary.

The key concept here is experience-based learning where we select those words or concepts that already have meaning for the child based on the child's daily experiences in life and what we see the child gravitating towards. The child who loves trucks, for example, and likes to move trucks around, already knows about trucks. So learning the label for "truck" is going to be much more meaningful than learning "cup" or "saucer" or "chair" because he loves trucks. Once the child gets the hang of it, gets the notion – gee, I can let mommy or daddy know what I want with just these series of sounds, or get their help with my truck or to open the door with just another series of sounds - he's motivated to use symbolic language in general. So these first few, what I would call, very meaningful, excursions into language by using experience-based words and phrases and concepts first, opens the door to the broader edifice; to the broader whole approach to language.

Now later on, we'll talk about doing the same thing with math. I mean, why count blocks, which the child may not be interested in, when he can count his trucks, which he is very interested in, to figure out how many trucks he has over here and how many trucks he has over there, and where is there more and where is there less? Or the




child who is learning to tell time – no way to tell time better than to know whether you have to wait 10 seconds to open the door to go out and play versus 5 seconds; versus 3 seconds. Or if you love cookies, when you are learning about numbers or waiting, are you going to have to wait a few seconds for your cookie or 10 seconds? You can look at a clock until the 10 seconds are up and show how the second dial works.

So the sense of time around waiting for something meaningful gives you a context for a feeling of what time is about, so it's not just arbitrary. Because how do you know what 10 seconds feels like compared to two minutes, compared to an hour? Obviously when you want something, a minute can feel like an hour, but that's also important to establish it first when you do want something so you connect your emotions to it so it has a feeling tone. Then the time has meaning for you and the concept for time has meaning. Then you can learn the specifics of different seconds, minutes, hours – once you have that context. Same thing with numbers – it makes a difference to you whether you get two cookies or five cookies or one cookie. So more or less and one versus five will have a lot of meaning in that experience-based context.

So that is the key. The key is let's build on experiences the child has; and when we are introducing new sounds and words that the child is going to learn to speak, let's start with the child's experiences. Then, when we're teaching the child to read, let's apply the same principle. I want you to think about that for a second, and I'll be right back with you.


Now when it comes to reading, here too, let's read about the boy who opened the door to go out to play, or the trucks that the boy was moving into the garage – pick topics that the child already has experience with because he is going to comprehend that and the reading will have more meaning for him. So we can use existing books that match the child's experiences, and there are plenty of them out there, or parents can create their own little books with the child. They can write out little words and sentences, find pictures from magazines, or if they are good drawers – draw their own to match, and create their own little books based on the child's daily life and experiences, or based on things the child loves to do. So this is what we call experience-based learning. It builds from the child's natural experiences and builds the concepts you want to teach. So you are going to cover all the concepts. You are going to eventually get to all the mathematical concepts, all the words the child needs to master, but you are going to come at it not from some arbitrary list or alphabetically, but from the child's heart; from the child's experiences.



Now why is that so important? Because, as we talked about before, all learning starts with the child's emotional investment in what the child is learning – not just in from a point of view of motivation, but to understand the word or concept, you have to invest that with personal experience. In other words, how do you know what an apple is, unless you have tasted an apple, thrown an apple, shared an apple with someone else – you can't just read a definition and say it's round and red and really know it. You have to smell it, taste it, feel it, do things with it. Then you know it. How do you know what mommy is? Mommy isn't just the big person with red hair and a big smile. Mommy is warmth and security. You don't have to know what those words mean right away, but when you do, that will resonate with the feeling. Mommy sets limits, mommy helps you, mommy invokes a feeling of great intimacy and connectedness; of safety, of hopefully excitement and exploration, and so forth and so on. So mommy becomes many things based on millions of emotional experiences with Mommy, so when you finally learn the word mommy, it's a very meaningful word. It's not just a dictionary definition of a person who is a parent, etc.

So, all our words and concepts find their meaning in the multiple experiences that are highly emotional that we have with them. We get to know the word by using what the word represents functionally in many different contexts in life, whether it's a telephone, a mommy, or an apple. So rather than learn the word and then have experience with it, let's start with those things we already are experienced with. So a toddler between 8 months and 20 months is experiencing many things – toys, mommy, daddy, telephones, etc. – so there is plenty to build on. By the time a child is learning to not just speak in that same time interval between 8-10-12 months and 24 months, saying their first words and then expanding rapidly between ages 2 and 3 and then 3 and 4, the child learning to read, whether it's at 4, 4 ½, 5 ½, or 6 – they've now had 4 years of experience and we can have their reading be truly experience-based. This, obviously, enhances comprehension and then motivation for more reading. Now also, when we talk about experience-based approaches, we want to apply this to comprehension of what we are reading when we talk about the reading part of the reading and language group.


