Web-Based Radio Show

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

Strengthening Reflective Thinking

Stanley I. Greenspan, M.D.

February 9, 2006

Welcome to our Web-based Radio Show. Thank you for joining us today. Just for those who are listening to this on archive, I want to remind you that we are beginning at 10:00 on Thursdays instead of our former time of 10:30. So those who want to listen in live, tune in Thursday east coast time at 10:00. It's available archived anytime for anyone, anywhere.

Today we are going to continue our series on helping children overcome learning challenges, how to work with learning differences, and how to facilitate learning strengths. But before we continue with our series on learning, I want to answer a question that came up during the week because we've been asked this question many, many, many times and it relates to the issue of learning but has more to do with children who have more severe processing problems and fit into the broad descriptor that we often use when we say a child has special needs.

The question is this, and we'll answer this question first in some detail because it's such an important question, then we'll return to our more specific discussion of learning. The question is this: How do I integrate or put together a variety of different approaches that I think will be helpful for my child in a meaningful way? And that's a very good question. The reason why it's such a good question is that many parents, educators, and therapists are now implementing programs for children with special needs, especially children with autistic spectrum disorders, that are using a combination of approaches. And, there is an attempt, understandably so, to strengthen different abilities of the child with different approaches. So, for example, many parents, educators, and colleagues of different therapeutic disciplines share with me that they are using both the DIR/Floortime approach and ABA or behavioral approaches or discrete trial approaches, many of them are using these two plus some additional

relationship-based approaches or social skills training, some are just using DIR/Floortime and different relationship and social skills training, others do predominantly more behavioral but do Floortime for social skills in between exercises, and so forth and so on.

So we have, in fact, colleagues from around the country have told me that when they are trying to do research comparing different approaches that it is hard to find a "pure culture" anymore because everyone is doing combinations of these now widely used approaches. Probably the largest combination that is being used is the combination of both DIR/Floortime and the behavioral approaches.

Now the challenge in using a variety of approaches, which has its merits, is to do so in a meaningful way rather than in a more of a hodgepodge or fragmented or shotgun type way. In other words, one way to do it is to just do a little bit of this and a little bit of that. But, that is not unlike making a stew with just taking what happens to be in your refrigerator and the spices available in your spice chest and just mixing them in together without any particular underlying organization or theory. A more meaningful way of doing it, and a far more effective way, is to have an integrated model that helps the caregivers and therapists and educators know exactly the sequence of skills or capacities they are trying to facilitate in a child and how each approach is working to do that and how all these approaches work together like a smooth running orchestra. So, when the music is playing, it sounds wonderful. It sounds like a Bach or Beethoven symphony, rather than a group of beginners who are just making noise.

Here is the key element. The key element is having a developmental sequence in mind of how the different capacities and skills build on one another. In other words, what are the core capacities we are trying to mobilize or teach or facilitate in children with autistic spectrum disorders or children with other special needs conditions? And, how will doing this approach or that approach facilitate this core capacity? To take a concrete example, let's assume for a moment that we want to help a child learn to communicate. If we understand the developmental sequence, we know that in order to communicate, you have to want to communicate. You have to want to relate to someone or else there's no motive; no interest in communicating. It's not natural. Also, we know that communication begins with gesturing – pointing, showing – and getting into what we call a continuous flow of back-and-forth interaction, where using 20 or 30 gestures in a row and also reading the other person's gestures or intentions as part of the flow of the back-and-forth. And then on top of that we build words or symbols

which could be pictures, which could be icons, which could be spoken words. And then we have a meaningful sequence of communication. Now if we just jump and have a child memorize phrases that are associated with, let's say, getting food, and he hasn't learned to relate or interact with gestures or get into a continuous flow of back-and-forth interaction, we may have an isolated little skill where a child, every time he is hungry can say, "I want juice" but doesn't really communicate. He doesn't really understand what you are saying. He doesn't follow directions. He doesn't have a conversation. So we need to build that sequence in a logical manner. Then when we think of different approaches, we can say how approach A, B, C, or D will fit into this developmental sequence.

