



The Use of Brain- Based Learning to Create Effective and Low Stress Language Learning Environment

By

Dr. Nesreen Hassan Refki Mounir

English Language Lecturer

The Use of Brain- Based Learning to Create Effective and Low Stress Language Learning Environment

By

Dr. Nesreen Hassan Refki Mounir

English Language Lecturer

Abstract

This paper discusses the new concept of the teacher as a facilitator and the importance of a student- centered classroom that supports students' learning process. That concept is accomplished through using new brain- based learning techniques that affect students positively by means of stimulating their positive emotions, motivating their learning process and enriching their learning by appropriate activities. Furthermore, some brain- based principles and tips are discussed to help maintain the student- centered learning process, EFL learning skills and the art of the brain- based learning facilitation.

Keywords: facilitator, student- centered classroom, brain- based learning, EFL learning skills

Introduction

Teaching English creatively is a fundamental skill that is considered to be the core of the educational process eventually. Away from spoon-feeding the information to students in a way that fills their minds with blind free-sugar theories- that teaches about languages rather than language itself- with an almost complete inability to use the language efficiently, the role of the teacher has been promoted to the degree of a facilitator of the learning process rather than a mere conveyer of knowledge to students. The personality of the teacher, as a facilitator of language learning in this unconventional manner, is crystalized in his culture that is reflected on students through his/ her own way to guide students enriching their learning experiences, expanding their knowledge and polishing their language is the best means of communication in the modern globalization era. As per the new concept, the facilitator or the teacher needs to acquire a specific level of awareness of the language of the era: theories, teaching methodologies, technology, the existing situation of educational process, students' needs analysis, students' individual differences, multiple intelligences, cognitive psychology, nutritive psychology, the huge number of students and other related theories that would help analyze, understand and truly support our students effectively getting rid of the boring atmosphere of the traditional teaching.

Brain- Based Learning will help students be active participants in the learning process. They will learn by themselves through the creative techniques used efficiently the thing that will help overcome the pertaining problem of resorting to Arabic in English classes.

Hence, this paper will discuss the importance of utilizing such wonderful brain- based learning techniques to reach that goal, helping students enjoy their learning, enriching their EFL learning skills and decreasing their anxiety.

Since the late twentieth century, learning has most often been studied using a social cognition frame. This frame has three specific dynamics - environmental factors, behavioral factors, and personal perceptions - which have been believed to interrelate with each other in ways that create the context in which learning takes place (see Figure 1).

Although social cognition theory has been instrumental in describing the social construction of knowledge and the very individualized task of learning, it does not seem to go far enough in examining the role of the personal perception dynamic. Learning is not just about the perceptions and attentiveness of each person: it is also affected by physiological changes in the person. The majority of this physiological activity is happening in the brain—learning actually creates physical changes to the brain. Technological gains have allowed scientists to examine the changes that occur in the brain during the learning process and to speculate on improved methods of teaching (Zull, 2004).

Physiological Activity in the Brain

Technology has provided the means for researchers to learn what is happening in the brain during the learning process and supports the theories that:

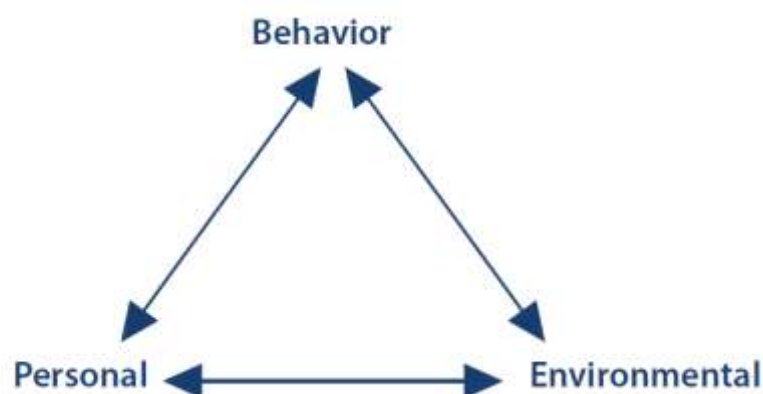
- When a person practices something, the neurons in the related area of the brain fire more frequently and dendrite growth increases - in

fact the dendrites may grow enough to begin to interconnect (creating new potential paths for cognitive connections);

- When a person is learning, synapses work to organize neurons into a cohesive network that draws in some of the more isolated neurons - the networks are the physical equivalent of knowledge;
 - Changes in the synaptic connections occur when learning is taking place;
 - Synaptic activity is greatly enhanced when the brain is flooded with emotion chemicals (i.e., adrenalin, dopamine, and serotonin); and
 - Exposure to new experiences and complex thinking actually increases synaptic connections and density between neurons in specific parts of the brain and also increases
- dendrite growth and connections within the brain (Draganski, 2004; Healy, 1990; Trachtenburg, 2002; Zull, 2004).

