Brain Based Instruction

Transcript of Speaker

I. Raising Student Achievement

By: Donna Wilson, Ph.D., and Marcus Conyers

Introduction

By: Marcus Conyers

Hello there. And a very warm welcome to Raising Student Achievement with Brain-Based Instruction. I'm Marcus Conyers, and I'm delighted to be your host on what we hope will be an exciting journey of discovery as together we find out how the human brain works; how it learns; some things that you can be doing in the classroom right now to help that process work even more effectively; to discover what really does increase student achievement; and then to look at ways to really increase the brain's capacity to think, learn and communicate.

Throughout this program, we'd encourage you to do whatever it takes for you to feel comfortable and to grow as a learner. For example, research suggests that every few minutes you might want to stand up and stretch and get a stronger blood flow to your brain; take plenty of water if you want to keep yourself refreshed; have snacks nearby; because we want you to get maximum mileage from every minute that you spend watching this program.

We've been fascinated by the brain for at least 25 years – Doctor Donna Wilson and myself – and really it all started when we were looking at ways in which the brain

seems to work some of the time and not the other. For example, have you noticed that you can know everything you need to know about a test or an examination right up until it's time to sit down. And then what happens? If you're like many of us, the brain goes completely blank. Then what happens when you walk out of the examination room? Bang. Suddenly the information comes back just in the knick of too late.

We began to get curious. What is it about the human brain that allows it to sometimes work perfectly and sometimes not to work very well at all. Other things have happened to us. For example, you could walk into a grocery store and see people you've known for years; but when you go to say hi, what happens to the name? For many of us, the name just disappears. And have you noticed if your spouse is with you, they're often never helpful. They'll wait until they see this look of absolute terror on your face, and then suddenly they're going to say, Aren't you going to introduce us. Another question. At 2 o'clock in the morning, what can happen? Suddenly the name can come back, again, just in the nick of too late.

So we became curious about how the brain naturally learns and what we can do to help it learn even more effectively.

Another large component for myself growing up in Britain was there was a terrific TV show called *Monty Python's Flying Circus*. I used to watch that show, all 28 minutes of it. How much of that show do you think I could recall the next day? Well, many of us could remember it just about perfectly. Not only could we recall it, we could also explain some of the sketches to our friends.

We began to discover that the brain seems to have a fabulous capacity for learning and for applying thinking and communication skills in some circumstances. The overall mission became how can we consistently help our brain think, learn and communicate in ways that really increase student achievement and learning.

One of the great pleasures that Doctor Wilson and I have as we travel across the country is we see terrific teachers applying brain-based instruction in the classroom. It's so exciting to see how much their students are learning and how students are saying, I really enjoy learning this way. Teachers are describing how they see students learning more and in less time.

Key Factors & Components

By: Marcus Conyers

A couple of key factors to be very aware of. Brain-based instruction is not a magic bullet; it's not a cure all for all of the challenges that we have in a school. It is simply a process for increasing the probability that students will learn more in less time.

Another factor about brain-based instruction that makes it particularly attractive for teachers is they feel really validated that many of the things that they've done for years are now beginning to be supported by science – the science of the brain, the science of instruction and the science of accelerated learning.

Another factor that you might find exciting about brain-based instruction is that many of the principles are ones that you can use in your everyday life and with your own family.

The components that we'll be focusing on in this program really take two distinct pathways. Pathway one is really learning how to teach in the way the brain naturally learns best. This is a key component of brain-based instruction. The research behind this comes from the areas of cognitive neuroscience, the psychology of education, accelerated learning and increasingly behavioral medicine and nutrition. It seems that all of these components can be brought to bear in a single process for raising student achievement in the classroom. The primary aspect then of brain-based instruction is to teach in ways that the brain can naturally learn best. We'll be giving you many examples of how to do this.

The second area, which perhaps offers even more promise, is to approach teaching students in a way that actually increases their brains' capacity to learn; really teaching them the cognitive assets, as we call them, for increasing their ability to think, learn and communicate well in school.

By really focusing on these two areas, increasing the effectiveness of instruction and increasing students' abilities to think, learn and communicate in the classroom, will really bring together two powerful forces for raising student achievement in your classroom, in your school and in your district.

Throughout this program, there are some key things that you can do to really get the most out of it. One is to keep yourself fit as we spoke about early. Secondly is to think very carefully about how the things that we're suggesting make sense to you in your classroom and in your life. Research suggests that when your brain makes connections that is the time when you really begin to learn at your fullest potential. Another key factor to bear in mind as you go through this program is to look for ways in which you

might apply some of the ideas that we're suggesting to you. Again, research suggests that transfer is best achieved when you actually look for ways to transfer what you're learning in novel situations.

Once again, I'm Marcus Conyers. I'm so delighted you've chosen to join us in this program. Now, let's start to explore some of the key areas of Raising Student Achievement with Brain-Based Instruction.

Learn to Drive Your Brain

By: Marcus Conyers

One of the most effective teachers that we've ever had in teaching how the brain learns and thinks and communicates was a young boy in Texas. We'd been doing some workshops there to show the local administrators and some of the teachers and some of the students our work on helping students raise student achievement. At the end of the section that we did with students, we did some mini-lessons with students, we always asked the kids, What did you really learn from this session? What was it that was really powerful and meaningful for you? This gives us great feedback, so we can keep improving what we're doing.

I'll always remember this one little student. He kind of looked up and he said, Well, from now on, I'm going to be the boss of my brain. The boss of my brain. Isn't that powerful. I looked at the superintendent, and the superintendent looked at me. And this little guy had really summarized the key elements that really make it significant in understanding how the brain works.

What would it be like in your classroom, in your school, in your community if everybody learned how to drive their brain? We took the idea of being the boss of your brain and took it a stage further and said, Learning how to drive your brain. Imagine, for example, kids learning how to put the brakes on their brain so they could stop doing behaviors that tended to get them in trouble in school. What about accelerating their brain so they could get through to the end of some of their key test questions more quickly. What about getting their brain's memory to work better at a more appropriate time. This idea of learning how to drive your brain really struck us as being a powerful metaphor.

When we went into the classroom – and Doctor Donna Wilson was pioneering this to see how would children respond to this idea of learning how to drive your brain. She got a fabulous response as you'll see in a few minutes. When she presented this idea to students, they almost immediately got it.

Metacognition

By: Marcus Conyers

Now, let's look at a key factor in learning how to drive your brain, which is metacognition. Metacognition is a very key component in helping our students learn to drive their brains. The reason it's such a critical factor, it has been proven in much of the research that Doctor Wilson and I have looked at, to be a leading indicator of high student achievement.

What do we mean by metacognition? There are many different definitions, and you might be thinking about your definition right now. Let's play with a few working

definitions. One is thinking about your thinking – that ability and skill and asset of really being able to understand what you are thinking about. Those people who are highest achievers in life, who seem to have the highest skill level around metacognition.

To put a slightly more precise definition around it, we consider using the ACE formula. Metacognition is the ability A, to assess current thinking; to be clear of what it is that you are currently thinking about. The C in the ACE formula is to really choose your thoughts; to choose your thoughts so they really serve you more effectively. The third aspect is E in the ACE formula – to execute your thoughts more effectively. What we see in high achieving students and adults across North America is that those people who have the ability to assess their current thoughts, choose their thoughts and execute their thoughts seem to achieve at much higher levels.

The wonderful thing about metacognition is that students seems so excited to learn more about it; they seem to crave the ability to be able to drive their brains more effectively. We have seen this happen for students and for teachers. One example is a terrific teacher that Doctor Wilson and I met in Florida. She attended one of our workshops, and she just loved the workshop because throughout the day she was just reflecting on what we said, connecting it to her own life, and then actually using it to plan what she was going to be doing differently in the classroom.

Afterwards, we interviewed and asked her, How do you use metacognition? How do you use thinking about thinking in your everyday life as a teacher? She said, Well, the end of every day is the most precious time. I stop and think about all of the things I did during the day as a teacher. I think about what worked and what didn't work; and I hit

the SAVE key on the good stuff, delete the not such good stuff and plan how I'm going to do things differently. Of all the teachers in the room, this was the teacher was who obviously learning most.

Metacognition is a very important first step in helping us increase student achievement and increase our effectiveness as educators.

A famous poet once said, "An unexamined life is not worth living." Not examining our own thoughts and in our own life leaves us very vulnerable to the opposite of metacognition which is to simply repeat the same thought processes over and over every single day.

What we'll now do is to show you Doctor Wilson working with a group of students, teaching them how to drive their own brains with the tool of metacognition. Now, let's join Doctor Wilson in the classroom.

Lesson: Driving Your Brain

By: Donna Wilson

We're glad you like it. You all are the first folks to see our new poster, and I've got one for you to take home with you on a sheet, so you can take the brain car home with you.

What do you think of this saying down here under metacognition? What do you think of that?

By: Student

Driving your brain.

By: Donna Wilson

Driving your brain. Do you think that's pretty cool?

By: Students

Yes.

By: Donna Wilson

What does that mean to you? Yes, ma'am?

By; Student

It means that you're trying to really helping your brain learn faster instead of learning slower.

By: Donna Wilson

So you might be telling your brain how to learn faster rather than slower like Mr. Brain Guy was talking about. Very good. Yes.

By: Student

That you're trying to make your brain think really fast.

By: Donna Wilson

Yes. That's a way to be in charge of your brain; isn't it? What are some other things we do when we're in charge of our brain and driving it?

By: Student

You have control of your brain.

By: Donna Wilson

You have control of your brain. You're actually the boss of your brain; aren't you. Very good. Let's hear another one.

By: Student

Use your brain.

By: Donna Wilson

Use your brain. Have you all said some of these things before in your class? What I'd like to do is refresh your memory on the word metacognition.

By: Students

Metacognition.

By: Donna Wilson

Everyone together, please.

By: Students

Metacognition.

By: Donna Wilson

Very nice. Now, what do you think, based on what you're looking at up here in the poster, the definition for metacognition can be? Do we have a clue up here? Yes.

By: Student

Driving your brain.

By: Donna Wilson

Driving your brain. Very good. Thank you. Metacognition is actually being able to drive and control your own brain. How can we compare some of the things we do with our brain to a car? When is a time when you use your brain here at school and you need to put on the brakes? Is there ever a time when you need to put on the brakes for yourself? Yes, sir. Do you have an idea? I saw you kind of moving head.

By: Student

When you're saying something and you accidentally say too much.

By: Donna Wilson.

Okay. High five. So, you say something, and you're afraid you're getting ready to say too much; so you put on the brakes. Together.

By: Students

Put on the brakes.

By: Donna Wilson

Very good. Now, when is another time when we need to put on those brakes?

By: Student

When you're reading.

By: Donna Wilson

When we're reading. Can you talk a little bit more about when you put on your brakes when you're reading?

By: Student

Maybe I'll read too fast and forget what you're reading before that.

By: Donna Wilson

Oh. So, if you're reading too fast you have to kind of slow down. Do you ever have to speed up a little bit when you're scanning something? When you're scanning your reading material? Very good. Yes.

By: Student

If you have to know if you're copying too much papers you would have to stop.

By: Donna Wilson

If you're copying. What do you mean by that?

By: Student

Like tons of papers you're copying.

By: Donna Wilson

Oh, okay. If you're accidentally running off too many papers. Very good thinking. Let's have one more of these. Yes, ma'am.

By: Student

You might be talking to some of your friends and say something that might hurt them or make them upset.

By: Donna Wilson

Very good example. In our social lives, sometimes we think of saying something that just might hurt somebody's feelings. What a great time to put on the brakes. Great thinking.

Now, let me ask you this. Cars have brakes. What else do they have?

By: Students

Ignition. Gas.

By: Donna Wilson

They have the ignition and the gas. On one hand we have the brakes, and on another hand we have the gas. When at school do we need to put on the gas? Yes, sir.

By: Student

When we're listening.

By: Donna Wilson

When we're listening. Put on that gas for listening like you just learned another strategy for doing that; didn't you? Yes.

By: Student

When you're reading and you're reading too slow.

By: Donna Wilson

Okay. If you're reading to slow, you might want to pep up the pace a bit and do some scanning and reading for meaning a bit quicker. Yes, sir.

By: Student

When you're listening to the teacher.

By: Donna Wilson

When you're listening to the teacher, put on that gas. Let's have one more. Yes, sir.

By: Student

When you're doing work at school and you're slowing down and you're talking to other people, you have to put on the gas.

By: Donna Wilson

What an interesting example. Because what you just described is on one hand you're putting the brakes on listening to other people and talking; and putting the gas on for paying attention to what you're doing in your directions. Very nice.

What I'd like to do to piggyback onto this idea of metacognition, I want to give you an experience with it, a very specific experience. Okay. Would you like to do that to

get some experience driving this old car? Or maybe we could say with me it's an older car and with you it's a young car.

Metacognition Summary

By: Marcus Conyers

Wasn't it exciting to see how quickly those students began to get engaged with the process of exploring what metacognition was. One of the things we most enjoy noticing is how students love that word metacognition. We find that whether we're teaching at the high school, the university level or the elementary level, learning the language of thinking is critical in improving the quality of thinking.

What did you notice when you watched that clip of Doctor Wilson introducing the brain car and driving your brain through metacognition?

Some of the things that we found most impressive with students is one, they get excited about it; they get excited about learning something new; that at some level they realize it's going to be critical every minute for the rest of their life. Another aspect was how quickly they were able to see the impact of metacognition in their education and in their home life. As Doctor Wilson likes to point out, metacognition really is the overarching principle in helping students learn how to think and learn and communicate more effectively so that they really get the most out of school.

As a classroom teacher—if you're a classroom teacher watching this program—what would it be like if on Monday you went into school and your students arrived with good skills of metacognition? Wouldn't that be phenomenal? This is really what we're aiming to do with some of the schools that we're working with.

Another aspect of metacognition that is critical that you will have got a glimpse of there is how important it is that students learn how to really make a priority about asking some questions. What is the situation that I'm in? What strategy do I need, and how can I apply it? You'll see very much how this process of metacognition links to the other tools and strategies that we teach in this program.

Of course, what we've got to be aware of in the little time that we have, we'll be sharing with you about one percent of everything that we teach on the area of metacognition and thinking for results.

Phases to Thinking, Learning & Communicating: Input Phase

By: Marcus Conyers

After we begin to get students to get a good awareness of the overarching principle of metacognition, it's critical to really focus on a three-part model for how the brain naturally seems to think, learn and communicate. As we go through this model together, we'd really like you to connect to your everyday school life and your own life at home.

The first phase in this three-phase model for thinking, learning and communicating is the input phase. At this phase, the brain works very hard to gather high-quality information from the world. It takes it in through our senses. Those people who are good at the input phases have well-developed cognitive assets for listening effectively, for actively seeking out critical pieces of information. They do well in terms of systematically searching the information that they need. All and all in our program for thinking for results, we have more than 22 cognitive assets that are infused within this

three-part model. Some of the key ones at the input phase are those of really listening attentively – and we'll you teach you a strategy of how to cultivate this in your students; systematic search – really scanning the world for finding the precise information that you need.

The input phase is critical in the overall process – the thinking, learning and communicating.

Right now, take a few minutes to consider what we are doing in our schools and in your classroom right now to increase students' ability to input information well in such a way that they can finally do better in school, on student achievement tests and in life.

When Doctor Wilson and I do our live workshops across the country, we always ask that question – What are we doing right now in our classrooms and our schools to really help students cultivate those abilities to really input information well? What do you think the answer usually is? For many of the teachers that we've worked with—and we've worked with about 50,000 teachers right now—they say that we really don't do that much. We tend to expect students to input well and ask them to, but often we don't cultivate those specific cognitive assets, if you will, that allow kids to learn more effectively. A little bit later on we'll be giving you one real good tool for helping students to listen more effectively, and another one to help them in their systematic search. You'll really see this in practice.

Phases to Thinking, Learning & Communicating: Processing Phase

By: Marcus Conyers

After students have begun to input information in a systematic and effective way, the next phase is processing. First it's input, then it's processing information. Here is where students really get a chance to add value to the information that they've inputted.

A couple of the cognitive assets that really work well here are those that involve working memory. What we find from cognitive neuroscience is many suggestions that the brain really learns to discover meaning and understand new information by bringing old information up in working memory and comparing the new information with it to look for similarities and differences. This is a critical part of the learning process.

For example, in your classroom you might have noticed that some of the students that arrive have a lot of information already stored in their working memory. When you teach them something, they can quickly make connections. There are other students that don't have so much information stored in their working memory. For them, it's much more difficult for them to process the lessons that you're giving to them.

An example we like to use for reading is, we were working with a group. The teacher was telling a story about a family sitting on a patio. As long as you knew what a patio was, if that was in your working memory, the story would be great. If you did not know what a patio was, the story would make no sense at all. Having strong working memory abilities – in other words, the ability to capture information, store it in working memory and recall it when you need it – makes a big difference in the processing arena.

What I'd like you to do right now is to pause and consider what is it that you're doing in your classrooms right now to help students develop skills for processing information more effectively. It could be around memory; it could be around creativity –

finding creative ways to use the information; it could be about sorting information and classifying it. What are we doing right now to help our students be more effective at processing information?

What were your thoughts about what you're already doing in your classroom right now to help students learn how to process information more effectively?

Again, it really varies from classroom to classroom, from different teaching styles. What we have noticed though in those classrooms where the teachers encourage students to learn how to process information more effectively, we tend to see more student learning.

In fact, we were in one terrific classroom where the teacher had a poster up on the wall. She said, Before you tell me what you think, think. What a novel idea. What does the opposite of this look like? You'll see this in every student classroom across the country. Some kids, whenever you ask a question, their hands go up. Have they processed? Have they inputted? No, but they just have this need to output. Do you have students like that?

Learning those tools for processing information more effectively can really add to the potential for higher student achievement.

Once again, this is just a small introduction to that processing aspect.

