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Introduction to *Student Teams That Get Results*

Why are connections essential? The essence of human interaction is social, based on relationships to create fertile soil for learning. Teachers and students must make daily and positive connections.

Gregory and Kuzmich, 2004.

PURPOSE FOR THIS BOOK

Busy teachers struggle daily with the demands of increased accountability and need to develop skill and proficiency in diverse learners. Teachers want students to succeed and excel. We want to provide teachers with tools that make a difference and have high payoff in terms of results. Supplying teachers with high quality tools will help them increase student performance. Some tools work better than others and get results faster for many types of learners. Carefully chosen, brain-compatible and research-based tools help students deepen thinking and accelerate learning. Tools that actively engage students and connect to their emotional needs help busy teachers meet diverse learning needs. In this book, we focus on the power of collaboration and dialogue to serve diverse learners in a differentiated classroom. In a differentiated classroom, we rely on students' ability to work in flexible groups (partners or small groups). In these groups, we want to foster meaningful dialogue that deepens student understanding and

facilitates aural and interactive rehearsal. Learning floats on a sea of conversation. Dialogue between and among learners is more powerful than a teacher talking to one student while the rest listen. The more minds that are engaged the better, and "it's hard to get left out of a pair" (Johnson & Johnson, 1991). Having to express ideas to others deepens understanding of concepts and clarifies thinking. Auditory learners benefit not only from the sound of the teacher's voice but also their peer's and their own voices. For teachers who are "eavesdropping," it's a great assessment tool. Just listening as students share ideas and explanations, teachers garner assessment data answering questions such as the following:

- Do they understand this material?
- Are there any misconceptions?
- Are there any gaps that need to be filled?
- How might I group students to capitalize on their knowledge and skill?

■ USING WHAT WE KNOW ABOUT THE BRAIN

Theaters of the Mind

Using the "Theaters of the Mind" helps teachers tap into the brain's five natural learning systems (Given, 2002a). This information about the brain helps us increase student transfer of learning and skills to successful performance. Each of our diverse learners in the differentiated classroom will benefit from opening the "cineplex" and using each theater to experience and process new information and skills.

Social Learning System

"All of us prefer to interact with those whose presence increases the brain's feel-good neurotransmitter brain levels, resulting from feelings of comfort, trust, respect, and affection" (Panksepp, 1998). Students benefit from frequent well planned social interaction in the classroom using techniques that foster a positive environment and deepens thinking. Examples of tools that support social learning include: organizers for decision making and problem solving, organizers that require cooperative group work to complete, and strategies that support the understanding of controversial social or political topics.

Emotional Learning System

People need to feel safe and supported to take risks. Students also need challenging tasks with a minimal level of threat or risk in order to learn new skills. Examples of strategies that support emotional learning include: methods that establish relevancy and access prior knowledge and organizers that require students to self evaluate thinking. Building a safe, supportive environment in a differentiated classroom helps all learners lower stress levels and recognize that we are more similar than different, but each of us have different strengths and needs. At times, a student or group of students will take the lead and other times follow. Fair isn't

always equal and equal isn't always fair. Emotions play a large role in engaging attention. Brains like to enjoy themselves in the learning process. Why not make learning positive and fun (focused on learning goals of course) rather than stressful and threatening? Neurotransmitters are released in the brain during "eustress" (positive) that actually help in cementing information in long-term memory. It has been said that angels can fly because they take themselves lightly.

Cognitive Learning System

Conscious language development and focused attention increases memory. Students need to use all senses to process new information. Examples of advanced organizers that support cognitive learning include: organizers that help students see patterns, deepen concepts, and note relationships as well as organizers that connect new learning to prior background knowledge.

Physical Learning System

Active problem solving supports our physical needs. Interaction, movement, and creation of products are ways to develop a problem solving orientation to learning. Examples of advanced organizers that support physical learning include: organizers that are graphic and highly visual, require active engagement, and challenge established ideas or provide novelty. Physical movement lowers the cortisol and sodium levels that increase during stress. If these are continually in the blood stream over time, they can lower immunity and create barriers to learning. Movement pumps glucose and oxygen to the brain. Both are needed to keep the brain engaged and processing.