Last time we talked about using our functional emotional stages to help bring alive the passage of applying each of the stages – the first one sort of identifying and describing just what it is in the passage you are reading – who are the characters, what are they doing – and then looking at the relationships in the passage if there are any,



and then looking at what any purposeful actions people are taking are – a boy asking his father something, and then looking for the larger patterns in the passage – what actually is going on, what is the boy trying to accomplish in this passage when he has his father take him to the store. Then seeing if we can create further, in the passage, create more ideas if we were writing – would we take it even further? Then looking at what we think about the passage – did we like it or not, and then comparing it with other passages we’ve read and giving it shades of gray – how much better or worse is it. Then being reflective about it – how would we compare this boy’s experience with our own experiences, and this author with other authors.

But just to look more microscopically at that first step of identifying what is in the passage before we take it up the ladder of our different levels of thinking to really bring that passage alive for us, let’s talk a little bit more about how we use our experience-based approach to bringing that passage alive that makes it vivid in our minds, helps us remember it, but also more importantly, helps us understand it so we can answer almost any question about it, even one that is not implicit in the passage itself. In other words, it’s not factual. This is what we do. We want to first take a multi-sensory view of the passage. As we identify the elements – whether it’s describing trees or a little boy and his daddy or a bicycle, let’s describe those objects through all the senses. The boy is wearing – and even if it’s not described that way in the passage – what would we do if we were writing it? The boy – what does he look like? What color clothes does he have on? Is he wearing a jacket or not? Try to bring him alive in terms of what he looks like. Is he a big boy or a little boy? So, through sight. And, is he saying anything? What words is he uttering? What sounds are coming from the boy or the daddy? These are all questions that the parent or the teacher can ask the child, because it is said so in the passage or how would you imagine it based on other things in the passage?

Also, we go to the other senses. Does the passage convey any smells? Are there flowers or plants in the passage? If not, is there a description that gives us any hint of mommy cooking cookies in the passage – any smells suggested in the passage? Any tastes suggested in the passage? If there is a feel to it – if you were touching the boy or the horse – what would it feel like? So let’s describe the objects in the passage, the actions in the passage, what is going on in the passage, but from the point of view of all the senses. How alive can we bring it? Now some passages will lend itself to multiple sensors, others one or two. But let’s walk through the different ones – what you see,




what you hear, in sight in terms of shape, color, size, what kind of movement is there, what is being said in terms of sound. Those are the big ones. Then any smells, or tastes? Then one of the more important ones is, what is the emotional tone in the passage? Is it happy, is it sad, is it neutral? Is the boy happy, is the daddy stern, is the horse jumping with joy? What are the emotions you see from the different objects or people, or the overall emotional tone of the passage?

Also, to bring alive the emotions, bring yourself into it. Always ask yourself the question, which is also higher up in our thinking – as we think about the passage – the highest level. Compare it, just to reemphasize this point, always compare it to your own personal experience, because that brings it alive for you. That makes it more meaningful. So always compare the passage to your own personal experience. What does this passage mean for me in terms of similar experiences or different experiences? Or if you have never had such an experience? Would I like or not like to be the boy in the passage or the daddy in the passage? So personalize it so you aren't changing the meaning of the passage but you are getting yourself into the different characters. It's good to do that with each character: Well, if I were the boy, how would I feel? If I were the daddy, how would I feel? Based on similar experiences or different experiences – well, I've never had that, I don't know how I would feel. But try to put yourself in the passage. Then, would I like to be given that toy in the passage? Or be moving that truck in the passage? By doing that, you are, again, really grasping and making that a part of yourself. Then it will be very easy then to remember that passage and to also answer questions about the passage. As you do this a few times, it becomes quick and you almost do it second hand. So that is what we mean by our experience-based approach.


Then, in a moment, take a 30 second break here, in just a moment we want to talk about some common additional challenges, particularly to reading that we want to pay attention to. So just bear with me for just one more minute.

Hi, this is Dr. Greenspan back with you. There are two additional issues that need to be taken into account, particularly when we look at the reading part of the language and reading group. We talked last week about teaching children, starting with babies when possible, but even older children, to discriminate their different sounds because they have to match the sounds to the shapes to learn to be good readers and they need to discriminate sounds to learn to talk so they can hear the different sounds that make up words, and that enables them to produce those sounds eventually. Some children need extra work in terms of oral/motor work to make their sounds. They need



practice, in other words, in moving their tongues and their lips and their mouths in the way that makes the sound that they would like to make, that they are hearing. They have a hard time with that. But when it comes to reading, there are two particular challenges that some children encounter. In addition to discriminating sounds, some children have difficulty with seeing the trees for the forest. They kind of get lost either in the forest and get overwhelmed by the trees. In other words, some kids are so sensitive to what they see, that all the black lettering on a white page kind of overwhelms them. Just like if an adult was in a room with a kaleidoscope of a million different colors being thrown at them very rapidly and they couldn't make out what the shapes were because they were just overwhelmed by the reds and the blacks and the whites and the yellows coming at them almost like in a dream. For some children, looking at letters on a page kind of overloads and overwhelms them.

