



The Impact of Critical Thinking Skills in TBSIR Approach on the Computer-Based English Expository Essay Writing of Iranian University Students

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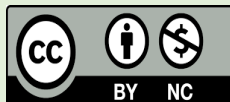
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Abstract

Due to the vital role of critical thinking skills in students' educational and non-educational success, the present research attempted to examine the impact of critical thinking skills in TBSIR approach on the computer-based English expository essay writing of Iranian university students. Participants of this study included 30 students at Gonbad-e-Kavous and Hazrat-e-Masoumeh universities in Iran. They answered to the Watson-Glaser critical thinking skills test (1980), then after two weeks of reviewing TSR structure, they wrote a computer-based English expository essay as pre-test. After four weeks of learning TBSIR structure, they wrote another computer-based English expository essay as post-test. The paired samples t-test and Pearson correlation were run and the results revealed the impact of critical thinking skills in the TBSIR approach on the computer-based English expository essay writing of Iranian university students. Also, the results indicate the positive and significant correlation between critical thinking skills especially analysis and interpretation and the computer-based English expository essay writing of Iranian university students, which helps the students to promote their educational and social lives. Finally, teachers, teacher trainers, syllabus designers and materials developers can benefit from the results of this study.

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Introduction

Language learners need to learn a new language which helps them to improve their lives. It provides an opportunity to communicate with others, to understand how people think and also to find a better job.

The two highly significant skills that help language learners to achieve their aims are critical thinking skills and writing. Critical thinking provides an environment in which language learners construct their own knowledge, solve their problems, make decisions and improve the quality of their lives. But it seems that critical thinking is neglected in educational system of Iran in spite of its significance.

Another fundamental skill to reach high levels of educational and occupational success is writing. But it is difficult for Iranian language learners to convey their meaning in written texts because the teachers cannot find practical methods to teach them how to represent their ideas. So, it is important to raise both the students' and the teachers' awareness toward these two vital skills.

Critical Thinking Skills

There is an attempt to learn a new language especially English as an international language in recent years. But language learners face with difficulties in the process of learning a new language. Critical thinking and writing are considered as the two difficult skills for most of them, the skills that their improvements go hand in hand. Critical thinking helps language learners to promote both their academic and non-academic lives. Based on the study on the significance of Critical thinking conducted by Sieroke et al. (2018), it is regarded as a skill which should be taught and practiced to develop.

Critical thinking refers to a cognitive activity emphasizing on argumentation that needs the use of mind (Cottrel, 2005), but there is no exact definition of critical thinking. The definitions are based on philosophy and psychology.

According to philosophers, it is about what a person requires in order to think. They focus more on the nature and the quality of critical thinking as a product (Siahi Atabaki et al., 2015). But psychologists pay attention to critical thinking skills. Critical thinking skills are conceptualized largely but according to Garrison (1991), identifying the problems, defining the problems clearly, searching possible solutions, evaluating their functions, and integrating their understanding with available knowledge are considered as critical thinking skills.

Based on the study done by Watson-Glaser (1980), critical thinking skills are analysis, assumption, deduction, inference, and interpretation:

- Analysis is the ability of distinguishing between arguments that are strong and relevant and those that are weak or relevant to a particular question at issue.
- Assumption is considered as recognizing unstated presuppositions in given statements or assertions.

- Deduction refers to the ability to determine whether certain conclusions necessarily follow from information in given statements or premises.
- Inference is the ability to discriminate among degrees of truth or falsity of inference drawn from given data.
- Interpretation is defined as weighing evidence and deciding if generalizations or conclusions based on the given data are warranted.

Expository Essay Writing

Writing is another high-priority skill in the process of language learning. Hyland (2009) defined writing as the process of converting thoughts into language. The writer should think about the content of writing and arrange the ideas by using suitable language. It is also defined as a cognitive challenge because it tests memory, language and thinking skills (Kellog, 2008). According to Hyland (2009), an essay refers to a short literary composition on a subject for expressing a personal view. And an expository essay is a kind of essay which attempts to explain, inform about and analyze an issue (Ibnian, 2008).

