

## **BRAIN-BASED LEARNING STRATEGIES AND ITS EFFECTS ON STUDENT OUTCOME IN UNIVERSITY AGED IRANIAN EFL STUDENTS**

**\*Valeh Valipour<sup>1</sup> and Seyed Mahdi Araghi<sup>2</sup>**

<sup>1</sup>TEFL, Islamic Azad University, Tonekabon & Ahar, Iran,

<sup>2</sup>Department of English Language Teaching and Literature, Payame Noor University, Iran

*\*Author for Correspondence*

### **ABSTRACT**

The purpose of this study is to examine the effectiveness of using brain based learning strategies in the framework of university level students that administer reading comprehension test. Participants are 20 students in Islamic Azad University, Tonekabon, Iran, in reading comprehension class, 10 as control group and 10 as experimental group. Instructors of these students were knowledgeable about the implementation of brain-based learning strategies. Both groups were measured and compared at the end of the sessions. The gained results showed that the experimental group had higher scores on the given test in comparison with the control group after analyzing and measuring t-test as the statistical measurement.

**Keywords:** *Brain-based Learning Strategies, Learning Strategies*

### **INTRODUCTION**

*"Brain based learning is all about: knowing how our brain works, then using that to foster better student outcomes "* (Eric Jensen, 2014).

Scientists innovatively have had a new look into how the brain works. This idea opened its way to educational science too and it has led to new findings and strategies in the domain of teaching and learning to improve the way students learn subject matters in different fields of study. In last decades more systematic implementation of brain-based strategies has been considered while referring to the importance of emotion, thematic instruction, differentiated learning, movement, and the use of mental models. As well, changing conceptions of memory, assessment, the learning environment, the biology of the brain, and uses of time have all served to improve student achievement. Brain-based teaching involves the accomplishing of carefully-designed principles by considering their effects in every stage of teaching a subject matter of each lesson.

Emotions maintain learners in positive emotional states to make them feel good about learning and engage more about learning. Learners' emotional states can affect their level of achievement. Caine ((Pool, 1997), emphasizes the significance of the effect of culture and an environment on learners' feeling safe and confidence. It is pointed to as an environment and situation in which students doesn't feel anxious for receiving new information as it is called *relaxed alertness* (Caine *et al.*, 2005). According to Sylwester (1998) ...our emotional system drives our intentional system, which drives learning and memory and everything else that we do. It is biologically impossible to learn and remember anything that we don't pay attention to.

Thematic instruction is a kind of exposure to the content and background of new topic to be taught and relevant to new information to learn new topic easier, Jensen (1997). It is basically the connection between meaningful tasks and activities to relevant practices by students as they are using the experiences they have in their mind related to the situation trustworthy for them for building their background knowledge and taking benefits for improving their comprehension. Through making information as patterns and chunks, thematic instruction can help the learners to place mentally or sort the new information meaningfully, therefore , it leads to the learners internalize and recall the new information very well when they need them to use. (Wagmeister & Shifrin, 2000). Pool (1997) refers to the role of teachers in this process as a helper for students by knowing the varieties of them during comprehending the relationship between the previous and new knowledge to be acquired. This may increase the learners' motivation during doing the learning process and practices as well as assessments.

### Research Article

Jensen (1997) says that a special time must be devoted for the brain processing in order to learn what must be learned and get mastery of a new concept. One of the aspects of devoting time in brain-based learning classrooms is achieving mastery by students to a skill or concept before taking the steps towards learning. The second one is preparing scheduling regular breaks for delivering the instruction and it makes the students have time to process the given new information and reflecting them. Studies have shown that adults in the work place need mental and physical breaks to increase productivity, quality, and morale...Attention span studies of children and young adults reveal similar but even more dramatic results. Students need a break in concentration at least every 20 minutes (Erlauer, 2003)

According to Reigeluth and Beatty (2003) ...whole environment, school, home, and other settings should be considered as part of the learning environment. Erlauer (2003) and Slavkin (2004) claim that learners must touch and feel how the effects of lack of sleep, food, and water on their physical and mental abilities to learn. Being actively participated in teaching and learning in the class can make learners more motivated as well as teachers be more confident about the correct way of teaching and learning their class and learners going to be achieved the desired objectives (Goldberg & Stevens, 2001). Being ensured a safe and exciting learning environment in the classroom without any teasing and humiliation due to failures lead to encourage learners to attempt more in learning process.

Tileston (2005) explains long-term memory as ...a five-drawer file cabinet that assists with retrieval in the brain. There are several types of memory; *semantic* memory refers to information regarding words, facts, and dates. *Episodic* memory refers to context and locations. *Procedural* memory encompasses muscle coordination, while *automatic* memory deals with conditioned response. Finally, Tileston believes, *emotional* memory takes precedence over all other types of memory. Saunders and Vawdrey (2002) claim, Recent brain research has shown that the brain pathways are strengthened with each use: often requiring six exposures (touching, seeing, hearing, doing) before the pathway is strong enough for long-term memory recall.