One of the approaches that is often used, and one of the more popular ones and the one that you know I advocate, is the DIR/Floortime approach. The DIR/Floortime approach, however, is more than simply an intervention model, which it is, it is a framework for understanding human development, and for orchestrating not just Floortime strategies, but also strategies that have been formulated in the other approaches – behavioral approaches and other relationship-based approaches. Now, why is the DIR/Floortime Model or framework an analytic framework in addition to being a specific intervention? Why can it be helpful in orchestrating an entire program which may include also, in addition to these approaches I mentioned, different therapies like speech therapy, occupational therapy, or physical therapy? Here is the reason why we advocate using the DIR/Floortime approach as a framework, as well as a specific intervention. In the DIR/Floortime model, we look at all the features of development that need to be taken into account in an intervention program. And the goal of the overall model is to be able to engage a child at his or her level of emotional, social, intellectual, and language functioning. This is where you meet the child so they understand you and you understand them. And then, we tailor the approaches to the child's processing profile. By processing, I mean the way the child takes in information or takes in experience from the world – how they take in sights, sounds, and smells. Also, how they move and construct actions. For example, some children are over-sensitive to sound and hold their ears. Other children are under-reactive and are self absorbed unless we are energized with them and give them a lot of vibrant sounds. Some children are sensory-seeking and seek out touch and bang into things. So, depending on the child's sensory profile, we will have different ways of working with that child. So (1) we need to engage the child where they are at – are they working on just learning to relate and interact, or are they working on verbal exchanges? (2) We

need to tailor to their nervous system, basically, to their unique biology – how they process or experience the world. And then (3), the other part of the DIR Model is how we create learning relationships that are tailored to their biological differences – to their unique biology – that meet them at their developmental level.

So that is the "D," the "I," and the "R" – the "D" is meeting them at their developmental level, the big "D," the "I" is figuring out their individual processing profile, i.e., their unique biology, and the "R" is creating those learning relationships that will be tailored to their unique biologies and meet them at their level and help them master higher levels. So you can see this broad framework takes in a number of the critical features of human development.

Now why can't other frameworks be used, like a behavioral framework or other relationship-based approaches as an overriding framework? Proponents of these other approaches may argue it should, and DIR/Floortime can be brought in as an element or a particular intervention. Well, here is the reason why. It is quite straightforward. The reason why, is that the other approaches don't look at all the facets of human development. They don't build on the latest research on how human beings grow and develop in their full complexity. These other approaches may take elements of current research, and let me give some examples.

The behavioral approaches – ABA Discrete Trial – tend to focus on the technology of changing behaviors; of teaching new and specific behaviors. But, there is no developmental model, there is no sequence other than what a number of my colleagues who are proponents of the behavioral approaches have said the behavior is important. By and large, rather than having a developmental model, the philosophy of the behavioral approaches, when it began over 100 years ago with the work of Watson and then B. F. Skinner later, was to go right to teaching the behaviors you wanted to teach using what we call "shaping" where the specific behavior was taught in steps. But, the steps that we use to teach a specific behavior like imitating a sound before using blending sounds to say a word, wasn't necessarily monitored on a model of normal, healthy human development. It was, at best, shaped behavior. That behavior wasn't necessarily connected to other behaviors that would lead to a larger skill.

Also, the behavioral model doesn't have a framework for considering individual differences in the unique biology of children, or tries to work with each child as an individual, it doesn't have a way of systematically conceptualizing auditory processing

differences, visual spatial processing differences, sensory modulation differences, or motor planning differences, for example, as expressions of the child's unique genetic or constitutional maturational variations.

So the behavioral model offers a technology of change, but not an overall model of human development. So that is why it can be incorporated as a specific intervention strategy or particular exercises can be incorporated, but while we need an approach like the DIR/Floortime approach to figure out how the whole orchestra is going to work out together to produce a beautiful symphony.

