

**The Effectiveness of a Brain-Based Program in Developing  
Al Azhar EFL University Students' Argumentative Writing**

**by**

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## **Abstract**

The study aims to investigate the effectiveness of a brain-based learning program in improving intermediate level B+ Al Azhar English Training Center students' argumentative writing. The study began with a review of literature and related studies dealing with EFL argumentative writing and the brain-based strategies which can teach arguments. The researcher prepared a list of the argumentative sub-skills regarding the students' needs and the CEFR rubrics and framework. Jury members of ILETS instructors and TEFL professors ascertained the appropriateness of the targeted sub-skills. The study adopted the experimental approach, three instruments were constructed and tested to fulfill the purpose of the study. the argumentative sub-skills were tested twice using the pretest and the posttest to measure the students' performance before and after applying the program. The study sample consisted of 56 B+ intermediate-level students of Al Azhar English Training Center, Al Azhar University, Cairo Governorate Which is academically run by the British Council according to a partner-ship with Al Azhar. The results revealed that, in terms of the development of the argumentative writing test, there is a statistically significant difference between the mean scores of the study participants on the pre and post-tests, as a total score in favor of the post-test scores. The findings showed the effectiveness of the brain-based learning program in developing the argumentative writing of Al Azhar AAETC intermediate-level students. The study recommended using brain-based learning in developing other writing genres in the IIELTS writing test and speaking sub-skills.

**Keywords:** Brain-Based Learning

## فاعلية برنامج قائم على نظرية إعمال الدماغ في تنمية الكتابة الجدلية للغة الانجليزية كلغة أجنبية لطلاب جامعة الأزهر

### ملخص البحث

تهدف الدراسة إلى التحقق من فعالية برنامج قائم على نظرية إعمال الدماغ في تحسين الكتابة الجدلية لطلاب المستوى المتوسط B + مركز تدريب الأزهر لتعليم اللغة الإنجليزية. بدأت الدراسة بمراجعة الأدبيات والدراسات ذات الصلة التي تتناول الكتابة الجدلية للغة الإنجليزية كلغة أجنبية والاستراتيجيات القائمة على نظرية إعمال الدماغ والتي يمكن أن تستخدم في تدريس الكتابة الجدلية. أعد الباحث قائمة بالمهارات الفرعية الخاصة بالكتابة الجدلية فيما يتعلق باحتياجات الطلاب ومعايير الإتحاد الأوروبي CEFR. كما تأكد أعضاء لجنة التحكيم من مدربي ILETS وأساتذة المناهج من ملاءمة المهارات الفرعية المستهدفة. اتبعت الدراسة المنهج التجريبي، حيث تم بناء ثلاث أدوات واختبارها لتحقيق الغرض من الدراسة. تم اختبار المهارات الفرعية للكتابة الجدلية مرتين باستخدام الاختبار القبلي والاختبار البعدي لقياس أداء الطلاب قبل وبعد تطبيق البرنامج. تكونت عينة الدراسة من ٥٦ B + من طلاب المستوى المتوسط من مركز الأزهر لتدريب اللغة الإنجليزية بجامعة الأزهر بمحافظة القاهرة والذي يديره المجلس الثقافي البريطاني أكاديمياً بالشراكة مع الأزهر. أظهرت النتائج أنه من حيث تطوير اختبار الكتابة الجدلية، هناك فرق ذو دلالة إحصائية بين متوسط درجات المشاركين في الدراسة في الاختبارين القبلي والبعدي، كمجموع درجات لصالح درجات الاختبار البعدي. وأظهرت النتائج فاعلية برنامج التعلم القائم على نظرية إعمال الدماغ في تنمية الكتابة الجدلية لدى طلاب المرحلة المتوسطة في مركز لغات الأزهر. أوصت الدراسة باستخدام التعلم القائم على الدماغ في تطوير أنواع الكتابة الأخرى في اختبار IELTS ومهارات التحدث الفرعية.

**كلمات مفتاحية:** التعلم القائم على نظرية إعمال الدماغ. الكتابة الجدلية.

## Introduction

English language teaching has many goals which are assigned according to the needs of the students and the learning context, accordingly the researcher focused on the objectives to be achieved by the students of Al Azhar English Training Center which is an English teaching language facility at Al Azhar University and it is academically supervised by the British council after a partnership started with Al Azhar in 2007. The Center provides the students with English language courses following the CEFR criteria and Cambridge curricula and standardized test such as KET, PET, and FCE. Consequently, the students are required to master the language tools according to the assessment criteria of Cambridge to pass their exams to upgrade their level and continue their course at the center.

The students of Al Azhar English training center study English for religious purposes and for interfaith dialogue. They study several topics with a global interest from Muslims and Non- Muslims, some of these topics requires from the students to be able to argue and to uncover the misconception. The researcher found the necessity of improving the argumentative writing of Al Azhar's students for academic purposes like passing Cambridge standardized tests such as the FCE and ILETS tests which support their opportunities for scholarships abroad and empower their qualification. Moreover, to help them dealing with different claims representing their Islamic identity.

