Using a Blended Learning Program to Develop Secondary School Students' Argumentative Writing and Critical Thinking Skills

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ABSTRACT

The present study aimed at investigating the effectiveness of a blended learning program in developing secondary school students' argumentative writing and critical thinking skills. The participants of the present study were 63 students, two intact classes from the second-year secondary stage students at El-Danakela secondary institute for girls in Sohaj Governorate. One class (totaling 32 students) represented the experimental group, and the other (totaling 31 students) represented the control one. The instruments of the study were an argumentative writing test, and a critical thinking scale. Reliability and validity of the instruments were verified. Results of the study revealed that the blended learning program was effective in developing argumentative writing and critical thinking skills of the second-year secondary stage students. The experimental group outperformed the control one in both argumentative writing and critical thinking skills as the effect size scores were ($d= 4.97$ and 2.36) respectively.

Keywords: Blended learning, Argumentative writing, Critical thinking, Google Classroom.

مستخلص الدراسة

هدفت الدراسة الحالية إلى استقصاء فاعلية برنامج تعليمي قائم على التعلم المدمج في تنمية مهارات الكتابة الجدلية والتفكير الناقد لدى طلاب المرحلة الثانوية. وقد تبنت الدراسة المنهج شبه التجريبي القائم على مجموعتين ، التجريبية والضابطة ذو الاختبارين القبلي والبعدي للتحقق من مدي فاعلية برنامج التعلم المدمج. وتمثلت عينة الدراسة في ٦٣ طالبة (فصلين كاملين من طالبات الصف الثاني الثانوي بمعهد الدناقلة الثانوي الازهري للبنات) بمحافظة سوهاج. حيث مثل الفصل الأول (٣٢ طالبة) المجموعة التجريبية ، ومثل الفصل الثاني (٣١ طالبة) المجموعة الضابطة. تم تحديد مهارات الكتابة الجدلية والتفكير الناقد اللازم توافرها لدى طلاب المرحلة الثانوية من قبل المحكمين من خلال قائمتي مهارات الكتابة الجدلية والتفكير الناقد. وتمثلت أدوات الدراسة في اختبار الكتابة الجدلية، واختبار التفكير الناقد. وتم التحقق من صدق الأدوات وثباتها. ولقد اسفرت نتائج الدراسة عن فاعلية برنامج التعلم المدمج في تنمية مهارات الكتابة الجدلية والتفكير الناقد لدى طالبات الصف الثاني الثانوي، حيث تفوق طلاب المجموعة التجريبية في مقابل طلاب المجموعة الضابطة في كل من مهارات الكتابة الجدلية والتفكير الناقد حيث بلغ حجم الأثر (d=4.97 & 2.36).

الكلمات المفتاحية: الكتابة الجدلية، التفكير الناقد، التعلم المدمج، فصول جوجل.

Introduction

As one of the four basic language skills, writing is more complex in that it tests a person's ability to use a language, express ideas and thoughts, communicate views, and convey feelings. As a result, a person needs to write, not only coherently, but correctly and within the proper context, which requires much more time and efforts to master. When writing, one must have indirect communication ability, language structure, and writing techniques. The dominant position given to writing is not simply because it is seen as a useful skill, but also because it represents a special type of language learning.

On the other hand, argumentative essay writing is a dynamic literacy practice where the writer establishes a dialogic relationship with an audience defending a point of view and looking to convince or get an adhesion. This genre of writing is crucial for students to articulate their own ideas in academically appropriate patterns and approaches. Writing in general and argumentative writing in particular is a crucial skill for academic success in life and in the students' future career. (Soodmand Afshar, 2017).

Academically, practicing writing argumentation helps students acquire knowledge (Schwarz, et al., 2003), promotes scientific thinking skills (Sampson, & Gleim, 2009), and enhances comprehension (De La Paz, 2005). Furthermore, argumentative writing can lead to an increase in intrinsic motivation and enhance problem-solving skills in the academic settings (Chinn, 2006).

The ability to write well is important for the students' school success; it is a tool for thinking and learning (Sperling & Freedman, 2001; Shanahan, 2004). The ability to write argumentatively is necessary because it is practiced in many school subject areas, including science

and social studies (Chambliss, 2001; MacArthur, et al., 2002). Furthermore, argumentative writing as one of the sophisticated writing genres enhances reasoning and higher thinking skills such as predicting, analyzing and synthesizing. Writing requires the activation and coordination of several linguistic skills including, but not limited to, semantics, syntax, spelling, and writing conventions (Singer & Bashir, 2004).

With this in mind, it is clear that the Egyptian public school system must teach students the skills that will enable them to develop their own strong, reasoned arguments, as well as the skills that will help them to evaluate the logic and validity of the arguments of others. Further, argumentative writing has long been a part of the curricula of English language arts at the middle school and high school levels. Consequently, teachers should promote language learning by giving their students opportunities to express themselves, their thoughts and their viewpoints and state reasonable arguments either in written texts or in speech.