Similarly, there are a number of skill building approaches having to do with social skills and building relationships that are very close to DIR/Floortime, but have evolved from their own frames of reference, but have some similar underlying assumptions about the importance of socialization, the importance of social skills, the importance of relationships, building healthy functioning for children. These goals, I think, are laudatory, and as many of you know, I fully support. But these other relationship-based approaches also don't have a comprehensive developmental framework embodied within the approach. So, by and large, they don't take into account individual differences in the unique biologies of children – how children process experience differently; whether they are sensory over-reactive or under-reactive or whether they are a little stronger in the visual spatial than the auditory, or whether they have motor planning challenges and sequencing challenges. So we have many interesting exercises that are good starting points for some of the children and give parents lots of good ideas in terms of building social skills or building relationships. But, we don't have a comprehensive model.

So this brings us back to our DIR/Floortime approach, which provides us with a comprehensive model looking at exactly where the child is developmentally, what their unique biologies are, and how we tailor our learning interactions to the child. So within this broad approach, we can now incorporate the different specific interventions as it meets the child's needs. The first step in this process is to analyze the child according to his "D," his "I," and his "R" – where is he developmentally, and as you know we have six stages we look at as primary stages, and then three more advanced stages. We look at how he attends and regulates, how he engages, how he is or isn't a purposeful two-way communicator with gestures, how he gets into what we call "shared social problem solving" where he gets into a continuous flow of back-and-forth interactions for problem solving where he gets into a continuous flow of interaction while solving a

problem with a caregiver, like taking a caregiver by the hand and walking them to the toy area and pointing to the toy they want. And then how he uses ideas or symbols to communicate – both feelings as well as facts – so how the child communicates they are hungry, or they are angry, or they want to play this game or that game, or that they saw an interesting picture. So we have to figure out where the child is in this developmental progression of intellectual, emotional, and language skills. We then figure out what their processing profile is – whether they are sensory over- or under-reactive. Then we figure out the learning relationships.

And, within the DIR/Floortime, we have what we call "spontaneous Floortime-type interactions" where we follow the child's lead, but for a specific reason: to harness the child's emotions; to take advantage of motivation; to take advantage of what they are really interested in because that is what produces the best learning; the best mastery. When a child wants to open the door to go out, he is going to learn what "open" means much more quickly than if we just show him a picture of "open."

But then we also have what we call "semi-structured problem solving." This is where we work on specific skills. Here is where we can bring in the other approaches. So let's say we are on our semi-structured problem solving, we're running into a difficulty with the child using spontaneous interactions to learn imitation. It's not happening. He's not imitating because of severe motor planning problems. Well, some exercises from behavioral approaches might be very helpful here – some imitation drills. We might bring in some of the semi-structured problem solving interaction and do that for an x-amount of time, a number of times each day. Particularly, let's say, in imitating oral-motor activities – learning to make different sounds and making a game out of it. But, here's the difference. If we do it and we use a Discrete Trial exercise for, let's say, imitating sounds, and we do it within the DIR/Floortime Model, we'll do it a little differently. Instead of implementing the behavioral approach in a start-stop way, where the child, let's say, is rewarded for making a sound like "ah" and the child may receive a reward like an M&M or receive a touch of his hands or a "very good" and then go to another sound like a "ba," we would be very mindful of the developmental sequence we are trying to mobilize. If we are trying to help that child be attentive, engaged, and purposeful, and get into a continuous flow of back-and-forth interaction at the same time we are teaching him to imitate, so rather than stop after he says "ba" and reward him and then write down that he did it 8 out of 10 times, we would go right from "can you do ba?" and if he did, we might give him a big smile, and then "how about now ga

and da?" We would keep the interaction and relating going. If we needed to write something down, we would do it at the very end after 10 or 15 minutes of having fun and making different sounds and different faces at each other or different motor movements with one another. In other words, we try to get a continuous flow going where we harness relating and interacting and purposeful two-way communication in a continuing back-and-forth way while we are teaching him imitation. But we might use some of the insights and some of the exercises from our behavioral colleagues in so doing.

So one of the principles of the DIR/Floortime approach as we incorporate other approaches is we always work on the first four levels simultaneously with the specific intervention we are doing. We are always working on attention, engagement, two-way purposeful communication and a continuous flow of back-and-forth emotional and social signaling and gesturing while we are working on a specific skill area.

