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IELTS ACADEMIC READING ACHIEVEMENT: THE CONTRIBUTION OF INFERENCE-MAKING AND EVALUATION OF ARGUMENTS

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Abstract:

The pivotal undertaking of education today is to endow individuals with the capacity to be able to think flexibly, reason rationally, and have open minds to be able to evaluate and interpret situations. In line with the studies demonstrating the positive relationship between higher-order thinking skills and academic achievement, this study aimed to particularly examine the impact of the two subcomponents of critical thinking, i.e., inference-making and evaluation of arguments on academic IELTS candidates' reading achievements. To achieve the purpose of the study, one hundred and seven IELTS candidates (from different institutes in Mashhad, a city in north of Iran) were asked to complete two tests of the Persian version of the "Watson-Glaser's Critical Thinking Appraisal" after being administered an IELTS reading comprehension test. The results showed that there is a positive relationship between IETLS reading score and EFL learners' inference-making and evaluation of argument. Subsequent data analyses demonstrated that among the two variables, inference making is the more powerful predictor of IELTS reading achievement. In addition, the results revealed that the two mentioned variables can predict about 10 percent of IELTS reading achievement. This study has some implications for educators and administrators to take full advantage of these associations by establishing guiding principles for enhancing IELTS candidates' inference-making and evaluation of arguments.

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1. Introduction

In the academic context, a high premium is placed on students' capability to extend their knowledge beyond what is learnt in their university classroom context. To thrive for this objective, students need to *read to learn* (McClellan, 1997). They must use an appropriate combination of the skills and strategies that are required for the different purposes of reading in tertiary level. Enright et al (2000) asserted that this will involve processing beyond the level of searching for information and basic comprehension of main ideas in a text and require an understanding of how information in a text as a whole is connected, and how to integrate information from across a variety of texts for use in written assignments or exam essays. Beck (1989) stated that "there is no reading without reasoning" (p. 677). Also, Waters (2006) contended that critical thinking activities can equip learners with instruments which help them "stay with" or "go beyond" the information presented in a text. It is plausibly believed that higher-order thinking skills can improve higher order learning skills contributing to academic success (Renner, 1996).

The most important aim of education today is to provide individuals with the capacity to be able to think flexibly and have open minds to be able to adapt to different situations. Consequently the structure of education, the content, and presentation methods should focus on the development of high level thinking skills, such as formulating analysis, synthesis, evaluation, finding relationships, summarizing subjects, and having students make connections with the world outside the classroom (Seferoglu & Akbiyik, 2006; Berber et al., 2002). Akyuz and Samsa (2009) stated that to teach students critical thinking skills is the aim of higher education. They believed that one of the greatest experiences for students in higher education is to think critically and to challenge other students' ideas with those of their own. They contended that one of the greatest experiences for students in higher education is to think critically and to challenge other students' ideas with those of their own. Thinking skills are crucial for educated persons and by these skills, they can cope with a rapidly changing world and deal with reality in a reasonable and independent manner.

Moon (2008) asserted that critical thinking has a significant role in higher education and the professions. It can be considered as a core of higher education and as a fundamental goal of learning. She believed that if critical thinking is clearly expressed in higher education, then students who are achieving those levels of qualification will be critical thinkers. In a similar vein, Ghanizadeh (2016) contended that academic success in higher education is associated with cultivating thinking skills and self-regulatory abilities.

Scholars advocating higher-order thinking skill believe that it is a thought process which is sensitive to problem interference, knowledge deficits, missing elements, and inconsistency.. Critical thinking can be defined as reflective thinking and includes high level thinking processes in which basic thinking skills are used, arguments are analyzed, meaning and interpretation are developed, logical thinking patterns are cultivated, theories that encircle claims and prejudices are understood, and an attitude that is reliable, unique, and believable is developed (Horng et al 2007; Edwards 2007).

Critical thinking is recognized as an important competence for students to acquire in academic settings (Connolly, 2000; Davidson, 1998; Davidson & Dunham, 1997). Kress (1985) further postulated that critical thinking is a social practice and is language itself. Maybe even more than L1 teachers, L2 teachers have reasons to introduce their students to aspects of critical thinking because if they do not, their students may well founder when they are confronted with the necessity of thinking critically, especially in an academic setting (Davidson, 1998; Ghanizadeh, 2011; Hashemi & Ghanizadeh, 2012; Ghanizadeh & Mirzaee, 2012).

Reviewing the literature, we will understand that the relationship between CT and reading comprehension is well established. Reading comprehension encompasses the ability to not only read the lines but also the reading between the lines. This entails enhancing higher-order thinking skills. To do so, students must go beyond absorbing knowledge and learn to heighten skills to judge information, evaluate alternative evidence and argue with tenable reasons (Ku, 2009). In other words, if we expect educational systems to prepare people for life, educators need to place a premium on enhancing monitoring and self-regulatory skills in learners.

