A Brain-Based Learning program to Develop Secondary Stage Students' EFL Critical Reading, Argumentative Writing Skills

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ABSTRACT

The current study was conducted to develop the EFL critical reading and argumentative writing skills for Al-Azhar secondary stage students through adopting a Brain-Based Learning program. Accomplishing this purpose, the present study used the pre-post, experimental-control group design. The study groups' pre-posttest design was adopted. Conducting the current treatment, thirty EFL 1st year secondary stage students from Ekwa religious institute for girls, Dyarb Negem administration, Sharkia governorate, Egypt, were randomly allocated in two groups (fifteen students for quasi-experimental group) and fifteen for control group, the researcher designed an EFL critical reading and argumentative writing skills tests to measure these skills before and after the treatment. The current study was conducted over a period of ten weeks, along ten sessions, throughout the academic year 2022-2023. The results of the study indicated that utilizing a Brain-Based Learning program was effective to develop EFL critical reading and argumentative writing skills for Al-Azhar secondary stage.

Key words: EFL Critical Reading; Argumentative writing Skills; Secondary Stage Students

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Introduction

Reading and writing are vital to express thoughts and to communicate ideas and views to others. By reading and writing, students can convey information and ideas and maintain social relationships. EFL learners have to practice these skills well when learning English. These skills are interrelated and interchanged as they cannot be learnt or taught separately, thus, the new trend in teaching EFL skills is to be taught in an integrative way **(1)**.

According to Hudson **(2)**, critical reading skills are skills help the learners be able to analyze, synthesize, and evaluate what is read. When teachers expose students to critical reading skills, they will also make students see the cause and effect or comparing relationships in the text, or adopting critical stance toward the text. In other words, when educators teach critical reading skills, they will develop students to be critical thinkers as well because when students do critical reading, it will lead to critical thinking. Students need to have fully understood a text where they will analyze, synthesize, and evaluate it, then only they will think critically about a text, choose or reject the ideas put forward, agree or disagree with the issues, and most important of all they know the reasons why they do it.

Özdemir **(3)** reported that it is necessary to understand the basic ideas and to explore ways to critical reading. If everything that is written can be improved around basic ideas, and if different ideas can be identified and reproduced, then critical reading can also be realized. To improve critical reading skills of readers, it is also important how the reader perceives himself/herself in the context, in other words, the critical reading level of the reader is also important. When a reader perceives that his/her critical reading skill is inadequate, a reader will not have the desire to read critically.

Al-Qatanani **(1)** investigated the effectiveness of a program based on Multiple Intelligences in developing the students' critical reading skills. The participants of the study were 50 students in the second grade at the secondary Stage. The Results revealed the significant effect of the program in developing the students' critical reading skills.

Argumentative writing is inseparable form to critical reading. In order to write a good analysis and evaluation on a topic careful critical reading is essential to strengthen the argument. The judgments and interpretations made based on the texts are the first steps towards formulating the writer's own approach **(4)**. By reading critically, students can develop reflective skill before starting to write critically. Therefore, critical reading and critical thinking play a vital role in the development of argumentative writing.

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Braun **(5)**, mentioned four important steps to write argumentative writing;

The first step: the student can start the contestable issue by reading, listening, or watching the conversational issue that will be argued. This aims to make the readers fully understood with the topic that will be discussed.

The second step: the writer's position of the issue must be clearly stated because the writer should try to identify and understand the opponent's point of view. Yet, if the writers only argue their own opinions, it means that the writers not likely to convince the reader at all. Therefore, this step is very important to be understood for the writers before they start to write an argumentative writing.

The third step: Providing the sufficient evidence in order to convince the readers. The evidence used to prove the writer's opinion should be taken from credible sources.

The last step: Making conclusion is the fourth step in in composing an argumentative writing. The writer should conclude what have been written in their argumentative writing with reasonable or logic conclusion as well as keeping the reader in the writer's side **(5)**.

El-Attar **(6)** investigated the effect of a discourse analysis program on improving the 2nd year faculty of specific education EFL argumentative writing skills. The

instruments were a pre-post argumentative writing test and a questionnaire. The results of the study showed that the experimental group gained more achievement in the test of argumentative writing skills.