Based on the previous studies of Argumentative writing the researcher found that Brain based learning strategies like (collaborative writing, mind mapping) are suitable with the dialectic tools the students need to improve their writings

Argumentative writing is a fundamental writing style which is required in higher education to compose various writing tasks. It aims is to convince

an audience in a situation of conflict between beliefs and attitudes of the writer / speaker and the reader /audience. The writing of formal argumentative places heavy cognitive demands on the writer. It involves logical and coherent reasoning which are acquired in the cognitive development. (Dastjerdi and Samian, 2011)

Argumentation constitutes the core text type in academic writing. Clearly, the mastery of argumentative writing is important because it empowers students, and "it enables them to produce, evaluate, and act on the professional, ethical, and political discourse" (Crammond, 1998, Khodabandeh, F. 2014)

Several studies on brain-based learning theory have demonstrated their effectiveness in the teaching and learning process, including Pinkerton (2002), Mohammed Baker Nofel (2004), Weimer (2007), Ferguson (2008), Ozden& Gulitekim (2009), Ayman Rajab Eid (2009), Abdul Azim (2010), Muhammad Said Saeed Sulaiman (2010), Monzer Abbasi, 2010, Sikes (2010), and the study of (Raja Mohammed Deeb Al-Jaji, 2010).

The review of related studies and literatures showed: The effectiveness of brain-based learning strategies in developing self-efficacy, reducing anxiety, increasing achievement, maintaining the impact of learning, and developing thinking and knowledge. Most of the studies that dealt with brain theory were in the field of science and mathematics and they were few in languages.

### **Context Of the Problem**

The students of the AAETC need to pass the Cambridge exams with enough scores to be able to complete their course in the center. These tests are part of the requirement to pass the intermediate level in the course. The productive skills especially writing is considered to be challenging to the students.

The discussion question which is a part of the writing tasks in these exams is one of the tasks that requires mastery in English writing, therefore, the choice of this genre seemed to be an appropriate mission.

Most of the AAETC students are Islamic Studies majors, they are prepared to play a crucial role in presenting Islam in international settings. Accordingly, they need the argumentative language tools to assist them presenting the information and knowledge they already had.

After considering their English writing assignments, the researcher noticed that students need to know how to define and to build argumentations which expresses their personal views in contemporary matters. In order to select the best approach for the study, the researcher extrapolated the findings and recommendations of earlier studies on writing issues, particularly argumentative writing.

### **Statement Of the Problem**

Through the previous presentation, students need to develop writing performance, focusing on argumentative writing, to use mind maps to organize ideas and paragraphs, and they need strategies such as collaborative writing to discuss and generate new ideas with the guide of brain-based learning techniques.

### **Questions of the research**

**Main Question** 1- What is the effectiveness of using a program based on brain-strategies in the development of argumentative writing for students of Al-Azhar University (English training center)?

**Sub-questions:** 2- What are the argumentative writing skills that should be developed for Al-Azhar University students?

3- What are the features of the proposed teaching program in the light of brain-based learning to develop the argumentative writing for students of Al-Azhar University? (Objectives, content, strategies, Assessment)

### **Research hypotheses**

1. There is a statistically significant difference between the mean scores of the students of the experimental and control groups in the post-application of the argumentative writing test as a total score, in favor of the experimental group.
- 2- There is a statistically significant difference between the mean scores of the students of the experimental and control groups in the post-test of the argumentative writing sub-skills, in favor of the experimental group.
- 3- There is a statistically significant difference between the mean scores of the experimental group students in the pre and post-test of the argumentative writing as a total score, in favor of the post test.
- 4- There is a statistically significant difference between the mean scores of the experimental group students in the pre and posttest of the argumentative writing sub-skills, in favor of the post test.
- 5- There is a general satisfaction among the students of the research group with the use of the proposed program based on the theory of brain work in developing their argumentative writing skills.

### **The Research Aims:**

- 1- Designing a program depends on the BBL strategies targeting the argumentative writing sub-skills assessed in the standardized tests of Cambridge
- 2 – Measuring the effectiveness of the BBL program on the argumentative writing performance of Al-Azhar EFL students (AAETC) Al Azhar English Training Centre.

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

**For teachers:** It provides a list of the necessary argumentative writing sub-skills of the students of Al-Azhar English Training Center intermediate level, so the teacher can help them pass their level in the course. It presents

models of teaching the parts of the argumentative essay, collaborative writing games, a graphic organizer, and many acronyms and mnemonics. The researcher adopts many memory techniques needed to teach this genre of writing. It guides the (ILETS) teachers who are interested to teach discussion question in the writing task 2 in the ILETS test. Moreover, it pinpoints the required performance for each rubric to help them assess their students accordingly.