TSR¹ and TBSIR² Approaches to Writing

There are two main approaches in order to organize essays. The first approach of writing is called TSR and regarded as the simplest approach. In TSR approach, T stands for topic sentence which identifies the main idea of the writer. S refers to supporting sentences that include all the explanations, illustrations and supports in order to provide evidence for the idea in the topic sentence. And return or result (R) reviews all the information in the essay (Chason et al., 2016).

Another approach to organize essays is suggested by Chason et al. (2016) which is called TBSIR. In this approach, bridge (B) is considered as a kind of connection between the information from the topic sentence and supporting sentences and interpretation (I) is the reason for all the information in the support.

This approach helps language learners to analyze and interpret in order to promote their critical thinking and writing abilities. The following excerpt is an illustration of TBSIR approach:

The political changes in Libya and its subsequent effect on the public had a negative impact on learning foreign languages (Topic). These changes kept weakening the effect of English on Arabic language to an extent that it became negligible (Bridge). The most important reason for this is that teaching foreign languages was not allowed in Libya from 1975 to 1990. As a result, the majority of people who were studying at that time speak only Arabic language today. The English language that is used is limited to simple English words like “sorry”, “please”, “friend”, and “man”, and it is only common among the younger generation. The second reason is the limited resources. Books and DVDs in English and Internet connection were not supported by the government, and therefore were not affordable for the majority of people. Only a few wealthy people had a chance to learn foreign languages and most of them learned the English language. The third reason is that people tend to consider using foreign languages in public

¹ Topic sentence, Supporting sentences, Result

² Topic sentence, Bridge, Supporting sentences, Interpretation, Result

places as a kind of affectation, and some of them will consider this as rude behavior. Even when friends are talking to each other in English, this would be considered as pretentious behavior. To avoid being rude or offending anybody, the English and Arabic languages were kept separate from each other, with English being just used partially in study or at work (Support). Despite the current trend of learning and integrating English into Arabic language, the generation that was forbidden from learning English remains the main obstacle to integrating and expanding foreign languages in Libya (Interpretation). Thus, Libyan political changes played a major role in diminishing the acquisition of foreign languages among Libyans (Return) (Chason et al., 2016, 5).

Paper-Based and Computer-Based Modes of Writing

Writers can benefit from two modes of writing in order to organize essays, paper-based and computer-based. These two modes are somehow similar, but language learners use computers or laptops to type their essays in computer-based mode. It helps language learners to make notes while reading, to draft and manipulate the drafts, to insert and reorder the new information, to correct spelling and grammatical mistakes. It reduces the time and effort for producing an essay and also reduces the use of paper.

In this regard, Williams and Bean (2018) conducted research and the results revealed that technology-mediated writing instructions help language learners to promote their writing skills. It also helps them to produce dynamic, multimodal and digital texts in order to express their learning, ideas, perspectives and intentions.

Previous and Related Studies on the Relationship between Critical Thinking and Writing

Several studies have been carried out on the relationship between critical thinking and writing, the two vital skills that help language learners to guarantee their educational and non-educational lives.

In this regard, the results of research done by Marzano (1991) indicate that "writing is used as a means to restructure knowledge and improve higher-order thinking, and, in this context, writing may provide an opportunity for students to think through arguments and use higher-order thinking skills in order to respond to complex problems" (521). Based on the study conducted by Rohmani (2017), "the students' writing performance is followed by the betterment of their critical thinking skills, writing performance is proven to be a good predictor of students' critical thinking skills" (233). Based on this research, critical thinking and writing performance are significantly and positively related to each other.