Phases to Thinking, Learning & Communicating: Output Phase – Part 1

By: Marcus Conyers

The next element in that three-part model of input, processing, output is the output phase. Interestingly, when I was being coached by Doctor Wilson here in Los

Angeles, she was working with a group of teachers from the intercity in Los Angeles helping them learn how to teach cognitive tools so kids from the intercity and south central LA could learn how to think more effectively, increase their student achievement and go on to build better lives.

I will always remember being in a group that Donna was coaching—and there were four of us sitting down; myself and three other educators. And this wonderful Hispanic gentleman said, We spend all our time it seems asking for output. We want grades, we want papers, we want them to show us what they know. But we don't spend the time on the input and the processing that allows them to have good output. Does that make sense? I learned a lot from Doctor Wilson in that particular setting.

Another factor around the output phase, it's obviously the most visible one; it's when we tend to look at student work. We can look at examples of writing. We can get students to answer questions.

Where we focus on the output phase – cultivating cognitive assets to encourage students to do this correctly – is to look at some fairly unique cognitive assets. Our definition of a cognitive asset in this phase is a way of thinking that allows students to increase their ability to get high levels of student achievement and produce better behavioral results in the world. Cultivating these assets is what helps make students smarter in a way.

One example of this is really a story. It's a really telling story. Do you know the story of the goose that lays the golden eggs? If you remember that story, the whole emphasis of the story was the farmer initially had this goose that was laying these golden

eggs. He was delighted with it. But eventually he tried to force the goose to lay the golden eggs; didn't give her time; and killed the goose to open him up to get the eggs.

In many ways we often feel like education can be like that – demanding the output without putting the time and energy into the input and processing phase.

Some of the cognitive assets that Doctor Wilson and I have found to be particularly useful are one of finishing power. Doctor Wilson and I are delighted to see how well our graduate students are doing. We ask for feedback about what assets from the 22 cognitive assets that we're sharing really have impact for you. They found that finishing power was one.

What we mean by the asset of finishing power is that ability to finish what you start. It was interesting that from this really highly educated, wonderful group this was one that many of us have difficulty with. For example, do you have anybody in your life or even yourself who's great at starting projects. In fact, if you go into many people's homes and workshops, you see all these wonderfully begun projects. People are excited about them, there's a load of energy, but many of these projects never get finished. Do you know anyone like this?

When we looked at studies of geniuses, what do geniuses do that the rest of us don't do so well is they finish things off. They often don't like to do it, but it's that finishing power that makes all the difference.

How does this apply for students in your classroom? Those students who have the finishing power, for example, to study something in the classroom during the day, go

home at night, do their homework to finish it off until they understand it will tend to learn a great deal more.

I remember working in Tallahassee, Florida, and just did a wonderful couple of days working in the classrooms with teachers and with students. The cab driver taking me back to the airport was such a wonderful dad. He was from a different country. He told me what he did. He said, It's so important for my kids to realize that to finish projects means you have to do a lot more work. I asked him, What do you mean? He said, Well, every time my kids come home from school, I get them to not only finish their homework but also to really put an end to it, read something more about it, reread the notes that they made during the day, reread the chapters that were in the textbooks. That's what leads to higher student achievement.

This man was so proud of his family. He showed me a picture. They're all going gangbusters through high school, and they're going to do great at university. If you have to ask me, what's the key asset, it's that finishing power – getting things finished.

A metaphor for finishing power might be a bridge. The only benefit of a bridge is when you build it all the way to the other side so traffic can cross it. What we find is when we coach students in finishing things off, we see much higher levels of student achievement.

A tool we can use to help students with finishing power is what we call a win web. A win web is a what's important now web. What we have on the outside is some key tasks that students need to complete, and then a target in the middle which encourages them to celebrate each task they complete with their finishing power. What

we find with students is once they begin to do this, they really begin to get a rush and a jolt and a real bounce of joy as they finish off important tasks. Whether it's spelling or mathematics, this finishing power asset makes a huge difference.

Once again, finishing power is only one of the many cognitive assets that we teach when we want students to increase their thinking power.

Another asset that's very important is effective expression. Effective expression is the ability to take information you've inputted, processed and then output in a written format, verbally and nonverbally. For example, many students have so many great ideas for writing stories, but they don't know how to express themselves fully. This is where coaching them on this asset makes a huge difference. We see some pretty good results once students learn how to master some tools of effective expression.

Right now, we'd like you to kind of process once again what you're doing in your classroom, in your school right now to help your students develop cognitive assets in the area of outputting to help them be more effective at finishing tasks, expressing themselves more fully. Explore this now.

Phases to Thinking, Learning & Communicating: Output Phase – Part 2

By: Marcus Conyers

What did you discover about coaching your students around the output phase of the three phases of thinking, learning and communicating?

In our workshops across the country, this is the area where most teachers feel pretty confident that we are doing some good things. We see some coaching around effective expression, for example, around writing. What we love to do is BrainSMART®

clinics to improve writing skills. Sometimes we see effective expression around public speaking. This is another area where we love to support students and teachers.

This area of output is one of the most fascinating ones to us in terms of how the brain naturally works well. For example, has this ever happened to you? You go to a wedding and the best man is often picked because they're somebody who loves to talk a lot. The same brain in the same person is communicating everywhere, chatting to everybody, driving everybody crazy right up until when. That's it – until it's time for him to make his speech. Suddenly, this man can't think of a word to say.

This output phase has implications in almost every area of our life. Helping kids learn to how to express themselves through speech and through writing is critical; also through drama and other aspects.

The finishing power area too is one area when students and teachers think about it, they often get quite excited about getting better at it because this is where the final payoff is. You may find that the win web strategy is pretty useful for doing this.

Phases to Thinking, Learning & Communicating: Phase Summary

There we have it – an introduction to the three key phases to thinking, learning and communicating and learning how to drive your brain.

We looked at the input phase, which is the stage at which the brain is gathering information through the senses, using systematic search, using listening skills and many other assets.

We then moved into the processing phase of thinking, learning and communicating. Here again, there is so much we can do to help students become more

effective in school, particularly in the area of reading and writing. For example, what we find is teachers spend a lot of time coaching around reading about, for example helping students get the main idea in the story; about classification when it comes to studying; about reading cues and inferences to find out what will happen in the story later on. Teachers spend a lot of time working on these things around the area of reading, but often they're not transferred into other areas of study. We focus quite a bit of time on helping students and teachers learn how to process information more effectively and fully.

Then we moved on to the third phase, which is the output phase, which we discussed in some length about effective expression, about finishing power and, again, we have a list of other assets.

I'd like you to really think about something. What would happen in your classroom right now if all of your students arrived in your classroom with the ability to be metacognitive – to think about their thinking, to assess their thinking, choose their thoughts and execute them; really skilled in these three phases of inputting information, processing information and outputting it; what would happen to student achievement and test scores?

Across the country and around the world, the answer we get is they would go up quite dramatically. What do you think would happen to behavior? That's right. That would probably improve too.

What we have here is just the beginning – one to two percent, if you will – of all we teach on this area. But it will be a good way for you to start to get a handle on it.

Now, let's move to looking at some clips of Doctor Donna Wilson teaching the cognitive asset of systematic search.

Lesson: Systematic Search – Part 1

By: Donna Wilson

It's good to be here with you today. How many of you would like to know a big secret about how to use your brilliant brains even better? Very good. Give yourselves a big yes for that.

By: Students

Yes.

By: Donna Wilson

One more time.

By: Students

Yes.

By: Donna Wilson

Very good. I'm glad to see your enthusiasm. I'm going to ask you a question. Do you think that it takes more time to actually write something and get a good grade or to make a plan for what you're going to write to get a good grade? Does it take longer to plan something or to actually do the something with most tasks in life? Yes, ma'am.

By: Student

Write.

By: Donna Wilson

It takes more time to write you think. That's an answer. Let's hear another one. How many of you think it takes more time to do the writing? We have some. That's good. This might make for a good debate. Let's hear another answer. What might be another answer? Yes, sir.

By: Student

To plan.

By: Donna Wilson

To plan. Why do you say that?

By: Student

Because you need to know what you're going to write about. You just don't sit down at the computer and write.

By: Donna Wilson

Okay. Although that's a very good point. High five. And high five for sharing your answer. Sometimes it seems like writing tasks can take a long time; doesn't it. I found, and research shows, that with most tasks it takes longer to develop a plan than it does to actually do your plan.

Have you ever noticed, for example, on a spelling test. Have any of you ever had spelling tests before? Have you ever noticed on these spelling tests that sometimes it takes you longer to study than it actually does to write your word at test time?

How many of you would like to know the secret of how to be more successful and be able to make better grades? All right. I've got one for you. It has to do with this idea

of exploration and planning. I want to teach you a phrase that you may or may not know. Systematic search. Say that with me, please.

By: Students

Systematic search.

By: Donna Wilson

Now, think about those two words. What do you all think systematic search means? I like the way you're thinking. I can see those wheels churning. Yes, ma'am.

By: Student

Something to start like working at the computer when you systematically – like your brain when you wake up in the morning, it starts working really quick and everything.

By: Donna Wilson

I like the way you took some time to think. We use our brain for the systematic search; don't we? I like the way you tied it to the computer too, because we think of systematic search as being a part of what computers do. We also know our brains can do it. What we're going to do this morning together is to learn more about how to do a systematic search with your brilliant brain. Would you like that?

By: Students

Yes.

By: Donna Wilson

Do I look like I'm doing a systematic search, say if someone says, Doctor Donna, I'd like for you to listen, pay attention so that you'll know what's going on. If I'm

standing here and I look like this, ha, ha, ha, and I hum a little song, do I look like I'm doing a systematic search?

By: Students

No.

By: Donna Wilson

Very good. Good observation. Let's think about what I might look like if I was systematically listening and searching for what was going to happen next. Would I be kind of leaning forward. Is that better? Does that look more like a systematic search?

By: Students

Yes.

By: Donna Wilson

Okay. Make an image in your mind, make a vision of what you look like when you're being very systematic about listening to your teacher. Very good. I could see your wheels churning. By the way, did you know when you make that visual image you're using this part of your brilliant brain. Take your hand and say, I love my occipital lobe.

By: Students

I love my occipital lobe.

By: Donna Wilson

That's what we make a vision with. That's what we imagine with when we see a picture, is our brilliant brain right back here.

Lesson: Systematic Search – Part 2

By: Donna Wilson

All right. What I would like for you to do is to answer this question to yourselves first. Okay. Not out loud. If I ask you to think about your hero, does everyone know what a hero is? A hero – someone tell us what a hero is. Yes, ma'am.

By: Student

It's somebody saves somebody and that does something good for you.

By: Donna Wilson

Someone that does something good or saves someone. Piggyback on, please.

By: Student

Someone could save the city.

By: Donna Wilson

Someone could save a city. That might be an example. Yes, sir.

By: Student

Maybe someone that can be in sports who gives you good tips.

By: Donna Wilson

Maybe someone, if you like baseball, is a hero to you if they give you good tips. Wonderful. Yes, sir.

By: Student

Helped someone.

By: Donna Wilson

Someone might be your hero because they helped someone. You all are brilliant. Wow. Great ideas you're having here. Yes, ma'am.

By: Student

If you save a little kid who's drowning.

By: Donna Wilson

Okay. Very much. If someone saves someone, a small child who's drowning. That's a very heroic deed.

I want you to all think about your hero. You may have a lot of heroes. Think about one person in your life that's a big hero to you. I'm going to give you just a bit here to think about that person.

Now what I'd like for you to do is to work with me and think – and by the way, when we do this activity, you're going to be using this area of your brain right here. Say, We're going to be using our frontal lobes.

By: Students

We're going to be using our frontal lobes.

By: Donna Wilson

Very nice. What we're going to do is thinking about your hero, I want to ask you – we're going to do an introduction here to the idea of systematic search, and I'm going to do a web. Do you all use webs in Mrs. Case's class? Very nice. We're going to be putting our ideas down on this web so we'll have a Mrs. Case classes web on how we can do a systematic search about our hero.

What I'd like for you to do is to share ideas together and with me about where do you go to find information about your hero. Because if I ask you this question, and I said

I want you to write a paper about your hero, you're going to need to do a systematic search first; aren't you?

By: Students

Yes.

By: Donna Wilson

Rather than just starting willy-nilly and being impulsive. Do you know what that means?

By: Student

Just starting without knowing anything.

By: Donna Wilson

Absolutely. We don't want to do that because we know that could get us in trouble, couldn't it. We might not make the good grade that we deserve. How are we going to find information? What are some ways that we gather information to eventually do a report? All right. I like the way you all are so nice and quiet when you want to answer. Yes, sir.

By: Student

You can get it off the dictionary.

By: Donna Wilson

Very good. High five. Imagine. Okay, so you can go to – could we say books? A dictionary would be an example. Very nice. All right. Yes, sir.

By: Student

You could go out and ask them questions about what they've done to help people.

By: Donna Wilson

Oh, so where we might go to the library, for example, and get books, we could also go directly to a person. What might we call that?

By: Student

An interview.

By: Donna Wilson

An interview. Very nice. That's a good word for it. Are you talking, sir, about interviewing the hero or interviewing someone that knows the hero.

By: Student

Interviewing himself.

By: Donna Wilson

Oh, interviewing the hero. Okay. All right.

By: Student

And ask him questions like why you do stuff.

By: Donna Wilson

Okay. Very nice idea. You could ask the hero questions. Could you also interview—if you can't get to the person to interview them—could you interview someone who might also know them and like them and think they're a hero?

By: Students

Yes.

By: Donna Wilson

Okay. Very good. All right. Yes ma'am.

By: Student

You could go on the internet and find out more about them.

By: Donna Wilson

Very nice. Do all of you – how many of you use the internet? Very nice. Okay. Give yourselves a big yes on that.

By: Students

Yes.

By: Donna Wilson

The internet is a way to gather information.

Lesson: Systematic Search – Part 3

By: Donna Wilson

Let's have some more ways here. Yes, ma'am.

By: Student

You could go to the library.

By: Donna Wilson

You could go the library. If you go to the library, what would be your first two areas to go to when you're doing a systematic search about your hero, for example?

By: Student

History and biography.

By: Donna Wilson

Okay. So you might go to history or biography. Very nice. High five. Yes, sir, did you have one.

By: Student

I was going to say the same thing she said.

By: Donna Wilson

She took yours. All right. Very nice. We've got some good ideas going. Yes, ma'am.

By: Student

You could look in the encyclopedia.

By: Donna Wilson

So you could go dictionary, encyclopedia. Where can you find these encyclopedias these days?

By: Students

In the library.

By: Donna Wilson

Okay. So you could do that kind of work while you're in the library working on the encyclopedias. Very nice. Yes, sir.

By: Student

You could go to Barnes & Nobles.

By: Donna Wilson

You could go to the bookstore. How many of you like to go to bookstores? That's great. That's where the Brain Guy and I hang out a lot when we have a chance. Bookstores. Yes, ma'am.

By: Student

You can do research on them.

By: Donna Wilson

You could do research. And how are you going to start your research? What's going to be one of the things that you use for your research?

By: Student

The computer.

By: Donna Wilson

Okay. Very good. Very nice. Let's have one more here. Yes, sir.

By: Student

Television show.

By: Donna Wilson

You could watch television and get information. What might be a show where you could get information about your hero?

By: Student

National Geographic.

By: Donna Wilson

Nice. Or we could say broader speaking TV here on some shows. How many of you have actually used some of these techniques when you do projects? Very good. Well, a big secret about your growing, brilliant brain is that when we do this, this systematic search instead of being very impulsive, we always do better. Tell me some times in your life when you have used systematic search. You all obviously are

becoming experts in this. I want to know when are some times when you use systematic search. I'll give you a bit to think about it here. Yes, ma'am.

By: Student

In Miss Case's class.

By: Donna Wilson

You use it with Miss Case. What's an example of when you use systematic search in your class?

By: Student

When she assigns us projects.

By: Donna Wilson

Great. So you begin with the search rather than just jumping in. Nice. Yes, sir.

By: Student

When you're on the computer – something where you have to think and then you write it down on cards, and then you type it into the computer.

By: Donna Wilson

Very nice. Yes, ma'am.

By: Student

A book report.

By: Donna Wilson

A book report. I bet she stole yours; didn't she? Yes. Very good. So you use systematic search for your book reports. Yes, ma'am.

By: Student

When we do a book report and we do a research project on it.

By: Donna Wilson

Okay. So a book report and a research project on your favorite animal.

Lesson: Systematic Search – Part 4

By: Donna Wilson

I want you to think about something here. I'm going to ask the question a little bit different. If we don't do systematic search and we're impulsive, what are some things that can happen that aren't good? And this can be in school or life because we can use this everywhere; can't we?

By: Student

You can get in trouble.

By: Donna Wilson

You can get in trouble. Very good point to make. Yes, sir.

By: Student

You can mess up.

By: Donna Wilson

You can mess up. What would be an example of getting in trouble or messing up?

By: Student

You could read the wrong paragraph or something in a book.

By: Donna Wilson

So you have a direction. Your teacher gives you directions and asks you to read something, and you go and read the wrong thing. Very good example. Yes, sir. Think about it.

By: Student

You could be in the very middle of a really long paragraph or a story, like a research project, and you mess up in the middle and you don't know it until you're all the way done, and you have to erase all of that.

By: Donna Wilson

That's a very good example. Has that ever happened to any of you before? It's happened to me too. Yes, ma'am.

By: Student

I'm a boy.

By: Donna Wilson

I'm sorry. Yes, sir.

By: Student

You won't get the grade that you wanted.

By: Donna Wilson

You won't get the grade you want. So you have in your mind a grade that you want, and then you're disappointed. Thanks for that. High five. Yes.

By: Student

You read a book, and then you skip a line and you write the wrong thing.

By: Donna Wilson

You skip a line. Okay. You get off on what you were wanting to do. Yes, sir.