**For learners:** It assists students especially who needs to improve their writing to get a better score in a standardized test such as (FCE, and ILETS) to pass the level, or for the purpose of scholarships and travel. Also, it contributes to the definition of collaborative writing skills and skills of learning. It increases their metacognitive knowledge. Consequently, they enhance their academic and self- learning abilities.

**For curriculum planners:** It draws a set of strategies to teach writing generally and argumentative writing specifically, accordingly it guides designers to build curricula according to the principles of brain - based learning and its strategies to develop the argumentative writing of EFL learners.

**For researchers:** It helps to make use of the research tools like the student's work sheets and the teacher's guide. It highlights some ideas for further or future researches.

### **The delimitation of the research**

- 1- 60 EFL female students of Al-Azhar English Training Center. Intermediate B+ level according to the CEFER standards. 32 experimental group, 28 control group. The total number of the students after excluding 4 from the experimental group is 56 students.
- 2- The setting: Al Azhar English Training Center, Cairo Egypt. A language facility at Al Azhar University, Al Darassa Campus. A 30



hours program took place for 9 weeks 2 hours twice a week starting from 30-10-2022 to 13-12-2022.

### **Definitions of Terms: (Brain based learning)**

Erickson defined it as a learning theory implies a coordination of ideas and learning environment full of real-life experiences, while making sure that the learners experiences are being treated to help them derive meaning from these experiences. (Erickson, H. L. (2007). p16)

(Jensen, E. 2008, p12) defined it as a learning theory emphasizes learning with the presence of the brain in a high motivational environment, away of threatening, full of real-life experiences and different learning styles.

### **In this study. It is defined as:**

It is learning with the presence of the brain in a high motivational environment full of real-life experiences, collaboration, and away from threatening while making sure that the learners experiences are being treated to help them derive meaning from these experiences, and helps to organize and improve the writing performance in a logical way.

### **Argumentative writing**

Moore defined it as the genre of writing in which an author opinion on a controversial issue and supports opinion with arguments for the purpose of getting the audience to change their mind on the controversial issue to reflect point of view. It demands that the writer makes the audience aware of why her or his understanding of the issue is credible. (Moore, 2009; Chase, B. 2011, p.5).

**In this study it is defined as;** The type of writing in which the writer clarifies his point of view and what he believes through the evidence and explanations in the various issues logically to the reader in order to make his argument realistic and acceptable to the other party.

### **Review of literature and related studies**

The brain's ability to multi-task leads educators to ponder the question: how can we effectively teach students when they may be focused on multiple ideas at a time? Educators must synthesize their knowledge of the brain and how it best learns in order to answer this question. (Siercks, A. 2012. p3)

Brain-based learning theory asserts its characteristics as a system by itself, not a pre-determined design, but rather a multi-system approach derived from a number of systems such as chemistry, neuroscience, psychology, genetic engineering, biology, computer science. (Jensen, E.2014. p15). Renate Caine illustrates, three interactive elements are essential to this process: (Caine, R. 2011 p.113)

### **The BBL Methods to use in an EFL writing class**

In this study the researcher focuses on some strategies that showed its effectiveness in teaching writing and related to the BBL Principles and strategies.

Collaboration can be defined as individuals communicating, whether orally or in written form, to plan, draft, and revise a document. The success of collaboration in group work is often incumbent upon a group's agreed upon plan of action. In a case study that looked at the productivity of a group of writers who used the technique of interlaced collaborative writing, Robinson, Dusenberry, Hutter, Lawrence, Frazee, and Burnett, R. E. (2019) discovered that the team was able to produce an article that was published, a two-year grant proposal, a digital and physical poster, a midterm research report, and a conference presentation over the course of three years.

Argument maps (organizers) are visual representation of an argument's structure used in informal logic and philosophy. The main parts of the argument, generally referred to as the conclusion and the premises, are typically included in an argument map. Co-premises, objections,

counterarguments, rebuttals, and lemmas can all be seen on argument maps. Maps of arguments are frequently created to aid in discussing issues, concepts, and arguments in wicked problems.

Through argumentative writing, students demonstrate various critical thinking skills such as distinguishing between an emotional appeal and a rational appeal, selecting evidence from experience, and avoiding generalizations (Bacha, 2010; Hidri, 2017, 2018a, 2018b; Wingate, 2012). It is not only important for English standardized tests, but also for success in education and careers. It assists in accomplishing many purposes – to persuade others during casual discussions, to change behaviors, or to resolve differences of opinions (Bipinchandra, Shah, Puteh, Din, Rahamat& Aziz, 2014; Deane & Song, 2014; Liu & Stapleton, 2014). For these reasons, argumentation has been emphasized in many syllabuses and studies on writing around the world – America (Dean & Song, 2014), China (Liu & Stapleton, 2014), and Chile (Preiss, Castillo, Flotts& Martin, 2013). Research has reported positive influences of many instructional techniques on students' ability in argumentation including group discussions, public Internet discussion forums and critical questions (Reznitskaya, Anderson &Kuo, 2007; Ritchie & Black, 2012; Song & Ferretti, 2013).