Now let me take an example from another intervention. Let's say we are using a relationship exercise where we are playing a particular game to teach the child to seek our help. So, we are deliberately putting a toy up on a shelf and then playing dumb like showing the child where it is, but how are we going to get there. So the child has to go, grab us, take us, move us to the shelf area. Here we are setting up a situation where the child is motivated to relate to us. This is a very good semi-structured, problem solving exercise where we are not strictly following the child's lead, we are creating a circumstance where the child needs our assistance. But, here too, while we are doing that, we will find an object that the child really wants, we won't just take some arbitrary object that is pre-designed. We'll say what is the child really interested in? Is it a cookie? Is it a particular toy? And when we put it out of sight, we'll make sure we have his attention so he sees us putting it up a little bit out of sight, but he can see a little bit of it. Then we'll be flirting with him as we put it up there – we're engaging. Then, as he starts making some gestures or sounds indicating that he wants it, we'll help him along and point to it and say, "is that what you want?" or point to something else so he'll hopefully look at the thing he wants or take our hand and move it in that direction or give us some other gesture. Then we may act deliberately confused to get more circles of communication; to get more back-and-forth's. We'll see how many we can get without frustrating him to a degree where he loses interest until we get as many circles we can as part of the continuous flow, and then help him retrieve the object either by offering to pick him up or offering to get it for him and seeing if he can make a choice.

So what we are getting here is we're using a particular exercise in relationship-building and actually, shared social problem-solving, but we're creating a semi-structured situation. We're orchestrating. In doing so, we're getting into this continuous flow of back-and-forth interaction. But also, we're tailoring to his nervous system. If he is a hyper-responsive child, we're being extra soothing. If his needs are hypo-reactive, we're energizing up and being very energetic. And similarly, if we are imitating sounds, we'll again be tailoring to his nervous system – being more soothing or more energizing, using more visual support or slowing down our oral or our vocal cadence to meet his individual processing profile. We'll be making the motor part of the task simple or complex. So for example, a child with motor planning problems who can't sequence or plan easily in the latter example of working together to find an object, we'll be making the physical action very simple. We won't put it on a high shelf where the child has to bring a chair over and take three steps to get us to help him get the toy. We'll put it on a low shelf where he just has to kind of look over in that direction and gesture a little bit and we can help him. Everything is orchestrated to the child's existing developmental level and their processing profile and we create that learning profile accordingly.

So these are a few examples of how we integrate different approaches into the DIR/Floortime Model. So again, just to summarize, and to complete the answer to this very, very important question, the DIR/Floortime Model offers a developmental framework where we understand the way in which different capacities develop naturally as healthy foundations for intellectual, emotional, and social growth. Then we orchestrate approaches to build these healthy foundations for development. We do that by meeting the child where they are developmentally – in their intellectual, social, emotional, and language development – we tailor to their processing profile – their unique biologies, and that tailoring occurs in learning relationships that are dynamic and highly motivating, that both follow the child's lead to harness the child's natural emotions or energy and motivation, because that gives meaning to gestures and meaning to words. And also, by harnessing a child's natural affect and natural motivation, the child not only uses his gestures and words and relatedness meaningfully, the child can generalize almost immediately because when you open a door to get it open, you understand what that word means. When you just look at a picture of a door open, you may learn it in a rote way and not know what it means.

That point probably deserves a little bit of amplification that I should have mentioned a little bit earlier, but let me mention it here. When we use a strictly

memory-based approach without putting it into the DIR/Floortime framework – a good example would be using a behavioral approach where we are, let's say matching a picture to an object as part of the exercise to learn to symbolize that object. The question really is, is this the way a child learns the meaning of an object? Let's say you are matching a picture of a glass of juice to a real glass of juice, or a picture of a book to a real book, or a picture of a bus to an object that is a toy bus. And the child learns even to say the word "bus" or certainly before that, to match the picture and the object, or matching two pictures, or matching different shapes. But the question really is, is this the way the child learns what a shape is, or what a bus is, or what the picture really means? Again, if we look at our model of normal, healthy development, we want to build healthy foundations after all, that is our main goal for thinking, relating, and communicating. When a child in ordinary development is learning what a bus is or what a glass of juice is, they are experiencing that through multiple sensory channels at the same time. And most importantly, they are experiencing it with a lot of emotion or affect. So the child is drinking the juice, and really enjoying it or not enjoying it. So he's investing it with an affective experience – with emotional experience; how does that juice taste… Then he is asting it, he's feeling its texture, he's smelling it, he's seeing it, and he's hearing the sounds that say it's "juice." So we have, then, an emotional, multi-sensory, motor based (he's doing something, like holding the glass or helping you, or at least using his tongue and mouth) experience. So in other words, all the parts of his nervous system are working together. All the different parts of the mind or brain are working together to synthesize or integrate what juice is and what a glass of juice is.