These findings lead to the conclusion that learning may be enhanced through practice and by engaging emotion into the process.

Figure 1 Triadic Interplay in Reciprocal Determinism



(Pajares, 2002)

Technology has also allowed researchers to refute the notions that the brain is hard-wired for learning and that learning ability decelerates with age (Schwartz & Begley, 2002). It also calls for a reconsideration of how teaching translates into a learning experience for both adults and children in classrooms. An examination of these new advances in neuron-scientific research opens the door for creating new, more effective types of learning experiences in the classroom.

Brain- Based Learning

One approach that recognizes and addresses the unique needs of a student-centered classroom is brain- based learning (Jensen, 2008). Brain-based learning is concerned with creating powerful learning environments based upon emotional connections (Bryan Haines, personal communication, May 21, 2008). As students learn, they are using emotions, cognition and physical processes all at the same time and past experience becomes both an indicator and a teacher. New information emerges both positive and negative emotions and the role of the teacher is to promote positive experiences and emotions for their students because negative emotions lead to a sense of student downshifting (Hart, 1983). Downshifting results in the "flight or fight" syndrome Lind reduces students' abilities to learn at optimal levels (Haines, 2007). Such downshifting can occur in response to the instructor, academic content being taught, various coping strategies of students (i.e., social networks, stereotypes of classmates), and physical and emotional environments created within the confinements of the classroom (Haines, 2007).

(Duman, stated that Brain-based research deals with learning teaching processing in classroom concerns, such as all of the sensory perception, consciousness, unconsciousness, attention, attitudes, behaviors, memories, and how emotions affect learning and how the brain works and learning (Goleman, 1995; LeDoux, 1996; Pert, 1997; and Sprenger, 1999). and a "celebration of neurons-an educator's guide to the human brain" and how the brain works (Sylwester, 2001). Significant work by Petitto (2003) and Zull (2002) led to the discovery of the principles of the brain works related to the biology, chemistry, and psychology of learning.

Indeed, brain researches on teaching-learning studies can enable educators in a multiply intelligence and enriched environments setting to understand and apply strategies of teaching and learning-for example, it is discussed what are the effecting factors on students' achievements in teaching-learning processing in classroom (Dhority and Jensen, 1998;Jensen, 1998; 2000; Genesee (2000);

According to Zadina (2004), the objectivities of brain research studies include that teaching to individual differences, diversifying teaching strategies, and maximizing the brain's natural learning processes. Neuroscience is based on information obtained through autopsies, experiments, and different types of scans -- MRIs, EEGs, PET and CAT scans, as well as the most recent brain research lab studies in neuroscience. Thus, technologies in medicine have paved the way for many new learning innovations, and determine how brain learning actually occurs (Duman, 2006; 2007).

The nature of cognition, the functioning of the human brain, and the construction of knowledge are tied to one another.

Neural scientists and educators are identifying how an understanding of the brain can improve pedagogy and increase the potential of students of all ages (Slavkin, 2002).

Brain- Based Principles

Implementing effective brain based learning can be achieved in the light of certain factors that help teachers meet and support their students' learning need. First, students need to feel safe. They learn more and faster in trustworthy environments. Second, students need high expectations with adequate support, encouragement, and feedback. Besides, they need learning that allows an emotional impact. They need a personal connection, and need to satisfy an urge to know. Students need social relationships. They need validation and acceptance from peers and teachers. Moreover, students need to form patterns, seek meaning and relevancy, and set goals. Finally, students need learning that supports multiple pathways to memory (Gregory and Kuzmich, 2010).

Caine and Caine (1991) have pointed out that "brain research establishes and confirms that multiple complex and concrete experiences are essential for meaningful learning and teaching" (p. 5). Based on their research and experience, Caine and others (2005) argued that great teaching involves three fundamental elements: First, Relaxed alertness: Creating the optimal emotional climate for learning. It consists of low threat and high challenge. It is also a state that is present in classroom in which emotional and social competence is the goal and accompanied by motivation linked to

personal goals and interests. Second, Orchestrated immersion in complex experience: Creating optimal opportunities for learning. Besides, orchestration means that teachers provide experiences that have learners interact with knowledge in ways that are concrete and physical, and in ways that engage all the learner’s senses. Learners also should be helped make meaningful connections between what is experienced and what that experience means to them. Third, Active processing of experience: Creating optimal ways to consolidate learning. This could happen by using teacher and peer questioning and feedback. Therefore, students are required to think more deeply, see relationships, analyze situations, and communicate. (See figure 2- The learning principles).