However, argumentative writing is not an easy communication task because it requires complex cognitive and linguistic skills (Nippold & Ward Lonergan, 2010). Argumentative writing has been proven by researchers to be the most difficult genre of writing (Ferretti, et al., 2007; Neff-van Aertselaer & Dafouz-Milne, 2008) and one of the most difficult skills to teach (Salahu-Din, et al., 2008). Moreover, both ESL and EFL learners at the secondary and university levels often face difficulties in the use of complex and appropriate elements in producing argumentative writing (Kaur, 2015).

Argumentative writing is a challenging communication task that calls upon sophisticated cognitive and linguistic abilities (Nippold, & Ward-Lonergan, 2010). It is a more advanced aspect of writing that depends on the cognitive ability of learners rather than the proficiency of language and is a highly complex type of writing (Drid, 2014).

This challenging communication task requires knowledge of the topic, perspective-taking, the ability to weigh both sides of an issue, and the use of literate language, including complex syntax to express one's ideas efficiently (Riley and Reedy, 2005). Nussbaum (2008) called this type of argumentative writing reflective writing, as it requires not only counterarguments or an opposing view, but also supporting reasons or elaboration and rebuttals. The consideration of counterarguments and construction of rebuttals can help one's arguments reach a deeper and more convincing level (Nussbaum & Kardash, 2005).

In an argumentative essay, the writer takes a position and tries to convince the reader to perform an action or to adopt a point of view regarding a controversy. To be successful, the argumentative writer must articulate a position, anticipate counterarguments, and reply to opposing points of view in an organized fashion. Therefore, the teacher should use the appropriate type of instruction that helps students develop their argumentative writing skills and avoid, or at least, delimit the traditional methods, procedures and techniques that hinder such a development.

Toulmin (1958) proposed an influential early model for describing and analyzing the structure of argumentative writing that continues to provide the foundation for much of the research on argumentative writing. The model of argument structure has been widely used in teaching and researching argumentative writing. Specifically, this framework has been used extensively in accounting for the various

elements marking the components of an argument in English argumentative writing. Toulmin's model consists of six essential components: 1) Claim or conclusion (the writer's position on the problem); 2) Grounds (reasons or evidence that support the claim); 3) Warrant (the logical connection that leads the grounds to the claim); 4) Backing (justification to the warrant); 5) Rebuttals (counterarguments or exceptions to the claim); and 6) Modal qualifiers (the conditions under which the claim cannot hold). In its focus on argumentation that is well organized, elaborated, and supported by evidence or personal experience (Perloff, 2003), Toulmin's perspective on argumentative writing reflects a traditional view of argumentation that has persuaded the "other side" as its primary purpose.

With the changing tides and times, rapid developments come in education. In recent years, technological advancements have been applied in education and have been playing an increasingly significant role in foreign/second languageteaching and learning (Shang, 2007). So, the use of technology in education has become a necessity as it is considered to give positive impacts towards teaching and learning process. The innovations of technology are increasing the variety of doable resolutions which has a possibility to enhance teaching and learning inputs, procedures, and outputs. Information Communication Technologies provide a possibility to implement new learning and teaching methods (Ghahari & Ameri-Golestan, 2014).

Used for teaching many subjects including language teaching, blended learning can be one of the methods to be tried in teaching English writing. Blended learning has become quite popular almost all over the world proved by many studies conducted and related to the method. As people know writing is the most difficult skill and teaching it is also a challenging job (Barkaoui, 2007). Consequently, teachers cannot

expect the desired results of learners' writing unless the teachers are able to make an interest in the minds of learners to write more and more (Adas & Bakir, 2013).

Developing productive skills, especially in academic writing, has become a dire need for most undergraduate learners to pursue their academic career successfully. The current daily environment has become more computerized than ever before. Not only should this environment be considered as a tool to perform tasks, but also as a tool to help increase its users' learning skills. Since the constructivist approach is dominant and learning by doing is perceived as a key element for most programs in higher education, the potential of reaping the benefits of enriching academic writing skills through integrating some reading and writing research skills in English in computerized environments has become a necessity. This can be done through blended courses guided by facilitators. The opportunity for instructors/facilitators to influence learner-centered environments is something that should be considered.

Blended learning is a mixture of online and face-to-face learning. In the literature, blended learning is also known as 'hybrid learning' or the 'flipped classroom'. Boelens, Van Laer, De Wever, and Elen (2015) identified blended learning as "learning that happens in an instructional context which is characterized by a deliberate combination of online and classroom-based interventions to instigate and support learning" (p.5). The online element should not solely be an addition to classroom-based teaching; rather, blended learning requires the effective integration of both virtual and face-to-face methods (Garrison & Kanuka, 2004).

