

Book Reviews

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The following book reviews were written by NCSTA members and teachers. We hope to make this an ongoing feature in The Science Reflector. If you are an author who has a book you would like reviewed or a teacher who would like to write a review, please [contact Beth Harris](#).

[Teaching with the Brain in Mind](#)

[Exploring North Carolina's Natural Areas](#)

[Forces of Nature](#)

For more reviews and correlated activities check out the [Science Literature Database from UNC-Wilmington](#).

Teaching with the Brain in Mind, Revised 2nd Edition

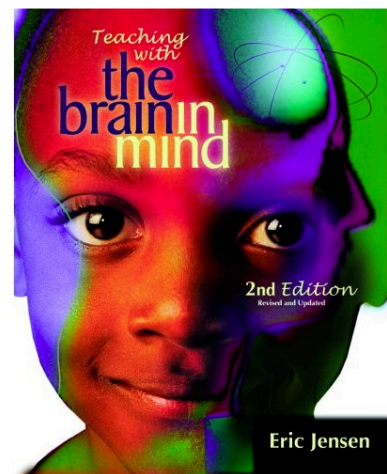
Eric Jensen

Association for Supervision & Curriculum Development, 2005

ISBN 978-1416600305

I find the descriptions of the mechanical, chemical and electrical systems of the brain fascinating. In *Teaching with the Brain in Mind*, the author, Eric Jensen, elaborates on the latest neurobiology research and gives substantial background information about the brain. He then shows how these correlate to the learning experiences in a classroom.

One limitation of the book is the suggested classroom techniques are quite generic as the book is not directed toward any specific population of learners. He provides the details about why students have better recall from engaging lessons. In fact, it is interesting to see that if a teacher constructs a lesson in the classic format, then the learner is primed for a brain-based learning experience. The classic lesson format was never explained to me from a brain function perspective, so it is interesting to see that correlation. The author provides the details about why, from a neurobiology perspective, students have better recall from engaging lessons.



One portion of brain-based teaching that is missing from the typical high school classroom is the movement component. The data show that students benefit from standing and stretching after exposure to new material allowing the brain time to process the new information. This is one component that I will try to incorporate on a daily basis. It seems the additional time needed to refocus/settle students may be worth the increase in retention.

Additionally, there are activities that I do outside for earth science that sometimes do not seem worth the effort.

For example, I wonder if it's really valid to take 32 teens outside (which is akin to herding cats) to identify clouds and estimate percent cloud cover when we could look at textbook pictures with minimal effort. The data do convince me that these activities are valuable. The fact that students view them as "fun" is an indication of a positive brain-based learning experience. Unfortunately, in the past, I have felt the need to justify such outdoor treks to colleagues and administrators. Now I have the brain based data to support these mini-adventures!

As a high school science teacher, the teenage brain is of the most interest to me. The importance of sleep and nutrition are substantiated with a chemical explanation. Additionally the seemingly impulsive behaviors of teens can be explained to some degree by the chemistry of their still maturing brains: "...the teen brain *is* different. It is more sensitive to the pleasurable effects of nicotine and alcohol and less sensitive to the adverse effects." (Jensen, p. 31). "They often choose activities with smaller, more immediate rewards rather than larger, more delayed rewards." (Jensen, p. 31). Understanding this trait as a result of ongoing teen brain development is prompting me to think of short-range goals, rather than long range goals.

The book has relevance in presenting new information to teachers and substantiating some of the changes we intuitively know are positive changes. Recess is one of the items that come to mind. I remember recess occurring on a daily basis when I was in elementary school. Recess seems to be less of a priority now for elementary students, yet the research shows that this time is imperative in helping students form the necessary brain pathways for processing information.

Eric Jensen is a co-founder of Jensen Learning Corporation. He offers conferences and online classes that focus on brain-based teaching methods. He is a former middle school teacher. His seminars and corporation are designed to bridge the gap between brain scientists and educators with the hope that educators will take the various aspects of learning back into their classrooms. The academic focus is just one component of education. His classes attempt to show educators how to incorporate the underutilized aspects of learning.