The 12 Brain/Mind Natural Learning Principle



THREE INTERACTIVE TEACHING ELEMENTS EMERGING OUT OF THE PRINCIPLES:		
RELAXED ALERTNESS	ORCHESTRATED IMMERSION IN COMPLEX EXPERIENCE	ACTIVE PROCESSING

Figure 2. The learning principles

It can be noticed here that these three components can be further implemented and validated with more practical suggestions. For example, prior knowledge can be enhanced by presenting information that builds upon the learner's background ideas. Teachers can also use outdoor activities, and telling their learners about their own experiences. Besides, graphic organizers can be utilized to help students see relationships and pattern new information.

Approaches of brain-based learning-teaching integrate the engagement of emotions, nutrition, enriched environments, thematic learning, integrating curriculum, movement, meaning-making, and the absence of threat for maximum learner participation and achievement. A basic premise is that we are all natural learners.

The aim of the brain based instruction is to pass from memorizing through meaningful learning. It requires these three interactive elements; 1. Relaxed alertness. 2. Immersion. 3. Active processing (Caine and Caine, 1990). Instead, brain-based learning emphasizes contextual learning and engages learners in decision-making, forming cooperative groups, locating resources, and applying the knowledge.

Furthermore, there are three main domains of learning and all teachers should know about them and use them to construct lessons; Brain- Based Taxonomies. These domains are cognitive (thinking), affective (emotion/feeling), and psychomotor (physical/kinesthetic). The cognitive domain involves the development of our mental skills and the acquisition of knowledge, the affective domain involves our feelings, emotions and attitudes, and the psychomotor domain is comprised of utilizing motor skills and coordinating them. Each domain

has a taxonomy associated with it and arranged so that they proceed from the simplest to more complex levels. Providing meaningful learning requires the brain system within the whole brain to work collaboratively. That's why the brain learns best when cognitive, affective and psychomotor information are processed simultaneously.

Brain- based teaching tips

Kaufman and others (2011) pointed out that accelerated learning has been identified through the International Alliance for Learning (2004) in the following ten elements: 1) knowledge about each human brain, 2) emotional state, 3) the learning environment, 4) the role of music and the arts, 5) personal motivation, 6) multiple intelligences and learning styles, 7) imagination/metaphors, 8) suggestion, 9) team learning and cooperation, and 10) improvement and results. Many of these strategies are reflected in the B.R.A.I.N. B.A.S.E.D. teaching tips offered by Hileman (2006) as shown in (Table 1).

Brain's Time Clock	Keep rhythm by alternating spatial and verbal tasks.
Repetition	Use previewing and reviewing strategies.
Active Learning	Increase blood flow with physical movement.
Images	Enrich the visual learning environment.
Novelty	Stimulate the brain with new approaches.
Be Colorful	Facilitate retention and motivation by color-coding.
Automatic Learning	Recognize the influence of nonverbal communication.
Social Brain	Exploit opportunities for cooperative learning.
Elicit Emotions	Create opportunities for emotional engagement.
Developing Thinking Skills	Engage learners in problem-solving.

Table 1. Brain- Based Teaching Tips by Hileman (2006)

Conclusion

The educational process is a two-edge blade that acquires the efforts and co-operation between both the teacher and the student. The teacher's attitude, culture and knowledge are considered to be the backbone of the issue and the brain that motivates all the other parts of the body of the educational process that is considered to be the student. The teacher's duty is to facilitate students' learning process other than teaching them. This facilitation should come out of a knowledgeable facilitator that copes with the latest theories and teaching methods including brain-based learning and all what it needs to motivate and facilitate learning through physical cognitive and affective domains.

Furthermore, understanding of the human brain is continually evolving, thus our interpretation of the implications of findings from brain-based research for teaching and learning should also continually develop. The brain is not only the control center of the entire human body, organizing our behaviors, emotions, movements, and biological functions, but it also is the seat of our humanity. Brain defines who we are, how we act, and the very nature of our species.

References

- Caine, R, N., Caine, G., McClintic, C.& Klimek, K. (2005). 12 Brain/Mind Learning Principles in Action: The Field book for Making Connections, Teaching, and the Human Brain. Thousand Oaks, California Corwin Press.
- Caine, R. N., & Caine, G. (1990). Understanding a brain-based approach to learning and teaching. *Educational Leadership*, 48(2), 66-70.
- Caine, R. N., & Caine, G. (1991). Making connections: Teaching and the human brain. Alexandria, Virginia, Association for Supervision and Curriculum Development
- cortex. *Nature*, 420(6917), 788–795. Retrieved October 30, 2007 from EBSCO online database, Academic Search Premier <http://search.ebscohost.com/login.aspx?direct=true>
- Dhority, L., & Jensen, E. (1998). Joyful fluency: Brain-compatible second language acquisition. Corwin Press.
- Draganski, B., Gaser, C., Busch, V., Schuicrer, G., Bogdahn, U., & May, A. (2004). Neuroplasticity: Changes in grey matter induced by training. *Nature*, 427(6972), 311–312. Retrieved October 31, 2007 from EBSCO online database, Academic Search Premier <http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=12046926&site=ehost-live>
- Duman, B. (2006). The effect of brain-based instruction to improve on students’ academic achievement in social studies