Because of the lack of critical pedagogy in Iran, the results of the study done by Hashemi et al. (2014) demonstrated that there is a relationship between critical thinking and writing abilities and critical thinking is considered as one of the significant prerequisites to teach argumentative writing. Similarly, Rimani Nikou (2015) in research examined the relationship between critical thinking skills and the quality of Iranian TEFL (Teaching English as a Foreign Language) students' writing. The results showed the positive relationship between critical thinking skills and writing quality. In the same way, Taghinezhad et al. (2018) and Assadi et al. (2013) examined the impact of critical thinking on language learners' writing performance.

The results indicate that using critical thinking strategies enhances language learners' writing skills.

There is extensive and pervasive literature on critical thinking skills and writing performance, but because of the lack of critical thinking in the educational system of Iran, there isn't any study about using the approaches of writing in which critical thinking skills are embedded to promote both critical thinking skills and writing ability in EFL contexts. In order to bridge the gap in this field, the current study attempts to examine the impact of critical thinking skills in the TBSIR approach on the computer-based English expository essay writing of Iranian university students by responding to the following research questions:

1. Do critical thinking skills in the TBSIR approach impact on the computer-based English expository essay writing of Iranian university students?

2. Is there any significant relationship between Iranian university students' critical thinking skills and their computer-based English expository essay writing?

3. Is there any significant relationship between analysis as a critical thinking skill in the TBSIR approach and the computer-based English expository essay writing of Iranian university students?

4. Is there any significant relationship between interpretation as a critical thinking skill in the TBSIR approach and the computer-based English expository essay writing of Iranian university students?

Furthermore, the following null hypotheses are posed in order to answer to the above-mentioned research questions:

1. Critical thinking skills in the TBSIR approach do not impact on the computer-based English expository essay writing of Iranian university students.

2. There is not any significant relationship between Iranian university students' critical thinking skills and their computer-based English expository essay writing.

3. There is not any significant relationship between analysis as a critical thinking skill in the TBSIR approach and the computer-based English expository essay writing of Iranian university students.

4. There is not any significant relationship between interpretation as a critical thinking skill in the TBSIR approach and the computer-based English expository essay writing of Iranian university students.

Method

Participants

The participants of this study included 24 female and 6 male Iranian university students at Gonbad-e-Kavous and Hazrat-e-Masoumeh universities majoring in English teaching, literature and translation. The age range of the participants was between 20 and 22. All the participants were junior students who have passed advanced (paragraph) writing and were passing essay writing course.

Research Design

Quantitative quasi experimental pre- and post-test research design was used in order to carry out the current study.

Instruments and Materials

The participants answered to demographic information questionnaire which determines the participants' personal information including their age, gender, major, name of university, years of studying at university and the writing courses that they have already passed.

Another instrument used in this study was the Watson-Glaser critical thinking skills test (1980) with the test-retest reliability of 0.81 (Table 1).

Table 1. Reliability of the Watson-Glaser Critical Thinking Skills Test (1980)

Reliability	Number of items
0.81	86

It includes 86 items and 5 subtests of analysis, assumption, deduction, inference, and interpretation (Table 2). The participants were asked to respond to each subtest every other day in order to gain better results.

Table 2. The Subtests of the Watson-Glaser Critical Thinking Skills Test along with the Corresponding Descriptions (Hashemi et al., 2014)

Subtest	Description	Items
Analyzing arguments	Distinguishing between arguments that are strong and relevant and those that are weak or relevant to a particular question at issues.	1-25 (25 items)
Assumptions	Recognizing unstated assumptions or presuppositions in given statements or assertions.	26-39 (14 items)
Deduction	Determining whether certain conclusions necessarily follow from information in given statements or premises.	40-60 (21 items)
Inference	Discriminating among degrees of truth or falsity of inference drawn from given data.	61-74 (14 items)
Interpretation	Weighing evidence and deciding if generalizations or conclusions based on the given data are warranted.	75-86 (12 items)

The Watson-Glaser critical thinking skills tests instruction was used to help participants how to respond to the test and the Watson-Glaser critical thinking skills solutions was used in order to score the test. Then, the participants were asked to write two expository essays by using their computers or laptops about one of the topics which were given to them as pre- and post-test.