There are some very gifted researchers at MIT that study children with this sort of challenge, and found that two very practical suggestions were very helpful for these children who are hypersensitive, visually, or had a hard time discriminating the visual part of reading in terms of taking out the single of the shapes that make the letters and the word or two or phrase or whole sentence and then kind of get lost and meshed in the whole page and just in a sea of letters. So they did two innovative things. They've tried this out and it seems to have worked successfully. Therefore, it's important to convey. Not all children have this problem, but this may be the source – it may not be the only source of a problem – a child can have a discrimination problem for sounds, but also have this problem as well. They found two things helped. One was to create like a little box on a piece of cardboard, you can cut it out, the little box or rectangle, and just enough to surround three or four words at a time so that the child could only be looking at the part of the sentence they were reading – it could be a single word, a phrase, or a whole sentence, even. But, to isolate it from all the other lettering so the child is looking at a limited amount. This can be done through trial and error to see what is most comfortable. For a child, for example, who is basically, fundamentally, and potentially a gifted reader, may be able to take in four words at a time, or even eventually a whole sentence and be a very rapid reader and just move down the page. Some adults do this themselves with their fingers, sort of, on the side of the page, to keep them on the line and keep them focused. But for children who aren't able to do that on their own, having a little special piece of cardboard that they move down the page with them, they can grow in size from initially a single word, then big enough for a phrase, and then big enough for a whole sentence or a whole line, and just move down




the page. Then, eventually, two or three lines can be in one rectangle and not overwhelm the child. And eventually, the child through doing this, often learns to then do it without the help of his special, what we might call, “reading rectangle.”

Then there was another innovation that the researchers at MIT came up with, which was using a filtered piece of plastic with different colors, so they found that the brightness of the black on white was just too much for some children, but a softer hue, like a piece of plastic that you could see through that had a bluish tint to it, would soften the background and foreground – the black on the white, and make it easier. So for those children who are very hypersensitive, softening it seems to make it easier.

Then there are some children who are hyposensitive, where things they see don’t register very easily, just like some children are hyposensitive to sound, and another is hypersensitive or hyperreactive. So the children who are hyporeactive to things they read, it might be the opposite. We may want a color that even sharpens the contrast a little bit more, in terms of the filters that brings out the lettering. For some of those children, you may need to start off with much bigger lettering to really catch their attention, so you might have to have bright red instead of black. You might do this just by finding the right kind of book. It might be a red on a yellow rather than red on a white. Experimenting can be very, very helpful.


But knowing that color, shape of the lettering, size of the lettering, both either softened or exaggerated can be important, as well as isolating single words or passages can help some children. So when we look at reading differences, we are looking at challenges in the area of separating or discriminating or being able to determine differences between sounds that you hear, makes you a good speller and helps you distinguish different words, both spoken and read. Then also as you see the shapes and have to match those sounds with the shapes, looking at whether the child is hypo- or hyperreactive with those shapes, whether the child gets lost or not, and giving the child some help and support. What happens, generally, is as you help a child, gradually the child becomes more confident, and then doesn’t seem to need the help as much. So it becomes a very good help and aid, which may not be permanent. It may be temporary, and also makes it more fun for the child to do that endeavor because the child has a greater sense of mastery.

Now one other additional challenge that we see is children whose problems are in the motor system, predominantly, in the movements associated with language with



reading. When it comes to reading, some children have trouble, related to what I have just been talking about, in tracking the material across the page. In other words, in moving their eye in a smooth left/right or right/left fashion, and they lose the line easily. Here, in addition to our rectangle that can help, or using a finger moving across the page to help where the child uses their finger under the line so they move their eyes with their finger and their finger serves as a guide for their eyes, we can also work directly on visual tracking. Just playing catch with the child, where they track the ball, starting off with big Nerf balls that are easier to catch, where you are almost next to them and then going further away with smaller balls, gives the child practice in coordinating their eye movements with their hand movements with things they are seeing. So, they see the ball coming, they have to move their hands and eyes to catch that ball, and starting easy and making it a little tougher gives them help. My colleague, Harry Wachs, the author of *Thinking Goes To School*, has a nice exercise where he has something with a hole on it, on a string, and the child has a pencil and has to put the pencil in this little circular thing hanging on a string. Then he moves the string back and forth so the little circle under it is like a pendulum, if you can picture that, and then the child has to get the pencil in as this thing is moving, so that requires tracking, using your eyes and hands in a coordinated way. Any game you can imagine where the child has to use “seeing” and “doing” together and coordinate the two, will improve the child’s tracking abilities. So there are many different exercises to do and I’m sure there are many games that involve some of this. I’m thinking of “Pin the tail on the donkey” if you do it with your eyes open, as opposed to with your eyes closed, would also involve – the thing is if you have a moving donkey and you have to catch the donkey to pin the tail on it while it’s moving. So that could be a fun game to do where you are learning to track – coordinate vision and movement. So we want to strengthen that.