By: Student

Like she says, when you skip a line and you finish your long paragraph, and then you finally look back and then you gotta to erase the whole thing.

By: Donna Wilson

Very important. What could happen in your life? Kind of put the school example to the back of your mind and think about life outside of school. What if you're impulsive? Because we know these great tools can be used everywhere – they're our brain tools. What could happen in your life if you're impulsive and not systematic? Yes, sir.

By: Student

You don't read the car manual and then when you go to drive, instead of putting it into driving, you put it into reverse and then you go crashing through the house.

By: Donna Wilson

Very good example. That could be a disaster; couldn't it? Yes, ma'am.

By: Student

Same thing like he said. If you're going to put it in drive, then you actually go and press it to number three, you're using it wrong.

By: Donna Wilson

Okay. What's another example? Yes.

By: Student

If you're putting a camera together and you put the wrong wires into a thing where you're not supposed to.

By: Donna Wilson

You have to pay a lot of attention because what's going to happen if you end up putting the wires in the wrong places?

By: Student

It won't work.

By: Donna Wilson

It won't work for you; will it? Yes, ma'am.

By: Student

You could forget to put the film in the camera.

By: Donna Wilson

Let's have another one that's different from cameras too.

By: Student

You could feed your pet the wrong food.

By: Donna Wilson

You could feed, for example – do you have more than one kind of pet?

By: Student

I have a dog and a cat.

By: Donna Wilson

So you could accidentally feed the dog cat food and the cat dog food if you don't take a little time. Very good. Yes, ma'am.

By: Student

When you're putting a building together and you put the wrong part in the wrong part in the building. It could fall down because you didn't put it together right.

By: Donna Wilson

That could be very dangerous if the building doesn't get built right; couldn't it. One last question for you. How many of you think that systematic search is very important? I'd like for you to think how are you going to use systematic search today to help be even more successful as a student? Just take a minute and think about that. Let's have a couple of shares, and then we'll close this lesson. Yes.

By: Student

When you have to read, and there's a word that you don't know, try to sound it out.

By: Donna Wilson

Use your sounding skills to find words that you don't know. Very nice. Yes.

By: Student

When you forget to write something if your parents send you to do an errand to the store, you forget it; and then they send you right back.

By: Donna Wilson

That's happened to me before too when I was about 10 years old. Very nice. You've got to remember what you're supposed to get when you go to do an errand. Let's have one more. Yes, ma'am.

By: Student

Listening to your teacher when she's talking.

By: Donna Wilson

Listen so you can get your directions and find out what the lesson's about. Very good. You all are great listeners and great thinkers. Give yourselves a round of applause, please. Very nice.

I'd like to say I have a prediction about you all. With my frontal lobe here, I want to make a prediction. I think that everyone in this class is going to be very successful in your lives as thinkers. Thank you so much.

Systematic Search Summary

By: Marcus Conyers

There we saw Doctor Wilson teaching the cognitive asset of systematic search. Of course, that happens at the input phase of the three phases for thinking, learning and communicating.

What I love about that exercise that Doctor Wilson was doing was the students were really getting to understand strategies for improving their ability to systematically search out information. This is an asset that is so critical today.

We spend a lot of time on the internet right now seeking out information to include in our books and in our workshops and in our graduate programs. The ability to search systematically for the right information in the right way with the right sources ends up being about 50 percent of what we need to really do a great job on what we're doing.

For this next generation of students as they leave our schools, they will become knowledge workers. Knowledge workers are the people that have the highest levels of income, the greatest job security, and it's so critical that they have become skilled at searching the internet, searching libraries, searching many different sources to get the right information; because that is the raw material that they can use in their thinking process.

Just to stress again, this input phase is critical for student achievement and for lifelong success.

What I'd like you to do right now is to reflect on what did you learn from watching Doctor Wilson coach kids in this systematic search. What did you learn from this process? What is it that you'd like to include in your own lessons? Please take some time reflecting and planning how you could use what you just saw.

HEAR Strategy – Part 1

By: Marcus Conyers

One of the skills that employers across the country and around the world value most highly is that ability to listen effectively and process information and then finally output it or replay it. What we'll be learning right now is what we call the HEAR strategy – the H-E-A-R strategy.

This strategy is designed to cultivate the asset of being more effective at inputting information. This fits very much at the beginning of the three phases for thinking, learning and communicating. We originally developed this strategy for middle school

students who were having great difficulty in learning how to listen and focus properly in the classroom.

We road tested this and got fabulous reports back. In fact, two or three years later after we first did this strategy, this teacher ran up to us at an international learning conference and said, There's the HEAR Guy. I said, What do you mean? That strategy works so well in our classroom; we love it; we're teaching all the kids.

The strategy not only works at the middle school level, it's also one that we train to CEOs of companies; we train it to people who want to improve their relationships. Have you ever heard of a relationship where somebody says that the other party doesn't listen very well? Not you, but other people of course. We've also used it in training university professors and people at all levels who need to listen more effectively.

To restate it, we do not naturally learn very well through listening. In fact, research suggests that most people listen at about a 25 percent efficiency. The answer to this is really pretty much stored inside your brain. Your brain has the fabulous capacity to really absorb and focus thousands of words per minute, and most people only speak about 150 words per minute. If the brain can process at hundreds to thousands of words per minute, and most people speak at 150 words per minute, there's a lot of excess brain capacity that needs to be used up.

What do most of us do with this excess brain capacity when someone else is speaking? Well, if you're like most people, what we tend to do is to run an internal running commentary about what the other person is saying, critiquing and editing them as they do it.

Here's what tends to happen in an average conversation. Just focus on the conversation in your life or in your classroom. Somebody is speaking here on the outside, and most of us are speaking to ourselves on the inside. You might want to do these gestures with me if you're more of a kinesthetic learner. Certainly, when we do our live workshops we do this. If you would please, look down to your left and say, Internal dialog. Just like me. Internal dialog. And if it feels as bit silly, that's good because silly things are remembered forever. Remember *Monty Python*.

Now, at the same time, imagine what happens if you're talking to yourself down here and someone else is speaking over here. Please do both. What do you think your brain most prefers to listen to? This external conversation or this much more interesting conversation with yourself? If you're like most people, we spend much more of our time listening to ourselves than to other people.

Part of the challenge is that's it's almost biologically impossible to listen to ourselves on the inside while listening to somebody else on the outside.

Think about the students in your classroom, whether they're high school, middle school or elementary. Have you noticed that most of them seem to have an internal track running all the time? They've all got their own rhythm. It's almost like they've got an internal Walkman going. Have you noticed that? You'll see this in your faculty meetings too. You'll see a bunch of adults sitting around, and how well would you say teachers are listening to each other during that. You might be lucky to have great faculty meetings where really people do listen; but in many of them they're kind of looking down to their

left and thinking, What am I doing here? Why do I have to be here? How could she say that?

The key is that unless we stop our internal dialog, it's almost biologically impossible to listen on the outside.

HEAR Strategy – Part 2

By: Marcus Conyers

You can notice what happens in your brain when I say, Halt. What happened in your brain when I said halt like that? For many people, the internal dialog stops. For many, that's the first time it's stopped for 10, 20, 30 years, because most of us have this internal dialog going on from the moment we get up in the morning.

The first stage in cultivating the cognitive asset of listening effectively is to halt. You can do this with me if you want to really get the whole sequence in your body. One, two, three and halt. Halting your internal dialog is something that you must do to listen effectively on the outside.

The next phase is – after we've learned how to halt our internal dialog – is to engage. Please do this with me. Say engage. You need to engage by listening with your right ear. By listening with your right ear, you maximize your opportunity for really processing the information the other person is saying. What happens is when you listen with your right ear the information is more easily processed in your left hemisphere, and it is in the Broca and Wernicke's areas of the brain where language information is processed. The second phase is to engage. Do that with me if you really want to learn it. And, engage.

So the process so far is halt, engage. When you're in this engaged mode, it's quite important to turn your right ear towards your speaker. I kind of imagine that there's a laser beam going from the ear directly to the speaker's mouth. This helps me really zero in.

Another factor about really engaging and leaning forward a little bit is it's a communication to your brain that you're serious about really listening.

The next phase in the HEAR process is to anticipate you're going to be learning something really critical. What do I mean by this? For example, if there was some really juicy gossip happening right now somewhere on the other side of the room where you are right now, how quickly would your brain tune into it? If you're like most people, your brain would tune in very quickly to the gossip because you would be anticipating you'd be learning something useful for you in your social setting. It's very critical that we communicate to our brain that we anticipate we'll be learning something critical. Do this with me. Say, anticipate. One more time. Anticipate.

The three together are halt, engage, anticipate and replay.

This final aspect that I've added in here is to replay. I want to ask you a question. Why is it important to replay what you think you've heard? Why would it make sense that that is so important? Some research suggests that when we actually replay what we've heard someone else say, it allows us to reprocess the information, which helps us remember it; it moves it more into working memory. It also allows us to check to see if we actually heard correctly.

This is important because most of us listen so poorly that it's very unlikely that we'll actually listen to a level where we're actually gathering the information that someone else is giving to us. Please do this with me. Replay. One more time. Replay.

Replaying what we've heard can make a huge impact on how well we actually listen.

HEAR Strategy – Part 3

By: Marcus Conyers

In researching what helps people get jobs – in job interviews, research suggests that within the first four or five minutes, the interviewer has made a pretty good impression and a pretty clear idea about whether they want to hire somebody or not. It's very important that you make that strong first impression. A key way to do that is to listen really attentively.

Let me give you an example. I remember going for a job interview one time, and the person interviewing me met me at the elevator and just walking to the room was talking about some key aspects about their company. I was using this strategy. I halted my internal dialog, I engaged full-body listening, I anticipated I'd be learning something important and I got ready to replay.

As we started the interview, he said, Do you have any questions before we start? I said, You said this company is going through a 10 percent growth phase right now. That's fascinated me. What's helping your company do that? Now, of course, people light up when they talk about how successful they are. That was at the early part of the conversation for the interview.

At the end of the interview—and this is something we use when we teach high school kids how to go out and get great jobs—what do most kids say when the interviewer says, Do you have any questions? Most kids say, I've lost the will to live; I just want to get out of here. But the BrainSMART® kids do something different. They say, Yes, I do have some questions for you. And they replay key aspects that the person has spoken about throughout the whole interview.

How do you think that interviewer now regards this student when they're able to remember and recall and replay the information that was given during the interview? Usually employers think this person is a great listener, a great learner, let's hire them.

This prospect of – and please do it with me – halt, engage, anticipate and replay – which spells HEAR. It's a very powerful tool that we've shared with thousands of teachers who reach hundreds and thousands of kids.

What we'd like to do right now is for you to watch us teach this strategy to students in a classroom. We're focusing this in a way that you've already begun to gather the information yourself; and now quickly we'd like you to see this at work in the classroom. As you view the footage of what you may teach to this tool, I want you to notice a few things. First of all, you can relax about the content because we've already just shared that with you. Focus on the process. Notice what I'm doing to attempt to cultivate this cognitive asset with kids. Notice how quickly they tune into how important it is. Notice how we're using what we call brain-based instruction by getting kids into a positive state, making it meaningful, keeping them engaged with their attention, helping them remember it and transfer it.

Enjoy watching us teach HEAR to a group of students.

Lesson: HEAR Strategy – Part 1

By: Marcus Conyers

Good afternoon everybody.

By: Students

Good afternoon.

By: Marcus Conyers

One of the things that I used to find when I was a student that the afternoons would be a much more difficult time to listen. Has anybody found that?

By: Students

Yes.

By: Marcus Conyers

Whatever you ate for lunch begins to wear off, and your energy starts to drop. What we're going to be learning now is a really smart and neat way to listen at a very effective level whenever you choose to. Because what we know is that when we learn to listen, we have one of the most powerful skills for learning and for life that you could ever have.

For example, when I work with business people, I ask them, What's the most important skill that you would need from somebody that you hire? The number one skill they ask for is the ability to listen.

As you go through the rest of your years in school, you've got lots of years ahead of you, a lot of your time is going to be spent listening. If you listen the way I'm going to

suggest with you, you'll get your homework done, you'll get your schoolwork done in about half of the time. Does that sound good?

By: Students

Yes.

By; Marcus Conyers

I thought you might like that. Everybody please stand up. Very good. First of all, I want you to notice what happens in your head when I say halt. What happened in your head when I said halt?

By: Student

It stopped.

By: Marcus Conyers

Very good. Give me a high five across the table. Literally, when I said halt, your brain stopped talking to you. Part of our thinking process all the time is we're always talking to ourselves. Just to remind us of this, everybody get your own left hand please and say, Talking to myself.

By: Students

Talking to myself.

By: Marcus Conyers

Very good. And relax your hand. If you notice, a lot of time when you're talking to your friends, your friends are kind of not really listening to; they're just looking down to their left. The reason is we have this internal dialog. Say it with me please.

By: Students

Internal dialog.

By: Marcus Conyers

You guys are so smart. In order for us to listen to what's happening out here, we have to shut off the internal dialog. What do you think is usually most interesting to your brain? What you're saying to yourself or what somebody else is saying?

By: Students

What you're saying to yourself.

By: Marcus Conyers

Yes. It's something that's going to vary. Sometimes we listen in for a little bit. So you listen to somebody who is talking over here. And then we have our internal dialog going on. Pretty soon we say, This is more interesting down here. What we have to learn to do is to shut this off. Do this with me. Say, Shut it off.

By: Students

Shut it off.

By; Marcus Conyers

The way we do this is to do the halt. Everybody. Attention.

By: Students

Attention.

By: Marcus Conyers

Very good. Do it with me. Halt.

By: Students

Halt.

By: Marcus Conyers

Very good. And one more time and go, Halt.

By: Students

Halt.

By: Marcus Conyers

That's the first stage in learning to listen well to be a listening genius.

Lesson: HEAR Strategy – Part 2

By: Marcus Conyers

The next stage after we've halted our internal dialog is to engage our whole body in the listening process. For example, have you ever noticed how difficult it is to listen to someone if you're kind of slouching; if you're kind of leaning back. Your listening energy just drops. What we need to do is to listen and engage with our right ear. Lean forward with your right ear and say, Engage.

By: Students

Engage.

By: Marcus Conyers

One more time. Engage.

By: Students

Engage.

By: Marcus Conyers

We're listening with our right ear. Can anybody guess why we are listening with our right ear? Things that make you go hmm.

By: Student

Probably because the person is talking in your right ear.

By: Marcus Conyers

Yes, it might be because the person is talking to the right. What else? Yes.

By: Student

Your internal dialog is on this side and you want to hear on that side.

By: Marcus Conyers

Very good. Give me a high five. That was excellent. What tends to happen is our internal dialog is over here. When we listen with our right ear, it goes into our left brain. Do this with me. Listen with our right ear.

By: Students

Listen with our right ear.

By: Marcus Conyers

It goes into our left brain.

By: Students

It goes in our left brain.

By: Marcus Conyers

And your left brain is good at talking. Do this with me. Talking.

By: Students

Talking.

By: Marcus Conyers

When we listen with our right ear, we get much more control in our language center.

After we've done that, the third thing we have to do is to anticipate we're going to be learning something really important. For example, if somebody said they've got a really interesting secret, and they start to whisper so you can't hear, what happens to your attention?

By: Students

It goes up.

By: Marcus Conyers

It really goes up because you really want to listen; don't you. Someone is saying, I've got a secret that I'm going to tell you. Notice how you anticipate you're going to be learning something, so you lean right in. When we anticipate, we open our brains. Do this with me. Please say, Anticipate.

By: Students

Anticipate.

By: Marcus Conyers

One more time.

By: Students

Anticipate.

By: Marcus Conyers

Anticipate you're going to be learning something very useful.

Finally, what we need to do is to replay what we heard. Do this with me, please. Replay.

By: Students

Replay.

By: Marcus Conyers

One more time.

By: Students

Replay.

By: Marcus Conyers

I've got a question for you. Why is it good to replay what somebody said?

By: Student

It makes you rethink about it.

By: Marcus Conyers

Very good. High five. Rethink about it. Why?

By: Student

Because you might not have heard it the first time.

By: Marcus Conyers

Really, you're a genius. Give yourself a high five. Very good. Because often we don't listen right the first time. We're going, Uh, uh, um, um, um, um. Then they say, What did I just say to you? And you didn't hear it. Yes.

By: Student

And because maybe you didn't understand it the first time, and you get the hang of it.

By: Marcus Conyers

Brilliant. I love that. Maybe you didn't understand it the first time and you get the hang of it the second time. Yes.

By: Student

You can get a better grade on your test.

By: Marcus Conyers

Very good. I love it. You get to replay it, and your teacher explains it to you, you might get an A on your test. I think you can, because most of the tests that we take are based on what we've read and what we've listened to. When we learn to listen better, we learn much more effectively.

Let's put this whole sequence together and get it into our bodies so we remember it forever. Attention. Very good. Go halt.

By: Students

Halt.

By: Marcus Conyers

Engage.

By: Students

Engage.

By; Marcus Conyers

Anticipate.

By: Students

Anticipate.

By: Marcus Conyers

Replay.

By: Students

Replay.

By: Marcus Conyers

Very good. That's the sequence. And what does this word spell?

By: Students

HEAR.

By: Marcus Conyers

Very good. Here's what we know. Your right brain is good at detecting patterns. I was watching your faces, you were looking at this, and suddenly the pattern appeared for you. Why am I using this? Why am I doing it? Yes.

By: Student

So you can remember what you learned.

By: Marcus Conyers

Yes. Very good. So you can remember the stuff that you've learned. This is called an acronym, and an acronym is a way to remember information. Doctor Donna and I have acronyms for most of the things we want to remember. So, it's halt, engage, anticipate, replay.