## **Method**

To achieve the aim of this study and examine the effectiveness of using a BBL programs to improve the argumentative writing of Al Azhar EFL university students, the current study utilized an experimental design to examine whether the use of brain-based learning program is effective in improving Al Azhar EFL university argumentative writing performance.

## **Participants**

The population of the study consists of a class of 56 EFL intermediate level students after excluding of 4. They are Islamic studies students in Al Azhar English Training Center, Al Azhar University, Cairo, Egypt

### **Procedures**

The intervention lasted for 9 weeks. 30 hours program 2 hour twice a week starting from 30-10-2022 to 13-12-2022. Excluding the time of the pre-post- tests. The aims of the study were clearly explained, and all students consented to participate in it. 56 Students of the experimental group and control group went through the writing test prior and after the implementation of the study.

**A pre-test** implementation took place in 30-10-2022 the students wrote an argumentative essay of 250 words of a selected argumentative topic in 40 minutes.

**A progress test:** Sample prompts of writing Task2 ILETS: to the experimental group only, it was before teaching the third part of the program

**A satisfaction questionnaire:** after the implementation of the program to the experimental group only. The researcher designed a five points Likert scale to measure the students' satisfaction fulfilled by the BBL strategies used in the program. Considering four different levels (learner-Content, learner-instructor, learner-learner, and the general satisfaction towards the program)

The satisfaction questionnaire was designed after considering a cohort of assessment experts' view point. The questionnaire administered online after the post-test, included 15 questions covered the mentioned categories.

### **Instruments**

In this section, the quantitative data developed to assess the improvement of the student's argumentation. a pre- posttest, a progress test

during the program, and a satisfaction questionnaire. The three instruments are followed by their validity and consistency statistical measurements.

### **Data Collection Instruments**

The assessment of the test measures their writing performance according to six criteria (Relevancy (task response), organization (cohesion and coherence), language use (vocabulary and grammar) the researcher targeted two skills to improve vocabulary (paraphrasing and summarizing) and for Grammar the researcher targeted (proofreading), reasoning, and writer voice. The researcher adapted the public version of the ILETS test Task2 rubrics and reviewed the literature of argumentative writing research paper. Moreover, the researcher used statistical measurement to prove the consistency and co-efficacy of the test components (sub-skills)

**The values of the correlation coefficients between the score of each sub-skill and the total score of the test.**

**Table 2**

<b>Skill</b>	<b>Correlation</b>
Relevancy, Task achievement	0.63**
Paraphrasing & Summarizing	0.71**
Proof reading	0.74**
Reasoning making a stance	0.75**
Organization	0.59**
Voice	0.76**

It is clear from the previous table that all sub-skills of the argumentative writing test are statistically related to the total score of the

test to which they belong, which indicates the validity of the internal consistency of the test.

**The stability of the overall test was calculated by:**

**Alpha- Cronbach coefficient:** was calculated for the test and its value was (0.88), which is a high value and indicates the accuracy and stability of the test as a mean of measurement and therefore it can be relied upon.

**By re-correcting with another instructor:** The test was re-corrected with another instructor: Fatima Taha English instructor and ILETS trainer with more than 12 years of experience, and the correlation coefficient was calculated between the scores of the two instructors. It was found equal to (0.97), which is a high value indicating a very strong correlation, which confirms the accuracy and stability of the test and its reliability.

**Calculating the internal consistency of the satisfaction questionnaire:** correlation coefficients were calculated between the score of each item and the total score of the questionnaire. The values of the correlation coefficients between the score of each item and the total score of the satisfaction questionnaire. D at the significance level of 0.01, when  $t \geq 0.56$ , where  $n = 20$ . All items in the questionnaire were statistically related to the total score, which indicates the validity of the internal consistency of the questionnaire.

**The pre-application of the research tools and the equivalence of the two groups:**

The argumentative writing test was previously applied to the two research groups (experimental and control) on Sunday 18-9-2022, and the

results were monitored and then processed. Statistically using the (T) test for two groups, with the test of homogeneity F.

### Data analysis and discussion: Progress and effectiveness

**First hypothesis;** the significance level of the homoscedasticity test (F test) is greater than 0.05, which indicates that there is no difference in the variance of the experimental and control groups. This indicates the superiority of the students of the experimental group over the students of the control group in the argumentative writing test as a total score after the brain-based learning program.