The researchers of the present study assume that inference-making and evaluation of arguments are among the strategies which can foster learning and hence reading. Reading critically, thus, plays an important role in students' success in courses they undertake. To read critically, language learners should be given the chance to go through the text and focus on the author's assumptions, viewpoints, purposes, and ideology (Khabiri & Pakzad, 2012). For reading effectively, the readers require to read with critical eyes which means that the reader should try to evaluate and read the text to find out what it says, and how and why it says it. Therefore, improving students' critical thinking seems to be one of the key issues in enhancing foreign language reading. Diverse approaches to the study of critical thinking have led to various definitions and roles of critical thinking and the interchangeable use of the terms reflective thinking, higher-order thinking, or critical reflection in the literature (Ertmer & Newby, 1996; Grimmett, 1988; Moon, 1999; Rogers, 2002). According to Paul and Elder (2001), critical thinking is self- disciplined, self-monitored, self-directed, and self-corrective thinking that typically require effective communication and problem-solving abilities.

The major aim of the present study is to examine the role of two components of critical thinking in the IELTS candidates' reading achievements. In the followings, research on critical thinking and reading comprehension are briefly reviewed.

2. Review of the Related Literature

2.1. Critical Thinking

It is widely recognized that the development of critical thinking can be beneficial for both the individual student and the society (Ghanizadeh & Moafian, 2011). In an information society, critical thinking is regarded as the most important skill in order to distinguish false, incomplete, outdated, etc., information. It is also universally accepted that the development of critical thinking skills is the ultimate goal of education. This, according to Bernard et al., includes "...not only thinking about important problems in disciplinary areas, but also thinking about the social, political, and ethical challenges of everyday life in a multi-faceted and increasingly complex world" (2007, p. 201).

As the researchers of the present study applied the <u>Watson–Glaser Critical</u> <u>Thinking Appraisal (2002a)</u> for determining the critical thinking abilities of the participants who took part in the research, the definition formulated by the authors of the instrument constitutes the focus of this research. <u>Watson and Glaser (2002b, pp. 21–</u> <u>23</u>) distinguished between the following abilities:

- Inferences drawn from factual statements,
- Recognition of assumptions in a series of statements,
- interpreting whether conclusions are warranted or not,
- determine if conclusions follow from information in given statements,
- evaluating arguments as being strong and relevant or weak and irrelevant.

2.2 Reading Comprehension

As far as teaching English as a foreign language is concerned, the ability to read between the lines is a challenging task for the students. Cook (1991) regarded reading primarily as a thinking process and highlighted the importance of engaging the students in talking about the text they read while using reading strategies. Sweet and Snow (2002) asserted that the purpose of reading comprehension is to construct meaning from the contexts (Sweet & Snow, 2002).

Colin (1993) noted that in order to understand the text and facilitate complex interaction, learners need to be critical thinkers; that is, to learn to value their own thinking, to compare their thinking and interpretations with others, to reexamine or reject the parts of the process in which they value their thinking and interpretations and to compare them with others when it is necessary.

Different studies in the area of reading and reading comprehension suggest that learners spontaneously use a variety of reading strategies in the reading process to assist them with the acquisition, storage, and retrieval of information (Zhang, 1993; Singhal, 2001). Research has also indicated that effective EFL/ESL readers use a variety of appropriate strategies (Shang, 2011), on the other hand, literature suggests that appropriate reading strategies may improve reading comprehension (Zhang, 1993).

2.3 Purpose of Study

The purpose of this study is to investigate the relationship between IELTS candidates' achievement in Academic IELTS reading test and two components of critical (thinking inference-making and evaluation of arguments) as measured through <u>Watson–Glaser</u> <u>Critical Thinking Appraisal (2002a)</u>. To achieve the purpose of this study, the following research questions were posed and investigated in the present study:

- 1) Is there any relationship between IELTS candidates' inference making and their achievement in academic IELTS reading?
- 2) Is there any relationship between IELTS candidates' evaluation of arguments and their achievement in academic IELTS reading?
- 3) What percentage of variability in IELTS candidates' achievement in academic IELTS reading can be accounted for by taking their inference making and inference making?

The study can offer both IELTS teachers and candidates' insights to improve some of their abilities they need to surpass in this regard. With verifying the effects of critical thinking on the achievement of IELTS candidates and finding out which component of CT, whether inference making and evaluation of arguments can best predict the achievement, we can put forward effective and practical guidelines for developing metacognitive reading strategies.

3. Method

3.1. Participants

The participants of this study comprised 107 IELTS candidates from different institutes in Mashhad – Iran. Participants were chosen from advanced and upper-intermediate proficiency levels. The participants were of different social backgrounds. Their ages ranged between 18 and 43. They had different majors in high school or university. Some of them were just students, some of them were students with part-time or full-time jobs and some just worked. 33 percent of the subjects who took part in this study were male and the 67 percent were female. All the subjects who took part in this study were volunteers, and there was no obligation for participation. The participants were informed of the purpose of the study and could choose to take part in it or not.

3.2. Instruments

The present study utilized two instruments in the process of data collection as follows:

- 1. The reading comprehension section of the 2015 academic IELTS test.
- 2. The Watson and Glaser Critical Thinking Appraisal, Form A.