There are a handful of studies that have been done on blended learning or supplementing online learning for face-to-face learning. Most of these studies indicate that technology and learning should go hand in

hand. According to Tutty and Klien (2008), using technology is highly engaging for all age groups and is a way to enhance the learning process for all performance base instruction. In addition, Mojkowski (2013) states that technology could provide access to a wealth of learning resources so that anyone can learn anything at any level in any place. It is about finding the correct balance between face-to-face and online learning. According to Vander Ark (2011), this shift of blended learning involving face-to-face and online instruction is intended to make learning more productive by giving better teaching tools, more time, and informative data. It allows individual instruction in a regular classroom setting.

Permanda and Gede (2017) investigated the effect of using blended learning strategies towards students' writing competency. The researcher used experimental design called post-test only control group design involving an experimental group and a control one which were formed by cluster random sampling comprising 28 students for each group. The teacher used blended learning for experiment group and the usual method to teach the control group. From the results obtained, students in the experimental group show a significant effect on their writing competency. Descriptively, the experimental group scored 84.75% while control group scored lower, 76.75% of the writing test. This illustrates that teaching writing using blended learning has enabled students to have better performance as compared to students who learned through conventional approach.

McCall (2017) explored the usage of microblogs on Facebook to develop students' academic reading and writing skills. The researcher administered action research using quantitative and qualitative data collection involving classroom observation, survey and interview. The teacher set up a Facebook microblog to have an online class session with

the students. The teacher posted a picture or articles, report, and comment for students to read. Based on the discussion of the study, students positively responded to the use of Facebook application as to perform reading and writing tasks. They viewed blended learning approach as an interactive and creative way of learning. Thus, integrating social media platform in teaching and learning specifically for English course will be beneficial for both students and teachers.

Notably, the importance of developing argumentative writing among EFL learners has been emphasized. Since the traditional approach to language teaching does not give adequate attention to the components of the argumentative writing. Hence, this research is conducted with an aim to develop a blended learning program that would help learners' better master their argumentative writing.

Argumentative writing is thought to be linked to critical thinking. In essence, critical thinking is considered as a form of logical thinking. Dixon, et al., (2005) emphasized that writing is a vehicle through which students can express their critical thinking, and that writing seems to be an expression of critical thinking when students are trained to use critical thinking methods consistently in writing. The development of critical thinking is one of the most important demands for growth among learners, especially with the flow of knowledge and openness in the media. Critical thinking helps to improve thinking, benefit from knowledge and the ability to judge it (Zahran, 2005).

Brown and Keeley (2007) defined critical thinking in terms of a set of qualities and abilities including awareness of a set of interrelated critical questions; ability to ask and answer critical questions at appropriate times; and the desire to actively use the critical questions. Critical thinking concept applies to all kinds of knowledge and implies

the true engagement of learners in the process of knowledge construction through reflecting and thinking deeply. Curiosity and questioning are necessary characteristics of those who think critically as they always try to find answers for the questions they raise.

Many researchers explicitly stress the importance of helping students develop into critical thinkers (Muilenburg & Berge, 2000; Paul & Elder, 2006; Facione & Facione, 2007; Moore, 2011). Paul and Elder (2006) suggest that developing critical thinkers is necessary and should be the central goal of all educational institutions. Paul and Elder (2006) think that instructors can play an important role in the development of internet-based students' critical thinking skills using effective strategies. Moore (2011) views that developing critical thinkers is fundamental to good education and that critical thinking skills are necessary to function as engaged and active citizens of our world.

Florea and Hurjui (2014) suggested some active-participative methods and techniques for working in small groups to develop critical thinking. Kim and Pollard (2017) recommended teachers to act as facilitators to create a critical thinking atmosphere to help students develop critical thinking skills. Rezaei, et al. (2011) believed in the value of debates, media analyses, problem solving tasks and self and peer assessment for promoting students' critical thinking; they highlighted the benefits of encouraging students to raise questions for the same purpose.

Critical thinking is a highly desirable goal of online higher education courses. In every discipline there is an agreement that college students need to improve their critical thinking skills (McLean, 2005). Critical thinking is more than just knowledge acquisition or a collection of processing skills; rather it is the development and continual use of analytical skills (Scriven & Paul, 2004). Overall, educators are concerned

about improving critical thinking skills among students in higher education and find it a desirable outcome of undergraduate education (Halpern, 2001; McLean, 2005).

Over the past decade, researchers have speculated that there may have been a relationship between the use of online discussions and the development of critical thinking skills (MacKnight, 2000). One hypothesis is that internet-based communication provides a social context for learning that gives learners time to think about their contributions and organize their thoughts prior to responding. It is believed that developing students' ability to reflect on their own learning process can help them progress in learning.

The researcher was motivated to conduct the present study aiming to investigate the impact of using a blended learning program to develop argumentative writing and critical thinking skills among the second-year secondary stage students.

Context of the Problem

Being a teacher of English for the students at the secondary stage, the researcher observed that the methods of teaching argumentative writing is just only the teacher assigns a topic and each student writes about; then, the teacher reads, corrects and grades the papers. This pattern of teaching is considered by many researchers as boring and does not motivate students to communicate through writing. It does not provide learners with opportunities of practicing writing argumentative topics in English; therefore, it may be one of the reasons of the noticeable inefficiency of the learners' argumentative writing performance.