Reflective Learning System

Metacognition, questioning, analysis, reaction, and goal setting all help us reflect on what we do and the results we get. We will not be able to sustain new learning without this type of reflective practice and dialogue. Examples of advanced organizers that support reflective learning include: organizers that help students see their work in relationship to a criteria or model and include ways to apply and integrate learning, and organizers that help us use adaptive and analytic reasoning with future or unknown situations and applications of learning. We learn from experience if we reflect on experience.

Teachers fostering differentiation, who tap into all five "theaters of the mind," engage more diverse learners and increase the active processing and deeper understanding of new information and skills in a variety of ways.

BRAIN BITS ■

Over the past twenty years, the emerging research and findings on how the brain operates has caused us to rethink student learning. The most important aspect of this research is how teachers use brain-friendly strategies tied to the desired results for learning.

Certain factors help us meet and support the brain based learning needs of students:

1. Students need to feel safe: students learn more and faster in trustworthy environments. Tools that provide risk free rehearsal and opportunities to celebrate help students feel safe.
2. Students need to learn in a state of relaxed alertness: students need high expectations with adequate support, encouragement, and feedback. Tools that develop routines and habits that have multiple applications help students anticipate learning in a relaxed manner.
3. Students need learning that allows an emotional impact: students need a personal connection, need to satisfy an urge "to know," and know that their learning makes a difference. Tools that connect to students' prior knowledge and are engaging or challenging help students make emotional connections.
4. Students need social relationships: learners crave validation and acceptance from peers and teachers. Tools that help students work in various size groups support this tendency.
5. Students need to form patterns, seek meaning and relevancy, and set goals: students need to connect prior knowledge and experience to new ideas and to integrate the new learning with the old. Tools that are graphic, seek to show relationships, and are relevant support student needs to form meaning.
6. Students enjoy an active learning environment that is engaging: students need to construct their own meaning from new knowledge and skills in a form that makes sense. Tools that encourage inference, creativity, and adaptive reasoning help students deepen understanding and increase lifelong learning.
7. Students need learning that supports multiple pathways to memory: students need variety and multi-sensory approaches to meet individual processing and learning needs. Tools that work with student learning styles and methods of knowing help increase long-term memory.

The brain's job in the first five to seven years is to get upright, mobile, and communicate. Communication begins with the spoken word. This ability is hard-wired in the brain. A child immersed in any culture will pick up the spoken word with no formal training.

USING WHAT WE KNOW ABOUT RESEARCH-BASED PRACTICES

Marzano, Pickering, and Pollack (2001) detail the research and effect size that clearly indicates the usefulness and success of such tools as questioning, using advanced organizers, note taking strategies, etc. There are certainly many types of tools and in this book we use brain-friendly methods, strategies that help teachers meet diverse learners' styles of learning, and tools that are research-based.

The following figure connects the instructional strategies research to what we know about the brain and then offers tactics to use every day in the classroom.