Sandra Parker
New Bern High School

Exploring North Carolina's Natural Areas

Dick Frankenberg (ed.), The University of North Carolina Press, 2000
ISBN 978-0807848517

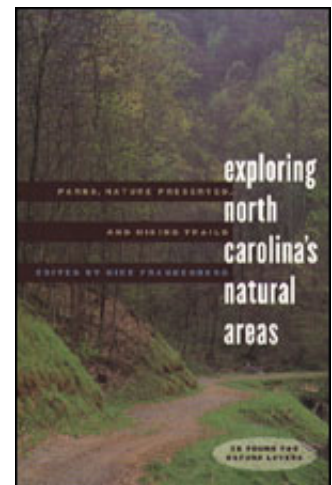
I would recommend this book to anyone who would be interested in exploring North Carolina. It contains information not just on the parks, the nature preserves and hiking trails but details about the land itself—written as background for "38 tours for nature lovers." I learned when and how North Carolina was first formed 1.8 to 1 billion years ago, the climate and its influence on the natural landscapes, and the biota, with details about the plants and animals of the natural landscapes of North Carolina. This book is an excellent resource for anyone who would like to take an eco-tour of North Carolina.

As it takes you from the mountains through the piedmont and the coastal plain to the coast, the book summarizes North Carolina's geologic history. The oldest rocks in North Carolina are found within the Blue Ridge Mountains, metamorphically modified sediments that make up the core of these mountains. The sediments were eroded from the earliest continental material in North America about 2.6 to 1.8 billion years ago. During a very active time period of plate movement, massive stresses built up where rock masses slid past one another.

These forces spawned both earthquakes and volcanoes like those that now occur in California and Washington. In ancient North Carolina, lava and ash spewed from volcanoes for hundred of millions of years. There is now a 10,000 foot deep layer of this ash along the border with Virginia. Materials from these volcanoes also landed in the seas that were beginning to shrink.

The materials formed layers that became the Carolina Slate Belt and other northeast-to-southwest-trending rock formations in the Piedmont. The volcanic ash and calcium carbonate deposited in these seas formed the slate and marble that is mined throughout the region today.

After all of this, the North American and the Euro-African plates of the earth's crust collided for over a period of



more than 500 million years. As a result of these crustal collisions, vast slabs of rock were pushed upward over 100 miles. This is what we now know as the Appalachian Mountains. As soon as they were born, they began to erode. The eastern slope was steeper than the western slope, so swift-running streams stripped away more material from the eastern side than the western side. Some mountains were isolated, and these are the mountains that we know today as Pilot Mountain, Hanging Rock and Crowders Mountain. As of today, all but 5,000 feet of the original Appalachian Mountains' mass has found its way to the east. Some of the eroded sediments have combined to form sediments and materials of the Coastal Plain, including that of the Sandhills. More of the material found its way into the ocean to form the continental shelf and the continental slope. Off the coast of North Carolina, these sediments reach a thickness of more than 10,000 feet.

With this book in hand, you will find detailed directions to the sites you choose, descriptions of what you can expect to see, the historical and scientific significance of the site, and information about the processes at work to produce change. This is the ultimate in field trip guides.

Kelly Scott
Mt. Pleasant High School

Forces of Nature

Ian Westwell, TAJ Books, 2008
ISBN-13: 978-1-84406-107-5.

Forces of Nature is wonderful book if you need bulletin board material for your classroom. The book measures 17 inches in width by 24 inches in height. Following an introduction, the book is divided into chapters dealing with volcanoes, earthquakes, hurricanes, and tornadoes. Each chapter consists of a series of large format photographs accompanied by simple explanations of the images. A final chapter provides a limited number of photographs illustrating tsunamis, floods, and wildfires. Some chapters include photographs spread across two pages yielding an image measuring 34 inches by 24 inches. Most of the pictures were obtained from the National Geographic Society's image collection, so the majority of the images are of exceptional quality. The book is inexpensive enough to justify cutting it apart so the images can be used for bulletin boards. There are several other books in the series including "Atlas of the Skies" and "Natural World." General information concerning the books may be obtained at the company's web site - www.tajbooks.com. They are also being sold at Sam's Club Stores.

Fred L. Beyer
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