

Critical Thinking and Reading Comprehension among Postgraduate Students: The Case of Gender and Language Proficiency Level

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Abstract—Critical thinking is believed to have significant contributions to learners' academic context in the era of technology and explosion of information (Kealey, Holland & Watson, 2005; Oliver & Utermohlen, 1995; Yeh, 2004). The need to think critically is felt more prominently for the postgraduate students with their intense exposure to more readings. This paper aims at probing the role of critical thinking skills in EFL learners' reading comprehension. In so doing, four hundred and forty-three male and female Iranian EFL postgraduate students in the fields of translation studies and English language teaching at Islamic Azad University, South Tehran and Science and Research branches participated in this study were selected. These students were selected based on their general English proficiency score in MA entrance examination in Iran. Considering the normal distribution of the subjects' scores, we chose those scores one standard deviation above and below the mean to be in the sample of the study. Consequently, four hundred and forty-three of them were patterned as homogenous and selected for the purpose of this research. Watson-Glaser critical thinking questionnaire and Longman's TOEFL were used to collect data. The Pearson Correlation Coefficient was run to analyze the data. The findings of present study demonstrated that there was a significant relationship between critical thinking and reading comprehension. Also, gender and level of proficiency could not make a statistically significant difference in this respect.

Index Terms—critical thinking, reading comprehension, gender, language proficiency, postgraduate students

I. INTRODUCTION

In a brief history of the idea of critical thinking, Paul, Elder, and Bartell (1997) maintained that the genesis of the concept dates back to the pedagogical perspectives of Socrates 2500 years ago when he “discovered by a method of probing questioning that people could not rationally justify their confident claims to knowledge.... Socrates established the importance of asking deep questions that probe profoundly into thinking before we accept ideas as worthy of belief” (p. 2). Paul, Elder and Bartell (1997) asserted that the present concept of critical thinking in pedagogy is the equivalence of “Socratic Questioning”. This disciplined and systematic method of questioning is used to quest after thought in various purposes “to explore complex ideas, to get to the truth of things, to open up issues and problems, to uncover assumption, to analyze concept, to distinguish what we know from what we don't know, and to follow out logical implications of thought” (p. 2). The concept of critical thinking was also followed by other Greek thinkers like Plato and Aristotle with the emphasis on the core idea that “only the trained mind is prepared to see through the way things look to us on the surface to the way they really are beneath the surface” (p. 3).

In recent years the concept of critical thinking has been widely dealt with in education. In the 8th Annual International Conference on Critical Thinking and Education Reform, Scriven and Paul (as cited in Condon & Kelly-Riley, 2004, p. 64) defined critical thinking as “the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by observation, experience, reflection, reasoning, or communication as a rubric to belief and action”. Critical thinking, according to Scriven and Paul, “entails the examination of those structures or elements of thought implicit in all reasoning: purpose, problem, or question-at-issue, assumptions, concepts, empirical grounding; reasoning leading to conclusions, implications and consequences, objections from alternative viewpoints, and frame of reference” (as cited in Condon & Kelly-Riley, 2004, p. 64). Halpern (2014) also defined critical thinking as “the use of those cognitive skills or strategies that increase the probability of a desirable outcome” (p. 54). It is purposeful, reasonable, and goal directed. Yeh and Chen (2005) put forth “that to produce a critical thinker, dispositions toward critical thinking and cognitive skills of critical thinking must be thought and nurtured as early as possible” (p. 334). Dispositions toward critical thinking have been proved to be highly correlated with the use of critical thinking skills. The critical thinking skills are (1) reasoning, (2) comprehension, application, analysis, and synthesis, (3) interpretation, (4) judgment, and (5) evaluation. Adopting a cognitive perspective to critical thing and in an attempt to revise Bloom's taxonomy of educational objectives,

Krathwohl (2002) divided the cognitive domain into two dimensions: the knowledge dimension comprising of factual, conceptual, procedural, and metacognitive knowledge and the Cognitive Process dimension comprising of remembering, understanding, applying, analyzing, evaluating, and creating.

Underlying the core purpose of critical thinkers, Paul and Elder (2002) stated that they “perceive explicit command of the thinking process as the key to command of behavior” (p. 122). They further applied the implications in learning process and claimed that critical thinkers:

see reading, writing, speaking, and listening as modes of skilled thinking. When they read, they see the text as a verbal representation of the thinking of the author. They strive to enter the writer’s point of view. They strive to reconstruct the author’s thinking in their own mind. (p. 122)

Today, there is no doubt how language and thought are related. Language is used to represent thought in any individual’s mind. This can be investigated in skills where the major concern is comprehension such as reading and listening comprehension. Reading comprehension, as Nunan (1999) claimed, is not, unlike speaking skill, a skill every one learns to do. Elder and Paul (2004) pointed out that “to learn well, one must read well” (p. 37). Regarding reading comprehension skill as a basic skill in language learning, Chastain (1988) L2 “learners need to learn to read for communication and to read ... more easily than they can acquire any other skill, and they can use reading materials as a primary source of comprehensible input as they learn the language” (p. 216).