So it's not surprising that in such an experience, the child really knows what juice is. He knows the difference between juice and milk: because it tastes different, it looks different, it smells different – some of the motor movements for drinking it may be the same for both, but so many other features are different. The child abstracts all of these different features into a concept of juice or milk or bus, as the child plays with the bus and moves the bus and someone uses the word "bus."

Now, we have assumed, mistakenly so, that children with special needs, particularly children with autistic spectrum disorders can't abstract – they can only look at one feature of an object. And therefore, we teach them in that way. But in doing that, we may be digging the hole deeper because if they have a predilection, which some may, for looking at only one feature of an object and not seeing how the "whole" is bigger than that one part, in other words they just look at one part of the elephant –

the tail – if we teach them in that way, by just matching shapes or matching the picture to the object, then we are facilitating that way of learning. What we have found is, through now working clinically with many children, is children with autistic spectrum disorders, as well as other special needs conditions, can learn in a truly integrated and synthetic way, but it requires more practice, more time, and more emphasis on each of the elements. So we have to heighten each of the senses – heighten the emotion or affective investment; heighten the doing part. So, when we want to teach a child, for example, what a bus is – a toy bus, or what juice is, instead of starting with a sequence where we just match the picture, although we can start that way just momentarily to give him an idea of what we are going to be working on, but then we want to go quickly to the real object so the child can touch it, move it, experience some emotion with it, whether it's a toy bus. Then we can play with the bus and show the picture of the bus and if we are going to move on to labeling it with the word or writing the word under it, then we will do it. So we'll create a multi-sensory, emotionally meaningful experience where the child is using all their senses to experiment with the actual object, investing with a lot of emotional pleasure by taking something that is actually fun for the child, and then also maybe seeing a picture or symbol of it, or seeing the word written of it, or saying the word. Then they are matching a multi-sensory, affectively meaningful doing based – action based - comprehension of that object to the symbol of the object. Now that can be done in an organized, sequential exercise based way, we can do that within a Discrete Trial format, but it's a different approach. It's a developmentally more meaningful approach.

Also in this model, if we are working on specific discrete skills, we will take symbols that we want to teach the child and base it on what the child is going to see a lot and experience a lot in his daily world. So if the child never sees a bus, it's silly to work on a toy bus because it will be remembered one day and forgotten the next day. On the other hand, if the child drinks juice every day, the child will experience it many times and use that symbol quite a bit. So we have to be thoughtful about what it is we teach the child. Not just in terms of going from more simple to more complex symbols if we are working on a symbol system, but using what is present in the child's world where they will experience that in an action-oriented, emotionally meaningful, multi-sensory, and motor based way, many times a day. That way, we can build up the child's internal world of meaningful experience and meaningful symbols.

So that is how we would shift the focus and use, let's say, the best of the Discrete Trial exercise, but within a DIR/Floortime context. This is a good example of what we have in mind. The same thing goes for relationship-based approaches as well. Use them in a DIR framework means we meet the child at his developmental level, we work with their individually biologically unique profile, and we create learning relationships that are meaningful for the child because they are tailored to his unique biology and they meet the child at their developmental level, and we are adding a third element on – and they create these learning relationships: a multi-sensory, motor, affectively meaningful context for learning. That is critical – that gets the whole mind and the whole brain working together as an orchestra.

So that is a long-winded answer to that question, but it is an important question that comes up many, many, many, many times. Now we are going to return to our discussion of learning patterns and pick up where we left off last time. We used a little longer time to answer this question than anticipated, so this was maybe a nice break for those who wanted to get to something specific. I'm going to ask you to pause for one second with me. I'm going to take a break for about 30 seconds and then I'll be back and we'll continue on with our learning challenges. So please hold on for one minute.