Classroom Instruction That Works Tied to Brain Research

Instructional Strategies	*Percentile Gain*	*Brain Research*	*Tactics*
Similarities and differences, compare, contrast, classifying, analogies and metaphors	45	**Brain seeks patterns, connections, and relationships between and among prior and new learning.**	**Classifying Compare, contrast Venn Synectics Concept attainment Concept formation iREAP T and Y charts**
Note taking and summarizing	34	**The brain pays attention to meaningful information and deletes that which is not relevant.**	**Mind maps Word webs Jigsaw Reciprocal teaching Four-corner processing Point of View iREAP**
Reinforcing effort and providing recognition	29	**Brain responds to challenge and not to threat. Emotions enhance learning.**	**Stories of determination Celebrate successes**
Assigning homework and practice	28	**If you don't use it, you lose it. Practice and rehearsal makes learning "stick."**	**Create challenges in a variety of ways**
Generating nonlinguistic representations	27	**The brain is a parallel processor. Visual stimuli are recalled with 90% accuracy.**	**Mind maps Graphic organizers Models Wallpaper Poster**
Using Cooperative Group Learning	27	**The brain is social. Collaboration facilitates understanding and higher order thinking.**	**Think-Pair-Share Say and Switch ABC Conversations Random Partners Jigsaw P.I.G.S.F. Community Circle Give and Go**
Setting objectives and providing feedback	23	**The brain responds to high challenge and continues to strive based on feedback.**	**Helpful feedback Rubrics Criteria Expectations Right angle**
Generating and testing hypothesis	23	**The brain is curious and has an innate need to make meaning through patterns.**	**Problem based/Inquiry Portfolios Case studies Question matters Cause and Effect**
Providing questions, cues, and advance organizers	22	**The brain responds to wholes and parts. All learners need to open "mental files" into which new learning can be hooked.**	**Wait time Questioning techniques Agenda maps Cubing Question matters**

SOURCE: Adapted from: Marzano, R., Pickering, D., & Pollack, J. (2001) and Gregory, G., & Parry, T. (2006)

This book will deal with several of the McREL strategies that teachers can use easily with very little preparation time and effort. One of the primary functions of this book is to help teachers take cooperative group learning to new levels when paired with other effective critical thinking strategies such as graphic organizers, appropriate note taking, and other tools to increase thinking skills within group learning. It might be said that if every classroom teacher had these nine strategies in executive control, we might be differentiating enough—as they attend to the various learning styles and multiple intelligences of diverse learners. They also provide a great variety of tools in the "toolkit" for differentiating instruction.

Cooperative group learning research for the last 25 years suggests that when group learning is implemented effectively, we can expect our students to have the following (adapted from Johnson, Johnson, & Holubec, 1993):

- High self-esteem
- Higher achievement
- Increased retention
- Greater social support
- More on-task behavior
- Greater collaborative skills
- Greater intrinsic motivation
- Increased perspective taking
- Better attitudes toward school
- Better attitudes toward teachers
- Greater use of high level reasoning
- More positive psychological adjustment

The clear benefits to students are well documented. The key is to make certain that group work is high quality, not just a place to get help filling out a worksheet. By pairing great grouping strategies with other practices, which increase student achievement, this book is designed to help teachers select quality methods of raising achievement and critical thinking for all students in a differentiated classroom.

Three top skills students need to work in a group:

1. Attentive Listening
   - Check for understanding: Do you mean . . . ? I think I heard you say . . . .
   - Body language speaks volumes; learn to read it in others.
2. Accepting Others' Ideas
   - Thank group members.
   - Give feedback.
   - Celebrate.
3. Disagreeing With Ideas, Not People
   - Use I statements . . . .
   - Your idea is interesting, *and* I think . . . .

In order to actively construct meaning, students need tools to organize information and skills, develop patterns that can be retrieved by the brain

from multiple pathways, and connect personally with the relevance of the learning or skill acquisition. Choosing the right strategies helps us deepen thinking and increase the probability that students can use this to adapt to unknown future circumstances like advanced classes, employment possibilities, and successful social and community interactions. We know that graphic organizers and visual representations are powerful research-based strategies with huge effects on raising achievement results. In this book, many of our collaboration strategies are paired with graphic organizers and visual representations. Given a generation that is exposed to multiple visual stimuli and extensive social networking, these strategies match their brains' natural tendencies.

Tools that improve thinking by their nature can be used ahead of a formative or summative assessment. Data-driven instructional choices have two paths to successful student growth. You can plan strategies for teaching and learning based on what students know and can do now, and you can plan based on what you want students to know and be able to do at the end of a unit, class, or period of time, thus differentiating. Planning from what students can do now works great for continuous progress subjects like learning to read and write. Planning backward from where students need to be is a powerful way to accelerate learning and increase the potential of more students demonstrating proficient or higher levels of performance (Gregory & Kuzmich, 2004). The tools in this book are designed to help support your backward design from a summative or formative assessment and therefore increase student achievement through planning for differentiation.