As Paris and Jacobs (1984) stated, “skilled readers often engage in deliberate activities that require helpful thinking, flexible strategies, and periodic self-monitoring... [while] novice readers often seem oblivious to these strategies and the need to use them” (p. 2083). Bowen, Madsen, and Hilferty (1985, p. 243) analyzed that reading critically presupposes basic skills in understanding and interpreting meaning: 1) Understanding meanings, 2) Paraphrasing the content, 3) Getting the main thought and the details, 4) Distinguishing among fact, inference, and opinion, 5) Seeing relationships, 6) Predicting outcomes, 7) Drawing conclusions, 8) Making generalizations, 9) Understanding figurative language, and 10) Recognizing propaganda.

If critical thinking is necessary for any student, it is a must for a university student. Paul (1990) found it a problem with university students’ reading comprehension skill when “they cannot identify the evidence an author needs to justify the implications that follow from what the author said” (p. 50). In an attempt to ameliorate the lack of this academic cognitive skill, he maintained that instead of approaching “written material as a collection of sentences,” a university student should try out “various interpretations until one fits all of the work, rather than ignoring or distorting statements that don’t fit their interpretation” (p. 335). Among university students, the critical thinking skills are not restricted to looking for the main idea or criticizing it, or even accepting the contents you are reading but, according to Paul and Elder (2014), entails developing the map of knowledge and reading to understand systems of thought. They asserted that “knowledge exists in systems of meanings with interrelated primary ideas, secondary ideas, and peripheral ideas” (p. 2). Having gained the understanding of these layers of ideas, the reader could think within the system. Besides, through “taking command of the structures that are the basis of all thought”, the reader can identify the purpose of the academic text “actively engaging a dialogue with the writer” (p. 18) and evaluating it.

Reading comprehension, besides its role as a language-based skill (Frost, 1998; Vellutino, Fletcher, Snowling & Scanlon, 2004), is considered to be a cognitive process (Ehri, 1995). Guo (2008) claimed that reading comprehension skill is a cognitive enterprise that involves the interaction of reader, text, and activity (Snow & Sweet, 2001). Also, underlining the psychometric process in reading comprehension skill, Sheorey and Mokhtari (2001) asserted that “reading is not a linear process but one in which readers constantly form hypotheses, test predictions, and use their knowledge of the world and of the language to construct meaning” (p. 432). On the same token, as Paris and Jacobs (1984) stated, “skilled readers often engage in deliberate activities that require helpful thinking, flexible strategies, and periodic self-monitoring... [while] novice readers often seem oblivious to these strategies and the need to use them” (p. 2083). Bowen, Madsen, and Hilferty (1985, p. 243) also analyzed that reading critically presupposes basic skills in understanding and interpreting meaning: 1) Understanding meanings, 2) Paraphrasing the content, 3) Getting the main thought and the details, 4) Distinguishing among fact, inference, and opinion, 5) Seeing relationships, 6) Predicting outcomes, 7) Drawing conclusions, 8) Making generalizations, 9) Understanding figurative language, and 10) Recognizing propaganda.

Aside from the theory-wise studies, there are a few studies with practical orientation. A few correlational studies supported the relationship between critical thinking ability and reading comprehension skills (e.g., Bakhshipour Khodaie, 2012; Eftekhary & Besharati Kalayeh, 2014; Fahim, Bagherkazemi, & Alemi, 2010; Hassani, Rahmany, & Babaei, 2013; Hawkins, 2012; Heydari, 2011) or reading strategies used by students (e.g., Nourmohammadi, Heidari, & Dehghan Niray, 2012). The studies investigating gender difference regarding the correlation between critical thinking ability and reading comprehension skill reported no significant difference (e.g., Eftekhary & Besharati Kalayeh, 2014; Hawkins, 2012; Heydari, 2011) except few (e.g., Nourmohammadi, Heidari, & Dehghan Niray, 2012) which claimed that male outperformed female in this regard. The majority of the studies investigated school children and only few (Bakhshipour Khodaie, 2012; Hawkins, 2012) had selected participants from university who were all undergraduate students.

One of the major problems in the Iranian context is that the educational system in general and the tertiary level in specific is still enchanted with the traditional mindset where the primacy of rote learning is clearly observed.

Consequently, according to Fahim and Ahmadian (2012), developing students' evaluative and reflective skills are not well-regarded. Moreover, as Jalilifar (2010) pointed out, "despite the growing interest in learning English as a foreign language in Iran, students at college level seem rarely proficient enough to read and comprehend English language texts" (p. 98). Despite the results of Iranian learners, the role of critical thinking skills in fostering basic academic language skills such as reading and writing requires due attention.