We talked a little about, but not sufficiently also about the other part of the motor, the oral motor challenges. Pat Lindamood with the Lindamood Bell approach emphasizes the child moving his or her mouth and getting the experience of the sound as they are learning to discriminate the sound. This can be done in many, many different ways, but a very good exercise is to do imitation games where you start off with sounds that the child can make, like “eee, eee, eee,” which is pretty easy, before you get to the “buh,” the “muh,” and the “luh” sounds that the child has a hard time controlling and moving their mouth muscles and their tongue in the appropriate way. But as you are doing this, as Pat Lindamood emphasizes and others have emphasized, let the child see how your mouth moves. In other words, open your mouth wide and




show him how you make the “l” sound or the “b” sound, and it is very helpful to have a mirror so the child can see his or her tongue moving in the same way. By starting off with sounds the child can master easily like “eee” or “ahhh” and making it a fun game, and then moving to the slightly harder sounds, this is a good way to exercise those mouth muscles and those tongue muscles and get them working together.

Now, some speech pathologists and oral/motor specialists also, are knowledgeable about different types of external and internal massage that provides some sensory support for moving the muscles of the tongue and mouth. But this should only be done by an experienced person who has been trained to do this, although our Affect Based Language Curriculum book by myself and Diane Lewis, gives a lot of oral/motor exercises. But, this should be done under the guidance of an experienced speech pathologist who is experienced in oral/motor work if you are going to move beyond the imitative work and go to the massage work. But, it’s something that parents can learn to do under the guidance of a trained professional. So oral/motor exercises for the child who has trouble producing the sounds because being able to make the sounds that you are hearing is a very important part of learning to discriminate sounds and a very important contribution towards language and to reading.

So here we have our approach to language and reading, which are very closely associated with one another. Think of reading as a further step in our language development. It’s how we pick up symbolic language and information – how we communicate it to others when we write because they will be reading it, and so forth.

So a very important part of our root system, then, is auditory processing and language, in general, and reading as an extension. Now, we’ll talk about reading again when we talk about the branches, but actually we have covered a lot about that reading branch here in our discussion about the language and reading root system. So, actually we are anticipating what we are going to talk about when we talk about the specific skill on the branch side, so we won’t have to spend as much time when we talk about the branches. But, I want you to remember this, because we are going to refer back to it.

Now we are going to see if we have enough time today for talking about motor planning and sequencing. I see we really don’t have enough time to get into a new topic today, and so what we are going to do is leave motor planning and sequencing and sensory modulation and visual spatial processing and thinking for subsequent shows. Let me just anticipate with you what we are going to be covering as part of our root



system, we'll be covering next time motor planning and sequencing (executive functioning). In other words, how does a child learn to plan actions? Because every aspect of learning involves some planning of your actions, whether you are writing an essay, or copying shapes, or reading – you've got to move your eyes across the page, writing certainly, carrying out homework assignments also involves a number of steps, so it all involves planning and sequencing your actions, which helps you also plan and sequence your ideas – being an organized person, an organized thinker, an organized doer. It's a very, very important skill to have. Many children have trouble with this – almost all the children with attentional problems that I see, who get diagnosed with ADHD or ADD, also have a problem with motor planning and sequencing, and for many of them that explains their attentional problems because they can't plan and sequence actions, they kind of get lost. I like to tell the joke, they get lost on the way to the bathroom – “Where am I going? Why am I here?” because they don't have that action plan in their mind. In other words, the purpose, the goal, the steps in between is not as automatic as it is for many individuals. So that is what we'll talk about next time.

Then we'll be talking about visual spatial thinking – how do we make sense out of the world that we see? How does a baby learn to do that? How do we help children who have problems with that? Because that is what is responsible for big picture thinking. Then we'll talk about how we learn to modulate our sensations better – how we help the child who is overreactive or underreactive or sensory craving, the child on the move, the child who gets scared easily or the child who doesn't respond very much. So those will be for our next three weeks – we may be able to cover two in one show or one at a time, depending. That will help us complete or get closer to completing our series on learning. Then we'll go onto the branches themselves and talk about specific skills a little bit more.

So we have an exciting number of shows coming up. I will look forward to speaking with you again next week and hope you can join us or listen to the show on archives. Thank you for joining us today.