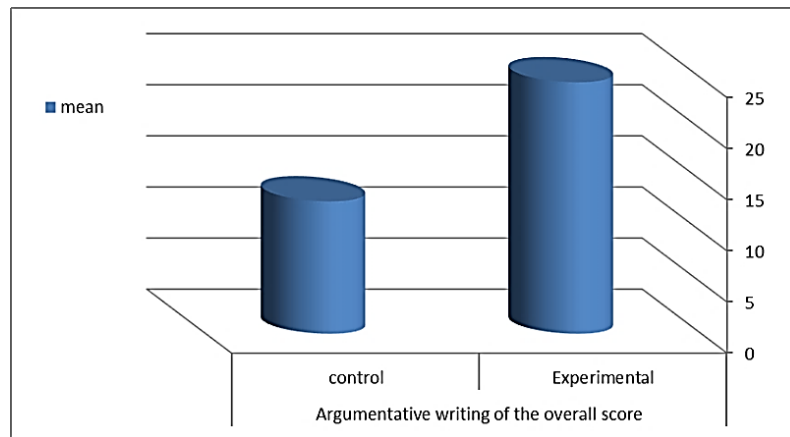


Figure (7) the difference between the mean scores of the students of the experimental and control groups in the post-test of argumentative writing skills as a total score.

the value of the effect size expressed by Eta square is equal to (0.871), i.e., greater than 0.232, and this value indicates that the size of the effect is very large.

**Second hypothesis;** the level of significance for the Homoscedasticity test (F-test) is greater than 0.05, which indicates that there is no difference in the variance of the experimental and control groups, and this indicates the superiority of the experimental group students over the control group

students in all sub-skills of argumentative writing after teaching the BBL program.

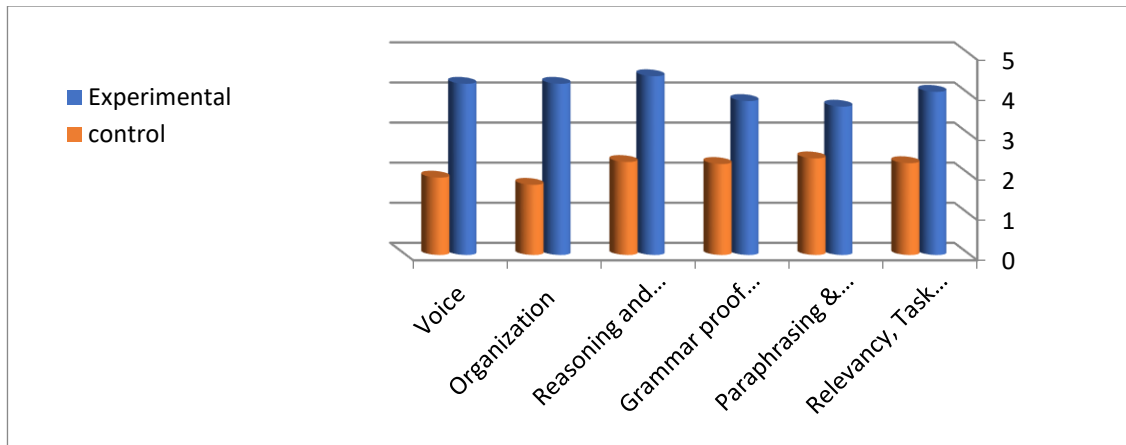


Figure (8): The difference between the mean scores of students of the experimental and control groups in the post test of argumentative writing sub-skills

**Third hypothesis:** The results of the t-test indicate the difference between the mean scores of the experimental group students in the pre and post applications of the argumentative writing test as a total score, ( $n = 28$ ), (degrees of freedom = 27). this indicates the superiority of the experimental group students in argumentative writing as a total score after teaching them using the proposed BBL program.

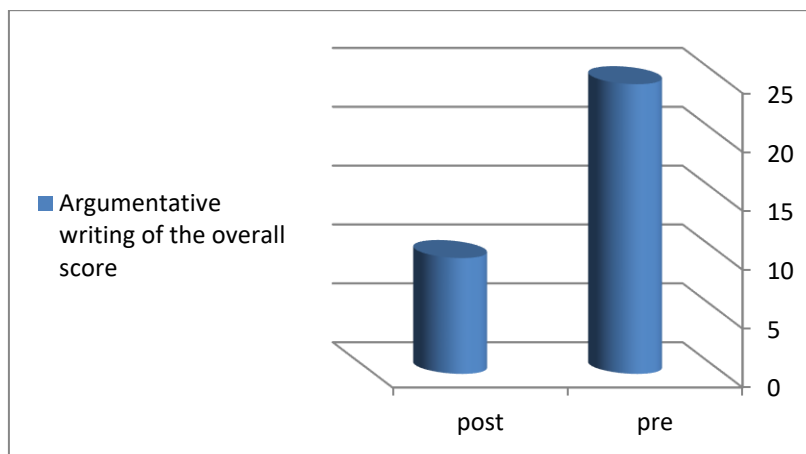




Figure (9): The difference between the mean scores of the students of the research group in the pre and post-test of argumentative writing as a total score

**Fourth hypothesis:** The level of significance of the t-test in argumentative writing skills as a total score is less than 0.01, which indicates that there is a statistically significant difference between the mean scores of the students of the experimental group in the pre and post- test of the argumentative writing test as a total score in favor of the post-test (with the highest average) at the level of 0, 01