3.2.1. The 2015 Academic IELTS Test:

The IELTS was established as a result of the ELTS validation project. ELTS itself was set up in 1979/80 as the British Council's English proficiency measure of overseas students' adequacy in English to pursue higher education in the UK. According to Davis (2001): Between 1982 and 1986, a validation study of ELTS was carried out, culminating in a formal seminar in October 1986, where the main findings were presented. The report on the validation study (Criper & Davies, 1988) recommended serious revision which in due course led to the development of IELTS (p. 140).

IELTS has the same role in the UK and Australia as TOFEL does in the United States and Canada and it is as important as TOFEL in making academic decisions.

In this study, the reading comprehension section of the 2015 academic IELTS test was chosen. It consisted of three reading comprehension passages, and forty different items. Subjects were given complete and clear instructions as what to do. Also, for better understanding, the cover page of the test was copied and handed out to subjects so as to be absolutely clear about what they needed to do.

3.2.1.1. The IELTS reading Test

In the IELTS, reading is tested quite separately from linguistic competence (which is not explicitly tested). The test is based on some analysis of target language use situations (in

particular the work of Munby, 1987, and Weir, 1983), and texts are intended to reflect in general terms what academic readers are expected to do:

Texts are taken from magazines, journals, books, and newspapers. Texts have been written for a non-specialist audience. All the topics are of general interest. They deal with issues which are interesting, recognizably appropriate and accessible to candidates entering postgraduate or undergraduate courses. At least one text contains detailed logical argument (IELTS Handbook, 1996. p. 6, as cited in Alderson).

The test, according to Alderson (2000), "...seeks to sample candidates' ability to perform a number of tasks, although it is not implied that these can be tested in isolation or independently of each other" (p. 131). Such abilities amount to the construct that at least the original version of IELTS attempted to measure:

- Identifying structure, content, sequence of events and procedures.
- Following instructions.
- Finding main ideas which the writer has attempted to make salient.
- Identifying the underlying theme or concept.
- Identifying ideas in the text, and relationships between them, e.g. probabilities, solution, cause, effect.
- Identifying, distinguishing and comparing facts, evidence, opinions, implications, definitions and hypotheses.
- Evaluating and challenging evidence.
- Formulating a hypothesis from underlying theme, concept and evidence.
- Reaching a conclusion by relating supporting evidence to the main idea.
- Drawing logical inferences (IELTS Specifications, 1989, as cited in Alderson, 2000).

3.2.2. The Watson and Glaser Critical Thinking Appraisal

Watson–Glaser Critical Thinking Appraisal (WGCTA) measures critical thinking using broad, nonspecific terms in five subsets:

- 1. Inference: discriminating among degrees of truth or falsity of inferences drawn from given data.
- 2. Recognition of assumptions: recognizing unstated assumptions or presuppositions in given statements or assertions.
- 3. Deduction: determining whether certain conclusions necessarily follow from information in given statements or premises.
- 4. Interpretation: weighing evidence and deciding if generalizations or conclusions based on the given data are warranted.

5. Evaluation of arguments: distinguishing between arguments that are strong and relevant and those that are weak or irrelevant to a particular question at issue (Worrell & Profetto-McGrath, 2007).

This test defines critical thinking as a composite of attitudes, knowledge, and skills (Suliman & Halabi, 2007). This test is an intellectually challenging tool for addressing critical thinkers' cognitive ability. According to Watson and Glaser (1980), the five subscales of the WGCTA are "each designed to tap a somewhat different aspect" of critical thinking skills (as cited in Bernard et al., 2007, p. 1).

There are four standardized versions and one experimental edition of the Watson–Glaser measure. The latest, the WGCTA, was revised in 1994. The number of items varies across versions but the subscales and their descriptions have remained consistent over time.

The test requires consideration of a series of propositions to evaluate how appropriate or valid they are. Candidates respond to both 'neutral' and 'controversial' items. The controversial items are designed to arouse attitudes, opinions and biases that can interfere with the ability to think critically and refer to political, economic, and social issues which frequently provoke strong feelings (Occupational Assessment Catalog, 2007, p. 9).

The version used in this study is the Form A of the WGCTA which was standardized and applied in 1980 by The Psychological Corporation in the Unites states of America. The test was fully explained to the test takers before its administration.

In the present study, the Persian version of the *Watson-Glaser* test was applied. According to Mohammadyari (2002), this test and its subcomponents do have reliability and validity in Iranian culture. To analyze the reliability of the questionnaire, she employed split-half reliability estimate. Moreover, with the adapted version in Iran, the reliability was found to be 0.98 and the results of the factor analysis offered some support for the inventory hypothesized structure (Mohammadyari, 2002).

Due to the nature of this study –correlation– and the fact that different proficiency levels are preferred in correlational studies, the researcher decided to employ the Persian format of Form A of the WGCTA so as not to add to the challenging nature of the test and to make participants engage merely in the critical thinking test rather than dealing with the English language which was the original language.

In this study, the inference making and evaluation of arguments are the two subtests that will be used.