To document the study problem, a pilot study was conducted on 30 second- year secondary stage students at El-Danakela secondary institute for girls in Sohag Governorate to investigate the level of argumentative

writing skills. Analyzing the students' performance, the researcher noted that:

- 80 % of the students poorly organized their essays;

- 75 % of the students did not write the introduction correctly, or they even did not write them.

- 77 % of the students poorly developed their argumentative essays.

- 85 % of the students did not write the conclusion correctly, or they even did not write them.

- 90 % of the students did not write the claims correctly, or they even did not write them.

- 92 % of the students did not provide evidence to support the argumentative issue.

- 90 % of students' writing samples had poor unity and cohesion; and

- 81 % of the students did not adhere to the writing conventions (grammar, spelling, and punctuation).

Furthermore, the related literature pinpointed that many EFL students cannot hold the floor of writing an argumentative discourse with success to meet the demand for using English for communication in their career or even in their writing (Al-Amri, 2016; Awad, 2018; Hassan, 2018). The current study advocates a blended learning program to investigate its effectiveness in developing the second-year secondary stage students' argumentative writing and critical thinking.

Problem of the Study

The problem of the study lies in the fact that most of the second-year secondary stage students lack the adequate skills required for developing a well- written argumentative piece of writing. Hence, the current study sought to investigate the effectiveness of a blended learning based-program in developing argumentative writing among the second-year secondary stage students.

Hypotheses of the Study

The present study aimed to test the following hypotheses:

1. There would be a statistically significant difference between the mean scores attained by the experimental group students and those of the control group in the post application of argumentative writing test in favor of the experimental group due to the blended learning program.

2. There would be a statistically significant difference between the mean scores attained by the experimental group students and those of the control group in the post application of critical thinking scale in favor of the experimental group due to the blended learning program.

Purpose of the Study

The current study aimed to:

1- Examine the effectiveness of a blended learning-based program in developing argumentative writing skills among the second-year secondary stage students.

2- Investigate the effectiveness of a blended learning-based program in developing critical thinking skills among the second-year secondary stage students.

Significance of the Study

The significance of the current study stems from the following consideration:

1. Bridging the gap between the traditional mode of teaching writing and the pedagogical potentials of technology integration in the language classroom.

2. Highlighting the importance of developing the second-year secondary stage students' argumentative writing skills as they are in a dire need for developing such skills.

3. Offering instruments to be used by EFL instructors for assessing English majors' argumentative writing and critical thinking skills.

4. Providing language instructors and curriculum designers with a systematically designed blended learning-based program that could help learners to develop their argumentative writing.

Design of the Study

A quantitative research approach was used in this study to collect the data from students' writing tests and a quasi-experimental design was used in the present study to fulfill the study purposes. The whole sample, randomly chosen, completed the critical thinking scale and the argumentative writing test. The research sample was then randomly divided into an experimental group and a control one. While the control group studied the usual content through the usual method of teaching, the experimental group studied the specified content via the blended learning. After the treatment, both the control and experimental groups had the writing posttest. Finally, results were statistically analyzed, and results were discussed.

Figure 1: Procedures of the study (experimental design)
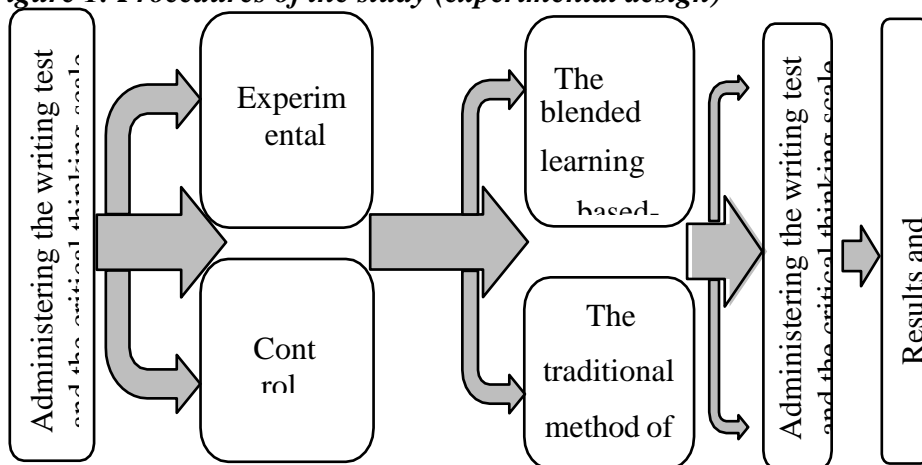
Participants of the Study

A total of 63 students (two intact classes of second-year secondary stage students) enrolled in the second year at El-Danakela Secondary Institute for Girls in Sohag Governorate (the researcher workplace). One class (totaling 32 students) represented the experimental group, and the other (totaling 31 students) represented the control one. In comparison to the first year, the second-year secondary stage students were chosen because they had longer and richer experiences in the research interest of the current study topic (argumentative writing) as an advanced genre of writing. Furthermore, they had enough time ahead of them to put what they learned and trained on in the third year to effective use. Randomly, one class was assigned to represent the experimental group, while the other was assigned to represent the control one.

