



# Teachers, Change Your Bait!

Brain-  
Compatible  
Differentiated  
Instruction



Martha Kaufeldt

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# Beginning with the Brain

In the early 1980s, I had an opportunity to begin my study of brain research and its implications for teaching and learning. For almost two decades I have been putting research into practice at all grade levels. I have been able to use the fundamental concepts of brain-compatible learning as the keystone to understand why almost every innovation and educational trend either succeeds or ultimately fails. Those strategies and programs that are well grounded in what the human brain needs to be successful usually survive.

I happen to be fascinated with the ever-expanding field of cognitive neuroscience. I am compelled to keep up on recent research and discoveries. My family calls me a “brainiac.” In my work as a consultant and workshop presenter, I have found that teachers most frequently ask questions such as “Can you give me just the basic concepts of all this?” “What can I do first?” “Can you give me a jump start?” In our profession, we are used to getting the basic ideas, and then innovating and elaborating on our own over time.

With that in mind, it makes sense to focus this series about successful teaching and learning strategies on brain research. *Teachers, Change Your Bait! Brain-Compatible Differentiated Instruction* is the first in a continuing series I will be writing called Beginning with the Brain. Subsequent titles will focus on topics such as brain-compatible classroom management and assessment strategies, all rooted in differentiation.

## The Teacher down the Hall

For many years and in several different schools, I have loved being “the teacher down the hall.” I enjoy sharing ideas, innovations, brainstorming, and struggles with anyone who would like to listen. As a mentor and coach in several comprehensive staff-development programs, I have had many opportunities to be a friend and helper for various colleagues. I know how overwhelming it can be to be a good teacher. There is never enough time,

and there is always something else to be done. The educational pendulum swings, and we hang on for dear life. Having a friend down the hall to get ideas from is a good thing, I think.

Like the other books in this series, this book is designed to be some words of wisdom and summary from your teacher friend down the hall, as if I had gone to a workshop or summer institute and now were sharing the information with you. I call this the Name That Tune method: I share the key concepts with you in brief forms that are recognizable (that is, not just fragments), along with Teacher down the Hall Stories in which I share my own experiences with these concepts and brain-compatible learning in the classroom. By summarizing this incredible information, however, I don't want to trivialize it. I have included resource suggestions in the Tackle Box Ideas section at the end of each chapter and in the bibliography (page 173) in hope that you will be inspired to investigate further.

## Here's a *TIP!* Theory into Practice

*Brain-research based, brain friendly, brain-compatible learning, or brain-antagonistic?!* The idea of designing classroom practices, strategies, and even schools on specific findings from neuroscience may seem a bit reckless and a giant leap to some skeptics. I have found, however, that even small revelations from brain research may be translated by clever teachers into classroom strategies that elicit huge results for many students. I refrain from using the term "brain-based" when describing the learning theories I embrace. If the brain is the organ for learning, then wouldn't all teaching strategies be brain-based? Making statements such as "Brain research proves . . ." doesn't work either, because the research alone doesn't prove *anything*. What I do believe is that valuable information is discovered every day about our brains and minds. I encourage teachers to learn as much as they can about current understandings and research. As a responsible educator, I am committed to designing curriculum, strategies, and environments that are most *compatible* with what we currently understand about how our brains function and learn.

The growing field of *cognitive neuroscience* will continue to provide answers to questions about both the biology of the brain and the influence it has on our behaviors and thoughts. Neuroscientists at prestigious universities are conducting fascinating studies on how brains grow, solve problems, remember, deteriorate, change, pay attention, and influence behavior. Unfortunately,

there are two main drawbacks to the usability of the recent brain research: The types of studies being conducted demand that the variables be carefully controlled; thus, using animal subjects is the norm. Incredible findings are determined from observing rat, primate, and even sea-slug brains. Conducting what is referred to as *translational research*, behavioral studies are then arranged, and eventually, usually years later, the initial theory is interpreted and suggestions for application are disseminated. *Whew!* I don't think my students can wait that long.

Aside from this delay in putting research into practice with human brains, there are important areas in neuroscience that must take priority. Studies regarding the causes and effects of devastating diseases such as Alzheimer's, Parkinson's, epilepsy, multiple sclerosis, schizophrenia, and depression are essential, and answers must be found soon.

Consequently, neuroscientists don't have many suggestions ready for classroom teachers on how an average brain (if there is such a thing!) might best learn and remember information. "One small step for man, one giant leap for mankind." those famous words of Neil Armstrong as he walked on the moon reflect my philosophy about using recent brain research to *influence* everyday classroom practice. I believe that well-informed educators can take a small step from brain research and create and apply a reasonable strategy in the classroom that will help many students take a giant leap in their learning.