Table 1: The Subtests of the Watson and Glaser Critical Thinking Appraisal				
Subtest	Definition	Items		
Inference-making	Discriminating among degrees of truth or falsity of inference drawn from given data	1-16		
Evaluation of	Distinguishing between arguments that are strong and relevant and those	63-80		
arguments	that are weak or relevant to a particular question at issue			

3.3 Data Collection

The study was conducted in several Private Language Institutes in Mashhad, a city in the north east of Iran in 2016. The institutes were selected based on credibility and feasibility criteria. The participants were asked to complete the *inference* and *evaluation* of arguments scales of the Watson-Glaser Critical Thinking Appraisal and take the reading section of IELTS test. The questionnaires were coded numerically and they were asked not to write their names. As an incentive, the participants were given the opportunity to receive feedback about their performance on the instruments by presenting their codes.

3.4. Data Analysis

To ensure the normality of the distribution, descriptive statistics and KS- test were employed. To determine the relationship between IELTS candidates' critical thinking and their achievement in academic reading comprehension, a Pearson product-moment correlation was applied to the data. To find out which components of critical thinking might have more predictive power in predicting candidates' reading score, a multiple regression analysis was run. To explore what percentage of variability in IELTS candidates can be explained by taking their critical thinking into account, the standard multiple regressions were run.

4. Results

4.1 Descriptive statistics

To check the normality of data distribution, the Kolmogorov-Smirnov test was employed. This test is used to check whether the distribution deviates from a comparable normal distribution. If the *p*-value is non-significant (*p*>.05), we can say that the distribution of a sample is not significantly different from a normal distribution, therefore it is normal. It the *p*-value is significant (p<.05) it implies that the distribution is not normal. Table 2 presents the results of the Kolmogorov-Smirnov test. As it can be seen, the obtained sig value for all variables (CT components and IELTS Reading Scores) is higher than .05. Therefore, it can safely be concluded that the data is normally distributed across all three variables.

	Kolmo	Kolmogorov-Smirnov			
	Statistic	df	Sig.		
CT components	.976	107	.052		
IELTS reading	.965	107	.096		

Table 2: The Results of K-S Test for CT Components and IELTS Reading Scores

Table 3 presents descriptive statistics of EFL learners' inference-making and evaluation of arguments as manifestations of critical thinking as follows: inference-making (M=5.2150, SD=1.69984), and evaluation of arguments (M=9.7196, SD=2.05488).

	Ν	Minimum	Maximum	Mean	Std. Deviation	
Inference-making	107	1.00	11.00	5.2150	1.69984	
Evaluation of arguments	107	4.00	14.00	9.7196	2.05488	
Valid N (listwise)	107					

Table 3: Descriptive Statistics of Inference-making and evaluation of arguments

Descriptive statistics of IELTS reading scores are represented in Table 4. As the table reveals, the minimum score is 8, the maximum is 34, and the mean is 21.23.

N		Minimum	Maximum	Mean	Std. Deviation
IELTS	107	8.00	34.00	21.2336	5.89864
Valid N (listwise)	107				

Table 4: Descriptive Statistics of IELTS Reading Scores

To investigate the relationship between inference-making, evaluation of arguments, and IELTS reading, multiple Pearson Product-Moment correlations were applied to the data. Table 5 indicates the results.

Table 5: The Correlation Coefficients between Inference-Making,				
Evaluation of Arguments, and IELTS Reading				
	IELTS Reading			
Inference-making	.341**			
Evaluation of arguments	.304**			

**Correlation is significant at the level of 0.05

According to Table 5, there is a significant correlation between inference-making and IELTS (r = 0.341, p < 0.05), evaluation of arguments and IELTS (r = 0.304, p < 0.05). So, as it can be seen, the correlation between inference-making and IELTS reading scores is slightly higher than the correlation of between evaluation of arguments and IELTS.

To explore what percentage of variability in EFL learners' scores of IELTS reading module achievement can be accounted for by their scores in variables under study, a multiple regression analysis was conducted.

The following Table (Table 6) is the ANOVA Table of regression for inferencemaking and evaluation of arguments in predicting IELTS achievement. In this analysis, IELTS score is THE dependent variable and inference-making and evaluation of arguments are considered as THE independent variables.

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	429.506	2	214.753	6.854	.002 ^b
Residual	3258.653	104	31.333		
Total	3688.159	106			

Table 6: The ANOVA Table of Regression for the Variables under Study

a. Dependent Variable: IRS

b. Predictors: (Constant), evaluation, inference

As Table 6 shows, the two variables are positive predictors of the dependent variable, i.e., IELTS reading. This can be figured out by examining the magnitude of the F value (which should be higher than the critical level) and the *p*-value (which should be less than the significance level, i.e., 0.05).

Table 7 illustrates the model summary statistics. The results revealed that the model containing the two variables (inference-making and evaluation of arguments) can predict about 10 percent of IELTS reading achievement. The R value is 0.341 which indicates the correlation coefficient between the variables. Its square value is 0.116 and

its adjusted square is 0.099. It indicates that about 10 of the variation in IELTS achievement can be explained by taking the above-mentioned variables into account.

evaluation of arguments in IELTS								
				Std.	Error	of	the	
Model	R	R Square	Adjusted R Square	Estimate				
1	.341ª	.116	.099	5.59761				

Table 7: R Square Table for the Role of inference-making and

a. Predictors: (Constant), evaluation, inference

5. Discussion

The primary concern of this study was to examine whether there is a relationship between Iranian EFL students' components of CT ability, in particular inference-making and evaluation of arguments, and their achievement in academic IELTS reading comprehension. Furthermore, this study tried to unlace extent to which students' performance on CT test could predict their success in IELTS reading comprehension section.