- instruction. 9. International Conference On Engineering Education San Juan, Puerto Rico July 23-28. ICEE-2006.
- Duman, B. (2007). Celebration of the neurons; The application of brain based learning in classroom environment. In The Proceeding of 7th International Educational Technology Conference, Near East University, North Cyprus (pp. 468-472).
- Duman, B.(2007). *Neden Beyin Temelli Öğrenme*. Ankara: Pegem A yayıncılık.
- e&db=eoah&AN=10540902&site=ehost-live
- EBSCO (2014). *Brain- Based Learning. Research starters: Academic topic overviews*. EBSCO Information Services, Inc.
- Genesee, F. (2000). *Brain Research: Implications for Second Language Learning*. ERIC Digest.
- Goleman, D. (1995). *Emotional Intelligence: Why It Can Matter More Than IQ*. NY: Bantom Books.
- Gregory, G. H., & Kuzmich, L. (2010). *Student Teams That Get Results: Teaching Tools for the Differentiated Classroom*. Corwin Press.
- Haines, B. J. (2007). "The Dilemma of Student Downshifting- Pedagogical Practices Which Influence Downshifting in High School Agricultural Science Programs." Unpublished doctoral dissertation,
- Hart, L. A. (1983). *Human Brain and Human Learning*. New York: Longman Press.

- Healy, J. M. (1990). *Endangered Minds: Why Our Children Don't Think*. New York, NY: Simon & Schuster.
- Hileman, S. (2006). "Motivating Students Using Brain-based Teaching Strategies." *The Agricultural Education magazine*, 78(4), 18-20.
<http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=14373157&site=ehost-live>
- International Alliance for Learning. (2004). "The 10 Elements for Accelerated Learning." Retrieved May 21, 2008 from www.ialearn.org/ALElements.php.
- Jensen, E. (2000). *Moving with the brain in mind*. *Educational leadership*, 58(3), 34-38.
- Jensen, E. P. (2008). *A fresh look at brain-based education*. *Phi Delta Kappan*, 89(6), 408-417.
- Jensen, Eric (1998). *Teaching with the brain in mind*. Alexandria, VA: association for supervision and Curriculum Developmnet. *Brain Compatible strategies*. Del Mar, CA: Turning Point Publishing.
- Kaufman, E. K., Robinson, J. S., Bellah, K. A., Akers, C., Haase-Wittler, P., & Martindale, L. (2008). *Engaging students with brain-based learning*. ACTEonline. Retrieved September, 2, 2011. Purdue University, West Lafayette, Indiana
- LeDoux, J. (1996). *The emotional brain: The mysterious underpinnings of emotional life*. NY: Simon & Schuster.

- Pajares, F. (2002). Overview of social cognitive theory and of self-efficacy. Retrieved June 5, 2007 from <http://www.des.emory.edu/mfp/eff.html>
- Pert, C. B. (1997). *Molecules of emotion: Why you feel the way you feel*. Simon and Schuster.
- Petitto, J. M., Huang, Z., Lo, J., & Streit, W. J. (2003). IL-2 gene knockout affects T lymphocyte trafficking and the microglial response to regenerating facial motor neurons. *Journal of neuroimmunology*, 134(1-2), 95-103.
- Schwartz, J. M. & Begley, S. (2002). *The Mind and the Brain*. New York, NY: Regan Books.
- Slavkin, M. (2002). Brain science in the classroom. *Principal Leadership*, 2(8), 21-28.
- Sprenger, (1999) *Learning & Memory* ASCD, Alexandria, Virginia
The Brain in Action
- Sylwester, K. (2001). R&D and economic growth. *Knowledge, Technology & Policy*, 13(4), 71-84.
- Sylwester, R. (1995). *A celebration of neurons: An educator's guide to the human brain*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Trachtenberg, J. T., Chen, B. E., Knott, G. W., Feng, G., Sanes, J.R., Welker, E. et al. (2002). Long term in vivo imaging of experience-dependent synaptic plasticity in adult
- Zadina, J. N. (2004). Brain research-based effective strategies to enhance learning and energize instruction. In A

presentation at the US Department of Education Office of English Language Acquisition Summit Conference.

Zull, J. E. (2002). *The art of changing the brain: Enriching teaching by exploring the biology of learning*. Stylus Publishing, LLC..

Zull, J. E. (2004). *The Art of Changing the Brain*. *Educational Leadership*, 62(1), 68–72. Retrieved October 17, 2007 from EBSCO online database, Academic Search Premier.