To ensure the compatibility and homogeneity of the study experimental and control groups' participants, the argumentative writing test and the critical thinking test designed for the study were administered to the participants. The differences in scores were calculated, and a homogeneity test was administered to ensure that there was no significant difference in the skills under the study between the study groups, as indicated in (table: 1).

Table 1:

Homogeneity of the study participants in the argumentative writing skills.

Argumentative Writing	Sample	N	Mean	Std. Deviation	T	Sig. (2tailed)
	Experimental	32	37.17	6.21	1.08	0.2
	Control	31	38.64	4.35		

The findings showed that the two groups' mean scores did not show statistically significant differences ($t=1.08$). As a result, the pre-test would be used as a baseline for comparing the research groups, and the two groups' performance on the argumentative writing task was found to be directly comparable between the two groups.

Concerning homogeneity of the study groups in the critical thinking skills, the critical thinking test was administered to both groups as a pretest. The differences between the scores were calculated and the results of the homogeneity test were used to verify that there was no significant difference between the study groups in critical thinking skills (table: 2).

Table 2:

Homogeneity of the study participants in the critical thinking skills.

	Sample	N	Mean	Std. Deviation	T	Sig. (2tailed)
Critical Thinking	Experimental	32	52.33	5.23	1.80	0.5
	Control	31	54.71	5.22		

There was no significant difference, according to the findings presented in table ($t=1.80$). As a result, it was considered that the critical thinking abilities of the two groups were statistically equal, and the pre-test would serve as a baseline for comparison between the research groups.

Instruments of the Study

The two main instruments used in the current study were an argumentative writing test and critical thinking scale:

1- The Argumentative Writing Test

The argumentative writing test was created by the researcher to be used as a pre-post test in order to evaluate the participants' argumentative writing before and after the treatment. The argumentative writing test encompassed two writing tasks, specifically writing two argumentative writing topics. Table (3) displays the two tasks of the test:

Table 3:

The argumentative writing test tasks description

Task	Description
One	Who has the greatest influence on 16- to 18-year-olds – their parents or their friends?
Two	Some people say that in the future there will be no schools, and students will learn online at home.

Purpose of the Test

This test was designed primarily to evaluate students' performance. The test main goal is to assess the participants' proficiency in the following six delimitations of argumentative writing that the test scoring rubric has identified:

1. Argumentation
2. Task achievement
3. Content development
4. Cohesion
5. Vocabulary
6. Grammar

2- The Critical Thinking Scale

Development of the Scale

The purpose of the critical thinking test is to evaluate a participant's capacity for rationally analysing premises, defences, deductions, inferences, and information interpretation. Critical thinking can be defined as "the ability to consider a range of information derived from many different sources, to process this information in a creative and logical manner, challenging it, analysing it and arriving at considered conclusions which can be defended and justified" (Moon, 2008, p 47).

The internal consistency reliability of all the scale items as well as the internal consistency reliability of each of the test five dimensions were evaluated using Cronbach's alpha.

Since Cronbach's alpha best fits the scale characteristics, it was chosen to evaluate the reliability of the scale. The five test cores' reliability ratings were, respectively, 0.76, 0.78, 0.72, 0.68, and 0.71, indicating that the sub-items of each core were very consistent with their respective cores.

Table 5:

Reliability of the test

Core	No. of Items	Mean	Std. Deviation	Cronbach's Alpha
1	10	4.80	3.58	.76
2	10	6.29	4.16	.78
3	9	4.87	3.29	.72
4	14	6.76	2.73	.68
5	9	3.92	3.29	.71
The Total Score	52	23.74	15.55	0.86

Variables of the Study

- **The independent variable:** A suggested blended learning program.

- **The first dependent variable:** The argumentative writing skills.

- **The second dependent variable:** The critical thinking skills.

Delimitations of the Study

This study is delimited to the following points:

- The study was conducted on second-year secondary stage students at El-Danakela secondary institute for girls in Sohaj Governorate (the researcher's place of work).

- The study utilized the Toulmin model for enhancing students' argumentative writing and critical thinking skills (Toulmin model is the most prominent model of argumentative writing).

- The treatment material comprised a blended learning program, which incorporated the skills of the argumentative writing in the light of Toulmin model of argumentation.

- Google classroom was used as a technological means for assisting in improving the candidates' argumentative writing and critical thinking skills.

- The study was delimited to the selected critical thinking skills by the jury members which are suitable for the target population of the study, as a critical thinking skills list was developed and then validated by the jury members.

- The study was conducted in the first semester of the academic year 2024/2025, during the period (10th October 2024 – 10th December 2024).

Procedures of the Study

The following procedures were followed for fulfilling the purpose of the current study:

1. Reviewing the literature and previous studies related to the current study to develop the conceptual and theoretical frameworks of the study.