Ok, we have returned. We are now going to continue with our discussion of learning challenges, learning differences, and learning strengths.   As you recall, last week we were continuing to talk about our learning tree, which is our visual image for the way in which children learn and master things. We were talking about the trunk, which is our levels of emotional, social, intellectual, and language development, as well as the learning roots, which is the unique biology of the child and how they process experiences, as well as the learning branches, which are the applications to math and reading and oral and written expression, and so forth. We were completing our discussion of the trunk, the tree trunk, and we started with the tree trunk, as you recall, because if we can strengthen the child's core capacities for relating, thinking, and communicating, which is embodied in the concept of the tree trunk, our 9 levels, we build – it's a little bit like strengthening the core of your body – like doing, maybe Pilates. It makes everything work a little more smoothly. In this case, in strengthening the tree trunk, we're actually strengthening the branches and the root system at the same time. So we always start with the trunk and then we see which of the roots need strengthening, and then we work with the branches. But in real life, we can work with all three at the same time.

Where we were after last week, was we had gotten up through Level 8, where we had talked about strengthening attending, focusing, relating, pre-verbal communication, shared social problem solving, using ideas creatively, using ideas logically, and doing what we call multi-causal thinking in Level 7, then getting into gray area and comparative thinking in Level 8. Now this week, we are going to cover, before we finish up, Level 9, and then next time we'll be able to talk about strengthening the roots.

Levels 8 and 9 kind of go together. Remember, Level 8 was gray area and comparative thinking and Level 9 refers to what we call reflective thinking – thinking about thinking and thinking about thoughts and thinking about feelings. It's your ability to think about yourself and judge yourself and your own performance. This gets stronger and stronger in ordinary development from your early adolescent years up through your adult years, and keeps getting stronger throughout life as we add new levels to it. But, it builds on this critical foundation for what we call reflective thinking. It's a very important level to reach for all our children – children with special needs, children with autistic spectrum disorders, as well as children who don't have any special challenges. It's a level that many adults don't fully reach and don't fully master, and it holds them back both work wise, academically, and socially when it is not reached. Think of what it involves. The ability to reflect, to think about your own thoughts and feelings, to judge yourself in the context of your relationships and interactions with others - this is such a critical ability. It allows a child, for example, to write an essay and then say, "Gee, was this a good essay? Did I make my point? Did I prove my point? No, I don't think so. Why do I have this paragraph in here? It doesn't relate to my main point." In other words, it allows for self-critical analysis; for self correction. It allows a person to learn from experience. It also allows a person to do more complex academic tasks, like compare Mark Twain and Tolstoy, but against some standard of what excellent writing is. So, they could say, "Twain was better at capturing the spirit of his time because look at his descriptions of nature or look at how he describes Huck Finn or look at how he captures this relationship between this boy and this man"etc. And we could compare it to Tolstoy – did he capture the spirit of the Russian history quite as well? You might say it's a draw or you like Twain better or you like Tolstoy better, but we would have some criteria that we would have internalized; that was ours of what constitutes excellent writing that we would be comparing the two against.

So what you need to have in order to reach this level, is to have what we call an internal standard or a sense of self that is amplified by a variety of internal standards of how you define yourself. Then you are comparing experience, whether it's Twain or Tolstoy, or your own emotions against this sense of self; against this standard, and that allows you to reflect. In other words, to put it more simply, if you are going to be reflective, there has to be someone who is doing the reflecting; there has to be a "me" or a "self" – there has to be an agency or some kind of organized sense of an entity who is reflecting; that has an opinion. This opinion has to be able to create judgments. If these judgments are just, "Oh, these are just good" or "bad" – it's not very sophisticated. But if these judgments use gray area thinking and subtlety and can do comparisons, and can do comparisons within the context of understanding your culture, your society, and your historical period, then you are really cooking. Now the more experience you get, the broader your context. So if you are a 12 year old doing the beginning of reflective thinking, you don't have much of a context – you haven't had many relationships, you haven't read a great deal, you can't really do a lot of reflecting, but you can do a little bit of reflecting. On the other hand, if you are a 50 year old person who has been through school, had a number of jobs, experienced many parts of life, experienced different cultures, read widely – you have a very broad context within which to reflect and compare and make judgments. And, they'll be more subtle and more astute than the 12 year old. So, when we talk about reflective thinking, the critical thing is to keep broadening that reflective base. But we need a "me," a sense of self, a sense of agency that is doing the reflecting. And we can describe that as reflecting off an internal standard or reflecting off a stable sense of self. That continues to broaden and deepen through additional stages of reflective thinking once we get to Level 9. So, we won't go into that today, but if you read our new book, *The First Idea,* you'll see that there are 16 actual levels, so there is an additional series of levels that take you through adolescence and adulthood that will basically broaden this capacity for reflective thinking.

