The relationship between Critical Thinking Ability and Reading Strategies Used by Iranian EFL Learners

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Abstract
The current empirical study has attempted to determine if there is any significant relationship between critical thinking of Iranian fresh EFL learners and those categories of reading strategies (cognitive, meta-cognitive, and compensation) that are mostly used by EFL learners. Thirty Iranian EFL Fresh female students studying in a private institute in Yazd in Iran participated in this study. Based on the purposes of the study, two questionnaires were administered to the participants: a critical thinking questionnaire and a reading strategy questionnaire. Results of the study showed that the most frequently used reading strategies were meta-cognitive strategy and cognitive strategy. Statistical analyses revealed no correlation between learners' critical thinking ability and their overall use of reading strategies.

Keywords: Cognitive Strategy, Compensatory Strategy, Critical Thinking, Metacognitive Strategy, Testing Strategy.

1. Introduction
Using reading strategies appropriately may be of great help to non-native readers because it can serve as an effective way of overcoming language deficiency and obtaining better reading achievement on language proficiency tests (Zhang, 2008). In the same way (Shang, 2010) proposes reading is a complex cognitive activity that is indispensable for adequate functioning and for obtaining information in contemporary society.

In Iran, where access to English native speakers for talking is limited, reading is considered as an essential skill to develop English as a foreign language (Nourmohammadi, et al, 2012). It can be considered as an important activity in any language classroom, not only as a source of information and a pleasurable activity, but also as a means of improving one’s knowledge of the language. Recently many researchers, teachers and teacher trainers of foreign languages aimed to identify the processes and strategies involved in reading skill and research on this skill has shown that learners use a variety of strategies to assist them with the acquisition, storage, and retrieval of information (Singhal, 2001). Oxford and Crookall (1989, cited in Singhal, 2001) assert that strategies are learning techniques, behaviors, problem-solving or study skills which make learning more effective and efficient.

Oxford (1990) offers a useful and comprehensive classification of the various strategies used by learners. This classification includes the following subcategories of reading strategies: cognitive strategies that are used by learners to transform or manipulate the language, memory strategies that help learners to remember and retrieve information, compensation strategies that include skills such as inferring, guessing while reading etc., meta-cognitive strategies that are behaviors undertaken by the learners to plan, arrange, and evaluate their own learning, affective strategies such as self-encouraging behav-
ior to lower anxiety, and lastly, social strategies that are those techniques that involve other individuals in the learning process and refer to cooperation with peers, questioning, asking for correction, and feedback. These mentioned six strategies can be used to facilitate comprehension (Singhal, 2001).

To enhance the reading comprehension ability in English, Alafssi (2004, p. 171) states that students should “understand the meaning of text, critically evaluate the message, remember the content, and apply the new-found knowledge flexibly”. Using reading strategies appropriately may be of great help to non-native readers because it can serve as an effective way of overcoming language deficiency and obtaining better reading achievement on language proficiency tests (Shang, 2012; Zhang, 2008).

The issue of incorporating critical thinking skills in education has raised many contradictory ideas about whether critical thinking can be taught or not. A variety of approaches and models to teaching, measuring and assessing critical thinking skills and abilities have been developed. In addition, teaching critical thinking skills has raised many issues such as culture, emotion, transferability and generalizability of the taught skills which are discussed and answered by the experts. Despite all contradictory ideas and beliefs on teaching critical thinking skills, however, everyone agrees that thinking critically is the major goal of education (Reed, 1998).

2. Review of the Related Literature

2.1 Critical thinking

Educators have long been aware of the importance of critical thinking skills as an outcome of student learning, and they consider it as a cross-disciplinary skill vital for college and employment. More recently, the Partnership for 21st Century Skills has identified critical thinking as one of several learning and innovation skills necessary to prepare students for post-secondary education and the workforce. Despite widespread recognition of its importance, there is a notable lack of consensus regarding the definition of critical thinking.

Critical thinking has roots in two primary academic disciplines: philosophy and psychology (Lewis & Smith, 1993). But noted a third critical thinking strand within the field of education. There are different approaches to defining critical thinking according to these three academic strands that reflect their respective concerns. They will be explained below.

2.1.1 Philosophical background

The writings of Socrates, Plato, Aristotle, and more recently, Matthew Lipman and Richard Paul, exemplify the philosophical approach (Li, 2011). This approach focuses on the hypothetical critical thinker, enumerating the qualities and characteristics of this person rather than the behaviors or actions the critical thinker can perform (Lewis & Smith, 1993; Thayer-Bacon, 2000). According to Stenberg (1986) this school of thought approaches the critical thinker as an ideal type, focusing on what people are capable of doing under the best of circumstances. Accordingly, Richard Paul (1992) cited in Lai (2011) discusses critical thinking in the context of “perfections of thought” (p.9). This preoccupation with the ideal critical thinker is evident in the American Philosophical Association’s consensus portrait of the ideal critical thinker as someone who is inquisitive in nature, open-minded, flexible, fair-minded, has a desire to be well-informed, understands diverse viewpoints, and is willing to both suspend judgment and to consider other perspectives (Facione, 1990).