2. Identifying argumentative writing and the critical thinking skills via consulting the related literature.

3. Submitting the skills lists of argumentative writing and critical thinking to a panel of experts to verify their validity and reliability.

4. Developing the study instruments, namely,

a. the argumentative writing test.

b. the critical thinking scale.

5. Submitting the study instruments to a panel of experts to verify their validity and computing their psychometric features.

6. Adjusting the study instruments in the light of the jury's feedback.

7. Administering the study instruments to a pilot sample to verify their reliability.

8. Administering the writing test and the critical thinking scale to the study participants for identifying the level of critical thinking and the degree of writing argumentative discourse.

9. Designing the training program of the present study.

10. Submitting the program to a panel of experts to verify its validity.

11. Administering the treatment materials to the study groups according to the study design.

12. Administering the post-writing test and the critical thinking scale.

13. Collecting and analyzing data statistically.

14. Analyzing and interpreting results.

15. Providing recommendations and suggestions.

Statistical analysis

The data collected by the researcher were statistically analyzed by using the SPSS program. The following formulas were used:

- Alpha Cronbach formula.

- Cohen's Kappa inter-rater reliability formula.

- Means of scores and standard deviation.

- The effect size equation to measure the effect of the study program.

Results

(1)– Results regarding the effect of the blended learning program on developing secondary school students' argumentative writing skills.

To answer the first research question that dealt with the effect of the study program on the subjects' argumentative writing skills, the researcher suggested the following hypothesis:

H 1:

There would be a statistically significant difference between the mean scores attained by the experimental group students and those of the control group in the post application of argumentative writing test in favor of the experimental group due to the blended learning program.

For testing this hypothesis, an independent sample *t*-test was employed. In other words, a comparison between the post-argumentative writing mean scores of both the experimental group and the control one was initiated in order to identify the changes in the argumentative writing skills between the experimental group and the control one as indicated by the results of the argumentative writing test. The following table (8) provides a detailed analysis of both the descriptive statistics and the inferential one in detail.

Table 8:

The independent t-test scores of the experimental group and the control one in the argumentative writing test (N= 32 & 31 respectively)

Group	N	Mean	S. D	Standard Error Mean	*t*-value	D. F	Sig.
EX	32	69.65	6.90	1.22	19.42	61	0.00
Con	31	41.06	4.47	0.80			

Furthermore, the results of the statistical analysis are depicted visually in the following figure where the differences in terms of the mean scores are represented in the following bar chart.

Figure 4:

The mean scores of both the experimental group and the control one in the post-argumentative writing test
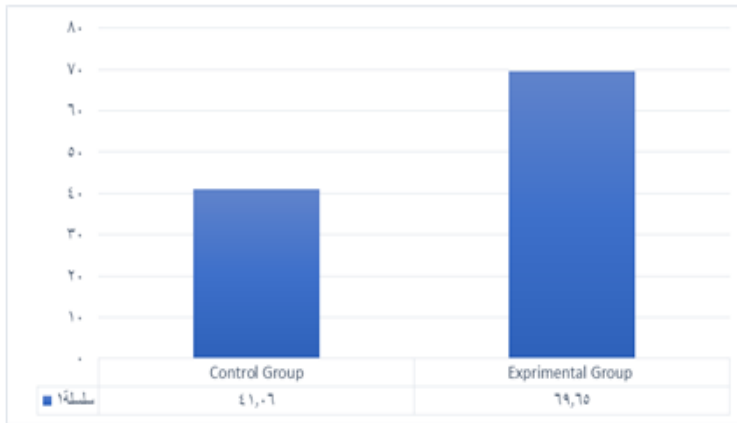
The above figure demonstrates that there is a clear difference between the mean scores attained by the experimental group and the control one concerning their argumentative writing skills. More significantly, authenticating the results attained of the statistical analysis necessitated calculating the effect size of the treatment, how much variance in argumentative writing is a result of the blended learning-based program. The Cohen's *d* standard was computed so as to identify the treatment effect size. Conducting the statistical analysis, it was revealed that the *d* value is (4.97) which is a high effect size indicating that more than 95 % of the development in the argumentative writing skills was the result of the treatment employed. Accordingly, the blended learning program was effective in developing the second-year secondary stage students argumentative writing.

(2)– Results regarding the effect of the blended learning program on developing secondary school students' critical thinking skills.

To answer the second research question that dealt with the effect of the study program on the subjects' critical thinking skills, the researcher suggested the following hypothesis:

H 2:

There would be a statistically significant difference between the mean scores attained by the experimental group students and those of the control group in the post application of critical thinking scale in favor of the experimental group due to the blended learning program.

For testing this hypothesis an independent sample *t*-test was employed. A comparison was drawn between the post-critical thinking scale mean scores of both the experimental group and the control one so as to identify the changes in the statistical differences in the critical thinking between the experimental group and the control one as indicated by the results of the critical thinking scale.