Sometimes when you're out in the world, you might not be able to stop and go halt. Some people might think you're crazy if you do that all the time. So what you can do is once you've learned the first part of this pattern is to train yourself to hear the word halt in your head when you click your fingers. Let's start with me first. I'll click my fingers, and you hear the word halt inside your head. One, two, three click.

By: Student

Cool.

By: Marcus Conyers

Cool. Isn't that cool? One more time. One, two, three and halt.

By: Student

I was thinking of it.

By: Marcus Conyers

Yeah. Give me a high five. This is wonderful. When you hear that, so next time you just want to get yourself to listen well. Very good.

Looking at your faces now, I can see you're listening about three times as much as when you came in. This is a real cool skill to use, particularly in the afternoon when your memory starts to go and your mind is wandering, you can just click and really tune in.

Turn to the person next to you and say, This is wonderful stuff.

By: Students

This is wonderful stuff.

By: Marcus Conyers

Everybody, please take your seat. Very good. Now, we've learned one of the most powerful skills ever invented is HEAR, which is? Say it with me.

By: Students

Halt, engage, anticipate, replay.

By: Marcus Conyers

Give yourself a big round of applause. Very good. Thank you very much.

HEAR Summary

By: Marcus Conyers

Everywhere we go across the country, teachers say that they love to teach that HEAR strategy because the students can learn if pretty quickly. If you've noticed, all of the different learning styles could get involved in the way we taught that – the kinesthetic kids, the ones who really learn by moving and shaking could get physically involved in the process. This is so important because often those more kinesthetic students who have the challenge at the input phase of listening to verbal data.

The auditory students love it because they're learning how to really listen to words and sounds; so it's a pretty strong way for them to do it. If you noticed, I was varying my voice tone to keep it interesting, vocally. Then the visual students like it because they can see all of these actions going. So the visual, auditory and kinesthetic student styles can really be embraced with this.

Something else that teachers report when they teach this strategy is often it is the kinesthetic students who benefit right away, because they can physically do things to increase their listening.

The little guy in the front row, I don't know if you could pick up the soundtrack, he was so excited when he learned how to click his fingers and switch off the internal dialog in his brain. That excitement is something that you might find with your own students.

Think about this. Imagine what would happen on Monday if your students arrived in your classroom able to listen to you with focused attention. What would that do for their student achievement? This is just one tool for helping students at the input phase.

What I'd like you to do right now is kind of reflect on how you might want to use this strategy to teach your kids and how you might want to use this strategy yourself – where would you find the ability to use the cognitive asset of effective listening? How would that be useful in your life? Also, kind of put a planned approach to this into your ongoing teaching whereby you find in the afternoon that the students begin to drop off a little bit. That might be a great time to get up and do the full exercise of halt, engage, anticipate, replay. Reflect on the HEAR strategy, how you might use it in the classroom or how you might use it in your own life.

I'm curious about how you plan to use something like the HEAR strategy to help your students cultivate that asset of effective listening. You might even find some adults that you know that could benefit from this, including yourself. One of the great things is when we learn to listen more effectively, we learn much more quickly; and it's a wonderful way to build strong relationships and bonds.

I'll just give you a quick example of how you could use this asset as a teacher. I was working with a group of students one day, and we just did a whole auditorium of about a thousand kids in it. We went into the classroom, and this kid looked at me, and she looked up and she said—it was like she had a hinge on her head—and she said, I went to MacDonald's the other day and I got two beef burgers and I got a little toy yellow elephant. And it was really exciting. This student just wanted to open up and dialog with me. I use the HEAR strategy. I halt, I engage, I anticipated and afterwards I replayed to her and said, You went to MacDonald's and you had a couple of burgers and you got a yellow elephant. Did you enjoy yourself? She said, Ah, yes.

How do you think that little girl felt? She felt wonderful. Someone had listened to her. And listening is a wonderful way to increase student self-esteem in a very practical and concrete way.

We've begun to look the process of learning how to drive your brain. This is an ongoing process that takes a lot of effort and a lot of time, but really brings some fabulous rewards. We've looked at the overarching principle that metacognition is key to driving your brain and that we can learn how to assess, choose and execute our thoughts. We've then gone on to look at the three-part processing model with a brief introduction – inputting, processing and outputting. We've begun to look at a couple of the cognitive assets and, of course, we have 22 in our program, and we've just begun to give you a small sample. We focused on that input phase because across the country we've found this is the area where teachers begin to need the most help.

What we'd now like to finish with is an example of Doctor Wilson interviewing and working with a group of teachers about the importance of cognitive assets for increasing student achievement and helping students learn well in school and in life. Now, let's join Doctor Wilson.

HEAR Strategy Lesson: Group Discussion

By: Donna Wilson

I'd like for you all to call out some of the important foundational pieces here that you came to and that your colleagues came to as well. Call out those important pieces.

By: Sandy

Use time wisely.

By: Donna Wilson

Use time wisely. Very important. Would you give an example, Sandy, of the importance of that in terms of what can go wrong.

By: Sandy

If they spend too much time on something, they won't get to their other work. If they work too fast, then they're not going to do a very good job.

By: Donna Wilson

Brilliant. Is this important for test taking?

By: Participants

Yes.

By: Donna Wilson

Wow. Let's have another one.

By: Lanita

Organizing.

By: Donna Wilson

Organizing. Let me count the ways. What does that affect at school, Lanita?

By: Lanita

I feel it affects all areas, because if you are organized, you can use your time wisely; you can have pride in what you do; you can be tolerant of others. So, I think if you're organized, you can do all of the other behaviors that are on this list.

By: Donna Wilson

Very important. Bravo. Several of you made the point that these pieces are like puzzles that go together. Take and do this with me, please, and show those puzzle pieces overlapping. Very good. If you are well organized, the students are well organized, then they're likely in many ways to be able to make a good plan. Maybe the organized ones, do you think, might be more apt to use time wisely? You've hit on a very important principle about these prerequisites as foundation, and it's that they do link; and yet each one, as we cover it, kind of adds another level of building block to what they know. Let's have a couple more that you think are especially important. Yes, Melanie.

By: Melanie

In the chart he has learning states because that's your metacognition. When we were talking about it, a lot of these reflect back to your metacognitions.

By: Donna Wilson

Brilliant.

By: Melanie

If you know when I need to learn this or use this learning strategy to accomplish this task, that's what it's all about.

By: Donna Wilson

Very important. Remember on the master list where the M in the master list is metacognition. Then the A in the master list is applying cognitive strategies. In fact, it is true, just as Melanie indicates, metacognition is what I call the overarching concept. If we're metacognitive, then we function like the girls who told me in the cafeteria at Wilmington, Delaware, Doctor Wilson, Doctor Wilson, I remember those memory pegs. I knew when to use them. Then one of them proceeded to tell me how she had used them that morning in her spelling test.

Recall the boy down in the Keys who said, Guess what, Brain Guy, Doctor Donna, I used this. And he was talking about the eyes up strategy to make a hundred percent on my spelling test this morning. Very good example of, in one case it was the memory pegs; in another case it was the eyes up strategy – both good thinking or cognitive strategies. Not only did they show that they could understand the strategies and use them, but they knew metacognitively when and where and how to use them to have success. Very good in point. Let's have one more. One more very important cognitive foundational piece from you.

By: Joanne

Displays enthusiasm for learning.

By: Donna Wilson

Displays enthusiasm.

By: Joanne

If the motivation is there to learn, they're going to find a way and keep trying until they find a way to be successful at the others.

By: Donna Wilson

Very good. Again, it seems that that piece connects strongly to this optimistic state for learning piece; doesn't it, Joanne?

By: Joanne

Um hum.

By: Donna Wilson

Very nice.

Impact of Cognitive Assets

By: Marcus Conyers

Wasn't it great to see how enthused those teachers and administrators were when they began to realize the impact of these cognitive assets that really have such an impact on student achievement and everyday life. This is very typical in most of the workshops that we've done. Once administrators, parents, teachers and students understand the power of these assets, they're really curious about learning more. Obviously, in this small introduction to the program, what we've wanted to do is to give you a taste, enough to get started with it, and to see some results in your school and in your life.

I hope you've enjoyed learning some simple first steps toward learning some strategies for learning how to drive your brain and how to help your students do the same

so they can achieve higher levels in school and life and create a safer and more positive school environment.

Components of Increasing Student Achievement – Part 1

By: Marcus Conyers

Now, let's look at some of the key factors that research suggests actually increases and influences student achievement. One of the most exciting areas of research today is that the last 30 years of research on what increases student achievement is beginning to connect with what we're beginning to learn about the brain.

Some factors that come through time and time again in all of the studies is that it is the effectiveness of the individual teacher that is far and away the most important factor in influencing high levels of student achievement. We've looked at huge mega-analysis – one was a 22,000 different studies with 15 million students' tests scores over time. The research really suggested that it was individual teacher effectiveness that really made the biggest impact.

Similar research suggests that if students get average instruction—so just imagine the situation where kids arrive in a school and they get average, traditional, standard instruction, around 40 to 50 percent of those students will achieve their learning goals. If you think about that in terms of all of those students trusting our schools to give them the achievement levels that they need, we can see that it isn't quite there yet.

Other research suggests that if students were all to receive innovative instruction fully implemented by teachers, more like 90 percent of students would achieve their learning goals.

At a time in history where we know far more about what it takes to raise student achievement, and the key component is the individual effectiveness of teachers, other studies we've looked at suggest that individual teacher effectiveness and the way they teach has an impact of roughly 40 to 50 percent in the variance of student test scores.

Longitudinal study indicates that if a child is fortunate enough to have three successive, effective teachers, their test scores outperform other students really quite dramatically.

The research for science supports the fact that individual teacher effectiveness is the single most important factor in raising student achievement.

Doctor Wilson and I have been so encouraged as we travel the country to go into classrooms to model strategies and mostly to observe teachers, to see the wonderful things that effective teachers are doing. Many, over time, have worked out almost intuitively what it takes to raise student achievement and using it in the classroom. The goal here is to capture what works best so we can do it much more consistently.

Another area of research suggests that when students arrive in the classroom with the thinking and learning skills that they need to do well at school, they tend to have much higher levels of student achievement. In particular, the skill of metacognition – thinking about thinking – allows students to succeed at much higher levels.

The exciting thing about this research is that it really points to a possible way we can help all students learn more, and that is by teaching them the specific thinking and learning tools they need to be successful in school and in life.

The most important factor is teacher effectiveness.

Components of Increasing Student Achievement – Part 2

By: Marcus Conyers

Next is equipping students with the thinking and learning tools that they need to be successful.

The third area of research that seems to indicate how we can raise student achievement is that of parent involvement. Parents are often so keen to see their kids succeeding. We've worked with many school districts to help do parent nights to really help parents understand what they need to do to help their kids learn much more successfully. Usually we get really good turnouts.

Some of the areas that have the biggest impact on student achievement is that around making sure that students get their homework done. I'll give you an example. Research suggests that students who do homework and have it graded by a teacher or commented find that that is twice as important as the socioeconomics of the student. Parents can do a great deal to support kids. Help them make sure that they get their homework done and get it handed in on time; and also to support the fact that academic skills are important for school and for life.

The other area where parents can have a really strong impact is in helping kids make sure that they get sufficient exercise. Exercise is critical for the brain to learn and develop properly. If kids get plenty of exercise outside of school, they tend to be better when they're in school.

Parents could also help in terms of making sure kids get good nutrition. Again, we provide information on what nutrition can really help the kids get off to a flying start.

When we look at all of the data of what increases student achievement, those three key areas really stand out – individual teacher effectiveness, making sure the kids have the thinking and learning tools they need to be successful in school and, thirdly, that they get parental support. When we get these three elements in place, we maximize the ability for kids to learn at higher levels.

One of the great myths that has really been debunked is that socioeconomics is a major factor in deciding which kids will learn well. When you've had kids with low socioeconomics, when they have great instruction, they're taught the tools for thinking and learning so they can learn well, and they get parental support, the socioeconomic factors tend to disappear.

All of this to say is that we have tremendous influence on raising student achievement when we get some of the key components for helping students learn effectively put into place in our schools, our districts and our communities.

Brain-Based Instruction Research – Part 1

By: Marcus Conyers

Some 90 percent of everything that's been learned about the brain has been discovered in the last 10 years. Think about that. The most important organ in the process of learning, the human brain, has really not been included in the design of schools, the design of textbooks or traditional classroom instruction. In fact, much of what we regard as standard classroom instruction is really not very well supported by research as being proven to produce higher levels of student achievement.

When we look at the concept of brain-based instruction, we mean something really quite simple. We mean designing instruction in line with the best research we have about how the brain can naturally learn and produce high levels of student achievement.

When we look at it from this frame, we can consider some background research sources that are available for us. For example, the actual neuroscience breakthroughs that we're beginning to see offer some tantalizing ideas about how the brain may actually think and learn. For example, we're beginning to understand that nutrition has an impact on how we think. You could probably notice this in your own life. Have you ever felt that after you eat a lot of food and sometimes you feel full that your brain tends to produce less skills in terms of thinking and learning and communicating.

One of the most exciting areas of research today is in the area of the brain, cognition and learning. In fact, back in the 1960s, the Society for Neuroscience had only a few hundred members. Now it's well over 30,000, and the average age is in the early 20s or 30s. Some of the smartest brains in the world are working together to understand about your brain and my brain.

What we have to be very clear about is brain research does not suggest or confirm specific strategies that we can use in the classroom to help all of our kids learn more effectively. What it is doing is giving us some useful insights that we might consider when it comes to designing instruction for helping all kids learn more successfully. We've got to have that note of caution that brain research is giving us some useful data, but right now we cannot say categorically use the strategy, you'll get this result in the brain.

However, there are some very interesting areas that we can begin to notice. For example, we can begin to see which areas of the brain light up during different processes. When people are reading silently, it is the back of the brain that begins to light up in the occipital lobe. This is an area of the brain which actually runs the visual system partially. We can see that when people are speaking, they're operating areas in the frontal and the side left lobe, right here, in the Broca and Wernicke areas of the brain. We can also see when people begin to think, it's the frontal brain areas that tend to be activated.

We also are beginning to understand that optimists tend to have more energy here in the front left lobe. It is this process of planning and looking ahead and improving the world that drives their body-brain system.

Early indications from brain research are giving us a wealth of potential knowledge about the brain.

Brain-Based Instruction Research – Part 2

By: Marcus Conyers

Now, what we have known for years is that effective teachers, effective instructors, have been running action research in their minds constantly, because there's 20 or 30 brains in a room, and you can see what happens to their body-brain systems when you use different instruction. Do they perk up or do they get bored? Do they remember what you teach or do they forget it?

What we're discovering now is what great teachers have done for years is beginning to be supported by the research. Although brain research does not have a direct correlation, it has some insights. It really connects with some other areas.

For example, we're beginning to understand that nutrition has a definite impact on the brain and learning. Studies done with the military at MIT found that when some soldiers were out in the battlefield in operations and training, if they had a high protein meal, starting with a little bit of protein and a few slow burn carbohydrates, their attention level was much higher than some soldiers when they had a heavily carbohydrate meal of pasta or bread or that source of food. What we're seeing is many applications from brain research are beginning to emerge in the areas of, for example, nutrition.

We also know reading – we can see now how the brain learns to read. We've noticed that certain brains have challenges around reading that can be diagnosed and possibly even treated through remediation.

Brain research is giving us some useful indications.

What are other areas of research that we can use to put into brain-based instruction? One powerful methodology is action research. We've been blessed to have worked with many teachers across the country who have taken some of the brain-based strategies that we've created and applied them in the classroom and reported the results. That's another way that we can see this moving forward.

Another area that shows promise is that of accelerated learning. Accelerated learning has now been around for 25 to 30 years, and is a process of finding out how can people learn things more efficiently. Corporations that use accelerated learning, which is based on how we believe the brain works, tend to cut training times in half and double the amount of information that's retained over a short period of time.

Other areas are cognitive education, which has been around for 20 or 30 years. Some wonderful information about how the brain processes information.

We tap into these research sources around brain-based instruction. Brain-based instruction is simply, in our terms, a process of taking research about how the brain may naturally learn best, and use it in our instruction. What we'll be doing in the next few minutes is to share an experience with you that will kind of put this concept into place. But first, let's look at some of the research about how the brain actually remembers information.

Classroom Practice

By: Marcus Conyers

Some 90 percent of everything that's been learned about the brain has been learned in the last 10 years. Isn't that exciting. Breakthroughs in neuroscience are beginning to indicate ways in which the human brain may think, learn and even communicate. Of course, it's too early to take any of these studies and directly relate them to classroom practice; but they are giving us some useful ideas that we may be able to translate and test in the classroom.

Our approach has been to take implications of brain research and then use action research projects to see how well these are actually applied and work in the classroom. Although we can't use direct correlations from brain research, we can take those suggestions and basically connect them with other areas of research.

For example, effective schools have a strong database on what increases student achievement in schools. We have the student achievement research itself about what it

takes to raise student achievement. We touched on that a little bit earlier. We have the whole field of cognitive education, which for 20 to 30 years has looked at how the human brain processes information and ways in which we can upgrade instruction so kids begin to learn more.

When we speak about brain-based instruction, what we're doing is we're taking our best estimate on how the brain actually learns best; testing it by teaching it in the classroom; and constantly refining what we're doing.

Some of the most exciting things about teaching with brain-based instruction is that teachers report it does start to get better results for them. It begins to give them a useful metaphor for how learning happens. It helps them refine and reshape their process.

What we're going to do now is to move ahead to learn some more about the human brain and some of its implications by going to the Orlando Science Center. As we go there, we'll be looking at ten key areas of brain mind learning which we hope you fill useful in your everyday instruction. Now, let's go to the Orlando Science Center.