Now why does this capacity to think about and judge yourself, say things like, "gee, I'm angrier than I normally am in this situation" or "I didn't do such a good job on this essay because I need to make it more logical" or "gee, there's not much creativity in this story." How does this ability for making these kinds of reflective judgments, as you learn this, as you master this – how does this, in turn, strengthen your root system and strengthen your branches of your learning tree?

First, before we answer those questions, let's just say how you strengthen this ability for reflective thinking. The way teachers and caregivers can strengthen this in children is simply by challenging them with more reflective questions. Go after opinions. "What do you think about the way you are feeling today?" "What do you think about what you just did?" "What do you think about this book you just read?" In other words, if you go just to memorize responses like what did Lionel Trilling think about Mark Twain? You can memorize that and read it and get an A on the test. But if you say, "What did you think about Mark Twain in light of Trilling's framework?" or "What did you think about Tolstoy?" or "Which did you like better and why between Tolstoy and Twain?" Now you are fostering reflective thinking. So anything from "What did you think about that tantrum you just had?" or "What did you think about the fact that you are so jealous of this person or that person?" or "How do you feel about your lust for this or that person?" – whatever it happens to be as you ask for the child's opinion, you are fostering reflective thinking because that is fostering a reflective attitude. This can start years earlier. It actually starts when we think about logical thinking. When you ask a child why he wants to go outside, but then it gets stronger as you get into gray area thinking and getting into the beginning of reflective thinking.

So the key to reflective thinking is to go after the child's opinions, even if they seem half-baked at first. That's principle one. Principle two is to be respectful of those opinions. Be interested in them because then the child will want to give you more opinions. He'll feel of value, or she'll feel of value. Any adult will feel that way. People in work places are discovering that by getting opinions, they get a more creative workforce and a more productive workforce. So educators have to be doing this more. It can't all be just memory-based and fact-based. You need the facts to support your opinion. So then that gets to the next principle – get the person's opinions, but then help them or challenge them to defend their opinion. "Well, what do you base it on?" That's so the person has to recruit the facts. He has to know something about the subject that is going to motivate them to go and learn, or you can then challenge them to go back and do their homework and do some more reading, or actually go witness some events. I always tell colleagues who want to do something new, fresh, or innovative in an area – don't just read about it. Go and immerse yourself in the actual full experience of that. So the very distinguished college colleague of mine, who was a straight A student and wanted to do something on education and was approaching it by reading everything on education because this person was an avid reader and could master academic material easily, I said, "Look – if you want to do something really

useful about education and apply yourself to this new field (he had been in a different related field), go spend some time in a school for a couple of years, really working with kids, and read at the same time, but don't just read about it. Get that full experience because only with that will you have that broader context."

So then challenge the person to defend their opinions. The next step is to challenge them to broaden their context for that opinion. In other words, in defending it, are they bringing in just one set of experiences that they have had? If you have a person who is saying, "Well, I like Mark Twain" and they only read Mark Twain. Well, they only read Mark Twain and Tolstoy and they can only compare two authors vs. a person who is well-read and read ten different authors and they'll have a more astute opinion. Or, a person who is talking about education and had been to ten different types of schools and spent a considerable amount of time in each school. So, broaden your context. Broaden the student's context in school to master reflective thinking academically. Broaden the social context to master reflective thinking and social relationships. That's what teen nature is all about in some respects. It's having relationships. So you can't learn; you can't become a good reflective thinker without jumping in the water, so to speak, of the subject matter and broadening that context.

