Chapter 5

A Meta–Synthesis of WBT and Active Learning Pedagogies: Faculty Development, Give Brainpower a Boost

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ABSTRACT

The primary purpose of this chapter is to contribute to the body of professional development literature on the practical application of active learning methods for a variety of content-rich lessons. An examination on current research on the brain and learning provides a framework for exploring how Whole Brain Teaching can actively engage learners. Specific examples demonstrate Whole Brain Teaching in the college classroom and adult-leaning situations. Readers will be able to apply ideas and emerge as engaged participants capable of investigating their own practice, as well as develop strategies to adapt.

A META-SYNTHESIS OF WBT AND ACTIVE LEARNING PEDAGOGIES: FACULTY DEVELOPMENT, GIVE BRAINPOWER A BOOST

Inspiring students to become active partners in the classroom cannot fall to the ancient ways of teaching where a learned teacher or professor lectures from his or her deep body of knowledge. Effective implementation of active learning requires students to be engaged workers in the learning process, which increases knowledge acquisition (Doyle & Zakrjsek, 2013; Medina, 2008). Classrooms that foster collaboration between and among students create better learning opportunities. This chapter is a

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meta-analysis, review, and application of cognitive research, neuroscience, and brain theory with active learning. To aid the reader, the synthesis incorporates methods and strategies developed by Chris Biffle (2013) and identified as Whole Brain Teaching (WBT).

The primary purpose of this chapter is to facilitate the practical application of active learning methods for a variety of content-rich lessons. As readers experience the content of the chapter, several possibilities can be anticipated. Readers will understand basic brain science pertaining to the limbic system, mirror neurons, and positivity, and how this information can enhance pedagogy. The chapter will define the relationship between brain activation and content retention, giving the reader a clear understanding of how to tap into brain science as a means to enhance learning. Gaining insights about the different learning preferences, including that of the quiet, reserved student, the reader will develop strategies to build a classroom climate that better encompasses the needs of all learners. The chapter is focused on active learning pedagogies and provides research that supports using such pedagogies. Key strategies from WBT are explained in order to provide readers charged with developing professional development a framework for introducing the strategies, and how these strategies draw on the research on active learning. Specific examples from the researchers’ experiences illustrate how these techniques can be effectively introduced and cultivated in undergraduate or graduate classroom. The strategies have been implemented in K-12 classrooms, and so individuals charged with teaching future teachers can draw on information presented in this chapter to model WBT techniques and their application in the classroom or to use the information as a resource to further explore WBT and other active learning strategies. Finally, by referencing the methods and strategies of Biffle’s WBT, readers will be able to investigate their own practices as well as develop and test strategies for their own use. Throughout this chapter, the researchers present examples of their use of WBT strategies in their college classrooms. For reader clarification, these examples are indicated by the designation:

**Application**

For the purposes of the chapter, the reader needs to discern a few facts regarding the brain and learning. First, a common fallacy is that humans only use ten percent of the brain. Humans use the entire brain. Thinking preferences, situations, and specific brain-processing demands appear to cause individuals to use certain brain areas more than others. Rekert (2013) reported that Einstein’s brain “was unusual in that there was a sizable expansion of a portion of his parietal lobe” (p. 6). He further explained that the brain’s plasticity, Einstein’s initial mathematical ability, and repeated use may have modified and expanded that part of his brain. Second, while Roger Sperry pioneered the idea that people may be “left brain” or “right brain,” current research suggests that the workings of the corpus callosum insures a healthy brain taps the “whole brain” for thinking, processing, learning, recall, and functioning (Browning, 2006). Third, all learning is active learning (Major, 2011), even listening to a lecture. For the purposes of this chapter, “active learning pedagogies” are methods in which the learner is “an active participant, not a passive consumer” (hooks, 1994, p. 14). Fourth, the name “Whole Brain Teaching” is the name of an organization and the specific methods of the creator, Chris Biffle. Biffle is not a neuroscientist. Most of the content developed and created by Biffle is given away free of charge. WBT Conferences are done at no cost to the attendee. However, WBT is a product name, and for the purpose of this chapter, does not indicate, imply, or affirm the researchers’ endorsement that the methods and techniques of WBT are singularly linked to neuroscience or any known quantitative research. There is, however, a qualitative dissertation. Fifth, the writers recognize that online bloggers and responders have been both highly complimentary