Brain-based learning is a theory of learning that has its own principles and implications which help teachers teach effectively. Such principles and implications are derived from recent brain research on the human brain and its amazing structure. It gleans information from many disciplines, such as Chemistry, Neurology, psychology, Sociology, and Biology. The goal of brain-based learning is to maximize the conditions under which the brain learns best **(7)**.

Huang **(8)** indicated that brain- based learning addresses the areas of motivation, attitudes, emotion and learning, experiential learning, attention, and memory. It refers to structuring educational activities. Brain-based learning involves active learning rather than passive learning. The goal of this learning is to meet the needs of the individual student. The learning process becomes more flexible and creative. Students become active and motivated. By brain-based learning, the students learn best naturally and cooperatively in a relaxed and motivating atmosphere.

There are twelve principles for brain-based learning. These principles can serve as a general foundation for any educational programs that follow the brain- based learning **(9)**. The principles consider all learners as living systems where emotional, mental, and physical functioning is interconnected. Therefore, no one principle is more important than another. These principles could become the basis of teaching foreign languages.

To the great significance of BBL, Caine **(10)** suggested that curricula should be developed around brain-based principles that require learning to be psychological and social, by using interactive curricula. So, it is required for teachers to comprehend how the brain works so as to improve students' levels of education and elaborate on their communication. These principles are:

1. ***The brain is a parallel processor.*** This means that the brain processes information and performs many tasks simultaneously.
2. ***Learning engages the entire physiology***. All learning is philosophical. The brain and the body are engaged in learning.
3. ***The search for meaning is innate***. Students do this automatically; meaning is more important than information alone. This means that the search for meaning is basic and very personal. The greater the extent to which what we learn is tied meaningful experiences, the deeper our learning will be.
4. ***The search for meaning occurs through patterning***: "The brain is designed to perceive patterns through meaningful categorization of information. It resists having meaningless patterns imposed on it".
5. ***Emotions are critical to finding meaning in information:*** Positive emotions drive attention and enhance learning and memory. They play a crucial role in making decisions. In the

groundbreaking, the emotional brain clearly explains how the emotional neural passageways influence the neural passageways needed for academic and scholarly work.

6. ***The brain processes parts and wholes simultaneously.*** Every brain perceives and creates parts and wholes. The left and the right hemispheres have different functions, but they are designed to work jointly.
7. ***Learning constantly involves conscious and unconscious processes***. There is an interaction connecting our conscious and unconscious. First primary task of educators is to help students take charge of their conscious and unconscious processing.
8. ***Learning involves both focused attention and peripheral perception***. People hold general perceptions of the environment and pay selective attention to various parts of it.
9. ***Learners have at least two different types of memory systems. spatial and rote learning***. There are at least two approaches to memory. The taxon or rote memory systems consist of facts and skills that are stored by practice and rehearsal. Spatial or autobiographical memory builds relationships among facts, events, and experiences. The brain understand best when facts and skills are embedded in natural spatial memory.
10. ***Learning is enhanced by challenge and inhibited by threat***. Students who fear of failure or embarrassment cannot learn easily. Students benefit when the classroom environment feels safe and supportive. The brain could be strengthened by presenting sensory-rich situations. This refers to the importance of eliminating the threat from the classroom.
11. ***Each brain is uniquely organized***. Each brain matures differently. Information is stored in multiple areas of the brain and is retrieved through multiple memory and neural pathways. Each learner has his/her own unique set of brain strengths, weaknesses and preferred learning style.
12. ***Learning is developmental***. Younger students with delayed brain development do not have the memory capacity of older students and their brains benefit from enriched home and school environments.

Siercks **(11)** reported that the largest portion of the brain is called cortex. It is divided into two halves called hemispheres. Each half plays an essential role in the instructional process. The left hemisphere processes information in a sequential and analytical manner. The right hemisphere processes information in a more holistic intuitive manner. Each half is composed of four lobes: frontal lobe at the front of the brain deals with decisions, planning,

creativity, and problem-solving. Partial lobe on the top of the brain toward the back is in charge of feeling and touch. Temporal lobe on the side, above the ears, processes auditory information and some memory. Occipital lobe at the back of the brain processes visual information. The prefrontal area, which is right behind the forehead, is an important area that deals with emotions, personality, attention, and learning. Each lobe is responsible for specific activities. Each task that the brain completes requires communication and coordination among its parts to perform its jobs.