The table (9) provides a detailed analysis of both the descriptive and inferential statistics as follows.

Table 9:

The independent sample t-test scores of the experimental group and the control one in the critical thinking scale (N= 32 & 31 respectively)

Group	N	Mean	S. D	Standard Error Mean	*t*-value	D. F	Sig.
EX	32	30.50	4.83	0.85	9. 23	61	0.00
Con	31	21.38	2.65	0.47			

Moreover, the results of the statistical analysis are represented visually in the following figure where the following bar chart delineates the differences in terms of the mean scores between the experimental group and the control one.

Figure 5:

The mean scores of both the experimental group and the control one in the post-critical thinking test

The figure above reveals that there is a clear difference between the mean scores attained by the experimental group students and the control one in terms of their critical thinking skills. More significantly, for substantiating the attained results of the statistical analysis, the effect size of the treatment, how much variance in critical thinking is a result of the blended learning-based program was calculated. Meticulously, the Cohen's *d* standard was calculated in order to identify the treatment effectiveness. The results of the statistical analysis revealed that the *d* value is (2.36) which is high effect size underscoring that 95 % of the development in the critical thinking skills is the result of the treatment introduced in the study, namely the blended learning program. Accordingly, the blended learning program was effective in developing the second-year secondary stage students critical thinking.

Recommendations of the study:

The present investigation has raised several recommendations which need further research:

1- Students should be encouraged to develop their self-regulation skills and to manage their time effectively which might occur inside or outside the classroom.

2- Students should also reflect on their own learning, their skills, and their future goals to be considered in the future learning.

3- Argumentative writing and critical thinking strategies should be given more attention in Egyptian EFL class. More effort and time should be exerted to develop these vital skills.

4- EFL teachers are recommended to make use of blended learning to foster EFL learners' writing skills.

5- The teachers' role as a guide and facilitator should be given further emphasis. S/he should give learners sufficient opportunities to become critical writers.

6- EFL teachers are recommended to make use of blended learning to achieve a relaxing atmosphere in essay writing.

7- Teachers are recommended to develop a risk-free learning environment in classroom that includes a blend of face-to-face instruction with a web-based mediated instruction to develop learners' self-confidence and reflection upon material presented to them.

Teaching argumentative writing and critical thinking should be one of the main educational targets.

8- Course designers should incorporate flexibility into the curriculum to cater the students' needs and learning styles; besides, they should support the curriculum with a plethora of activities to promote critical thinking skills among students.

Suggestions for further research:

In the light of the results achieved, the study offers some suggestions for future researchers:

1- The area of EFL is still in need of more research to investigate the effectiveness of other interventions based on a blended learning approach in developing students' listening, speaking and reading skills.

2- The current study investigated the effect of a blended learning based instructional program on developing argumentative writing and critical thinking among secondary school students. Other researchers may investigate the effect of blended learning on developing argumentative writing among college students.

3- In terms of gender, participants were exclusively females. Future researchers should include blended learning with English majors from both sexes.

4- Further research can be done to investigate the effectiveness of blended learning in developing the students' attitude towards EFL.

5- Further research is needed to test the effectiveness of using blended learning versus traditional learning at all levels of language learning.

6- Experimental research can be done to explore the effect of blended learning to develop critical thinking skills among middle school and high school students.

7- Further research can be done to investigate the effectiveness of blended learning as an effective means to enhance language fluency for non-specialists EFL learners.

REFERENCES:

Adas, D., & Bakir, A. (2013). Writing difficulties and new solutions: Blended learning as an approach to improve writing abilities. *International Journal of Humanities and Social Science*, *3*(9), 254-266.

Barkaoui, K. (2007). Teaching writing to second language learners: Insights from theory and research. *TESL Reporter*, *40*(1), 35-48.

Browne, M. N., & Keeley, S. M. (2007). *Asking the right questions: A guide to critical thinking*. Pearson Education.

Chambliss, M. J. (2001). Analyzing Science Textbook Materials to Determine How àPersuasiveà They Are. *Theory into Practice*, *40*(4), 255-264.

Chinn, C. A. (2006). Learning to argue. In A. M. O'Donnell, C. E. Hmelo-Silver, & G. Erkens (Eds.), *Collaborative learning, reasoning, and technology* (pp. 355–383). Mahwah, NJ: Erlbaum.

De La Paz, S. (2005). Effects of Historical Reasoning Instruction and Writing Strategy Mastery in Culturally and Academically Diverse Middle School Classrooms. *Journal of Educational Psychology*, *97*(2), 139.

Dixon, F., Cassady, J., Cross, T., & Williams, D. (2005). Effects of technology on criticalthinking and essay writing among gifted adolescents. *Journal of Secondary Gifted Education*, *16*(4), 180-189.

Drid, T. (2014). Exploring the Use of Through-Argumentation and Counter- Argumentation in Arabic-Speaking EFL Learners' Argumentative Essays. *Arab World English Journal, 5*(4).), 216-261.