The Human Brain & Learning

By: Marcus Conyers

Hello there. I'm Marcus Conyers, and it's my great privilege to welcome you here today to the fabulous Orlando Science Center where we will be studying special systems for helping students reach high levels of academic achievement. Beside me we see a brain, which is really the star of the show. Behind me we see the wonderful matrix of

dendrites and axons that can work together in a symphony when students are learning at peak levels. Now, let's get on with the program.

Congratulations on exploring some of the credible key facts about the human brain and learning and also discovering some strategies, tools and techniques for helping students achieve at high levels of academic success. We wish you all the very best in putting these practical processes into place in your classrooms and in your school. Thank you so much for learning with us.

Key Pathways – Neurons

By: Marcus Conyers

We will now approach ten key pathways for increasing student achievement by understanding how the body-brain system truly learns.

The first is the fact that the brain has around 100 billion neurons. Think about that. One hundred billion neurons. Every student in your classroom arrives in your classroom equipped with this complement of 100 billion neurons, but what makes us successful and smart is the connections that they make between those neurons.

A key process to understand here is that everything that you do as a teacher that really gets your students to think and learn literally wires in new learning into the brain.

Let's start off by looking at a couple of metaphors. Please hold your hand up like this. This will help you really begin to get engaged physically at your end of the screen. Here we have a pretty good illustration of a neuron. Here we have the middle of the cell which is the neuron. As you wiggle your fingers now, what you have are dendrites. Your arm here will then represent an axon. What helps your students create actual

learning in their brains is when their dendrites over here are connected by another axon. When dendrites and axons connect, this is when learning truly happens in the brain.

Wonderful research from the National Research Council now confirms that learning literally changes the physical structure of the brain. When we consider this – the students arrive in the classroom with 100 billion neurons, able to make almost infinite connections to their dendrites, the axon – and what you do as a teacher that wires in this learning makes you, in our opinion, an applied neuroscientist. So, the next time somebody asks you what is your career, you can say that you're an applied neuroscientist.

What do we do with this information that the brain has 100 billion neurons. Here's some key things to remember. First, throughout time, we have usually really underestimated the power of students brains to grow with the correct stimulation. It used to be considered that some students from poverty or from minority backgrounds could not learn as well as other students. We now know that this is biologically untrue. Research suggests that when we give all students the sorts of high-powered and effective instruction, they begin to learn at very high levels of academic achievement.

The second consideration here is to really have a range of different instructional strategies in your classroom. It strikes us that if you have a wider range, you're more likely to do those things that really help the students make their connections in the classrooms that creates leading and learning.

Point number one – the brain has 100 billion neurons.

Now, let's reflect on the fact that the brain has 100 billion neurons. What does that say about the potential of all students to learn in the classroom given the right forms of instruction? Consider that for a moment.

Key Pathways – Hemispheres

By: Marcus Conyers

The second key pathway to understanding the brain and learning is to realize that the brain has two hemispheres. We can do this by using your two hands like this. The left hemisphere, and we can see that illustrated over here, is slightly more involved in processes such as verbal linguistic and sequence. The right hemisphere is often more involved in things like seeing the big picture, art and creativity. What we must always remember is that it takes both hemispheres to get most of the key tasks down in our everyday lives. It is really not true to say that somebody's left-brained or somebody is right-brained. We need to use both hemispheres all of the time to learn at extremely high levels.

What we will also see in the classroom is that different students develop these hemispheres and their functions at different times. For example, little boys often arrive at the school with much more skill and application ability around right hemispheric skills. You'll see these kids arriving; they're moving and they're shaking; and they really learn by doing. These are the students that turn up in your classroom and say, I really want to do something today. If you give me something good to do, I'll do it; if not, I'll create something for myself to do. So for your more right hemispheric, male learners it's so important that you do those kinesthetic and active strategies that you do so well.

What we also know is that little girls often arrive in the classroom with slightly more left hemispheric skills in place. This tends to be good for sitting and listening and reading and writing. Often you'll see in some cases that the little girls tend to be better in the early stages of school. Remember always that every brain is absolutely as unique as a fingerprint, and all generalizations are lies.

Some other aspects about the left and the right hemisphere that's important when you're teaching is to really consider a range of instructional strategies that really honor these hemispheric references. For example, it's often good to start your lessons going for the big picture first to really hook in your more right hemispheric learners. These are the learners that often say, Why do I have to learn this? When you can begin your lessons by giving the big picture first and giving a reason why you need to learn something, often your more right hemispheric learners will really tune into you.

Another aspect to honor your left hemispheric learners is to make sure you're clear about the sequence and the exact things that you want your students to do. What can drive your left hemispheric students absolutely crazy is that they're not really quite sure what you want them to do. Think about this. Let's make this real for you. Imagine that you're teaching and you give students assignments. Often, before you've even finished giving the assignment, your more right hemispheric movers and shakers are up there trying to do something. The more left hemispheric students are saying, What's the first thing we need to do? Or the second thing we need to do, and the third thing, et cetera.

Second key point about the pathways to learning is to understand that you have students that have different needs for the left hemisphere and for the right hemisphere. Effective instruction is about harnessing these hemispheres in ways that really allow all students to learn at high levels.

The future of instruction is really going to be determined by how well we can make our instructional style meet the brain and learning styles of our students.

Let's pause to consider. Think about students in your classroom who you may think are slightly more right hemispheric in their approach; they're more moving and shaking. They're often the kids that will ask, Why are we learning this? They can often quickly tune into the answer to a problem but are often not very good at explaining how they got there. In a second, we're going to ask you to think about students that you know who are like this.

On the other side of the coin, we have those more left hemispheric students. These are ones that will tend to do well on tests; they'll often give you good eye contact; they can listen; and they can playback the information to you.

Right now, please pause and think about students that you know in your classroom who may be more left hemispheric and some that may be more right hemispheric. Now, consider these two different groups of students in your classroom.

Key Pathways – Oxygen

By: Marcus Conyers

The third pathway for really enhancing student achievement and learning is the fact that the human brain weighs around about 3 pounds. For this tiny amount of weight,

it's important to remember that the brain uses about 20 percent of your oxygen. Your brain really needs that oxygen and glucose for it to run efficiently and effectively.

What you'll often see in the classrooms is that in the afternoons you begin to see your students fade. Have you seen that happen? They begin to fall to sleep, and sometimes it might even be teachers that are doing that. One of the reasons is that this 3-pound mass of brain needs two things to really make it work well – it needs glucose and oxygen. We'll be talking more about glucose later, but why do you think the brain needs oxygen? That's right, because oxygen is the super fuel for thinking and learning.

When we looked at the research about what helps students from Japan achieve at very high levels, we began to discover that every 45 to 50 minutes in Japan they get the students up and moving, doing vigorous exercise because activity tends to get the blood flow up and tends to get more oxygen into the brain, which allows the brain to think and learn with more efficiency and effectiveness.

What does this mean to us as classroom teachers? The first thing to remember is build in opportunities for exercise whenever you can into your daily routine for teaching. When you do this, you allow your students to get more oxygen into the brain so their three pounds of brain wear can be more focused and more attuned to learning.

Now, let's reflect on ways you can bring more exercise into the classroom so that your students can learn at higher levels and get their three pounds of brain wear learning more efficiently.

Key Pathways – Lobes

By: Marcus Conyers

The fourth key pathway to understanding how the brain really learns and can increase its capacity to achieve at high levels academically is the lobes of the brain. If you'd like to learn this with me, you might want to grab your own head to really get this into your body-brain system.

Everyone, please grab the front of your own head, please. Right here we have the prefrontal lobes. The prefrontal lobes are absolutely critical in the learning process. These are often the last part of the brain to develop, and it often doesn't fully develop until the teens or even twenties.

What does this mean to us in the real world? For example, have you ever tried to say to middle school or high school kids, Think about the future. Show me their expression when you ask them to think about the future. They'll often give you a blank expression. One of the reasons is that these frontal lobes, these prefrontal lobes, are critical for planning and seeing the future – putting plans into place for long-term learning and execution.

The other thing the prefrontal lobes are very important for is to stop doing things that don't make any sense. We often describe these as being the brakes. If you think of the prefrontal lobe as being the area for the CEO, it runs the executive functions, it helps for planning, decision making and judgment. It's also the area that is very much involved in making sure that we can avoid going for the short-term benefit rather than pursuing the long-term benefit.

What do I mean by this? There was a wonderful test done called the marshmallow test. I gave a group of students the opportunity to get two marshmallows if

they could resist the temptation for eating one marshmallow. Just imagine this scenario. There's a little student; they go into a room and there's a plate. On that plate is a marshmallow. The students came in one by one to see if they could avoid the short-term temptation of grabbing the one marshmallow. This is very much a front brain activity.

Some of the kids had some really amazing strategies. One kid who was very auditory was kind of singing to himself. He blocked off the temptation of eating the marshmallow. Another student who was more visual was kind of covering their eyes. They resisted the temptation with that short-term benefit of the one marshmallow. Another kid walked in the room, and as soon as he saw it—his frontal lobes weren't working really well—he just grabbed that marshmallow and ate it right away.

This exercise is a very good predictor about success over time. Those people who were able to avoid the short-term gratification and who, instead, can invest in long-term plans that really bring a high yield tend to do better in school and in life.

This frontal lobe is very much the CEO of your brain.

Now, please grab the side of your head here and say temporal lobes. Your temporal lobes tend to be the area of your brain that's very much involved with storing information. The way it works is information comes in through your senses, it connects with areas of the brain; for example, the hippocampus which is kind of the indexing system. Then if the brain thinks it's important, it files it away in the temporal lobes.

The reason why it's so important to consider these temporal lobes as an educator is to understand all of the information that your students have learned is influenced by

these temporal lobes. If you think of it as kind of a Rolodex, the storage area for all of the information that your students arrive at school with.

What does this mean for you in the classroom? If you're reading a story, and it makes no sense to your students, it's often because they don't have sufficient references stored in their temporal lobes to really make sense of the story. One application of this is we were working with one group of kids, and the teacher was telling a story about sitting out on a patio and talking to the family. If you did not have the word patio stored in your temporal lobes, the story would make absolutely no sense.

The temporal lobes are involved in storing and retrieving key areas of information. Think of this as kind of like your database.

Now, grab the top of your head, please. The top of your head here is the motor cortex, or your parietal lobe. This area of the brain is involved in movement and in speech. You'll notice that often when some people speak they have a lot of hand gestures. The reason for that is the motor cortex in the parietal lobe is very close to the areas involved in speech.

One of the jokes in our family where I had a grandfather who loved to talk with his hands; if you asked him to sit on his hands, he could never speak. One of the reasons is that the systems are so closely linked.

The parietal is involved very much in movement and motor activities.

Now, please grab the back of your brain here, and say occipital lobe. Your occipital lobe is really deeply involved with visual processing for your brain. Research suggests that this visual processing area is absolutely critical for success.

Let's do an experiment right now. Right now, think about how many windows you have in your house at home. As you do that, just count how many windows that you have. For some people, they will tend to look up to switch on the occipital lobe; and some of you probably just did a virtual voyage around your home looking up and thinking about the different windows you have in your house at home.

The power of this occipital lobe is that the brain seems to have an almost limitless potential for storing information that it sees visually. In fact, one research study found that those people who were showed hundred of slides, when a few days later they were shown a number of slides again, people could recognize with 90 percent plus accuracy what the original slides were.

What does that mean? That means that the brain shown the slides was able to store them and when shown similar slides later on was able to precisely identify what ones had been seen before. The occipital lobe is such a critical part of the learning process.

What does this mean for us as a learner and as a teacher? As a teacher, it means all of the things that you're doing right now to make your teaching much more visual is probably really helping your students learn at high levels.

What are some practical applications of this? Use graphics, use pictures, use mind maps or graphic organizers to really get this occipital lobe in the brain working at a highly effective level in your students.

Let's just review those four lobes. We have the prefrontal lobe right here – it's the CEO of the brain; we have the temporal lobes that are very much involved in storing

information inside the brain; we have the motor cortex up here with the parietal lobe; and we have the occipital lobe right back here which is involved in visual processing.

Now, let's pause and reflect about ways in which you might be able to adjust your teaching and instruction to meet the needs of these different lobes of the brain.

Key Pathways – Senses

By: Marcus Conyers

The next key pathway in learning for high student achievement is to appreciate that human beings learn best when we use all of our senses. Think about this. Think about what you really remember about all the days that you were at school. Most of us have about 12,000 hours in school before we graduate from high school. What do you really remember from all those days? For many of us it could be the high school prom. But for many of us it's the fieldtrips. And when you think about a fieldtrip, what is it that you really remember? You probably remember the unique sites, sounds, smells, tastes, feelings that you had during that fieldtrip.

We know that effective instructors are really good at using multi-sensory instruction. When we do this, we really give the brain far more chances to learn information.

A good metaphor for this is to consider your hand representing the five senses. If you only learn by listening to sound, you've got one little finger trying to pick up a heavy object – that is whatever it is that you want to learn. If you use all five senses, you've got a whole hand that can get a grip about the material that you really want to learn.

As an instructor and as a teacher who really wants to galvanize learning for high student achievement, what you can do is to use multi-sensory teaching.

One great teacher that we worked with decided to bring a fieldtrip to his students, and he used multi-sensory teaching. He got the kids to sit back in chairs. He gave them fishing rods, and he brought some fish. Outside the doorway of the classroom he got some friends. Here's what happened. The little kids would cast, he would run out with the line out of the doorway into the street, and outside his friends would be hooking fish onto the end of the fishing line. Then he'd make the students fight.

So what senses are the students using now? They're feeling it; they're feeling it, because what would happen is outside people were saying, You've got a fish, you've got a fish. He also brought in some live fish so they could actually smell the fish during this whole experience. He splashed water on them so they could feel it. Finally, they began to eat fish as a special supper at the end of the experience. He created a full sensory learning experience that allowed the students to learn at high levels. He then read the book about *The Old Man and the Sea* by Hemmingway. What a wonderful way to engage learning.

Now, let's reflect on ways that you could use to bring more sensory experience into your classroom so that your students learn at higher levels for high student achievement.

Key Pathways – Nutrition

By: Marcus Conyers

The next key pathway for high student achievement and learning is to remember that nutrition is critical for high levels of learning. There are actually six key aspects that need to be involved in this process.

The first is to remember that your whole body-brain system is made up mostly of water. Many of us need to make sure that we have significant amounts of water every day to keep the body-brain system working well. Your brain is very much an electrochemical system. Research suggests that when we are well hydrated that electrochemical process can work very well. It's a wonderful conductor for electricity.

Research also suggests that for some people as they get dehydrated levels of attention begin to drop off. A real good action point for the system – make sure that your students have access to plenty of water during the day. It has not been proved scientifically that there is a certain amount that you must have. For example, it's often touted you must have eight glasses a day. One good guide is that your thirst can be a good guide.

Something to avoid if you really want to hydrate the body-brain system is things like sodas, which not only give you liquid but they also tend to act as a diuretic that moves liquid out of the system.

So, the first thing to remember is that water can be an important asset for creating high student achievement and learning.

The second aspect is called essential fatty acids. When you look at a brain, what you see is there tends to be white matter and gray matter. The white matter is often described as the myelin sheath. If you go back to what we described earlier on with the

neuron, we can see that over time the axon gets a layer of essential fatty acids called myelin, and this becomes an insulator that allows for much more rapid transmission of nerve signals throughout the brain's system.

For example, if you look at children when they're younger, and they're walking along, they kind of walk in kind of a jerky way. But after they get to be a little bit older, the myelin sheath appears and they can move smoothly as they learn how to run and walk.

Essential fatty acids are critical in the diet, particularly for making sure that we learn and stay at high levels of optimism and positive energy. Again, if we look at your dendrites and your axons at this point of connector, which is the synapse, the receiving mechanism here is made exclusively almost of essential fatty acids. If you don't have sufficient fatty acids in the diet, it's often difficult for the correct chemical transmissions to happen in the brain.

For example, some research done by the National Institute for Health indicated—and this is a small-scale study—that people who had fish oil or ate fish were able to actually increase the levels of positive chemistry in their brain and reduce some symptoms of depression. This is also critical in the treatment of students who have attention deficit disorder. Some research at Perdue University found out that those kids who had the highest levels of hyperactivity and ADD had the lowest levels of essential fatty acids.

There are some simple ways you can get these EFAs, or essential fatty acids, in your diet. Fish is a wonderful way to do it. Flaxseed oil, which you can get from your

local store, is another very inexpensive way to do it. You can have supplements in the form of capsules that will allow you to do this. We would recommend that you don't use fish oil capsules unless they're a really high quality because they tend not to be really good tasting, and sometimes they don't agree with people.

Those essential fatty acids are critical for brain health. We're also beginning to learn that this is also critical for heart health. For example, those countries where people eat the most fish tend to have the lowest rates of heart disease. In fact, one study found that those males who eat fish on a regular basis had much lower levels of heart attack.

The second area in terms of those six key components of nutrition is essential fatty acids.

The next area to look at is protein. Protein is critical for your whole body-brain system. We need a little bit every day. They did some research at the U.S. military because they found out with many students after they left high school and went into the Army they tended to get very sleepy in the afternoons after they had a regular American lunch, which consisted mostly of carbohydrates, particularly starchy carbohydrates.

They then tried an experiment. They gave two groups of soldiers different foods. One they gave protein first and then some fresh fruits and vegetables. Those soldiers, when they had the protein first and a little bit of those slow release carbohydrates like fruits and vegetables, had a much higher attention level in the afternoon. Other soldiers that had a higher carbohydrate mix first tended to have a lower level of attention. This is another way that you can help get attention levels up for you and your students in the classroom.

The fourth aspect for nutrition is carbohydrates. Carbohydrates come in many forms. The key ones to avoid if you really want to teach and learn at a high level are those that are very concentrated; for example, sugar, soda, white flour tend to be carbohydrates that do not add to high levels of learning. The best ones, it seems to be, for health and higher learning are things like fruits and vegetables and whole grains. These are carbohydrates that the body-brain system seems to process more slowly. It gives you a good and steady stream of energy.