Considering our first research question which asked whether there is any relationship between IELTS candidates' inference making and their achievement in academic IELTS reading, the result of the present study revealed that there was a significant relationship between these variables.

Many scholars claim that inference is central to reading comprehension (McIntosh, 1985; Farr, Carey & Tone, 1986). Getting meaning out of even the simplest texts depend on inferencing. As a text is read, information that is relevant to the written message is activated in long-term memory. "When information that was not explicitly stated in the text is activated, an *inference* is made." (George, Mannes, & Hoffman, 1997, p. 776).

This finding suggests that students exhibiting a higher level of inference-making, and evaluation of arguments, can logically have better achievements in reading comprehension section of IELTS test. In other words, it can be concluded that teaching critical thinking techniques can significantly promote IELTS reading performance of EFL learners.

In the same line with this study, Long, Oppy, and Seely (1994) argued that if readers are unable to generate inferences relevant world knowledge, they feel as though they do not comprehend the text and have difficulty remembering it. In a similar vein, some practitioners of reading, among them Harvey and Goudvis (2000), Tovani (2000) and Beers (2003), have stressed the paramount importance of teaching reading strategies to improve reading comprehension; needless to mention one of the essential reading strategies is inferencing. Being competent in drawing inferences is crucial in the comprehension of text (Caine & Oakhill 1999). Similarly, less skilled readers make fewer inferences than their skilled counterparts (e.g., Long, Oppy, & Seely 1997; Oakhill 1982, 1984).

Elder and Paul (2002) proposed that we can help students reflect upon their daily inferences and assumptions that lead to better appraisal of the events. As they become adept in identifying their inferences and assumptions, they are in a better position to question the extent to which any of their assumptions are justified (Elder & Paul, 2002)

The researchers' second question aimed at investigating the relationship between EFL learners' evaluation of arguments and their achievements in academic IELTS reading test demonstrated a significant relationship between the variables in question.

Critical thinking can be defined as the systematic evaluation or formulation of beliefs, or statements by rational standards (Vaughn, 2008). Given the extortionate rate at which massive amounts of information, arguments and counter-arguments, beliefs and interpretations are put forth, the development and exploitation of such rational standards seems to be the only path to achieving a hard core around which to shape one's own thinking and reasoning. As such, critical thinking is the ability essential for successful performance in not only educational but also professional and social contexts. Perry (1999) and Brookfield (1987) asserted the critical evaluation of ideas, arguments, and points of view are important for the development of students as autonomous thinkers.

The third research question enquired the predictive power of these two CT – associated components in IELTS reading. By conducting a statistical regression analysis, the researchers came to this conclusion that the participants' total score of these variables is a positive predictor of IELTS reading. The result of the regression analysis showed that the model containing the total score of inference making and evaluation of arguments can predict about 10% of the learners' success in IELTS reading section.

Leafing through the existing literature on critical thinking, one can reasonably infer that there is a close association between critical thinking and students' reading achievement. Since inference-making and evaluation of arguments are two subcomponents of critical thinking, we can reasonably infer that each of them play a part in influencing critical thinking ability. On the other hand, this study is unique in its own in that it exclusively investigated the correlation of the two subcomponents of critical thinking with IELTS reading skills, while to the researchers' best knowledge there is hardly any documented study with the same purpose.

The findings of this study are in line with Kamali and Fahim's (2011) research which showed that there is a positive correlation between learners' CT ability and their performances on reading texts containing unfamiliar items. Also, Miller (1981) concluded in his study that students' gain in CT achievement was closely related to their reading proficiency achievement. Another study conducted by Sheikhi (2009) which attempted to investigate the relationship between autonomy, CT and reading comprehension of Iranian EFL learners revealed a positive correlation between CT and reading comprehension. Finally, Bagheri and Ghanizadeh (2016) and Boloori (2010) reported a positive correlation between CT and inferential reading comprehension.

It was also found that among the variables, inference making is a more powerful predictor of IELTS reading achievement. Previous research has shown that students with comprehension difficulties are poor at inference making (e.g., Cain & Oakhill, 1999; Oakhill, 1982, 1984). Cain and Oakhill (1999) noted that poor comprehenders cannot reach to a comprehensive representation of the text; they are often able to integrate information at a local level but are unable to produce a coherent integrated model of the text as a whole.

Inference making is regarded as a central component of skilled reading (e.g., Garnham & Oakhill, 1996; Singer, 1994; van den Broek, 1994). Although less skilled readers are capable of inferential processing, they do not generate as many inferences as more skilled readers do (e.g., Casteel & Simpson, 1991; Long, Oppy, & Seely, 1997; Oakhill, 1982, 1984; Omanson, Warren, & Trabasso, 1978; Paris & Lindauer, 1976; Paris & Upton, 1976).