To this end, the present study aimed at investigating the relationship between the critical thinking skills and reading comprehension among postgraduate university students. The role of gender and language proficiency were also considered for any possible difference among them.

Concerning the objectives of the study, following research questions were propounded:

1. Is there any statistically significant relationship between critical thinking ability of EFL learners and their performance on reading comprehension?
2. Is there any significant difference between males and females regarding the relationship between critical thinking and reading comprehension skill?
3. Is there any significant difference between students with high, mid, and low language proficiency regarding the relationship between critical thinking and reading comprehension skill?

II. METHODOLOGY

A. Participants

Six hundred and thirty MA graduate students in translation studies and English language teaching at Islamic Azad University, South Tehran and Science and Research branches participated in this study. As the first step, these students who were from both sexes were selected based on their general English proficiency score in MA entrance examination in Iran. Through considering the normal distribution of the subjects' scores, those scores which were one standard deviation above and below the mean were decided to be in the sample of the study. Consequently, four hundred and forty-three of them were patterned as homogenous and selected for the purpose of this research.

B. Instruments

The main purpose of the study was to find out the relationship between critical thinking and reading comprehension of Iranian postgraduate university students. In this regard, two instruments were selected to collect data. Since the participants were all postgraduate students in English language teaching or translation studies, the reading comprehension test was taken from Longman's Preparation Course for TOEFL (Phillips, 2001). The test consisted of five texts and fifty items and the participants had 55 minutes to answer. Watson-Glaser (1980) Critical Thinking Appraisal- Form A (WGCTA) – was also administered to measure some of the important abilities involved in critical thinking. Since Watson-Glaser (1980) Critical Thinking Appraisal - Form A was designed for native speakers, to avoid any misunderstanding in part of cultural differences and lack of vocabulary and grammar knowledge, the researchers used the translated version of this test which was prepared by Yari (as cited in Faravani, 2006). According to Faravani (2006), its Farsi version is culturally adapted to be suitable for use in Iran. It comprises 80 items which is designed to measure level of ability not an individual's rate of performance. As Jodeiri (2005) stated, this form is deemed appropriate in terms of reading difficulty for use with subjects who have the equivalent of a ninth-grade education. This test consists of 5 subtests as follows:

Test 1. Inference: Discriminating among degrees of truth or falsity of inferences drawn from given data.

Test 2. Recognizing Unstated Assumptions: Recognizing Unstated Assumptions or presupposition in given statements or assertions.

Test 3. Deduction: Determining whether certain conclusions necessarily follow from information in given statement or premises.

Test 4. Interpretation: Weighing evidence and deciding if generalizations or conclusions based on the given data are warranted.

Test 5. Evaluation of Arguments: Distinguishing between arguments that are strong and relevant and those that are weak or relevant to a particular question at issue.

The survey is a reliably standardized instrument since it has been administered to students of different education levels in different parts of the world (Jodeiri, 2005). Reliability of this test was determined in two ways: Estimates of stability of the test scores over time and the correlation between scores on alternate forms. Testing stability over time, by administering the test to the same group with an interval difference, indicated an acceptable level of stability (0.73). The overall reliability estimates were sufficiently high to warrant the use of the test for group administration and research studies. Hunt and London as cited in Dam and Volman (2004) pointed out that "the Watson-Glaser test measures the ability of persons to follow the 'rules' involved in various forms of reasoning. As Jodeiri stated "the norms for raw scores for high school students ranged from 42.6 for nine-grade students to 48.5 for twelve-grade students out of the total score of 80" (p. 89). Differences in mean scores among the high school and college groups are in the expected direction. The higher the grade of the students, the higher their average scores on the CTA.

C. Procedure

In order to accomplish the data analyses in this research, the following steps were carried out. First, retrieving the data of the students attending and passing the national entrance examination of Islamic Azad University (IAU) from the IAU Testing Center, six hundred and thirty M.A postgraduate freshmen majoring in translation studies and English language teaching were selected based on their General English score in Islamic Azad University MA entrance examination. After calculating the mean and standard deviation of the test, four hundred and forty-three of them who were between the cut-off scores were selected as the participants of the study. Second, the reading comprehension section of the Longman TOEFL was administered. It consisted of five passages and fifty items. The time allocated to the reading tests was 55 minutes. Then, the students were divided into low, mid, and high based on their level of proficiency. Finally the data from the test, their level of proficiency and their gender were used to analyze and test the hypotheses.

