
Brain-Based Literacy Learning

Pieces of the Puzzle

That reading happens in the brain is obvious. How this actually occurs has been a focus of scientific investigation for more than 100 years. What do we really know about how the brain learns to read? We know that whereas speaking is natural, reading is not. Children do not automatically read. They have to learn how to do it. Have you ever thought about what your brain goes through when you read? Reading in its simplest form is a process of decoding and comprehension. The ultimate goal of reading is for children to become sufficiently fluent to understand what they read. Reading begins when someone unlocks the code of a written language system. However, the neuroscience of reading is much more complex than this simplistic view. Reading is an elaborate process that involves decoding abstract symbols into sounds, then into words that generate meaning.

THE RESEARCH CONNECTION

During the past decade, in particular, we have experienced amazing progress in our understanding of the brain and its impact on reading and comprehension. Never before have neuroscientific studies and classroom instruction been so closely linked. Educators can now refer to carefully designed research studies to determine the most effective ways to teach reading (National Reading Panel, 2000).

What does this evidence tell us? Several studies have found that reading originates in and relies on the brain systems for spoken language. Becoming literate is not a passive act. English skills are best acquired when students are actively engaged in the processes of learning and becoming literate (Blachowicz & Fisher, 2002; National Reading Panel, 2000). The major findings of the National Reading Panel indicate that in order to read, children need to be taught alphabets (phonemic awareness and phonics), reading fluency, vocabulary and strategies for reading comprehension. These components of the reading process need to be taught comprehensively, systematically and explicitly.

Another important question about recent research findings is whether teachers can implement these findings in their classrooms. The connection between theory and practice remains paramount in the minds of educators concerned with the issues of reading and comprehension. Reading is very likely the one area of the school curriculum where neuroscience has made its greatest impact (Shaywitz, 2003). Educators have been well aware of the difficulties involved in learning to read and have long debated the best methods to teach beginning reading. Reading proficiency depends on expert teaching so that the reader learns how to access print accurately and fluently.

Brain researchers have developed new technologies for looking inside the brain and analysing functions and processes. These technologies fall into two major categories: those that examine brain function and those that focus on brain structure. Different technologies are utilised to look at how the brain works. These procedures can be used to isolate and identify the areas of the brain where distinct levels of activity are occurring. Using these technologies, researchers have been able to determine how different brains function when conducting certain activities, including reading. Some of these discoveries include the following:

Novice readers use different neural pathways while reading than skilled readers.

Individuals with reading difficulties access different brain regions to decode text than proficient readers (Wolfe & Nevilles, 2004).

The brains of people with reading difficulties work harder than those of skilled readers (Devinsky & D'Esposito, 2004).

With proper instructional intervention, the brains of young, struggling readers can be rewired to use different cerebral areas that more closely align with those of typical readers (Bergen & Coscia, 2001).

READING COMPREHENSION AND THE BRAIN

Clearly, we have a lot to learn. Investigators and researchers have worked hard to understand reading and the brain and now have a place to focus

5. Groups return to their original tables, refine and add new ideas.
6. Group prepares for discussion by generating discoveries, insights and questions.
7. Ask students: “As you generated, sorted, categorised, labelled and visited others to focus your understanding, what did you notice about your thinking and learning?”

POSTCARD CONNECTIONS

Overview

Postcard Connections provides your students with multiple opportunities to think divergently and to connect what they are learning to a visual image. As an activator, the collection of cards can be placed throughout the room at the various table teams. Postcards promote visual literacy skills, provide an interesting “brain break” in your lesson, and also can be used to develop oral and written language skills.

The first thing you need to do is to start collecting postcards. Have your family and friends—and even your students—save them for you. Postcards are great because they are inexpensive, easy to collect, come in all shapes and sizes and fit into any suitcase easily. I recommend going to markets, bookshops, record shops, art museums and tourist shops for the most interesting cards. You can also recycle your old greeting cards by just cutting off the front image and discarding the verse portion.

Once you have your collection, the learning opportunities are endless!

Implementation

1. Postcard Connections can be used as a terrific introductory activity. Place an assortment of cards on the tables. Provide a prompt to the students and have them discuss the cards and select one card that they can agree on that best symbolises a given topic.
2. Then invite the reporters from each table to discuss and share how that card symbolises the topic that you are studying. They can even write about it. This activity provides a nice icebreaker and gets your students thinking in new and different ways.

Dominoes

Each student gets three to six postcards. The facilitator or team leader starts by putting one postcard on the floor. They tell the group to start connecting the postcards domino style based on any relationship they can come up with. Students keep building this web of images and cards silently until all cards are connected. Then they take time to discuss how/why cards are connected. This is an inclusionary activity because there are no right or wrong answers, and the discussion should not be limited to preconceived notions. This activity works well with students of

WHAT IS THIS THING CALLED DIFFERENTIATION?

Differentiated Instruction Is Student-Centred

Students come into our classrooms with different levels of background knowledge, interests and cognitive abilities. Teachers who differentiate instruction seek to provide appropriately challenging learning experiences for all students. Tomlinson (2001) states that “differentiating instruction means ‘shaking up’ what goes on in the classroom so that students have multiple options for taking in information, making sense of ideas, and expressing what they learn” (p. 1).

Differentiated Instruction Is a Blend of Total Class, Small-Group, Partner and Individual Instruction

Teachers need to decide which curriculum areas or topics would be most conducive to differentiation. Keep in mind a balance of grouping strategies.

Differentiated Instruction Is More Qualitative Than Quantitative

It is not about the scores, it is about the *quality* of instruction. The “how” of instruction is just as important as the “what” of instruction.

Differentiated Instruction Is Proactive

The teacher proactively plans a variety of ways to accomplish instructional goals. They assume that different learners will have different and unique needs.

Differentiated instruction provides multiple approaches to what students learn (content), how they learn it (process) and how they demonstrate what they’ve learned (product; Tomlinson, 2001).

Differentiated Instruction Is a Continuous Learning Experience for Students as Well as Teachers

Assessment is ongoing. Teachers make adjustments as needed in content, process and products.

PIECES OF THE PUZZLE

Preassessment

Profile students’ interests, attitudes, experiences, skills, background knowledge and multiple intelligences through

Into, Through and Beyond Boosters

Developing strategic readers and learners is a complex process. This chapter takes an interactive view of reading and writing to develop your students' mental processes. Reading comprehension—the process of obtaining meaning from print—is fundamental to learning. Checking for understanding after a student reads a passage used to be the way that we tested for reading comprehension. However, research now supports the necessity of setting the stage for comprehension and learning before the students even open a book. It is also important to engage them in the meaning-making process throughout the reading as well as give them time to reflect and connect to what has been read after the reading occurs.

The key concept of this new definition of comprehension is that a reader constructs meaning from a text rather than merely “barking at print” and reproducing the words on the page. Meaning is something that is actively created instead of passively received (Vaughn & Estes, 1986). The more a student knows about a topic, the better they will be able to comprehend the printed material on that topic. What sets apart proficient readers from struggling readers? One major difference is that proficient readers reflect and carry on an internal monologue with the text while they read. This ability to “think about thinking” is called metacognition.

A reader's comprehension is also influenced by situations in which the reading occurs. These factors may include physical conditions such as noise or light levels in the room, physical space for the learning and time elements such as early morning or late night. Teachers have a great deal of influence on the conditions of learning in the classroom. Will the information be