In essence, the findings of this study have some implications for EFL teachers, educators and administrators to establish successful paths for developing programs and activities that foster inference-making and evaluation of arguments among EFL students. Teachers, in particular EFL teachers, are suggested to develop and employ critical thinking abilities in the context of their classroom by encouraging thinking, reinforcing inference-making, using problem-based learning, providing feedback, etc.

References

1. Afflerbach, P., Pearson, P. D., & Paris, S. G. (2008). Clarifying differences between reading skills and reading strategies. *The Reading Teacher*, *61*, 364-373.

- Ahmadi, M. R., & Hairul, N. I. (2012). Reciprocal teaching as an important factor of improving reading comprehension. *Journal of Studies in Education*, 2(4), 153-173.
- 3. Akyuz, H. I., & Samsa, S. (2009). The effects of blended learning environment on the critical thinking skills of students. *Procedia Social and Behavioral Sciences*, *1*, 1744-1748.
- 4. Alderson, J.C. (2000). Technology in testing: the present and the future. *System* 28, 593-603
- 5. Bagheri, F., & Ghanizadeh, A. (2016). Critical Thinking and Gender Differences in Academic Self-regulation in Higher Education. *Journal of Applied Linguistics and Language Research*, 3(3), 133-145.
- 6. Beck, I. L. (1989). Reading and reasoning. The Reading Teacher, 42, 676–682.
- Bernard, R. M., & Zhang, D., & Abrami, P. C. (2007). Exploring the structure of the Watson–Glaser Critical Thinking Appraisal: One scale or many subscales? *Thinking Skills and Creativity*, 18, 124.
- 8. Beers, K. (2003). *When kids can't read: What teachers can do*: Heinemann Portsmouth, NH.
- Berber, F., Akbulut, F., Maden, H., Gezer, M., & Keser, S. (2002). Düsünme ve elestirel düsünme (Thinking and critical thinking). Retrieved May 2014 from: <u>http://www.sevketkeser.net/docs/alldoc/dusunmeveelestireldusunme.pdf</u>.
- 10. Boloori, L. (2010). The relationship between critical thinking and performance of Iranian *EFL learners on the inferential reading comprehension test*. Unpublished master's thesis, Azad University of Takestan, Iran.
- 11. Brookfield, S. D. (1987). *Developing critical thinkers. Milton Keynes:* Open University Press: Buckingham.
- 12. Cain, K., & Oakhill, J. V. (1999). Inference making ability and its relation to comprehension failure in young children. *Reading and writing*, *11*(5-6), 489-503.
- 13. Casteel, M. A., & Simpson, G. B. (1991). Textual coherence and the development of inferential generation skills. *Journal of Research in Reading*, 14, 116-129.
- 14. Chastain, K. (1988). *Developing second language skills: theory to practice* (3rd ed.). New York: Harcourt Brace Jovanovich Publisher.
- 15. Collins, N.D. (1993). Teaching critical reading through Literature. *ERIC Digest*, *4*, 1-5.
- 16. Connolly, M. (2000). What we think we know about critical thinking. *CELE Journal*, *8*, 120-134.
- 17. Cook, J.E., (1991). Critical Reading? How? Why? Teaching PreK-8. 21(6), 23-24

- 18. Criper, C., & Davies, A. (1988). *ELTS validation project report*. University of Cambridge, Local Examinations Syndicate.
- 19. Davidson, B. (1998). A case for critical thinking in the English language classroom. *TESOL Quarterly*, 32, 119-123.
- 20. Davidson, B., & Dunham, R. (1997). Assessing EFL student progress in critical thinking with the Ennis-Weir Critical Thinking Essay Test. *JALT Journal*, 19 (1), 43-57.
- 21. Descartes, R., & De Spinoza, B. (1961). *Rules for the direction of the mind*. Indianapolis: Bobbs-Merrill.
- 22. Dewey, J. (1933). How we think. Prometheus Books, New York.
- 23. Edwards, S. (2007). Critical thinking: a two phase framework. *Nurse Education in Practice*, 7(5), 303-314.
- 24. Enright, M, Grabe, W, Koda, K, Mosenthal, P, Mulcany-Ernt, P., & Schedl, M, (2000). *TOEFL 2000 reading framework: A working paper*, TOEFL Monograph Series 17 ETS, Princeton
- 25. Farr, R., Carrey, R., & Tone, B. (1986) Recent Theory and Research into the Reading Process: Implication for Reading Assessment. In J. Orasanu (Ed.) *Reading Comprehension: From Research to Practice.* Hillsdale, New Jersey: Lawrence Erbium Associates.
- 26. Elder, L., & Paul, R. (2002). Critical thinking: distinguishing between inferences and assumptions. *Journal of Developmental Education*, 25(3), 34-37.
- 27. Ertmer, P.A., & Newby, T.J. (1996). The expert learner: Strategic, self-regulated, and reflective. *Instructional Science*, 24, 1-24.
- Hillsdale, N.J., Erlbaum. Graesser, A. C., Singer, M., & Trabasso, T. (1994). Constructing infer- ences during narrative text comprehension. *Psychological Review*, 101, 371-395.
- 29. Horng, J., Hong, J., Chanlin, L., Chang, S., & Chu, H. 2007. Creative teachers and creative teaching strategies. *International Journal of Consumer Studies*, 29(4), 352-358.
- 30. Garnham, A., & Oakhill, J. V. (1996). *The mental models theory of language comprehension*. In B. K. Britton & A. C. Graesser (Eds.), Models of understanding text (pp. 313-339).
- 31. Ghanizadeh, A. (2011). An investigation into the relationship between selfregulation and critical thinking among Iranian EFL teachers. *The Journal of Technology & Education*, 5(3), 213–221.