Procedure and Data Collection

As all the participants have already passed advanced (paragraph) writing and were passing essay writing course, they were familiar with TSR approach to organize paragraphs and essays. They reviewed how to analyze a paragraph and an essay and identify different parts of it by using this approach in 30-minutes 2-sessions online classes in Telegram through PowerPoint presentations, PDF and Word files and voice messages. They wrote an expository essay about a topic given to them by using their computers or laptops as pre-test.

The participants learned the TBSIR structure, how to analyze a paragraph and an essay and identify different parts of it by using this new approach in 30-minutes 4-sessions online classes in Telegram through PowerPoint presentations, PDF and Word files and voice messages. They wrote another expository essay about a topic given to them by using their computers or laptops as post-test.

Finally, two raters assess the participants TSR essays by using TSR expository essay rubric (Empowering writers, n.d.) with the inter-rater reliability coefficient of 0.933 and TBSIR essays by using TBSIR expository paragraph and essay rubric (Chason et al., 2016) with the inter-rater reliability coefficient of 0.922 (Table 3).

Table 3. *The Inter-Rater Reliability of Pre- and Post-test*

The inter-rater reliability of pre-test	0.933
The inter-rater reliability of post-test	0.922

Data Analysis and Results

Collected and arranged data of the current research were entered to SPSS (Statistical Package for Social Sciences) software (version 26) to evaluate descriptive statistics include mean and standard deviation for the sample. The data were analyzed by using paired-sample t-test to compare the participants' scores on pre- and post-test of computer-based English expository essays and also Pearson correlation to examine any significant correlation between the participants' critical thinking skills, analysis and interpretation and their computer-based English expository essays that assume the normality of data. The ratios of skewness and kurtosis indices over their standard errors was used in order to investigate the normality of data (Table 4). As the computed ratios were lower than +/- 1.96, it can be assumed that the normality assumption was retained.

Table 4. *Descriptive Statistics: Testing Normality of Data*

	N	Skewness			Kurtosis		
		Statistic	Statistic	Std. Error	Ratio	Statistic	Std. Error
Interpretation	30	-.619	.427	-1.45	-.558	.833	-0.67
Inference	30	.262	.427	0.61	-.749	.833	-0.90
Deduction	30	.671	.427	1.57	1.309	.833	1.57
Assumption	30	-.162	.427	-0.38	-.514	.833	-0.62
Argument	30	-.166	.427	-0.39	-.530	.833	-0.64
Critical Thinking	30	-.168	.427	-0.39	-.531	.833	-0.64
Post-test	30	-.697	.427	-1.63	-.048	.833	-0.06
Pretest	30	.533	.427	1.25	-.074	.833	-0.09

Pearson correlation was used in order to investigate the inter-rater reliability of the two raters who assess the participants' pre- and post-test computer-based English expository essays. The results, based on Table 5, revealed the considerable significant agreements between the two raters on both pre- and post-test.

Table 5. *Pearson Correlations: Inter-Rater Reliability of Pretest and Post-test of Computer-Based English Expository Writing*

		Pre-Rater2	Post-Rater2
Pre-Rater1	Pearson Correlation	.93**	
	Sig. (2-tailed)	.000	
	N	30	
Post-Rater1	Pearson Correlation		.922**
	Sig. (2-tailed)		.000
	N		30