USING WHAT WE KNOW ABOUT STUDENTS AND LEARNING STYLES

The tools in this book also appeal to the diverse learning styles represented in our students. We use analogous thinking to represent the four styles as the everyday item associated with the particular style also gives the attributes of that style.

Puppy as the Interpersonal Learner (Abstract Random)

These learners like to interact with other learners, discuss, socialize, and thrive on teacher approval and nurturing. They want teachers to make the learning relevant to them so that the learning is personalized and meaningful. They like cooperative groups and partner work in a supportive enabling environment.

Microscope as the Analytical Learner (Abstract Sequential)

These learners like to analyze, compare, contrast, classify, and summarize their learning. They appreciate quality information and then a chance to digest, probe, and think logically and analytically. They like to work alone and do in-depth study of things that interest and challenge them. They often think group work is "pooled ignorance" and would rather have a good lecture.

Clipboard as the Sequential Learner (Concrete Sequential)

These learners like to practice, observe, describe, and memorize new learning to be successful. They like information presented to them and like to "practice 'til perfect." They appreciate order, routine, and "no surprises."

Beach Ball as the Expressive Learner (Concrete Random)

These learners like originality, spontaneity, and elaborative thinking. They like choices and are creative, innovative learners. They are bored always doing the same thing and think "variety is the spice of life."

The variety of tools provided will appeal to multiple styles with organizational strengths, interpersonal opportunities, investigative aspects, and creative vestiges. Some of the preferences for the four learning styles are shown in this figure.

Learning Styles

The Beach Ball Learner prefers	**The Puppy Learner prefers**
PMI Star gazing Four Squares for Creativity Exhibitions Presentations Hypothesizing Research Predictions Investigation Collaborative products Innovations	People Search Sharing standards & purpose Agenda K.W.L. Think-Pair-Share Mind maps Four-corner graphic Group graffiti Ticket Out Journal entry Survey
The Clipboard Learner prefers	**The Microscope Learner prefers**
Practice, rehearsal Fishbone Prioritizing Note taking and summarizing Graphic organizers Labs Quizzes Demonstrations Projects Problem-based Centers	Graphic organizers Points of view Lecturette Video Internet search Software, CD Text Independent reading Resource books Audio tape Guest speaker Field trip

SOURCE: Gregory and Kuzmich (2004)

With a variety of learner preferences in a differentiated classroom, it is important to provide for all four continually. It is not the intent to label the learner and cater to the preference but to recognize that we have the diversity of preferences and continue to ask the question as reflective practitioners: *What is there in this learning experience that will attend to and satisfy each style?* For example, there should be clear directions and expectations for the clipboard, opportunities to interact with others for the puppy, analytical thinking and investigation for the microscope, and choice to satisfy the beach ball.

REHEARSAL TO GET TO LONG-TERM MEMORY

Information first comes into the brain through sensory stimuli. If the information captures our attention, it will be moved to short-term memory. If we want to retain that information or develop the skill, we need to rehearse it in our working memory such that it can be processed by the hippocampus and filed in long-term memory. The tools in this book are appropriate ways to process and rehearse information and skills so that it makes the leap into long-term storage and can be retrieved when needed on tests or for life.

It is one thing to remember and yet another to do something with that memory. Once in long-term memory, we can retrieve the information, integrate it, and use it in relevant ways to solve problems, design solutions, and create your life.

The challenge for teachers in a differentiated classroom is that each student's sensory memory responds or engages in a variety of unique ways through relevance, novelty, or meaning. Also, in the rehearsal or working memory phase, different learners prefer different modes. Since some learners need more rehearsals, we need a variety of ways to both engage learners and sustain the interest level during multiple focused practices. We've learned over the years that "louder and slower from another part of the room" isn't the best second strategy. Thus, in this book, we are providing numerous ways for students to actively process new skill and information.