- 32. Ghanizadeh, A. (2016). The interplay between reflective thinking, critical thinking, self-monitoring, and academic achievement in higher education. *Higher Education*, DOI 10.1007/s10734-016-0031-y
- 33. Ghanizadeh, A., & Mirzaee, S. (2012). *Critical thinking: How to enhance it in language classes.* Germany: LAP.
- 34. Ghanizadeh, A., & Moafian, F. (2011). Critical thinking and emotional intelligence: investigating the relationship among EFL learners and the contribution of age and gender. *Iranian Journal of Applied Linguistics (IJAL), 14* (1), 23-48.
- 35. Grimmett, P. (1988). The nature of reflection and Schon's conception in perspective. In P.Grimmett, & G. Erikson (Eds.). Reflection in teacher education. NY: Teachers College Press.
- 36. Halpern, D. F. (2003). *Thought and knowledge: An introduction to critical thinking*. Mahwah, NJ: Erlbaum
- 37. Hashemi, M. R., & Ghanizadeh, A. (2012). Critical discourse analysis and critical thinking: An experimental study in an EFL context. *System*, 40(1), 37–47.
- 38. Johnston, P. H. (1983). *Reading comprehension assessment: A cognitive basis*. New Jersey: I. R. A.
- 39. Khabiri, M., & Pakzad, M. (2012). The Effect of Teaching Critical Reading Strategies on EFL Learners' Vocabulary Retention. *The Journal of Teaching Language Skills (JTLS)*, 4 (1), Ser. 66/4.
- 40. Kamali, Z., & Fahim, M. (2011). The relationship between critical thinking ability of Iranian EFL learners and their resilience level facing unfamiliar vocabulary items in reading. *Journal of Language Teaching and Research*, 2(1), 104-111.
- 41. Ku, K. Y. (2009). Assessing students' critical thinking performance: Urging for measurements using multi-response format. *Thinking Skills and Creativity*, 4(1), 70-76
- 42. Kuhn, D. (1992). Thinking as argument. Harvard Education Review, 62 (2), 155-178.
- 43. Kuhn, D., & Dean, D. (2004). Metacognition: a bridge between cognitive psychology and educational practice. *Theory into Practice*, 43(4), 268–274.
- 44. Long, D. L., Oppy, B. J., & Seely, M. R. (1997). Individual differences in readers' sentence-and text-level representations. *Journal of Memory and Language*, 36(1), 129-145.
- 45. McIntosh, E (1985) What Do Practitioners Need to Know about Current Inference Research? *The Reading Teacher*, *38*, *8*, 755-760.
- 46. Maclellan, E, (1997). Reading to learn. Studies in Higher Education, 22, 277-288.

- 47. Meneghetti, C., Carretti, B., & De Beni, R. (2006). Components of reading comprehension and scholastic achievement. *Learning and Individual Differences*, *16*, 291-301
- 48. Miller, S. (1981). *The impact of a program of critical thinking on reading comprehension remediation and critical thinking of middle and high school students*. Unpublished PhD. Dissertation. United states International University.
- 49. Mohammadyari, A. (2002). *The relationship between critical thinking and change management of the heads of the educational departments in Ferdowsi University of Mashhad*. Unpublished master's thesis, Ferdowsi University, Mashhad, Iran.
- 50. Moon, J. (2008). *Critical thinking: An exploration of theory and practice*. UK: Library of Congress.
- 51. Moon, J. (1999a). *Reflection in learning & professional development: Theory & practice.* London: Kogan Page.
- 52. Moon, J. (1999b). *Learning Journals: A hand book for academic, students and professional development*. London: Kogan Pag
- 53. Munby, J. (1978). *Communicative syllabus design*. Cambridge University Press: Cambridge.
- 54. Oakhill, J. (1982). Constructive processes in skilled and less skilled comprehenders' memory for sentences. *British Journal of Psychology*, 73(1), 13-20.
- 55. Oakhill, J. V. (1984). Inferential and memory skills in children's comprehension of stories. *British Journal of Educational Psychology*, 54, 31-39.
- Oakhill, J. V. (1996). *Mental models in children's text comprehension*. In J. V. Oakhill & A. Garnham (Eds.), Mental models in cognitive science: Essays in honour of Phil Johnson-Laird (pp. 77-94). Hove, U.K.: Psychology Press.
- 57. Omanson, R. C., Warren, W. M., & Trabasso, T. (1978). Goals, inferential comprehension and recall of stories by children. *Discourse Processes*, *1*, 337-354.
- 58. Paul, R. W. (1985). *The Critical-Thinking Movement*. Paper presented at the National Forum: Phi Kappa Phi Journal.
- 59. Paul, R., & Elder, L. (2001). *The miniature guide to critical thinking: Concept and tools*. Dillon Beach, CA: The Foundation for Critical Thinking.
- 60. Paris, S. G., & Lindauer, B. K. (1976). The role of inference in children's comprehension and memory for sentences. *Cognitive Psychology*, *8*, 217-227.
- 61. Paris, S. G., & Upton, L. R. (1976). Children's memory for inferential relations in prose. *Child Development*, 47, 660-668.
- Paris, S., Wasik, B. A., & Turner, J. C. (1991). *The development of strategic readers*. In R. Barr, M. L. Kamil, P. B. Mosenthal, & D. Pearson (Eds.), Handbook of Reading Research (vol. 2, pp. 609-640). Mahwah, NJ: Lawrence Erlbaum.