So if you are going after the child's opinions, if you are constantly broadening the context for the child, challenging the child to broaden the context, and you are valuing the child's opinion, and you're constantly challenging the child's opinions and they're defending more with their broader context with being more subtle and nuance than gray area in their thinking as opposed to all-or-nothing in their thinking – "I believe it, therefore it has to be true" – then you are creating true reflective thinkers.

Now why does this, then, help with our root system and also our branch system? Well, with our root system, when we are doing this reflective thinking, we are going to do it in all the areas – we do it verbally, but we're also going to do it with visual spatial experiences, and we're going to do it with actions. So, we don't want to limit ourselves just to discussions that are reflective. We want to use visual imagery – comparing architecture – which one do you like better? We want to do it with different ways to get someplace – geography, which is all visual spatial. We want to do it with sports – what is the best way to kick the soccer ball or to shoot the basketball or take that dance step? Do you have any of your own ideas? Would you choreograph this differently than the ballet teacher is choreographing this ballet?   Would you orchestrate the opera differently in terms of the way in which the different actress, actresses, and singers are

portraying their roles? In other words, challenge the person to apply this to the auditory and verbal world, the visual spatial world, the world of action and doing – all in meaningful emotional context. That way you broaden reflective thinking in all the different roots that contribute to the child. In terms of visual spatial, you can also add on mathematical and science reflective thinking where, if it's an advanced mathematician – "What are the different possible ways of analyzing this problem? What different frameworks do you have mathematically speaking?" I don't know enough math to even talk intelligently about that except to know that I know that's something that advanced mathematicians can do. You can look at the thinking of Newton and compare it to the thinking of Einstein and look at the brilliance of both of them in terms of your view of how each one dealt with things happening in physical space.

So there are lots of ways to foster this in different realms of strengthening the root system. Similarly, you can see how it applies to the branches because you use reading, you use oral and written expression, you use debate and argument as part of that oral expression to demonstrate your reflective thinking and also to embellish it and support it. So as you become a reflective thinker, let's say you are not very good at remembering facts, but you are a very good reflective thinker. Well, your framework; your concept will help you recruit the facts because you have such a clear idea of where you want to go and what you want to prove. Then you can use an encyclopedia to help or use your computer to help you retain some facts. Even if you are poor grammarian or a poor speller and don't have great sentence structure or what you view as writing talent – if you are a clear thinker and know what you are trying to prove and know what you are trying to say, that's going to create the center core for you to organize everything. Then you can use technologies to help you with the things you are weaker on. You take a little more time with those things – double check your spelling; double check your grammar. But if you don't have the reflective thinking, you can't do that.

So that reflective thinking is going to give you the core around which to strengthen your different branches. You can reach slowly and more carefully and more selectively if you are not an avid reader or a fast reader. But again, you have that structure of a reflective direction that you are going in. So the reflective thinking is going to strengthen your root system and strengthen your branches. I want to go back into that in our next segment when we talk explicitly about how we strengthen the root system, and then how we strengthen each of the branches, and some exercises for it.

I'll just give you one in anticipation, for example, in constructing an essay. If you have that reflective ability, you can diagram your essay in advance with little boxes and arrows – what your main point is, what your supporting points are. But you have to have that reflective framework, and that creates the basis for then creating a visual diagram of your essay that makes it tight and cohesive and forceful. Then it is a very well-organized essay. We'll show you how to do that when we talk about the branches, per se.

So we are going to stop in just a second. What we have covered so far is the tree trunk and showed how each level builds competencies that can be used in learning, and as you apply that to each of the different areas like visual spatial, verbal, and the world of action and doing things, we are strengthening our thinking abilities in each of those realms. So we are simultaneously building a strong tree trunk, i.e., thinking, at the same time we are beginning to strengthen our roots and beginning to strengthen our branches. Next time we'll talk about the roots explicitly and then we'll talk about the branches.

So thank you for joining us and we'll speak to you again next week at 10:00.