BENEFITS OF USING THESE TOOLS AND GETTING THE INTENDED RESULTS

Strategies that provide students with "cognitive structures so that they have 'mental hooks' on which to 'hang' new concepts and information from . . . learning" get better and more rapid results (Robbins, Gregory, & Herndon, 2000). Students will demonstrate increased proficiency on future assessments if teachers provide the tools that help students' rehearsal for the type of required thinking and skill demonstration. In order to prepare students for deeper and more successful thinking on assessments, teachers need tools that help students:

- Scaffold critical layers of meaning
- Generalize and infer
- Integrate content

- Identify patterns
- Increase adaptive and analytic reasoning

> . . . the brain is essentially curious and it must be to survive. It constantly seeks connections between the new and the known. Learning is a process of active construction by the learner. (Wolfe & Brandt, 1998, p. 11)

■ IN THIS BOOK: TOOLS THAT GET RESULTS

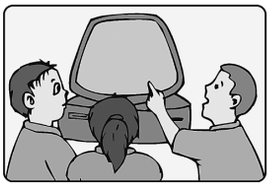
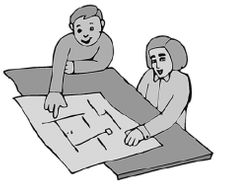
We have organized this book into three sections that reflect aspects of learning that develop comprehension, deepen thinking through application, and provide tools for differentiating instruction.

Teaming to Learn: The number one reason people lose their jobs is surprising. It is not because they don't know or can't do. It's because they can't work together to accomplish what the organization needs. Though we don't know the needs of the future workplace, we do know you will still need to collaborate with colleagues—virtually or face to face. Thus we must give students the opportunity to work productively together to accomplish tasks and deepen learning. In these processes, we need to overtly teach social skills that they need for life.

Sharing Knowledge and Skills: The brain needs multiple rehearsals to reach long-term memory. Transferring and strengthening understanding requires learning through many pathways. We learn more deeply that which we can explain, teach, or demonstrate.

Integrating and Applying Knowledge: Relevant application of learning helps students deepen understanding. Tasks that allow students to use what they have acquired in motivating ways allow learning to "stick." When learning sticks, students achieve more, test with better results, and have access to more options and opportunities for higher-level classes and post-secondary education.

Student Teams That Get Results

		
Teaming to Learn	**Sharing Knowledge and Skills**	**Integrating and Applying Learning**
Purpose: **Learning routines** **Understanding roles** **Developing team** **Celebrating success** **Getting and giving feedback** **Communicating** **Building trust** **Peer coaching** **Team process evaluation**	**Purpose:** **Learning content** **Developing understanding** **Developing learning strategies** **Developing schema** **Learning multiple routines** **Transferring** **Expanding options** **Sharing** **Peer support**	**Purpose:** **Learning to use knowledge** **Goal setting** **Long-term memory** **Developing generalization** **Generating hypotheses** **Critical thinking skills** **Analysis skills** **Problem-solving strategies** **Developing creativity** **Successful teamwork**
1. Community Circle **2. Find Some Who** **3. Four-Corner Cards** **4. Random Partners** **5. T-Chart and Y-Chart** **6. Graffiti** **7. Think-Pair-Share and Say and Switch**	**8. ABC Conversations** **9. 3-2-1 with Consulting Line or Inside-Outside Circles** **10. Jigsaw Methods** **11. Concept Formation** **12. Content Dialogue** **13. Note Taking and Summarizing** **14. Wallpaper Poster**	**15. Four Squares for Creativity** **16. Point of View** **17. iREAP** **18. Question Cubing** **19. Cause and Effect** **20. Right Angle** **21. Synectics**

We hope you use the strategies in this book in combination or alone. Use these strategies to deepen understanding, better retain new learning, and to increase content-based dialogue. Use these strategies to strengthen relationships. Without relationships, there is no learning.

Student learning and growth is too critical to leave to chance. Random use of good strategies is not nearly as beneficial as tying the selection of the tool to the intended result. A doctor does not randomly choose medication; instead, given the data and the desired result, he or she carefully selects the right remedy. A busy teacher committed to student learning also needs to choose the right tools for teaching and learning tied to what is known about learners and for the next levels of desired growth and achievement.