With all the findings from research about how our brains react to stress, lack of stimulation, poor nutrition, lack of physical activity, and emotional or traumatic experiences, one can more easily determine what things can *diminish* proper brain function. I have found that in my classrooms, I am mostly trying to create a learning environment that at the very least is *not brain-antagonistic*. I don't want the abilities of my students' brains to be minimized—I want them *maximized!* Perhaps it should be referred to as *brain-friendly* education.

We can't wait for the neuroscientists to tell us what to do with our classes of unique learners. Knowledge about our brains is growing exponentially. Brain biology can offer some new directions and inspiration to educators. We must continue to read and discuss the findings and do our own action research in our classrooms. This is what I have been doing for over twenty years. I can assure you that building your teaching around strategies that are most *compatible* with how the brain learns will be a rewarding experience for your students and for you.

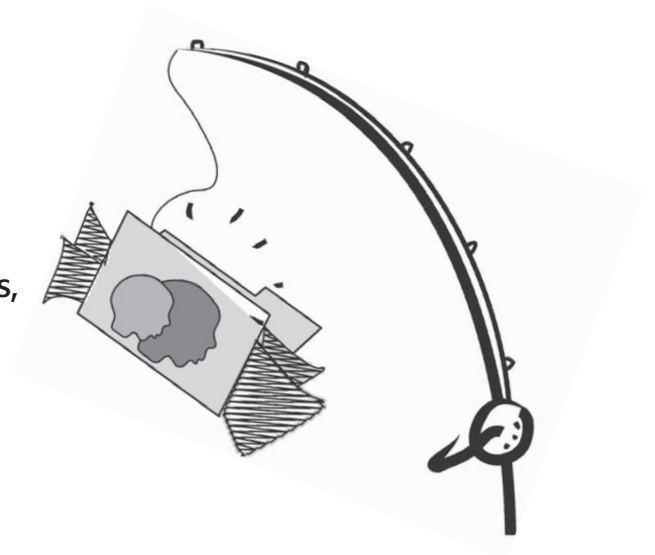


# 2

## Developing Student Profiles

### *Aligning Instruction with Individual Needs*

- ▶ Purposefully gather and organize data to create individual student learning profiles.
- ▶ Determine each student's multiple intelligence strengths, learning styles, prior knowledge, and interests.
- ▶ Identify developmental stages, readiness, challenge areas, and limitations.



*If students aren't learning from the way that we teach, then we need to teach them in the way that they learn. This statement embodies the essence of . . . instructional intelligence, a significant component of which is the practice of differentiating instruction. . . . A dynamic concept, instructional intelligence challenges the "one size fits all" way of thinking. There is no magic program or one best way of teaching, because there is no one standard student profile. All students are different, and we need different strategies for different learners. (Forsten, Grant, and Hollas 2002, vii)*

Each learner is as unique as a fingerprint. Born with a genetic predisposition and physical capabilities, each child has experiences that shape the brain into a learning machine, with its own special way of interpreting and processing the world. In addition to cognitive abilities, each of us also develops what I refer to as an *emotional threshold*. Based on our personalities, our sensitivities, and the stress factors in our lives, we develop a limit to how much pressure, chaos, and ambiguity we can handle without going into the reflexive response.

In my classroom, when I used a firm look and stern voice to tell a student, “Go sit down and get started—right now,” one student might get upset and later tell her mom that I had yelled at her “in front of the *whole* class!” On the other hand, given the same directive, another student would giggle or do a Jim Carrey face and say, “OK, whatever you say! You’re the boss!” It didn’t faze him in the least. This emotional threshold is present, and different, in all of us. What pushes one student’s buttons isn’t even an issue for someone else. There do seem to be some gender differences, and there are certainly cultural influences.

If we get to know our students, we begin to understand their emotional and challenge thresholds. We have a better sense of how hard we can push and when to back off a little, and how big and how many steps we can give them at a time without overwhelming them. One of the most straightforward ways to do this is to create individual profiles of our students and add to them throughout the year.



## Gather and Organize Student Data

To begin to differentiate strategies, attempt to know more about your individual students. Creating a student profile for each student can be a great way to gather data that might influence how you address the learning needs of that student later. In elementary and self-contained classrooms, the profile can be a file folder including various surveys and instruments that provide you with a range of information:

- ◆ standardized test score summary
- ◆ reading inventory
- ◆ math skills and concepts inventory
- ◆ writing samples
- ◆ multiple intelligences checklist
- ◆ All about Me student survey
- ◆ parent/home survey and language survey
- ◆ individualized education plan (IEP)

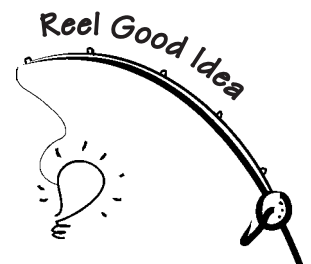
In secondary and single-subject classrooms, each student in each class period could have a file that might include the following:

- ◆ multiple intelligences checklist
- ◆ writing sample
- ◆ career and college survey
- ◆ All about Me student survey
- ◆ individualized education plan (IEP)

An All about Me student survey can be adapted for older or younger students. (See the sample questions below.) I ask these survey questions because I want to know right away what daily

#### **ALL ABOUT ME SAMPLE STUDENT SURVEY QUESTIONS**

- What do you like to do best outside of school?
- What is your favorite subject at school?
- What do you do if you get mad?
- What time do you go to sleep at night?
- What commitments do you have after school? Work? Sports?
- How do you get money?
- Whom do you live with the most?
- Where's the farthest you have ever traveled?
- What do you have for a typical breakfast?
- What responsibilities do you have at home?
- How early do you get up on a school day?
- When are you most successful at school?
- What frustrates you most?
- How do you get to and from school?
- How much time a day do you spend watching TV, playing video games, and using the computer?



# 6

## Varying the Content

*Meaningful, Specific, and Appropriate*

- ▶ Emphasize meaningful, relevant, and worthwhile content to motivate and challenge students.
- ▶ Engage students by teaching specific areas in depth rather than broad general concepts.
- ▶ Adjust the curriculum to match and accommodate students' readiness levels.



*Perhaps most significantly, studying topics and facts as information to be memorized fails to engage the deeper intellect of students. When students are encouraged to think beyond the facts and connect factual knowledge to ideas of conceptual significance, they find relevance and personal meaning. When students become personally and intellectually engaged, they are more motivated to learn because their emotions are involved. They are mind-active rather than mind-passive. (Erickson 2001, 20)*

Successfully designed curriculum is a wonderful combination of relevant, meaningful *content* that is *processed* by the learner in various ways to build understanding that can be demonstrated through a range of *products*. Curriculum content is difficult to separate from the processes and products, but each element can be varied in its own way. When creating differentiated instructional strategies, look to each element for possibilities. (See chapters 7 and 8 for discussion of the other elements, process and products.)

## Emphasize Meaningful, Relevant, and Worthwhile Content

As chapter 1 details, a key element of brain-compatible learning is the exposure to and interaction within a multisensory-enriched environment. When children have had developmentally appropriate play and problem-solving experiences, their brains have the necessary wiring started to make connections when new concepts are presented. An enriched environment doesn't mean *overstimulation*—flash cards for babies, super-achieving preschools, or an overscheduled summer—it means normal opportunities for children to play, experiment, make mistakes, build things, take things apart, get wet and dirty, laugh, get frustrated, create, imagine, and daydream.

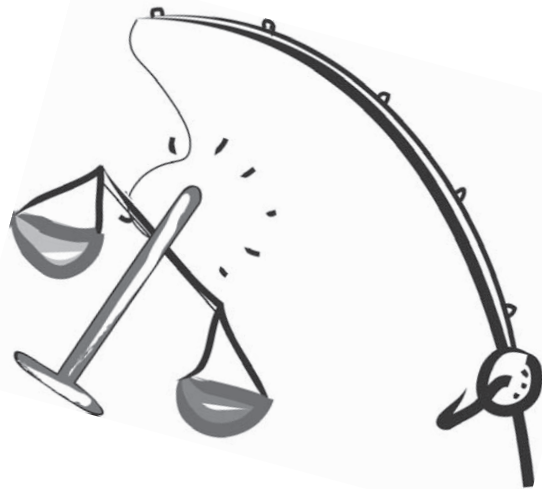
Children who have limited exposure to the world due to poverty, institutionalized care, disabilities, or even a dependence on TV and technology may not have the beginning hooks in their brains to connect new learning. When doing experiments or activities that involve water, for example, teachers often see who has had previous experiences playing with water: bathtub play, creek play, hose play, and so forth. When doing measurement activities to develop math concepts, it is usually obvious which students have used a tape measure before or have measured ingredients for a recipe. I brought in a standard broom to illustrate a stage I lever. Many students didn't know how to use this "nonelectrical" dustbuster! This lack of

# 9

## Managing the Variables in a Differentiated Classroom

### *Designing Systems and Procedures*

- ▶ Orchestrate effective systems and procedures to manage student behaviors and time.
- ▶ Build in creative anchor activities to direct and engage students during *ragged time*.
- ▶ Plan for acceleration, enrichment, and remediation for students.



*F*or many teachers, uncertainty about how to manage a differentiated classroom grows into a fear that stops them from attempting to provide instruction based on their students' varied interests and needs. . . . Although managing a differentiated classroom is not always easy, progress in that direction tends to make school a better fit for more students. It also tends to make teaching more satisfying and invigorating. (Tomlinson 2001, 32)

I believe the single biggest roadblock for teachers attempting to implement differentiated instructional strategies is classroom management and organization. Most educators understand that the underlying philosophy of the No Child Left Behind movement is that one size doesn't fit all. Effective teachers recognize that not only must they modify the instructional strategies to accommodate all students, they must also frequently have more than one task or activity going on in the classroom at the same time. The challenge of orchestrating two, three, or more activities to occur simultaneously can be overwhelming. Teachers who feel they barely have control over the class when everyone is doing the same thing at the same time are intimidated by the thought of possible chaos if students are supposed to be completing various tasks.