Another area for nutrition that's important is vitamins. We need the vitamins to ensure our health.

And, finally, minerals. All of us need sufficient minerals to let our bodies processes work efficiently and effectively. A hundred years ago, most of us used to get our vitamins because the plants were growing in soil rich in minerals. Now, with extensive farming, some of us need supplements. This could come in the form of a multi-vitamin or some very specific mineral substances that you can use to upgrade and enhance your nutrition.

These six key components make up the nutritional aspects that you really need to think, learn and teach at high levels.

Reflect if you would now on how well you think you're doing on making sure that you get the right amounts of these six key components for driving your brain through nutrition.

Key Pathways – Seven Chunks

By: Marcus Conyers

The seventh aspect that really drives high student achievement and learning by getting the brain to work well is to remember that the brain can really focus on about seven chunks of information at any one time. There was an article written by George Miller called "The Magic Number Seven, Plus or Minus One or Two." This was a very powerful piece of research that he did for Bell Laboratories.

What he wanted to find out was what is the maximum number of digits that the human brain can easily store in short-term memory. They discovered that if you give people eight digits to remember, often the eighth digit gets deleted.

What does this mean to us in the classroom? It's often a really good idea if we have a lot of information to cover is to break it down to a maximum of around seven chunks of information. Often when we go into classrooms we see teachers saying, Okay, today we're going to be covering 20 key aspects. Of course, that's too much for many brains to really focus on. Think how many sevens there are in the world – there's the *7 Habits of Highly Effective People*, a great book that's been a bestseller. Notice it wasn't 52 habits of highly effective people, it was seven. There are the Seven Seas, the Seven Oceans. The number seven seems to be a critical component in breaking your instructional practice down into bite-size chunks so the human brain can learn.

Let's reflect on ways which we can use this information that the brain likes to focus on seven chunks so we can really help students learn more effectively. Another key aspect before we reflect on that is to realize that younger students often have less capacity in their mind-brain system and need to have one, two or three chunks. When we

put information together in that way, we really increase the chances of students learning this.

Now, let's reflect on how many chunks of information would be optimal for the students that we have in our classrooms.

Key Pathways – Eight-Minute Cycles

The eighth aspect for helping students increase learning and higher academic achievement is to realize that the brain often works in about eight-minute cycles. In any presentation that you do, it's often good to break it down into eight-minute chunks. When you do this, you're really enabling your students to give you focused attention and then a little bit of downtime. If you notice, most TV shows hardly ever go past eight minutes in any particular segment. This is very difficult for the brain to process that. It really needs a breather.

On this topic, there's a key part of the brain that's involved in this, and it's called the hippocampus. To remember that, think about a hippopotamus going on a university campus, and it becomes a hippo on campus or the hippocampus. The job of the hippocampus is to take information in and sort it and store it into your temporal lobes for long-term storage. What do you think happens if you just keep loading loads and loads of information into that brain system? Eventually, the hippocampus seems to say, Tilt or delete – I've got too much information. Eight minutes seems to be one measure of how much your students can learn.

Of course, this is just a rough rule. Another way to consider it is watch when you see the glazed-over expressions of your students. If they start to glaze, it's often time to stop and do something different.

Now, let's reflect on what do you think the attention span of your students is. Is eight minutes too long? What would be the right way to break down your instruction to really meet their needs.

Key Pathways – Nine Intelligences

The ninth aspect for really helping your students learn well is to remember that there are at least nine intelligences. Howard Gardner, who I've had the privilege of meeting recently has put the theory that there's more than just basic IQ and uni-dimentional ways of looking at intelligence. He makes the point that most of school really focuses on verbal intelligence and mathematical intelligence.

Let's just consider these different intelligences. The first is verbal linguistic. When we think about this, there's the intelligence involved with thinking and speaking using words. Often, those students who have this intelligence in good regard will tend to do well in school.

The second intelligence is logical mathematical – the ability to do mathematics, to think logically and often to sequence information in ways that work well. Again, in school, we tend to really put a high price on this logical mathematical intelligence.

A third area is the intrapersonal. Intrapersonal intelligence involves really understanding oneself. It's the ability to really understand and become metacognitive

about our own thinking and learning. Research suggests that those people that develop that intrapersonal intelligence tend to be more successful in life.

Another aspect is interpersonal intelligence. This involves the ability to communicate well with others, to have empathy. Research suggests that those people who have strong interpersonal skills tend to do better in life. For example, in the business world, a huge amount of time is spent in interpersonal communication.

Another intelligence is musical intelligence. Often, when we go to high schools, we see some students who are incredibly skilled as musicians. Throughout history, most cultures have used music as a key part of the learning process.

Another intelligence is that visual spatial. They're the skills involved with pictures and art. This is an intelligence that, again, must be cultivated and nurtured for higher levels of student achievement.

A newer intelligence that has been introduced is naturalist intelligence. This is the ability to really understand nature well. To give you an example, I just had the privilege of meeting Monty Roberts, the horse whisperer. Here's a man who had a wonderful natural intelligence. He was able to communicate with horses through nonverbal communication; and his understanding was wonderful. Naturalist intelligence is that ability to really connect and make meaning of nature.

The final, and possibly the ninth—and it hasn't fully been defined as an intelligence—is that existentialist. This is a connection of really finding meaning in life and really detecting a higher purpose.

That's a short summary of some of the key intelligences; and we have at least nine of those intelligences.

Now, let's take time to reflect on these intelligences and what role they might play in effective instruction.

Key Pathways – Storage Capacity

By: Marcus Conyers

The tenth pathway to high student achievement by understanding how the brain learns is to remember that research suggests that the brain can store up to the equivalent of 10 million books. Think about that. Think of all of the information that could be contained in 10 million books.

Your brain has an incredible capacity to store information when we learn it in the right way. Throughout this program, we'll be looking at ways to really enhance our ability to store, retain and recall information from this fabulous database that we can read over time.

It's a really good thing that we can remember the equivalent of 10 million books of information stored in our brain, because information is exploding at an almost expediential rate. Back home in Cambridge, England, when we go back there, there's an average of about a mile of new books added to the library every year. So, the brain can store the equivalent of up to 10 million books worth of information.

Now, let's reflect on the implications of this. If the brain can remember and store this information, what could we do to really help brains learn this more efficiently so the brain could recall it and apply it when it needs it.

Now we've explored the ten key pathways for increasing student achievement based on how the brain learns. Thank you for exploring this with us. What we suggest is that you watch out for these key aspects in your everyday life and in your everyday teaching.

Learning & Memory – Lecture

By: Marcus Conyers

One area of research that we've found fascinating is that around learning and memory. This is a field which is expanding all the time. We're beginning to discover what nutritional aspects impact the brain and memory and learning. Over the years, there has been significant data gathered around how the brain actually responds to different forms of instruction. I would have to say that this is early indicators of what may be true. The best way for you to find out if it's true for you is to think about it and reflect in your own real experience.

One data set that we've looked at that many of the teachers we have communicated with believe is true is as follows.

First of all, just imagine that you go to a lecture. You drive across town, and you arrive at the lecture—maybe you're doing graduate school, whatever—and you sit down and the lecture, and you're finally there, and the lecture is good and it's interesting. Then you're driving home, and the next day when you wake up in the morning somebody says to you, What did you learn during that lecture? What do many of us say? I can't remember.

You're not alone if that happens to you. In fact, research indicates for many people—and by no means all—they can expect to remember roughly 5 percent of the content of a lecture. This is after 24 hours. The reason for this is the brain is not naturally designed to learn very well from what people say. Think about this. Think about your own experience.

Have you been to lectures where you couldn't remember that much the day afterwards? Think about a week afterwards or a year afterwards, and you'll begin to see the impact of this key point. The reason I mention this is that if we assume that when we lecture that students should remember it, we're really not based on the research studies that we have to date.

Think about that. Every time we attend a lecture, the brain is going to be deleting around 95 percent of the information and hitting the SAVE key and remembering about 5 percent. To really make this make sense for you, I'd really just like you to stop and reflect on whether this is true for you. Have you been to lectures before where you kind of enjoyed the lecture—or even if you didn't enjoy the lecture—and within 24 hours you found it difficult to remember a lot of the information. Just pause and reflect right now.

Welcome back. How did you do? Did you find that for you, you often forget the content of a lecture? This is really quite common. Key point here as we go through this information is to start to look at instruction and ways we can design it more around how the brain naturally learns. Key point here is many brains are not designed to learn particularly well from lectures.

Another research study that we looked at was from a medical school. They looked at what science students actually remembered after a couple of years at a pretty prestigious university. Just imagine you're a parent and you sent your kids to this school. After two years after traditional lectures and traditional instruction, most of the students could only remember and recall 10 to 20 percent of the science they had been taught. Think about that. All that hard work that went into those lectures and what resulted was a pretty low level of recall. We're not saying that this is true for all lectures; but for many people, they don't learn that well from the lecture format.

Think about the students in your classroom. Do you have some students who learn better from lecture than others?

In the case of this particular medical school, they really looked at their research, and they began to change what they were doing. They began to use much more brain compatible instruction to the help the doctors-to-be to learn more effectively. They used problem solving models and hands-on learning.

If we use lecture, we have to be aware that for some students it may work really well, but for many we can't expect a high level of retention and recall or application.

Learning & Memory – Reading

By: Marcus Conyers

The next phase that we look at is how well does your brain actually scan a book, look at a book, and remember what you've read. Think about this. Think about all of the books that you've read in your life and think about how many of those books you actually remember – even the titles or the authors.

Once again, the brain does not seem to be designed very well to recall information from reading. In fact, many of us have had this experience that we're sitting there and reading, and then somebody walks in and says, What are you reading? You look up and you say, I have absolutely no idea. The brain seems to be less well designed for reading print and listening to words than to be active out there in the world using more active learning processes. Think about that.

The brain is likely to delete 90 percent of what we read and save around 10 percent. Again, this is just within 24 hours.

I'd like you now to reflect on what is the likely implications of this in classroom teaching in the U.S. and around the world today. If after lecture we're likely to delete 95 percent and after reading we're likely to delete 90 percent after just 24 hours, what implications does this have for brain-based instruction and student achievement? Just reflect on this and think about what impact this could be having in your school and your classroom.

Learning & Memory – Modeling

By: Marcus Conyers

Welcome back. It's really useful to process this information with yourself and others to get the true impact. If you look at another modality for instruction, which is really learning by modeling, which is by watching people, seeing what they do or actually building models, this area seems to have a much higher level of retention and recall. In fact, research suggests in some studies that people will tend to hit the SAVE key and remember 30 percent of what they watch somebody doing.

Fascinating brain research is coming out about this. There are some certain neurons within the brain whose job is to really notice what other people are doing. These are called mirroring neurons. What these mirroring neurons do is they act as a movie camera. They take a movie film of what somebody else is doing, and it acts kind of like a green room for rehearsal. Then the same areas of the brain that the person you are watching is using will tend to get fired up in the brain. For example, if you watch somebody playing tennis, the same neurons that they use to play tennis will be activated in your brain.

This kind of makes sense, because parents across the world say, Don't do as I do; do as I say. What do kids do? They tend to do as you do. The reason is the brain is naturally much more attuned to learn by watching and seeing what other people do.

What implications does this have? If kids learn not so well from lecture or from reading—although those do have a very important place—and kids do learn from watching, what implications does this have? What we can do is to be even more dynamic in the classroom. Acting out information can really have a powerful influence on increasing kids' ability to learn well. For example, we often see great history teachers will act out certain scenes from history. I remember my teachers used to do this tremendously well. They were using that power of the human brain to learn by watching to activate those mirroring neurons.

Right now, please pause and reflect about what you are already doing in the classroom to actually make things more visually interesting by acting out things, or what

you could do, or what you've seen other teachers do. Most importantly, just take some time to reflect on the power of modeling in the classroom and its impact in your school.

How did you do? What ideas did you begin to notice. Most effective teachers, those teachers that get the highest levels of student achievement, are often really good at creating action in the classroom and acting things out.

Learning & Memory – Dialog

By: Marcus Conyers

A powerful way in which we can increase the brain's ability to retain and recall information is that of allowing people to dialog. What we've learned is that when people have a chance to dialog to talk through ideas having listened to something, the ability to retain information skyrockets. Some research suggests that people will remember around 50 percent of what they talk about after 24 hours.

Let's make this meaningful for you. Have you ever had a time when you've attended a lecture or you've been to a conference or any sort of learning event, and the person is speaking and you think you're getting it. Then you have a chance to dialog or talk something through with somebody. What happens to your memory? If you're like most people, the ability to recall information just goes through the roof. In fact, as I look back to all the conferences that Doctor Wilson and I have attended and taught at, what we really remember is not so much what the presenters were saying, but the dialogs that that presentation stimulated.

Think about this in your own mind now. Think about places where you've been where someone has been presenting and you had a chance to dialog and talk through

what they were saying. When the brain has a chance to dialog and talk through information with somebody else, the brain is able to retain or save around 50 percent of the information and only delete about 50 percent of this.

What implications does this have for us potentially in the classroom for brain-based instruction? It really links beautifully with the research on the impact of peer teaching. A study that we looked at showed that one of the most powerful ways for increasing student achievement was that of peer teaching. This was true in reading and in math.

I'll always remember going into a classroom one time. It was middle school, and they were teaching math concepts. It was a really crowded classroom, and all of the students were kind of jammed in together. All the students were working in teams to actually solve the math problem. The excitement in the room was really palpable. When the students were able to talk about what they were doing, to swap ideas, their ability just went through the roof.

I then went into a different classroom where all the kids were sitting by themselves. Many of them had this view and this outlook, Oh, my gosh, I can't do this by myself.

Research also suggests that when students have a chance to get corrective feedback on what they're doing and how they're learning that student achievement tends to rise quite dramatically. Creating opportunities for people to dialog with each other can dramatically increase retention. In fact, in the design of this online program, what we've

looked to do is to give you plenty of time to just stop what you're doing, listen and chat with somebody else and bring those ideas together.

We even use this in the design of our graduate programs. We have graduate programs with students from across the states, and we encourage them to do dialog in terms of threaded discussions. They can do this via the internet.

This process of allowing people to really engage in dialog is so powerful. I'll give you some examples from my own life, and then I'll give you time to reflect on your own.

When thinking about elementary school, I really don't remember that much about it. But one day we had a chance to work in a group where we could dialog about how to storm a castle. We were being crusaders, and we were studying the history of the crusades. We had to draw a picture of the fort, and we had to decide how many forces we needed. We worked in groups dialoging and creating our plan for bringing down a fortress. I still remember to this day that to take down a fortress you need three times as many forces as the defenders have. That part of history is really emblazoned in my mind forever. It was that process of dialog.

Also, think about what we know about TV shows. When TV shows are spoken about the next day, recall goes through the roof. Hence the success of *Monty Python's Flying Circus.* When I was in high school watching that show, everyone would watch it with close attention. The next day, some of my friends would be able to repeat the sketch almost verbatim. Then we'd talk about the sketches. That dialog, again, helped hit the SAVE key in memory.

What can we do with this information in the classroom? It's a really powerful idea in brain-based instruction after you've been speaking for seven, eight minutes or so to give students a chance to dialog with each other what they've learned. The other advantage of this is as you walk around the room you can hear exactly what students are talking about, and it will give you an idea of how much they've already learned.

Right now, to kind of model this process, please reflect and dialog about how you're already using this idea of dialog and discussion in your classroom, and think about some examples of how it's helped you learn something in the past. Also reflect on how you might be able to use it even more effectively in your classroom.

Welcome back. Did you think of some ideas for using discussion and dialog? Certainly, when we do our live workshops, we build this in. Looking at some research on accelerated learning, the more time students spend working on things themselves, the more those students are going to be able to learn effectively.

Learning & Memory – Activities & Exercises

By: Marcus Conyers

We really start to move up the charts in terms of retention and recall when our students have a chance to do things. What we know is that when students get a chance to do things, their retention goes up to around 75 percent. Think about this. When your students get a chance to do an exercise, a kinesthetic activity, they can hit the SAVE key and recall around 75 percent of your instruction. Isn't that powerful? They'll be deleting about 25 percent.

You can really think about this in your own life. For example, when high school students are interviewed about what they remember about the whole of high school, all the high school years, what most of them remember is driver ed—learning how to drive—and typing. It's those skills that involve doing that people tend to remember the most.

This is also why we tend to learn so much more from fieldtrips. I remember the fieldtrips that I went on like it was yesterday because we were out there doing things.

If you want to really help our students remember information so they can recall it and apply it, making sure they get to do things makes a huge impact. Some research suggested that those students who had teachers who learned about higher-order thinking and hands-on teaching had up to 40 percent increase in terms of their student achievement. This is a powerful thing to think about.

Of course, great teachers that we've worked with have always used plenty of hands-on and plenty of actions to make sure that the learning sticks. In other classrooms, however, what we see is it's a handing out of worksheets; it's a picture; it's answer the questions at the back of the book. Without much action, it's unlikely we're going to get much attention and recall.

To make this make sense for yourself, please reflect and dialog on what stuff you're already doing in your classroom right now that is actively involving so students get to do things. Also think about what you might be able to do in the future to really harness this aspect of brain-based instruction even more effectively.

Welcome back. I hope you came up with some really good ideas for this, because remember, what you do in creating your own links is what's really going to help you learn and acquire the information from this program.

I just want to give you one more example about the act of doing. In early elementary school, one day we were all allowed to go into a gymnasium to act out the aspects of atoms. What we could do was we started off all standing together and we were ice. Then we moved around the room a little bit and we became water. Then we screamed as we ran around the auditorium when we became steam. Just as a reminder, doing really makes a huge impact.

Learning & Memory – Use Information Immediately

By: Marcus Conyers

Another aspect that really allows us to dramatically increase retention and recall information is the act of using information right away or teaching somebody else. If you can ever find a way in your classroom to get your students to use the information immediately or to teach somebody else—again, this links back to the peer group teaching—you can see some quite dramatic increases in the amount of information that people recall.