III. RESULTS

Having tested the preliminary assumptions such as test of normality, linearity, and homoscedasticity, the Pearson correlation coefficient was adopted to answer the first question which investigated if there is any statistically significant relationship between critical thinking ability of postgraduate university students and their performance on reading comprehension. Based on the results ($r(441) = .76, p < .05$, representing a large effect size) displayed in Table 1, it can be concluded that there was a significant relationship between their critical thinking and reading comprehension.

TABLE 1
PEARSON CORRELATION; CRITICAL THINKING AND READING COMPREHENSION

		Critical Thinking
	Pearson Correlation	.767**
Reading Comprehension	Sig. (2-tailed)	.000
	N	443

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

Then came the second question which was an attempt to study the possible difference between male and female regarding the relationship between critical thinking and reading comprehension skill of the postgraduate university students. Based on the results displayed in Table 2, it can be concluded that there were significant relationships between critical thinking and reading comprehension for male ($r(194) = .76, p < .05$, representing a large effect size) and female subjects ($r(441) = .76, p < .05$, representing a large effect size). The results of Z-transformation ($Z = .05, p > .05$) indicated that there was not any significant difference between male and female regarding the relationship between critical thinking and reading comprehension skill of the postgraduate university students.

TABLE 2
PEARSON CORRELATION; CRITICAL THINKING AND READING COMPREHENSION BY GENDER

		Critical Thinking	
		Male	Female
	Pearson Correlation	.768**	.766**
Reading Comprehension	Sig. (2-tailed)	.000	.000
	N	196	247

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

The third research question was to verify the role of language proficiency level of the postgraduate students in this relationship. Based on the results displayed in Table 3, it can be concluded that there were significant relationships between critical thinking and reading comprehension for low ($r(144) = .61, p < .05$, representing a large effect size), mid ($r(177) = .498, p < .05$, representing a large effect size) and high language proficiency groups ($r(117) = .841, p < .05$, representing a large effect size). The results of Z-transformation indicated that there were not any significant differences between low and mid group ($Z = 1.57, p > .05$), low and high group ($Z = .61, p > .05$), and mid and high groups ($Z = .49, p > .05$) regarding the relationship between critical thinking and reading comprehension skill of the postgraduate students.

TABLE 3
PEARSON CORRELATION; CRITICAL THINKING AND READING COMPREHENSION BY PROFICIENCY LEVEL

		Low	Mid	High	Critical Thinking
					Z-Transformation
	Pearson Correlation	.619**	.498**	.541**	Low vs. Mid ($Z = 1.57, p > .05$)
Reading Comprehension	Sig. (2-tailed)	.000	.000	.000	Low vs. High ($Z = .61, p > .05$) Mid vs. High ($Z = .14, p > .05$)
	N	146	179	119	

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

IV. DISCUSSIONS AND CONCLUSION

The present study was carried out to identify the relationship between critical thinking and reading comprehensions among Iranian post-graduate students majoring in English Language Teaching and Translation Studies programs. The results of the present study was supported by a large number of the studies previously conducted (e.g., Bakhshipour Khodaie, 2012; Eftekhary & Besharati Kalayeh, 2014; Fahim, Bagherkazemi, & Alemi, 2010; Hassani, Rahmany, & Babaei, 2013; Hawkins, 2012; Heydari, 2011). This is in spite of the fact that none of them were conducted among the postgraduate participants. This can add valuable contribution to the previous literature as barely no scholar has ever dealt with. The result of this study revealed that male and female postgraduate students are not significantly different in this regard which is in line with a few studies (e.g., Eftekhary & Besharati Kalayeh, 2014; Hawkins, 2012; Heydari, 2011) but does not support the finding of few studies (e.g., Nourmohammadi, Heidari, & Dehghan Nirya, 2012). The results, further, indicated that English language proficiency has no role in the relationship between critical thinking ability and reading comprehension skill as the results did not differ among students with high, mid, and low levels of language proficiency.

Nowadays, there has been an increased emphasis on properties and outcomes of critical thinking, as one of the key academic skills, in the process of learning. The most significant purpose of modern education, according to Ku (2009), is to teach critical thinking, “as it equips students with the competency necessary to reason about social affairs in a rapidly changing world” (p. 71). Critical thinking is a technique to reflect and evaluate what is read, so it helps students make a sound judgment and shape their beliefs. Critical thinking “involves reflecting on the validity of what we have read in light of our prior knowledge and understanding of the world” (Kurland, 2000). In this regard, students need to encourage critical thinking skills and incorporate it into their academic studies, “to the complex problems that they will face, and to the critical choices they will be forced to make as a result of the information explosion and other rapid technological changes” (Oliver & Utermohlen, 1995, p. 1). Hence, the results of the study suggest that university professors be attentive to integrating critical thinking skills into their teaching, syllabi, reading lists, and the assessing procedure so that post-graduate students are directly or indirectly exposed to such skill and learn to use them in the professional career opportunities to encounter after graduation.

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