- 63. Paul, R. (1996). Critical thinking and the state of education today. *Inquiry: Critical Thinking Across the Disciplines*, *16*(2), 12-34.
- 64. Perfetti, C., & Hogaboam, T. (1975). Relationship between single word decoding and reading comprehension skill. *Journal of Educational Psychology*, 67, 461-469.
- 65. Perry, J. (1999). Forms of Intellectual and Ethical Development in the College Years: A Scheme. Jossey-Bass Higher and Adult Education Series. Jossey-Bass Publishers, 350 Sansome St., San Francisco, CA 94104.
- 66. Renner, C. E. (1996). Enrich learners' language production through content-based instruction. Paper presented at the a National Conference on Lingua e Nuova Didattica, Modena, Italy.(ERIC Document Reproduction Service No. ED 411 694).
- 67. Rodgers, C. (2002). Defining Reflection; Another look at John Dewey and reflective thinking. *Teachers College Record*, 104(4), 842-866.
- Rumelhart, D. E. (1994). *Toward an interactive model of reading*. In R. Rudell, M. R. Rudell, & H. Singer (Eds.), Theoretical models and processes of reading (4th ed.) (pp. 864-894). Newark, DA: International Reading Association.
- 69. Seferoglu S., & Akbıyık, C. (2006). Critical thinking and education. *H.U. Journal of Education*, 30(3), 193-200.
- 70. Shang, H. F. (2011). Exploring the relationship between EFL proficiency level and reading strategy use. *Journal of Language Teaching and Research*, 2(1), 18-27.
- 71. Singer, M. (1994). *Discourse inference processes*. In M. A. Gernsbacher (Ed.), Handbook of psycholinguistics (pp. 479-515). San Diego: Aca- demic Press.
- 72. Singhal, M. (2001). Reading proficiency, reading strategies, metacognitive awareness and L2 readers. *The Reading Matrix*, 1(1), 1-22.
- 73. Sheikhi, B. R. (2009). *The relationship between autonomy, critical thinking and reading comprehension of Iranian EFL learners*. Unpublished master's thesis, Azad University of Science and Research, Tehran, Iran.
- 74. St. George, M., Mannes, S., & Hoffman, J. E. (1997). Individual differences in inference generation: An ERP analysis. *Journal of Cognitive Neuroscience*, 9(6), 776-787.
- 75. Suliman, W. A., & Halabi, J. (2007). Critical thinking, self-esteem, and state anxiety of nursing students. *Nurse Education Today*, 27(2), 162-168.
- 76. Sweet, A. P., & Snow, C. (2002). *Reconceptualizing reading comprehension*. In C. C. Block, L. B. Gambrell, & M. Pressley (Eds.), Improving comprehension instruction (pp. 17-53). San Francisco, CA: Jossey-Bass.
- 77. Tovani, C. (2000). I read it, but I don't get it: Comprehension strategies for adolescent readers: Stenhouse Publishers.

- 78. van den Broek, P. (1994). Comprehension and memory of narrative texts: Inferences and coherence. In M. A. Gernsbacher (Ed.), Handbook of psycholinguistics (pp. 539-588). San Diego: Academic Press.
- 79. Vaughn, L. (2008). The power of critical thinking: Effective reasoning about ordinary and extraordinary claims (2nd ed.).Oxford: Oxford University Press.
- 80. Waters, A. (2006). Thinking and language learning. ELT Journal, 60 (4), 237-319.
- 81. Watson, G., & Glaser. E. (2002). *Watson-Glaser Critical Thinking Appraisal*. UK Edition: Practice Test. Psychological Corporation.
- 82. Weir, C.J. (1983). *Identifying the language needs of overseas students in tertiary education in the United Kingdom*. PhD thesis, Institute of Education, University of London
- Worrell, J. A., & Profetto-Mcgrath, J. (2007). Critical thinking as an outcome of context-based learning among post RN students: A literature review. *Nurse Education Today*, 27(5), 420-426. <u>http://dx.doi.org/10.1016/j.nedt.2006.07.004</u>
- 84. Zhang, Z. (1993). Literature review on reading strategy research. Paper presented at the Annual Meeting of the Mid-South Educational Research Association, New Orleans, LA, November 10-12, 1993.

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