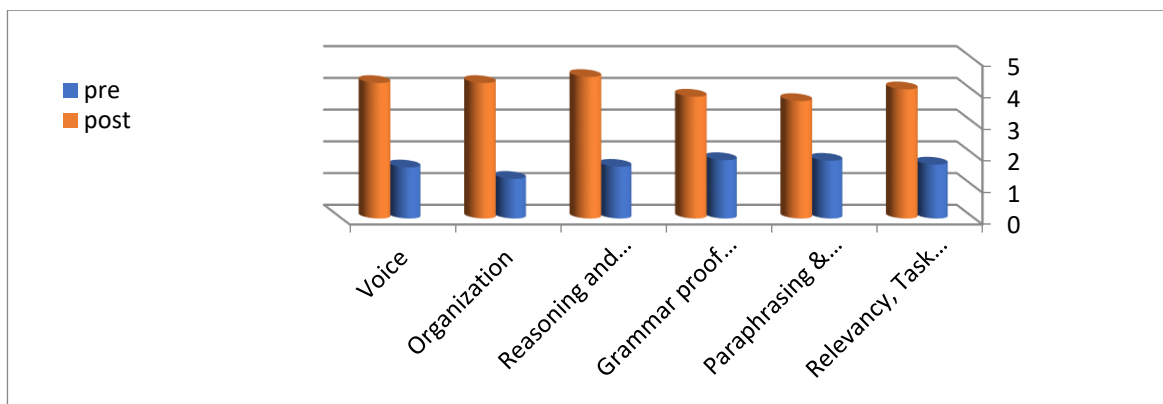


Figure (10) : The difference between the mean scores of the students of the experimental group in the pre and post-test in the argumentative writing sub-skills scores.

**Fifth hypothesis:** A satisfaction questionnaire was applied and the results of the descriptive statistical analysis of the data were reliable and included averages, standard deviations, frequencies, and percentages for all the questionnaire items. It was taken into account that the five-point Likert scale.

All items of the satisfaction scale came with a mean greater than (4.20). Consequently, the general direction for the questionnaire as a whole came with an average of (4.81), which is greater than (4.20). This indicates that 96.2% of the experimental group whole responses were agreed strongly to

the satisfaction questionnaire of BBL suggested program to improve their argumentative writing.

## **Conclusion**

### **The Effectiveness of the Proposed Program in Developing Argumentative Writing:**

- 1-The correct gain ratio was used for Ezzat (Ezzat. A, 2013, p28) to measure and determine the value of the effectiveness of the suggested program. and showed a significant effect, thus the first question was answered.
- 2-The program not only enhanced their ability to write argumentations, but also their metacognitive skills of learning. The students showed their willingness to attend a similar program, which means the progress in their motivation to learn.
- 3-The three modules of the program targeted their needs and interests of improving their writing abilities to get better scores in standardized tests and academic writing. They could better write different sentences structures, organize their paragraphs logically, support their paragraphs with reasons, evidences and avoid fallacious claims.

### **Implications of the study**

- 1-The participants of the study felt more achieved and confident when they used the organizers and the memory techniques while writing. The researcher noticed that they could finish before the time allocated and found time to proofread and check for mistakes in the post-test.
- 2-The learning atmosphere in a brain-based classroom is active and safe. The participants worked individually, with their peers and collaborated to reach their goal. They enjoyed running discussions, searching for references and competing in groups. The writing activities in which they

draw and move in the class decrease the stressful fact of being in a writing class.

**3-The participants showed interest and attention** to the stage of assessment and feedback of the other students and the instructor, they avoided the mistakes they did in their pre- test, writing exercises, and the progress test.

**4- At the orchestrated immersion stage**, the participants listened, watched and read about the topic from various perspectives, this led them to search for more information from credible resources when they handle a new controversial topic and that can't be offered by one text book or one source of information in the ordinary classes. Accordingly, the students turned to be autonomous learners and critical thinkers who accept different views and their reasons and refute their evidences if they are invalid or fallacious.

### **Recommendations of the study**

#### **For the students:**

1- Improving the metacognitive skills; the students in the university stage are expected to gain more studying and learning methods such as planning, positive self-talk, self-monitoring. In our society studying is considered to be a stressful experience to many of the students. In the BBL classroom, the students' metacognitive abilities guide them to feel more controlling and self- assured.

**2- Active learners:** Students should initiate in activities and competitions, communicate in peer-discussions and whole groups, and do the required task individually and collaboratively.

**3-The students are critical thinkers:** In a BBL classroom the students are expected to ask questions and search for reasons, provide credible resources to support their ideas, analyze and assess their friends' work.

4-**The student should Collaborate positively:** the winning groups are those who are cooperative and help each other in their tasks more than the others because they fill their own gaps and correct their mistakes before presenting their work.