Facione, N. C., & Facione, P. A. (2007). Critical thinking and clinical judgment. *Critical thinking and clinical reasoning in the health sciences: A teaching anthology*, 1-13.

Ferretti, R. P., Andrews-Weckerly, S., & Lewis, W. E. (2007). Improving the argumentative writing of students with learning disabilities: Descriptive and normative considerations. *Reading & Writing Quarterly*, *23*(3), 267-285.

Florea, N. M., & Hurjui, E. (2014). Critical thinking in elementary school children. *Procedia-Social and behavioral sciences*, *180*, 565-572.

Ghahari, S., & Ameri-Golestan, A. (2014). The effect of blended learning vs. classroom learning techniques on Iranian EFL learners' writing. *International Journal of Foreign Language Teaching and Research*, *1*(3), 77-86.

Halpern, D. F. (2001). Assessing the effectiveness of critical thinking instruction. *The Journal of General Education*, *50*(4), 270-286.

Kaur, S. (2015). Teaching strategies used by Thai EFL lecturers to teach argumentative writing. *Procedia-Social and Behavioral Sciences*, *208*, 143-156.

MacArthur, C. A., Ferretti, R. P., & Okolo, C. M. (2002). On defending controversial viewpoints: Debates of sixth graders about the desirability of early 20th- century American immigration. *Learning Disabilities Research & Practice*, *17*(3), 160-172.

MacKnight, C. B. (2000). Teaching critical thinking through online discussions. *Educause Quarterly*, *23*(4), 38-41.

McCall, R. B. (2017). Qualitative transitions in behavioral development in the first two years of life. In *Psychological development from infancy* (pp. 183-224). Routledge.

McLean, C. L. (2005). Evaluating critical thinking skills: Two conceptualizations. *International Journal of E-Learning & Distance Education/Revue internationale du e-learning et la formation à distance*, *20*(2), 1- 20.

Mojkowski, C. (2013). *Schools must bring creativity to blended learning. Education Week, 33*(6), 26-27.

Moore, T. J. (2011). Critical thinking and disciplinary thinking: A continuing debate. *Higher Education Research & Development*, *30*(3), 261-274.

Neff-van Aertselaer, J., & Dafouz-Milne, E. (2008). Argumentation patterns in different languages: An analysis of meta discourse markers in English and Spanish texts. *Developing contrastive pragmatics interlanguage and cross-cultural perspectives*, 87-102.

Nippold, M. A., & Ward-Lonergan, J. M. (2010). Argumentative writing in pre- adolescents: The role of verbal reasoning. *Child Language Teaching andTherapy*, *26*(3), 238-248.

Nussbaum, E. M., Kardash, C. M., & Graham, S. E. (2005). The Effects of Goal Instructions and Text on the Generation of Counterarguments During Writing. *Journal of Educational Psychology*, *97*(2), 157.

Nussbaum, M. (2008). *Liberty of conscience: in defense of America's tradition of religious equality*. Basic Books.

Paul, R., & Elder, L. (2006). *Critical thinking: Learn the tools the best thinkers use*.

Perloff, R. M. (2003). *The dynamics of persuasion* (2nd ed.). Mahwah, NJ: Erlbaum.

Permana, Y. G. (2017). The Effect of Using Blended Learning Strategy toward the 8 Grade Students' Writing Competency. *Journal of Psychology and Instructions*, *1*(2), 79-87.

Rezaei, S., Derakhshan, A., & Bagherkazemi, M. (2011). Critical thinking in language education. *Journal of Language Teaching and Research*, *2*(4), 769.

Riley, J., & Reedy, D. (2005). Developing young children's thinking through learning to write arguments. *Journal of Early Childhood Literacy*, *5*(1), 29-51.

Salahu-Din, D., Persky, H., & Miller, J. (2008). The nation's report card: Writing 2007 (NCES 2008–468). *National Center for Education Statistics, Institute of Education Sciences, US Department of Education, Washington, DC*.

Sampson, V., & Gleim, L. (2009). Argument-driven inquiry to promote the understanding of important concepts & practices in biology. *The American biologyteacher*, *71*(8), 465-473.

Schwarz, B. B., Neuman, Y., Gil, J., & Ilya, M. (2003). Construction of collective and individual knowledge in argumentative activity. *The Journal of the Learning Sciences*, *12*(2), 219-256.

Scriven, M., & Paul, R. (2004). Defining Critical Thinking. The critical thinking community: foundation for critical thinking.

Shang, H. F. (2007). An exploratory study of e-mail application on FL writing performance. *Computer Assisted Language Learning*, *20*(1), 79-96.

Tutty, J. I., & Klein, J. D. (2008). Computer-mediated instruction: A comparison ofonline and face-to-face collaboration. *Educational Technology Research and Development*, *56*(2), 101-124.

Vander Ark, T. (2011). *Getting smart: How digital learning is changing the world*. John Wiley & Sons.

Zahran, H. (2005). Developmental psychology, childhood and adolescence. *World of Books*.