To Kane **(12)**, learning is the basic function of the brain. Teachers' knowledge of each area of the brain and how these areas correlate to learning can affect how the teachers perceive brain-based education and how teachers can use it in their classrooms. As a result, knowing the mechanism through which the brain works, helps students to: (1) acquire knowledge, reduce anxiety, (2) cause social and psychological ease, (3) achieve a better understanding, (4) recall information, and enhance their participation within the learning process.

Shore **(13)** and Ozden and Gultekin **(14)** reported that BBL proved to be effective in increasing student achievement, deeper understanding, attitude and retention of knowledge due to the following characteristics:

1- Human brains are unique as faces.
2- The brain is changeable.
3- The brain connects new information to old.
4- The brain is divided into two hemispheres that have different functions.
5- The left brain is an analytic and abstract but the right brain is holistic and concrete.
6- The brain has four lobes. Each lobe serves different functions and duties. But they work as a unity to achieve brain jobs.

Methodology

Thy Participants:

The participants of the current study included (30) 1st year of secondary students at Ekwa religious institute for girls, Dyarb Negem administration, Sharkia governorate where the researcher work. They were randomly assigned in two groups, experimental (15) students and control (15) students. It was assumed that the participants formed a homogenous group as they were randomly chosen.

The Study Procedures:

To answer the study questions, the following procedures were conducted:

1. Reviewing literature and previous studies related to critical reading, critical writing, self-esteem and the brain based learning.

2- Designing instruments of the study:

a- Designing a critical reading questionnaire to identify the most important skills for EFL students.

b- Designing an argumentative writing questionnaire to identify the most important skills for EFL students.

c- Designing a critical reading skills test.

d- Designing an argumentative writing skills test.

3- Submitting these instruments to the jury members to validate it.

4. Designing the program that is based on the brain based learning in the light of objectives, content, activities, strategies, learner's and teacher's roles, and evaluation.

5- Submitting the program to the jury members to validate it.

6- Choosing the study participants from Al-Azhar secondary stage students and dividing them into experimental and control groups.

7- Pre-administering the study instruments to the two groups.

8- Administering the program based on the brain-based learning to the experimental group and the control group through regular instruction.

9 - Post-administering the instruments to both groups to investigate the effect of the proposed program.

10- Comparing the pre-post results statistically of both groups.

11- Interpreting results, providing conclusions, recommendations and suggestions for further studies.

Results:

1- There was a statistical significant difference between the mean scores of the experimental group and the control group students in the post-test of the overall EFL critical reading skills and its sub-skills favoring the experimental group.

2- A Brain-Based Learning program had a high effect on developing overall argumentative writing and its sub- skills.

Discussion:

The results of the study showed that there is a statistically significant difference between the mean scores of the participants on the EFL critical reading and argumentative writing skills pre-posttests in favor of the posttest. This might be attributed to the activities and tasks of the program that help to improve students' performance of the critical reading and argumentative writing skills.

There some reasons behind the improvement of the experimental group results:

1) Improving students' ability to communicate with people in real life (not only in or out of class).

2) Developing students' confidence in different communicative contexts.

3) Enabling students to express their opinions and ideas in correct English.

4) Enhancing the students' ability to read words appropriately.

5) Enabling students to organize their ideas coherently and speak fluently about a specific issue.

6) Enabling students to be better listeners.
7) Promoting self-learning and co-operative learning.
8) Sketching feasible topics in their daily learners' using English.

Conclusion:

Based on the results of the study it can be concluded that using A Brain-Based Learning program is an effective way to develop EFL critical reading and argumentative writing skills through focusing on individual differences among students. It is also concluded that coping the new trends in teaching which focuses on the changing role of the teacher from being a lecturer to a facilitator, enhance students' achievement.

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