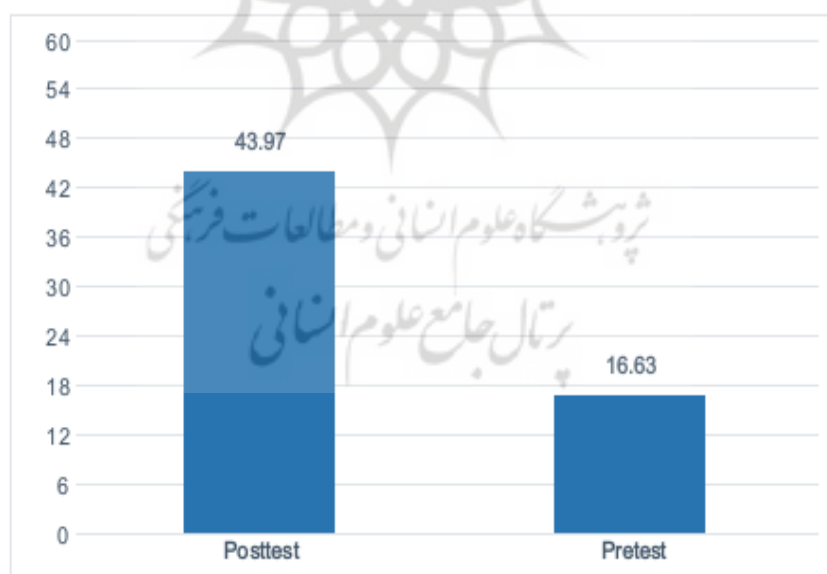
** . Correlation is significant at the 0.01 level (2-tailed).

The Impact of Critical Thinking Skills on the Computer-Based English Expository Essay Writing of Iranian University Students

Iranian university students' means on pre- and post-test of computer-based English expository essay writing was compared by using a paired-samples t-test. The results, as shown in Table 6, indicated higher mean on the post-test (M= 43.97) of computer-based English expository essay writing of Iranian university students than pretest (M= 16.63).

Table 6. *Descriptive Statistics: Pretest and Post-test of Computer-Based English Expository Writing*

	Mean	N	Std. Deviation	Std. Error Mean
Post-test	43.97	30	4.422	.807
Pretest	16.63	30	2.726	.498

**Figure 1.** *Means on Pretest and Post-test of Computer-Based English Expository Writing*

As mentioned above, Iranian university students had a significantly higher mean on the posttest of computer-based English expository writing than pretest based on the results of the paired-samples t-test ($t(29) = 59.73, p < .05, r = .996$ representing a large effect size) (Table 7), so it can be concluded that critical thinking skills of Iranian university students impacts on their computer-based English expository essay writing.

Table 7. Paired-Samples *t*-test: Pretest and Post-test of Computer-Based English Expository Writing

Mean	Std. Deviation	Std. Error Mean	Paired Differences		T	df	Sig. (2-tailed)
			95% Confidence Interval of the Difference				
			Lower	Upper			
27.333	2.506	.458	26.397	28.269	59.733	29	.000

The Relationship between Critical Thinking Skills and Computer-Based English Expository Essay Writing of Iranian University Students

Pearson correlation was used to probe any significant relationship between Iranian university students' critical thinking skills and their computer-based English expository essay writing. The results, as shown in Table 8, ($r(28) = .916$ representing a large effect size, $p < .05$) revealed the positive and significant correlation between Iranian university students' critical thinking skills and their computer-based English expository essay writing.

Table 8. Pearson Correlation between Critical Thinking and Post-test of Computer-Based English Expository Writing

		Post-test
Critical Thinking	Pearson Correlation	.916**
	Sig. (2-tailed)	.000
	N	30

** . Correlation is significant at the 0.01 level (2-tailed).

The Relationship between Analysis as a Critical Thinking Skill in TBSIR Approach and the Computer-Based English Expository Essay Writing of Iranian University Students

Pearson correlation was used to examine any significant relationship between analysis as a critical thinking skill and the computer-based English expository essay writing. Based on the results displayed in Table 9 ($r(28) = .726$ representing a large effect size, $p < .05$), there was a positive and significant correlation between analysis as a critical thinking skill and the computer-based English expository essay writing.