5- **Self- assessment:** the student works individually and gets the opportunity to know the mistakes and points of power and weakness after getting quick feedback. Consequently, s/he assesses the others' work subjectively.

**For teachers:**

**Objectives of the lesson:** the researcher noticed that clarifying the objectives and goals at the beginning of the class, involve the students to be responsible with the teacher on the achievement of these goals.

**Safe and fun:** the writing classes become more productive when the students compete in writing games (such as the grab bag activity), writing posters, drawing organizers.

**Orchestrated immersion:** It is very recommended that the teacher prepares more than one resource about the topic before teaching it. Providing the students with videos, audios, reports and hand out exercises help them to broaden their perspectives, enhance their vocabulary, as a result their language.

**Collaborative writing** (reciprocal) should be monitored by the teacher carefully, also the teacher is required to facilitate by guiding, assigning roles, clearing any ambiguity, providing answers to their questions, and setting the time boundaries. **Hydration:** the teacher should make sure that the students drink enough water to avoid the students' fatigue and to get better results, therefore, it is recommended to offer the students glasses of water or juice before they start or in the break.

**Brain breaks, and cross-lateral exercise:** are great to improve their energy levels and avoid boredom. Constantly, the students get used to it and compete doing it skillfully.

**Using memory strategies:** Drawing graphic organizers made by the students' imagination effectively improve the students' ability to recall all the required parts of big concepts because the human mind can remember visuals and make connections to the meanings easily if the ideas are connected in a mind map or an organizer.

**Time of reflection and feedback:** The students should be given enough time to read, write and assess him/her self. The students appreciate reading the rubrics of the writing questions in order to know how to assess their colleagues and how they will be assessed. The teacher should provide an answer key, afford extra resources, and online materials so the students can turn back to a written material.

**Appreciation and celebration:** The human mind hardly forget the nice memories according to the brain studies. Therefore, it is recommended after the students exert a big effort in a long or tiresome activity to feel appreciated by encouraging words, a smile, or presents at the end of the class.

**For the future research:**

- 1- BBL learning strategies can also be used with the other writing questions (genres) of the standardized tests (opinion writing- cause and effect- advantages and disadvantages), for the sake of higher scores in these examinations.
- 2- Holding trial discussions or mock courts between groups or classes might enhance the students' confidence and consequently their use of spoken language. A possible study to measure the effectiveness of arguments in improving the spoken language of the EFL students.

## References

- Abd Alwahed, S.& Ibrahim, Y. (2011). The Human Brain "Learning and Thinking Machine and Creative Problem Solving", Theba press for distribution, Cairo.
- Afana, E. & Aljesh, Y. (2009). Teaching and learning with the Two Sides of the Brain. Al Thaqafa press for distribution.
- Allagui, B. (2019). Investigating the quality of argument structure in first-year university writing. English language teaching research in the Middle East and North Africa: Multiple perspectives, 173-196.
- Aminloo, M. S. (2013). The Effect of Collaborative Writing on EFL Learners Writing Ability at Elementary Level. Journal of Language Teaching & Research, 4(4)
- Anne Hanson.(2008) Brain friendly Strategies for Developing Students Writing Skills. Corwin; 2nd edition.
- Bench-Capon, T. J., & Dunne, P. E. (2007). Argumentation in artificial intelligence. Artificial intelligence, 171(10-15), 619-641.
- Bhandari, P. & Nikolopoulou, K. (2023, January 16). What Is a Likert Scale? | Guide & Examples. Scribbr. Retrieved January 26, 2023, from <https://www.scribbr.com/methodology/likert-scale/>
- Caine G, Caine RN, McClintic C and Klimek K (2005). 12 Brain/Mind Learning Principles In Action (Thousand Oaks, CA: Corwin Press).
- Caine, R & Caine, G.(2011).Making Connections: Teaching and the Human Brain. ISBN-13: 978-0201490886
- Crossley, S. A., Kyle, K., & McNamara, D. S. (2016). The tool for the automatic analysis of text cohesion (TAACO): Automatic

assessment of local, global, and text cohesion. *Behavior research methods*, 48, 1227-1237.

Crowhurst, M. (1990). Teaching and learning the writing of persuasive/argumentative discourse. *Canadian Journal of Education*, 15,348-359.

Dastjerdi, H. V., & Samian, S. H. (2011). Quality of Iranian EFL learners' argumentative essays: Cohesive devices in focus. *Mediterranean Journal of Social Sciences*, 2(2), 65-76.

Duman, B. (2010). The Effects of Brain-Based Learning on the Academic Achievement of Students with Different Learning Styles. *Educational Sciences: Theory and Practice*, 10(4), 2077-2103.

Erickson, H. L. (2007). *Stirring the head, heart, and soul: Redefining curriculum, instruction, concept-based learning*. Crown Press.