In a brain compatible classroom, assessment both measures achievement and provides motivation (Goldberg & Stevens, 2001). Caine *et al.*, (2005) and Caufield *et al.*, (2000) all propose that by giving permission to learners to create some of their own assignments and topics for getting marks, they can assess their own abilities in learning better. Caine *et al.*, (2005) suggests that it is the assessment which must be designed to be appropriate with learners not the learners must be matched with assessments. According to Erlauer (2003), to make learners aware of the ways of improving their own tasks can be gained through increasing motivation by immediate, constructive feedback.

Winters (2001) mentions there are some locations in brain relating to cognitive functions for learning information. Researches about brain and how it works during learning reveal that human brain is not like a computer doing tasks in linear forms, but several strategies are done to act and create meanings.

Jensen (2005) states- Amazingly, the part of the brain that processes movement is the same part of the brain that processes learning. All abilities must be involved to increase and improve learning processes, even the abilities related to dancing, clapping, manipulating, and all natural ones (Caine *et al.*, 2005; Jensen, 2000; Slavkin, 2004). As Given (2002) says, Teachers benefit by harnessing this natural energy instead of fighting it.

Slavkin (2004) believes, If brain-based pedagogy could be summed up in one sentence, it would be, Knowledge should be socially created. Erlauer (2003) suggests that Collaborative learning provides the brain with the means to explore new information, typically in a problem-solving situation. Collaborative communities in schools can take many forms. Students can form peer groups and assist each other's learning (Wolfe, 2001). Caine *et al.*, (2005) and Pool (1997) to collaborative work of learners and teachers to help creating a safe and peaceful environment to make learners feel comfortable and be able to focus on learning.

Caine and Caine (1995, 2005) believe that any change occurring in mental models is equal to changing in teacher perception as well as teachers' starting to improve their classes' learning process it leads to make changes in their mental models.

### **Statement of the Problem**

Teachers always try to find a way to improve their students' learning of lessons and new information effectively. A lot of efforts have been done due to this and nowadays most attentions have been turned towards brain-based learning strategies to solve the problem of effective and successful learning process more and more.

The purpose of this study is investigating the effects of brain-based learning strategies on reading comprehension test scores of Iranian EFL learners.

### **The Significance of the Study**

Neuroscience shows that the brain can be modeled not with a central processor where 'intelligence' lies, but in having perhaps 70 functional areas. Mental activity requires several areas to work together. What appear as different types of intelligence result from different combinations of well-developed functional areas. Learning is a process by which neurons join by developing the synapses between them. Knowledge is arranged hierarchically, with new knowledge being linked to existing neural networks.

Therefore, from among the methods of learning a language, using brain-based learning and teaching strategies may be one of the best. In this study, it is trying to use brain-based learning strategies for improving and guiding teaching and learning practices in classrooms by increasing the students' motivations to get better results on reading comprehension test.

### **Research Questions and Hypotheses of the Study**

The present study will try to answer the following questions:

1. Is there any difference between the scores of experimental and control groups on reading comprehension test?

Based on the research question the following hypotheses are proposed:

1. There is no difference between the experimental group scores and those of the control group's gained on reading comprehension test.

\* Significance level in this hypothesis is  $P=.05$ .

## **MATERIALS AND METHODS**

The population of this study was 20 students of English as a foreign language. The students study English language translation at B.A level of Islamic Azad university of Tonekabon, Iran.

The subjects were second-year undergraduate students. 20 students, male and female in the age range of 20-28, were randomly selected based on their scores got on proficiency test of TOEFL to determine their homogeneity and background of English language abilities. They were divided into two groups, control group and experimental group, each group consists of 10 participants. For both group the same teacher starts to teach the lessons due to the brain-compatible strategies curriculum levels, high for the experimental and low for the control group. For measuring learning strategies, Motivated Strategies for Learning Questionnaire (MSLQ) was used; this instrument examines several aspects of motivation related to learning, such as goal orientation and self-efficacy. This is an excellent tool for mentoring programs that have tutoring aspects or an educational skills component. MSLQ has already obtained reliability and validity.

## **RESULTS AND DISCUSSION**

For analyzing the gained data, statistical SPSS software was used through independent t-tests a comparison of means done for the experimental and the control group to reveal if there was a difference between the outcomes of groups performances on reading comprehension test.

**Table1. Means of two groups on independent post-test**

Post-Test	N	Mean	Std.Deviation	Variance df
Exp. Group	10	14.67	2.03	0.13 18
Con. Group	10	11.98	2.24	0.16 18

### **Research Article**

As statistical measurement revealed, the null hypothesis of this study was rejected, therefore, it can be concluded that brain-based learning strategies and principles have a positive effect in reading comprehension learning of EFL students.

Significance  $\rightarrow t_{\text{observed}} = 6.311 > t_{\text{critical}} = 2.101$   $p = .05$

A comparison of the reading comprehension scores according to brain-based learning strategies was done. The scores were used to evaluate a student's understanding of analyzing, evaluating, and interpreting text at their grade level. This type of study was based on several works by leading brain-based research scholars, most notably: Caine and Caine (1995, 2010) and Slavkin (2002).

The final result was to determine there is a causal relationship between student achievement and brain-based learning principles in this population. Then as a conclusion, using brain-based learning strategies can be effective for pedagogical objectives to improve learners learning abilities.

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