For example, and one of the aspects that we do to encourage the learning of mathematics, is we teach something called health math. Here we get kids really involved in understanding nutrition and the number of grams of sugar in a can of soda, et cetera. What we do is we equip the kids with some great hands-on learning experiences. Then we ask them to go home and teach their parents. What's exciting about this is the kids

love to go home and feel important and powerful by teaching their parents. When they do this, the information tends to stick even more.

We also find this in our workshops that we do across the country. When teachers take what they've learned with us live and go and apply it in their classrooms or at home, they really dramatically increase their ability to retain and recall information.

How can we use this great understanding that when we teach somebody else or when we use information right away we will tend to recall it? Right now, please take a few minutes to reflect on what we could do to make sure kids use information right away that they've learned, or that they get a chance to teach somebody else. Reflect on what you're doing right now and other ideas that might help you use this powerful system even more effectively.

Welcome back. Hope you came up with some great ideas there. This is really at the pinnacle, because when we do this, when we actually use information or teach somebody else, we tend to remember 90 percent of what we've learned. We hit the SAVE key on 90, and we only delete 10 percent.

Learning & Memory – Summary

By: Marcus Conyers

As we look through this data around how brains may learn in the classroom, it really shows some fabulous opportunities for one, validating what you've been doing already about making information more hands-on; doing the things that really get the kids activated and involved; giving them time to work in groups; and also using information and teaching each other.

It will also point out to you why many students, if they're not already successful in school, do not respond that well if we give them more lecture and more reading and more worksheets. If that's not their preferred style, they're unlikely to suddenly spontaneously change their level of student success.

To review, we've found out that when we listen to a lecture, the brain may remember 5 percent of the information and delete 95 percent. When we read a book, our brains may remember 10 percent and delete 90. When we have an opportunity to watch somebody really modeling something, our brain can save 30 percent and delete 70. We really start to rock and roll and move up when we give people an opportunity to dialog what they've been studying; so the brain will tend to save 50 percent and delete 50. When our students get a chance to really get in there and do it and use it, they will tend to remember 75 percent; so the brain hits the SAVE key on 75 percent and deletes only 25. Then at the top of the tree, using information where people can use the information right away or teach somebody else, they will tend to remember 90 percent.

There's just a few guidelines about what we can do to help make instruction more brain compatible. We wish you the best of luck in actually applying this in the classroom. A little bit later on, we'll be modeling a way that you could actually use this and link it to a lesson plan. Enjoy applying this information.

Communication – Student Styles

By: Marcus Conyers

Have you ever felt sometimes that you're teaching in FM and your students are learning in AM? You've felt like the information that you're giving is going right over

their heads or they're tuning you out? Well, you might be accurate. In fact, research suggests that there are at least three different communication styles that your students may have in the classroom. Once we begin to understand this, this can really help our brain-based instruction hit home much more effectively. For example, we know that there are at least three styles.

First of all, you have your visual students. Your visual students will tend to look at you very intently. They'll watch every move that you make, and they have a huge amount of excitement when they see you make a mistake. They live for that stuff. They'll notice every stain you have on your shirt, everything that you drop. Your visual students have brains that are highly activated in the visual areas, and they love to learn by watching. Just think about those visual students, and I'll give you some key ways to read those students more effectively later on.

On the other hand, you also have some of your students who are much more auditory. These are the students who will tend to listen to you. They tend to be really good at quietly sitting there, taking in information. They often don't need to give you a lot of eye contact; although sometimes they will. And they're the kids that will remember a promise that you've made for the rest of your life. They listen to what you say. You can see these kids 20, 30 years later; and they say, Miss Jones, you never did take us on the fieldtrip; and you promised that we would if we handed in our test papers on time. So, you have kids who are auditory that remember what you say forever. They tend to be very good at listening and doing reading and writing tasks. Think about students who are like that.

Then you have a third set of students who are the kinesthetics. They are the movers and shakers in schools. These are the kids that really learn well by doing. They love to rock and roll; they love to move. In fact, their language is one of movement. These are the students who often have the most difficult time in school.

Think about it – you have your visual students, your auditory students and your more kinesthetic students. Just think of those different styles of students in your classroom.

Now, in the time that we have available in this program, we just want to get you to think about these differences so maybe you can make some tiny adjustments in your instruction. As we begin to look at the real students who are arriving in your school, notice how that may have changed over time. For example, back in the 1940s and 1950s, only around 40 to 50 percent of kids ever went on to complete four years of high school.

Back in those days, the kids that would rather be out in the fields or out in the factories or doing something left school; they were out there doing those sort of things. It tended to be the more auditory students who would be remaining in school. Since then, we now have a fact where some 80 percent of students are finishing four years of high school in some of the more successful areas. So, we now have classrooms that are full of visual, auditory and kinesthetic students. They bring their direct needs to our classrooms.

Communication – Visual Learners

By: Marcus Conyers

This has a huge impact in terms of how we need to design instruction. Let's think about this for the moment. When we looked at the research about roughly what sort of

styles are represented in our classrooms today, a fairly common agreement was that around 15 to 25 percent of kids arrive in our schools who are more auditory – the kids that are happy to sit there and listen and read and write and really take part in the verbal dialog part of teaching. These kids you might say have pretty high verbal intelligence if you looked at Gardner's intelligences. So, to these 15 to 25 percent of kids, schools today can be a really neat place to be.

In fact, in one survey of hundreds of classrooms, the researcher found that in most classrooms most of the instruction is highly verbal – it's around lecture, it's around worksheets, it's around reading assignments. This is going to work relatively well for 15 to 25 percent of kids.

For a few kids who are auditory, they're going to learn very well; and even some of the visual and kinesthetic kids can adapt their learning style, if you will, to the teaching style, to the style of instruction. Those will tend to be the kids who can do pretty well in life. But for many of the visual and kinesthetic kids, they do not stretch their learning style to meet the current instructional style of the school. That is why with standard instruction maybe 40 to 50 percent of kids will do okay; but there's a huge and growing majority—50 to 60 percent of kids—who really need different instruction if they are to achieve at maximum high levels that our school districts and our schools demand.

The great thing about beginning to understand these differences between visual, auditory and kinesthetic students is that it will start to explain why some students learn very well when you use some activities while others do not. Let's think about this, and let's give you some specifics of how you can read which students are more visual,

which are more auditory, and which are more kinesthetic. This will just give you a start point.

One of the first things to notice is the body language of your visual students tends to be pretty dynamic. They love to paint pictures with their hands. They'll have gestures like this; they're often excited. If you watch the body language of someone, the nonverbal communication of someone who is visual, they're often looking up to grab a picture in their minds eye almost like they're downloading data; and they're painting pictures with their hands.

Let me give an example. Just imagine a student coming back from Disney, and it's the end of the school vacation. You ask that kid when he comes back from Disney, What was Disney like? They may communicate to you something like this. Oh, Disney was wonderful. They have that beautiful white castle with gold flecks down the side. There was wonderful cartoon characters walking down the street holding a gold balloon or a silver balloon or a yellow balloon. There were smiles on all the kids' faces.

What was the student doing with their hands as they were describing it? They were literally painting the pictures. Some of you may have seen the beautiful white castle with the gold flecks down it. Your students will tend to be pretty active with their gestures if they are more of a visual kid.

The other thing is the speech tends to be pretty quickly. When your visual kids communicate with you, they tend to speak pretty quickly. Why would that be? Logically, when the brain is processing pictures very quickly—what's a picture worth? That's right. It's worth a thousand words—the brain is processing huge numbers of

images, and it can do it very quickly. Whereas, speech is much slower. Often kids are trying to accelerate their speech so they can catch up with the images that are running in their minds.

So, your visual kids will tend to speak quickly; they'll tend to have a lot of gestures. They might even look up to download information through the occipital lobe of their brain.

These are also students that love it when they can do graphics; when you can show them pictures of what it is that they're learning. They love to watch videos. There are many, many signals that you'll have.

Right now, to make this meaningful for yourself, please think about one or two students you know or people you know who might be more visual; who prefer to learn in that visual mode. Reflect on some kids you know or people you know who are slightly more visual.

Did you think of some students or some people you know who are more visual? Once you get the hang of this, you'll begin to see these people everywhere. Of course, these students who are more visual can learn very quickly, almost at the speed of light, when we give them visual processing tools that help them learn effectively.

A few strategies that we found may help with students who are more visual are the opportunities to do mind maps or some sort of organization or planner. That can work very well. Graphics – we have a system that we call creating brain webs that we use. On one side of the page we create a big graphic of a brain. They can paint pictures or draw pictures of key aspects that they really want to learn. And on the other side they

can write key notes that they want to take. Research suggests that effective note taking is a key to increasing student achievement.

Using graphics in your presentation can make a big difference for helping them understand. Showing videos to help them get the big picture can be very useful. Using positive body language—because these visual kids tend to be watching every gesture that you use—can also help them have more comfort around you and believe that you're truly committed to helping the students learn.

Decorate your classroom with plenty of color and really making the place look visually inviting can also make a difference.

Fieldtrips—getting students outside so they can really see how things work—can help your visual students.

That's just a few ideas, and you'll no doubt come up with some more of your own.

Communication – Auditory Learners

By: Marcus Conyers

After we've done a great job helping our more visual students learn effectively, we now need to switch our attention to our friends the auditory learners. The auditory learners are quite easy to spot because they will tend to give you very limited body language, because they're very good at processing verbally and internally.

Imagine the student, again, coming back from Disney who is a student who really enjoyed their time at Disney; they're more likely to see this. I really enjoyed coming back from Disney, and my time there was just wonderful. It was great to hear all of the kids screaming and having wonderful fun on the rides. I loved the sound of the music,

the bands playing and the laughter that I heard everywhere. I can't wait to read more about Disney and write about it.

What was happening with the body language for this little guy? Not much. The reason is he's not really making many pictures. He's replaying a tape of his experience at that theme park. You'll notice students who are like that in your classroom.

The other thing you'll notice is their eye motions tend to be just a little bit to the side. They don't need to look up to grab big bulks of information. They tend to be pretty good at just kind of looking down and often won't give you so much eye contact.

So, you have auditory students in your classroom. They'll tend to also speak a little bit more slowly. Did you notice that when that kids was describing it? They tend to speak more slowly because they don't have to keep up with any pictures in their minds eye. So, students who are more auditory are almost storing information almost like an audiotape or a CD inside their brains and can play it back accordingly.

Now, just reflect briefly on some students that you may have in your classroom who are more auditory.

Welcome back. Did you think of some students that are more auditory? You'll tend to see them – and they tend to do very well in school because they're good at listening and speaking and writing. And writing, in many instances, they of course may need some care and attention in that area. So, we have the auditory students.

Strategies that might work well with auditory students are storytelling. Those students love to hear stories. Use of voice tone can make a big difference, particularly varying your voice tone so you make your voice tone interesting that will help them pay

attention. Play them songs, play music to make a big difference. Playing tapes or CDs of great speakers over time. Poetry reading can make a difference. Giving them plenty of opportunities to read and write to learn can also help with those students. There's many strategies that we can use to help the auditory learners most effectively, and many of those are already in place in your school.

Communication – Kinesthetic Learners

By: Marcus Conyers

The third group of learners that we have are the kinesthetics – the movers and shakers. Across the country and around the world what we're finding is there's more and more of these kinesthetic learners arriving in our classrooms.

These are the kids that really learn well by doing. They love to do, and they learn by touching, by making models, by acting out. They can learn very quickly under the right circumstances, but tend not learn so well just from traditional auditory communication such as lectures, working on worksheets and information that isn't really connected physically to their bodies.

If a kid comes back from Disney who is more of a kinesthetic student, they're going to be acting more like this. Oh, man, I really loved the ride at that theme park. You get on the ride and you feel it as you go up higher and higher up on the ride. Then suddenly you start to drop, and you're moving from side to side, and your stomach just feels terrible and it's up in your heart and you think, oh, my gosh. Then you get off the ride and your knees are shaking.

What was happening with his communication? As you noticed, your kinesthetic kids will tend to relive what they've experienced before. So, your kinesthetic kids just do it. They relive previous experiences, and that's how they really connect to information.

Right now, reflect on some students that you know who might be more kinesthetic.

So, could you identify some of your students who are more kinesthetic. Most teachers can immediately. These movers and shakers tend to create many of the challenges in the classroom unless their needs to move are met. Watching out for the needs of your kinesthetic students can make a huge difference.

Research suggests that one of the best ways to increase student achievement in your class is to make sure we meet the needs of those kinesthetic learners first. This also allows the other communication styles to learn well; but once you get those kids on board, you're away to the races for helping the kids learn more effectively.

Just to touch briefly on a few strategies that many teachers use with the students who are more kinesthetic. One – anything that is more hands-on can make a huge impact. Two – making sure you give the kids chances to get up and exercise and move around to kind of get the jiggles out of their bodies. Three – to give them models and kinesthetic tools they can use to create meaning. Four – to give them some great experiences; fieldtrips are a wonderful way for your kinesthetic learners to learn. Five – get them to teach your other students kinesthetically what they've learned.

There are many more strategies that we have in our toolbox to help your kinesthetic learners learn more effectively, and we hope that you'll have fun discovering

what you're already doing right to help these kinesthetic learners and ideas to add to your toolbox that you can use more effectively.

So, were you able to identify some kinesthetic students and think of some strategies that you can use to help them learn even more effectively? Again, this is a long-term process within your school of working with other teachers to find out the sort of students they have in their classroom and to start to build a bank of lessons that you could use to help more of your students reach high levels of success more of the time.

In fact, when we work with schools and districts, what we recommend the great teachers do is to create a whole bank of lessons that literally can reach more of these different styles of learners more of the time. This is how we can really raise student achievement to higher levels. Interestingly, when I was working in Japan, I was impressed with the education system because what they focus on there is actually really creating lessons that reach all learning styles and that result in high levels of learning.

So, we've begun to look at the three different learning styles – visual, auditory and kinesthetic. In this brief introduction to this topic, we've let you see some ways to maybe recognize these different learning styles. We've also looked at some attributes that these learning styles have in terms of how they can learn best. And we've also begun to look at a few tools that you could use right away to reach these different learners. Again, this is just an introduction; and over time as you develop your own strategy bank, you'll be able to help far more of these students achieve at higher levels.

Hitting the SAVE Key

By: Marcus Conyers

At BrainSMART® we use a metaphor that the brain is always saving or deleting information. Think about this for the moment. We see kids arriving off the buses in the morning, and they arrive in our classrooms, and they seem to be sometimes on auto delete. Have you ever noticed that – it's like you teach, the kids delete, you teach, the kids delete and then we test.

One of the mechanisms we like to share with students and with teachers is the concept of hitting the SAVE key in our learning bank. We'll just take you through this acronym, and it may be helpful for you. Then you'll see the link as we do a brain-based lesson in a couple of minutes.

First of all, just notice this. The S in the SAVE key represents see. One of the things we know about the brain is the brain works tremendously well when it can take in visual information. Most of schooling is designed around hearing. The first letter is see. When we want to learn something, the brain needs to make a picture of it in the minds eye or see a picture of it out there in the world.

The A in hitting the SAVE key is to associate. The brain seems to work best when it can take new information and associate it or connect it with information that is already there. If we want our kids to hit the SAVE key, they need to see it and associate it.

The next aspect of hitting the SAVE key is they need to vividly experience it. That's the V and E in the SAVE model – to vividly experience information.

When kids can see it, associate it, and then vividly experience it in some way, that is when they're able to hit the save key. Many of the brain-based strategies that we've

developed—and we have a toolbox of 60 different strategies that we share with educators across the country—all of those are designed to help the students hit the SAVE key so they can retain the information and recall it when they need it; for example, when they're taking standardized tests.

I'd like you to reflect and think about this with us. If the students are sitting in our classrooms and they're deleting the information, what must we do to help them recall it? That's right. Teach in ways that help your students naturally hit the SAVE key.

That brings us on to the next process, which we call Creating Brain-Based Instruction Lesson Plans. Now, let's look at a lesson plan that can help the students hit the SAVE key.

Creating Brain-Based Lesson Plans – Part 1

By: Marcus Conyers

Research suggests that one of the most powerful ways to raise student achievement is for teachers to have lessons that really help kids learn effectively. When working in Japan, I was very impressed with the real priority that teachers there put on creating lessons. The lessons there are almost sacred. The wonderful thing about Japan too is that they give the teachers a lot of time—in fact, around 40 percent of their time is available for creating lessons, critiquing lessons and improving lessons. This is really the unit of what we can use to raise student achievement through brain-based instruction. Wouldn't it be wonderful in your school and in your district if you had more time to create brain-based lesson plans?

What we're going to do right now is to share with you a pretty simple process for creating brain-based lesson plans in a short period of time. So, even if you don't have a lot of time, you can begin to create these and apply these in your classroom.

A cool thing to do too is to get together with friends who are teachers and create a whole lesson bank of brain-based lessons. We call these the six cylinders that drive student achievement.

The first element is to ask yourself a question. What is the goal of this lesson? This is such a significant and important first question in designing any lesson. For example, what would not be a good goal for a lesson that's likely to result in learning is to say to cover the material. Because if you cover the material, it does not mean that the brains in the classroom have retained the information. So, a learning goal might be, I want my students to listen and to retain the key concepts of this particular area of study. In a few minutes I'll show you an example of one around nutrition, and my goal there will be clear as I explain it to you. So, the first thing we have to do, the first cylinder is to have a clear goal of what it is that we want our students to learn from this particular lesson.

A key part about goal setting for lessons is to pick one or two key factors that are really important for you. For example, you might have a lesson that is just about parts of speech. By the end of this lesson, I want my kids to be able to remember and understand the different parts of speech. Once that first cylinder is in place, it will help your brain design what you do. You'll also have a clear measure of how successful you've been.