Goldberg D & Stevens J (2001). *For the Learners' Sake: Brain-Based Instruction for the 21stCentury* (Tuscon, AZ: Zephyr Press).

Gomaa, L. (2010) *Writing Trouble Spots for ESL Students of Arabic: The Apple Where Teachers Meet and Learn*.

Harrell, M. (2010). Creating argument diagrams. Online: [https://www.academia.edu/772321/Creating\\_Argument\\_Diagrams](https://www.academia.edu/772321/Creating_Argument_Diagrams) [16-08-02].

Helwa, A., & Abdel-Hamid, H. S. (2014). The Effectiveness of a Program Based on the Combination of Relevance and Confidence Motivational Strategies in Developing EFL Argumentative Writing Skills and Overcoming Writing Apprehension among Students Teachers at Faculty of Education.

Hitchcock, D., & Verheij, B. (2006). *Arguing on the Toulmin model*. Dordrecht: Springer.

---

- J. Diane Connell (2015) Brain Based Strategies to Reach Every Learner  
XanEdu Publishing Inc. ISBN-13: 978-1583902059
- Jensen, E. (2005), Teaching with the Brain in Mind (Alexandria, VA: ASCD) 2<sup>nd</sup> edition.
- Jensen, E. (2014). <http://www.brainbasedlearning.net/> [Accessed January 12, 2014].
- Kaewpet, C. (2018). Criteria and scale for argumentation. Theory and Practice in Language Studies, 8(6), 564-569.
- Karbach, J. (2012). Using Toulmin's model of argumentation. Journal of Teaching Writing, new edition 6(1), 81-92.
- Khodabandeh, F. (2014). Argumentation across L1 and L2: Examination of three instructional treatments of genre-based approach to teaching writing. Procedia-Social and Behavioral Sciences, 98, 968-975.
- Kovalik, S. J., & Olsen, K. D. (2004). Exceeding expectations: A user's guide to implementing brain research in the classroom. Susan Kovalik and Associates.
- McLeod, S. A. (2019, August 03). Likert scale. Simply Psychology. [www.simplypsychology.org/likert-scale.html](http://www.simplypsychology.org/likert-scale.html)
- Miller, S. A. (2012). Using graphic organizers to increase writing performance (Doctoral dissertation)
- Nafa, M. S. (2013). A Brain Based Approach for Teaching English Language Vocabulary to ESL Learners: An Investigation Based on Arabic-speaking Learners (Doctoral dissertation, The British University in Dubai (BUiD)).



- Nippold, M. A. (2000). Language development during the adolescent years: Aspects of pragmatics, syntax, and semantics. *Topics in language disorders*, 20(2), 15-28.
- North, B., & Piccardo, E. (2016). Developing illustrative descriptors of aspects of mediation for the Common European Framework of Reference (CEFR): A Council of Europe project. *Language teaching*, 49(3), 455-459.
- Nordquist, Richard. (2018), "What Is the Toulmin Model of Argument?" ThoughtCo, Dec. 7 [thoughtco.com/toulmin-model-argument-1692474](https://www.thoughtco.com/toulmin-model-argument-1692474).
- Pintrich PR, Smith DAF, Garcia T & McKeachie WJ (1993). Reliability and predictive validity of the motivated strategies for learning questionnaire (MSLQ). *Educational and Psychological Measurement* 53801-803.
- R.Heale, (2015). *Evid Based Nurs.*, volume 18 number 3. first published as 10.1136/eb-2015-102129 on 15 May 2015
- Solaty, N. (2009). *Brain Based Learning*, Ammaan, Al Masera press for distribution.
- Singer, B. D., & Bashir, A. S. (2004). Developmental variations in writing composition skills. *Handbook of language and literacy: Development and disorders*, 559-582.
- Storch, N. (2005). Collaborative writing: Product, process, and students' reflections. *Journal of second language writing*, 14(3), 153-173.
- Stapleton, P., & Wu, Y. A. (2015). Assessing the quality of arguments in students' persuasive writing: A case study analyzing the relationship

between surface structure and substance. *Journal of English for Academic Purposes*, 17, 12-23.

Valipour, V . & Araghi, S.M. (2014), Brain based learning and its effect on student outcome in university aged Iranian EFL students.

Van der Pluijm, L.C. & Visser, J.C. *Argumentation* (2011) 25: 527.  
<https://doi.org/10.1007/s10503-011-9214-y>

Robinson, J., Dusenberry, L., Hutter, L., Lawrence, H., Frazee, A., & Burnett, R. E. (2019). State of the field: Teaching with digital tools in the writing and communication classroom. *Computers and Composition*, 54, 102511.

Yoon, H. J. (2017). Textual voice elements and voice strength in EFL argumentative writing. *Assessing Writing*, 32, 72-84.

Zaiton, k. (2001). Critical analysis of Brain Based Learning and its reflection on teaching science, The fifth conference on scientific education of citizenship. Faculty of Education, Ain Shams University, Cairo.