I have observed teachers trying to juggle three concurrent student activities: a reading circle, independent work, and choice time. I call this the three-ring circus—teachers are often unable to focus with the circle groups because students who are supposed to be working on other tasks are constantly distracting them. Teachers appear to be constantly putting out fires, jumping up and going to a student who is off-task, doesn't know what to do, or is disrupting others. Eventually, out of frustration and exhaustion, the teacher will choose to have everyone return to the seating arrangement and everyone do the *same* assignment at the *same* time. Because the management system failed, the instructional strategy fails.

The brain is a pattern-seeking instrument that seeks organization when faced with chaos (Hart 1999). When learner-centered organizational systems and procedures are established, students will be able to detect what to do on their own. A well-prepared teacher will have pre-established procedures for each activity in the classroom. In many cases, students should be involved in the creation of the routines. Most important, students should know what the system is for getting help and what to do if they are finished with a task before others.

All classrooms will have students of mixed abilities. The cognitive range continues to get broader and broader due to our diverse population and varied prior experiences. Plan for these inevitable differences. Your basic teaching strategies should already include a design for accommodating or modifying instruction for the struggling learners as well as expanding opportunities for your most capable students.

## Orchestrate Effective Systems and Procedures

*Well-designed procedures for various activities allow for several different activities to be going on at the same time, which is imperative if you are orchestrating multiage classrooms or learning environments that encourage choice, movement, centers, and so on. Procedures can also help ensure that transitions take place efficiently, with a minimum of wasted time and confusion.*  
(Kaufeldt, 1999, 51)

Often students don't know a procedure for an activity because there isn't one! Teachers often make assumptions that students *know* certain patterns for doing things. When a teacher asks students to clean up, the students may not have the same level of understanding as expected. Simply asking students to "hand in your work" may create momentary chaos of movement and talking. Having a simple pre-established pattern for handing in work eliminates the confusion of assumptions.

Many activities and daily tasks should have established procedures. Students should know the pattern of behaviors you expect for each of these situations:

- ◆ arrival to class
- ◆ seating arrangements
- ◆ collecting assignments or other materials
- ◆ passing out assignments or materials
- ◆ getting basic needs met: water, restrooms, movement
- ◆ independent work



## About *Teachers, Change Your Bait!*

*Teachers, Change Your Bait! Brain-Compatible Differentiated Instruction* is packed with best-practice ideas and examples for meeting the instructional needs of all your students. A concise explanation of brain-compatible learning theory provides the rationale for why the strategies work and why you should start right away!

Fill your strategy tackle box with practical ways to vary the six key components of differentiation:

- **physical** and **social** environment
- **processing** for learning
- **content** and its **presentation**
- **products** to demonstrate learning

Everything you need to organize a successful differentiated classroom is here, from how to set up student profiles and establish groups, to how to collect on going feedback for planning instruction and documenting progress. You will find activities that engage reluctant learners, strategies that will help with “leaving no child behind,” techniques to teach second-language learners, and complex tasks to inspire high-potential students.

Make differentiation work in your classroom and every student will experience success!

“Martha Kaufeldt has done it again! *Teachers, Change Your Bait* is an invaluable, user-friendly book that takes you step-by-step through exactly how to set up and implement a brain-friendly, differentiated classroom. Her explanation of the key elements of brain-compatible, differentiated instruction, and the practical suggestions for doing it are the best I have read anywhere.”

—David Lazear, President, David Lazear Group, Inc., best-selling author, consultant, and trainer in *applied* multiple intelligence

“I am extremely grateful to Martha for her willingness to share her considerable wisdom, and I admire her skill in creating a book that is fun and easy to use. Following her guidance has made a world of difference in my classroom. Teachers will appreciate the wealth of practical ideas, and they will watch with joy as their students respond to a brain-compatible environment.”

—Shane Sparks, intermediate teacher, Tierra Pacific Charter School, Santa Cruz, California



### About the Author

**Martha Kaufeldt**, an experienced educator, has taught at all grade levels, served as a district level gifted coordinator and staff developer, and was the lead teacher and restructuring coordinator for a demonstration brain-compatible school. She currently gives presentations and workshops on the fundamentals of brain-compatible learning, differentiated instruction, assessment, and integrated curriculum planning. She is the author of the best-selling *Begin with the Brain: Orchestrating the Learner-Centered Classroom*. Martha lives with her family in Santa Cruz, California.



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