Table 9. Pearson Correlation between Analysis as a Critical Thinking Skill and Post-test of Computer-Based English Expository Writing

		Post-test
Analysis	Pearson Correlation	.726**
	Sig. (2-tailed)	.000
	N	30

** . Correlation is significant at the 0.01 level (2-tailed).

The Relationship between Interpretation as a Critical Thinking Skill in TBSIR Approach and the Computer-Based English Expository Essay Writing of Iranian University Students

Pearson correlation was used to investigate any significant relationship between interpretation as a critical thinking skill and the computer-based English expository essay writing. The results as demonstrated in Table 10, ($r(28) = .679$ representing a large effect size, $p < .05$) revealed a positive and significant correlation between interpretation as a critical thinking skill and the computer-based English expository essay writing.

Table 10. *Pearson Correlation between Interpretation as a Critical Thinking Skill and Post-test of Computer-Based English Expository Writing*

		Post-test
	Pearson Correlation	.679**
Interpretation	Sig. (2-tailed)	.000
	N	30

** . Correlation is significant at the 0.01 level (2-tailed).

Discussion

The results of this research demonstrated the positive correlation between critical thinking skills and computer-based English expository essay writing of Iranian university students and also revealed the considerable, significant and positive impact of critical thinking skills in TBSIR approach on Iranian university students' computer-based English expository essay writing. Therefore, the students' development in writing performance intensifies their critical thinking skills. The results also confirmed the influential relationship between analysis and interpretation as critical thinking skills in TBSIR approach and the computer-based English expository essay writing of Iranian university students.

The findings of the current study are consistent with the studies on the relationship between critical thinking skills and writing ability both in EFL (English as a Foreign Language) and ESL (English as a Second Language) contexts. As cases in point, based on the studies conducted by Taghinezhad et al. (2018), Rohmani (2017), Rimani Nikou (2015), Hashemi et al. (2014) and Assadi et al. (2013), critical thinking skills and writing performance are significantly and positively related to each other and developing critical thinking skills results in promotion in writing ability and vice versa. In the line with this result, Marzano (1991) pointed out that writing ability can be used as a mean to promote critical thinking skills.

This study examined the impact of critical thinking skills on writing performance by using an implicit strategy, TBSIR approach, to organize writing which leads to improvement in critical thinking skills. In other hand, some researches done by Abrami et al. (2008), Beyer (2008), and Marin and Halpern (2011) manifested that teaching critical thinking skills directly and explicitly enhances the students' attention to apply critical thinking skills to their writing. Also, Moghaddam and Malekzadeh (2011) confirmed the impact of explicit critical thinking skills teaching on writing ability.

The findings of the study are consistently related to the researches on computer-based writing. According to Allen et al. (2016), computer-based instructions help the students to promote their writing by using suggestions and strategies in drafting, producing and revising

their texts and similarly, Ulusoy (2006) pointed out that it can simplify the process of producing a text.

Conclusion

The current study was intended to empirically investigate the impact of critical thinking skills in TBSIR approach on the computer-based English expository essay writing of Iranian university students. It also intended to investigate the relationship between critical thinking skills, analysis and interpretation as critical thinking skills and Iranian university students' English expository essay writing, as mentioned earlier. The statistic results confirmed the impact of and the relationship between these two variables. In other words, students' writing skill development is concerned with critical thinking skills enhancement, the skills which seem totally neglected in EFL contexts. The findings also revealed the importance of using computer as a mean to promote the students' writing skills.

The findings provide incentives to emphasize on the results in order to incorporate critical thinking skills in educational system of Iran, so it has implications for syllabus designers and materials developers. Also, the results of this study can be beneficial for teacher trainers, teachers and students. The teachers need to be trained on teaching students to use critical thinking skills, produce high quality texts and develop them in educational setting and in their real-life situations. They need to deal with challenges and tackle them by analyzing, making judgments, making decisions and solving the problems.

Based on the findings of this study, further studies can be conducted using multiple test measures, both qualitative and quantitative, to examine the impact of critical thinking skills on writing performance. Additionally, other critical thinking skills, including assumption, deduction, and inference, other approaches to writing and explicit approaches to teaching critical thinking skills can be used. Future studies can emphasize more on larger groups of participants with different educational and cultural backgrounds in order to enhance generalizability.

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