The next thing you need to do is to make sure that we get student brains engaged. This is why the next question is – What is the benefit for my students to learn this? The reason we say this is how often have you had kids say, Why do we have to learn this? Does it happen to you? It happens in most of the classrooms where we are. So, get a clear idea about what is the benefit to the learner of learning this. Again, we'll show you an example in a few minutes.

Creating Brain-Based Lesson Plans – Part 2

By: Marcus Conyers

The next phase after we've got that benefit clearly in mind is to make sure that we find a way to grab the students' attention and sustain attention. I've got a question for you. What would you say is happening to attention spans of students in your classroom right now? Is it going up, or is it dropping? In most of the classrooms where Doctor Wilson and I – we see attention levels are really dropping, because the threshold, the grabbing attention is going up. Kids are raised watching MTV, having huge amounts of multi-media stimulation, and there you are in the classroom.

What we do know of is that there are a few key aspects that can really help you increase your ability to grab attention and sustain attention.

The fourth cylinder then is once we've got clear about what our goal is, we're clear about the benefit to the students, and we're clear about a way to grab attention and sustain attention, is how can we make it meaningful for students.

One of the major reasons that students don't learn more is unless they find a way to meaningfully connect the information and use it in some way, their brain will tend to

delete it. So, making it meaningful – and the question how do I make it meaningful involves a couple of processes. One, how can I make it meaningful visually, auditorily and kinesthetically? How can I make it meaningful from what they see, hear and do during this lesson? That's a critical first step. The next step is how can I make it meaningful so it connects to their lives in some way. Once we've got that, we've got the first four cylinders for raising student achievement through a lesson plan.

The next factor is to find a way to help students actually retain the information. We know that when kids learn how to hit the SAVE key on what they've studied they'll tend to retain it more effectively. Using what we know about attention where we just lecture or ask kids to read, they'll tend to delete it. The next question is – How will my students retain this information? What tools will they use for this?

The next aspect, and the last cylinder, is how can they transfer and apply what they've learned here. Again, research suggests that when kids have an opportunity to transfer and apply what they've learned, it tends to stay with them for much longer and enrich the whole quality of the learning experience.

These then are the six cylinders that drive student achievement via the process of a lesson plan. We start off by asking the question – What is the goal? Then – What is the benefit? Then – How will I grab and sustain attention? Then – How can we make it meaningful in visual, auditory and kinesthetic terms? And – How can we make it connect to their lives. The next question is: How do we help the students retain the information? Finally – How can students apply or transfer this information?

When these six cylinders are in place, we're beginning to create lessons that can really result in students' learning. In a couple of minutes, we'll show you a model of this at work; and you can be the judge of how successful we've been.

Lesson: Brain-Smart Foods – Part 1

By: Marcus Conyers

In this lesson, we'll be learning ten foods that may have some health benefits for sustaining a high level of health and protecting the immune system. We're going to teach it in a way that we hope you'll actually remember it and be able to transfer it for the rest of your life. Has this happened to you? You've begun to read a bunch of information about nutrition, and you're kind of learning more about it or you see something on TV; and you know all of the information right up until when it's time to actually buy food or sit down and eat. Has that happened to you?

In this lesson, we'll be looking at a way to actually overcome this. I've got a question for you. How much time have you had at the end of a day when you've felt exhausted? Have you finally had too much day at the end of your energy? This happens to most people. Research suggests that what we eat may have an influence on this.

In order to remember this information as we share it with you, we're going to use a strategy that we call Smart Pegs. This is based on some keys for brain-based instruction. The first thing to remember is that the brain learns best through location. In fact, what are the three laws of real estate? Location, location, location. It's very similar, as it turns out and as we saw in the Orlando Science Center, to be around location, location, location for the brain and memory.

At this time, we're going to use our own body to make sure that we can learn this information after we've shared it with you. Have you noticed that wherever you go your body's there? Please do this. Say, Number one, the head. Number one, the head. Say, Number two, the shoulders. Number two, the shoulders. Say, number three, the chest. Number three, the chest. Number four, the belly. Number four, the belly. Number five, the hips. Number five, the hips. Number six, the backside. Number six, the backside. Number seven, the thighs. Number seven, the thighs. Number eight, the knees. Number eight, the knees. Number nine, the shins. Number nine, the shins. Number ten, the toes.

What you now have is ten locations where you can store information. You can use this information for learning absolutely anything; but in this lesson, we're going to use it to remember ten key foods.

The first thing that we need to remember after we know how to store things in a location is the power of imagination; because when we have location and imagination, the brain is much more likely to receive, retain and recall the information.

The first item we want to remember are blueberries. Blueberries have many health benefits. One is that they tend to be high in antioxidants, and the brain needs antioxidants to protect it. So, first of all, grab a nice handful of blueberries and use your imagination and slap the blueberries on your head. The more vividly you imagine this, the more strongly your brain will remember it. Remember the SAVE key – see, associate and vividly experience. This is exactly what you're doing. So, slap it on your head. So, what's on your head? Answer, please. Blueberries. Now, go yes to hit the SAVE key. Yes. So, what's number one on your list? That's it; blueberries. Yes.

The next food we want to remember is nuts. Get some nuts in your minds eye and put them on your shoulders. You have some nuts on your shoulders. What's on your shoulders? Nuts. Very good. What's on your shoulders again? Nuts. Hit the SAVE key. Yes.

The benefits of nuts are really quite immense. Some research suggests that eating nuts on a regular basis can reduce the risk of getting heart disease. Nuts are also a really good source of food to help you stimulate your brain to say, I'm full. I'll give you an example. If you've ever been really hungry, and you didn't have time to eat and you hopped on a plane like I often do and you have a bag of peanuts; what tends to happen to your appetite? Or, for many of us, we have a few nuts and it begins to send signals to the brain that we're feeling full. Nuts is a great thing to add to your diet. Of course, use it in moderation because they are quite high in calories. So, what's on your shoulders? Nuts. Yes. Very good.

Lesson: Brain-Smart Foods – Part 2

By: Marcus Conyers

The third food we want to remember is salmon. Imagine a salmon and put it on your chest. Imagine it slapping around on your chest. Remember, the more vividly you use your imagination, the more strongly you're likely to remember it. So, what's on your chest? Salmon. Yes.

Research suggests that people who eat fish on a regular basis have a much lower risk of getting heart disease. Fish is a great thing to add to your diet. Fish also has all of

the protein of steak but about half of the saturated fat. It's a tremendous source of protein for you to include in your diet. So, what's number three? Salmon. Yes.

Now, the third food that we want to remember can be very good for heart health and brain health. Do you remember how your grandmother said that fish was actually food for the brain. It happens that she was actually right. So, on your chest, please say, salmon. Imagine a salmon flapping around on your chest. Remember, the more you use location and imagination, the stronger this memory will be. This will help you hit the SAVE key in your memory. So, on your chest, what do you have? You have salmon. Yes.

Research suggests that people who eat fish several times per week have a significantly less risk of getting heart disease. In fact, in countries around the world where they have the highest fish consumption, the heart disease rates tend to be a little bit lower. The other benefits of salmon are they are very rich sources of essential fatty acids. These essential fatty acids are really good for the brain. We know that in your brain we have the dendrites and the axons and connecting. And we know that when you have high quantities of essential fatty acids in your diet you're more likely to keep these synapses working more effectively. So, when you have salmon, we have the essential fatty acid that even helps brain function work more effectively; and some research suggests it may even improve your mood. So, salmon is great for the heart and the brain. So, what's on your chest? Salmon. Yes.

On our belly, let's put some broccoli. Imagine broccoli on your belly right there. Broccoli is a wonderful green, and the green vegetable varieties are very good at helping

us support our immune system with Vitamin C and other nutrients. So, what's on your belly? Broccoli. Yes.

Now, on your hips, just imagine you've got bananas. Around your hips you've got bananas. So, what's on your hips? Bananas. Yes. Bananas are a very good source of potassium, and some studies suggest that this may be good at helping people lower their blood pressure in quite an effective way. Again, look at the research for yourself and decide are bananas right for you. So, what's on your hips? Bananas. Yes.

On your backside, please imagine you've got frozen yogurt. Just imagine that. That's quite a vivid experience for you. Imagine frozen yogurt on your backside. What's on your backside? Frozen yogurt. Yes. In fact, some people remember this by saying two scoops – whatever; that's your brain. What's the benefit of frozen yogurt? It may be a very good source of calcium. In fact, the yogurt doesn't have to be frozen to have the calcium, but the calcium can be very useful for many areas of your body-brain system functioning well. So, what's on your backside? Frozen yogurt. Yes.

On your thighs, just imagine you're rubbing olive oil. So, what's on your thighs? Olive oil. Yes. Research suggests that olive oil can be very good for protecting the heart and also the brain. It has the certain sorts of fats that are good for these functions. In fact, we've seen a marked increase in heart disease since people have been replacing healthy, natural oils with other oils that are rich in trans fatty acids. And we have more research on this on the site. So, what's on your thighs? Olive oil. Yes.

On you knees, say, brown bread. What's on your knees? Brown bread. Yes. Looking at the research, it seems that whole wheat bread and bread that's made from

whole grains is much better for you than traditional white bread. The reason is it has more fiber and more vitamins and minerals in it. A very easy choice is to get more brown bread. So, what's on your knees? Brown bread. Yes.

On your shins, just imagine you're tying spinach. Imagine that you're tying spinach around your shins. What's around your shins? Spinach. Yes. Spinach is very rich in antioxidants and a tremendous source of vitamins to help your body-brain system operate at a good and positive level. What's on your shins? Spinach. Yes.

On your toes, just imagine you're standing in ooey, gooey tomatoes. Just imagine the juices oozing over your toes. What's oozing over your toes? Tomatoes. Yes. Tomatoes, it turns out, are a wonderful food because they contain something called Lycopene. And Lycopene is a substance that seems to be effective in some ways for reducing the risk of some cancers and also in keeping the brain working more efficiently.

Lesson: Brain-Smart Foods – Part 3

By: Marcus Conyers

Researchers have looked at people who had older brains and discovered those that have the highest amounts of Lycopene tended to have less impairment in terms of cognitive function. Tomatoes can be a wonderful source of nutrition. They also show that males who have the highest levels of Lycopene sometimes have less risk of prostate cancer. Tomatoes can be a wonderful source of nutrition.

It also turns out that to really help the tomatoes deliver the Lycopene to you, because they're fat soluble, it's good to have it with some fat. So, maybe a little bit of

olive oil over some tomatoes is a wonderful way for you to get that Lycopene hit that you really need.

Now, we've looked at ten foods that research suggests may be good for you. Of course, you need to do your own investigations to find out if these foods are right for you. Let's see how many of these that we remember right now using imagination and location and hitting the SAVE key.

First of all, what was on your head? What foods were on your head? That's right; it's blueberries. Yes. By the way, if you remember five of these, I would say that you were a genius. So, what's on your head? Blueberries. Yes.

What's on your shoulders? That's right; on the shoulders you've got nuts. Yes. Nuts are a pretty important part of our diet when used correctly.

What's on your chest? That's right; there's a salmon. Yes. Well remembered. Isn't this fun? Isn't it great when you can learn this way?

What's on your belly? What food do we have on your belly? That's right; you have broccoli. Yes. What's on your hips? Yes, that food is bananas. Yes. What's on your backside? That's right; it's frozen yogurt. Yes. What's on your thighs? That's correct; it's olive oil. Yes. What's on your knees? Brown bread. Yes. What's on your shins? Spinach. Yes. And what's on your toes? Tomatoes. Yes.

How did you do? If you got five out ten, you would be doing really well.

This is just the beginning part of a lesson for helping you remember some key foods that can help, perhaps, keep you more healthy and enhance your overall wellness.

What does this mean to us when we go to the grocery store the next time? Well, next time you go to the grocery store, you've kind of got a built-in shopping list. And when you go down the aisle where the fruit is, what's the first fruit you could grab? You could grab some blueberries. What else could you get? Maybe some bananas. Very good. Yes. On your shoulders, what have you got? Nuts. You might choose some nuts to add those to your diet.

What's the third thing you might find when you go to the grocery store? Fish, if you choose to like fish.

Go to explore the vegetable aisle, and you see that you've got some broccoli, and you also have some spinach and some tomatoes. Very good. Yes. See how your brain can even work just a little bit out of sequence.

You might also find that you need some oil. What oil are you going to buy? Olive oil. Right. Yes.

What sort of bread are you going to buy? White bread or brown bread? Yes.

And if you go to the frozen dessert section, what dessert are you going to get? Well, you might get ice cream if you want the extra sugar and fat; or what you might do is get, what else? Frozen yogurt. Yes. So, you see you have a built-in way to remember the information. These are exactly the strategies that we use to help us eat and exercise more effectively.

The other thing about exercise in this, have you noticed that you're standing up. If you want to really learn this information, standing up is a great way to do it; so if you haven't stood up so far, now is a great time to do it.

When we add this healthy nutrition to some basic exercise—just walking 20 or 30 minutes a day—you're dramatically increasing your chances of improving and sustaining a high level of wellness.

Now, very importantly, you've learned some content. We've also modeled a process to allow you to gather this information. For example, this strategy of the Smart Pegs, which is what we use from one to ten, we have used it to help students learn math, to learn Latin, to learn the parts of speech; and what is most powerful is, just imagine whatever your topic is that you want to teach your students; they're sitting down to take a test and suddenly they're able to run through in their minds those key pieces of information.

So, congratulations, however well you did on this; and think about other ways that you could use this lesson planning system to really help your students achieve at a higher level.

Brain-Smart Foods Summary

By: Marcus Conyers

In this mini-lesson on ten BrainSMART® foods, the goal, which is the first cylinder, was to equip you with ten key foods that might help you sustain health and energy; and also, for you to retain that information and actually apply it one time when you're out in a restaurant or when you're shopping. The benefit is to you that once you gather this information and begin to use it, you may well find more energy, you certainly have a greater control of your nutritional expenditures, and find some interesting ways in which you can eat and think and exercise more effectively.

The third aspect in terms of attention was the way we're going to keep you paying attention is to get your whole body-brain system involved in the process. When you do this, your attention level should have been quite dramatic.

We've also used visual, auditory and kinesthetic learning approaches to make sure that you could create meaning for yourself through those three channels and also a way to make it meaningful for you in terms of creating your own meal plans, for example.

We wanted you to retain it, and that was answered by using a strategy that we call Smart Pegs.

Finally, we wanted you to be able to apply and transfer what you've learned by organizing it in the form of a list of foods that you could use and purchase so that the next time you're in a grocery store, you have a list automatically built-in; and when you're making your next decisions about what to eat, the information is right there in your working memory.

Our goal was as we laid out this – so, here we've used the six cylinders for driving student achievement through an effective lesson plan. Now, let's look at ways in which you could use a lesson plan similar to this in your own content area.

Overview

By: Marcus Conyers

Congratulations. You've almost finished this program. When we began, we said that we would be focusing on two major areas. The first, discovering how we could brain-based instruction to increase student achievement. We began to look at ways in

which the brain naturally learns best and ways that we can teach that really allow brains to maximize student achievement in our classrooms.

We've looked at the role of understanding how some students are visual, some are auditory, and some are more kinesthetic. And we've looked at tools and strategies that you can use to help these students learn more effectively.

We actually used a practical lesson planning system that had the six cylinders for driving student achievement. We then modeled a complete lesson around nutrition to allow you to see this in action.

We have also considered ways that we can really increase the capacity for students' brains to learn well and achieve at higher levels by understanding the power of the "Drive Your Brain" model. Here we looked at the power of metacognition as the overarching skill that allows us to assess our thinking, choose our thinking, and then execute our thinking in meaningful and positive ways.

We looked at the three-part model for effective thinking, learning and communicating, beginning with the input phase, then the processing phase and the outputting phase. And we looked at some strategies that you could use right away in your classroom to increase students' learning. We looked at the power of the HEAR strategy – the halt, engage, anticipate, replay. And we also saw Doctor Wilson modeling ways that we could use systematic search at that precious input phase.

We then considered ways in which our students can learn more, more of the time; how we can gain more energy and eat more effectively for lifelong learning and health.

So, congratulations for completing this program. We'll finish off with a few next steps.

Next Steps

By: Marcus Conyers

We hope that you have enjoyed this journey of discovery about the brain and learning and raising student achievement. It's now time to look at possible next steps.

As we said earlier on, we've now covered around about 1 percent of what Doctor Wilson and I teach in this subject that is fascinating and expanding all the time. We spent time to develop specific resources to help you move to the next level. Here are some ideas that you might want to use for following up.

One, you may want to visit our website, which is at www.brainsmart.com and get updates on some of the workshops and some of the books that we are launching.

Secondly, you might want to review some of the books that we've already published. We have one which is called *BrainSMART® Strategies for Boosting Test Scores*. This is a great resource for people who want to raise student achievement by applying brain-based learning. We also have *Courageous Learners: Unleashing the Brain Power of Students*, which is a book for helping teachers work with students at risk. We have *Drive Your Brain: A Family's Guide for Increasing Student Success in School and in Life.* This is a book that has been designed for parents to really help support you and your school. We also have *Thinking for Results*, which is a program for driving your brain for teachers. This teaches some of the 22 cognitive assets to help students achieve at higher levels.

You could also look at ways for increasing your long-term development through use of our graduate degrees which are delivered on line and through video. This will allow you to work at the master's and EDS level and beyond.

Furthermore, you can feel free to make sure that you keep in touch with us with the web boards that are provided in this program and the bulletin boards.

Most of all in your next steps is what you do with the information that we shared with you so far. There is more than enough for you to get started in the exhilarating process of discovering how to use brain-based instruction to raise student achievement.

Doctor Wilson and I wish you all of the best success in the world for you as you move in your exciting journey of discovering and applying this information in your classrooms.