Scholars advocating the philosophical tradition also emphasize qualities or standards of thought. Bailin (2002) who works within this tradition defines critical thinking as thinking of a particular quality—essentially good thinking that meets specified criteria or standards of adequacy and accuracy. This strand has traditionally focused on the application of formal rules of logic (Leis & Smith, 1993; Stenberge, 1986). But its limitation in defining critical thinking is that it does not always correspond to reality (Stenberg, 1986). By emphasizing the ideal critical thinker and what people have the capacity to do, this approach may have less to contribute to discussions about how people actually think (Lai, 2011).

2.2 Reading strategy use

According to Branett (1986) reading is an interactive process combining top-down and bottom-up processing; as a result, it is very important for students to use appropriate reading strategies to increase their comprehension. The term “strategy means the mental operations involved when readers purposefully approach a text to make sense of what they read. In other
words, reading comprehension requires the integration and application of multiple strategies or skills. Strategies can be defined as learning techniques, behaviors, problem-solving or study skills which make learning more effective and efficient (Oxford & Crookall, 1986, cited in Singhal, 2001). There are different classification systems available for reading strategies but Oxford (1990) offers more useful and comprehensive classification of the various strategies used by learners. According to Oxford (1990) the following six strategies can more appropriately be referred to as subcategories of reading strategies: cognitive strategies that are used by learners to transform or manipulate the language, memory strategies that help learners to remember and retrieve information, compensation strategies that include skills such as inferring, guessing while reading etc., metacognitive (Chamot, 2005; Zhang, 1993).

2.2.1 Cognitive strategy

According to Chamot & Kupper (1989), cognitive strategies are approaches “in which learners work with and manipulate the task materials themselves, moving towards task completion”(p.14). Examples of cognitive strategies include the skills of predicting based on prior knowledge, analyzing text organization by looking for specific patterns, self-questioning, making a summary, taking notes by writing down the main idea or specific points, translating, inferencing, and transferring (Chamot & Kupper, 1989; Oxford, 1990). Cognitive learning strategies are characterized into three main sets: rehearsal, elaboration, and organizational strategies. According to Weistein & Mayer (1986) all of these organizational strategies can be used to test and confirm the accuracy of learner’s deeper understanding of the text.

2. 2. 2 Metacognitive strategy

Students’ metacognitive knowledge and use of metacognitive strategies can have an important influence upon their achievement. According to (Chamot & Kupper, 1989; Wenen, 1998), metacognitive strategies involve thinking about the learning process, planning for learning, monitoring the learning task, and evaluating how well one has learned. Oxford (1990) proposes that metacognitive strategies include three strategy sets: Centering, arranging and planning, as well as evaluating the learning. A similar model of metacognitive strategies proposed by Pintrich (1999) included three general types of strategies: Planning, monitoring, and regulating. Planning activities include setting goals for studying, skimming a text before reading, generating questions before reading a text, etc. Monitoring strategy is an essential aspect of self-regulated learning. Weinstein & Mayer (1986) regard all metacognitive activities as partly the monitoring of comprehension where students check their understanding against some self-set goals. Monitoring activities include tracking of attention while reading a text, self-testing through the use of questions about the text material to check for understanding, etc (Pintrich, 1999). The other type of metacognitive strategies is regulatory strategy which is closely tied to monitoring strategies. Regulatory activities may include asking questions to monitor students’ comprehension, slowing the pace of reading with more difficult texts, reviewing examination materials, and postponing questions. Several studies have shown that all these strategies can enhance second/foreign language reading by correcting their studying behavior and repairing deficits in their understanding of the reading text (Carrell, 1989; Pitrich, 1990).

2.2.3 Compensation strategy

According to the literature, another factor resulting in successful reading is the development of vocabulary knowledge (Yaag, 2004). However, many EFL readers often encounter the problem of unfamiliar vocabulary and unknown concepts so as to interfere the comprehension (Zhang, 1993). Several researchers suggest teaching students active compensation strategies to achieve comprehension (Oxford, 1990; Sinatra & Dowd, 1992; Zhang, 1993). Sinatra and Dowd (1992) propose a comprehension framework for the use of context clues: syntactic clues (related to grammatical structures) and semantic clues (involved intra- and inter sentence meaning relationship).

Sinatra and Dowd (1992) argued that readers should not only understand how the writer used grammar, but also use semantic clues such as restatement, use of examples and semantic clues in order to guess the meaning of a new word. In addition, to guess the meaning of words intelligently, Oxford (1990) clustered 10 compensation strategies into two sets: linguistic clues (guessing meanings from suffixes, prefixes, and word order) and other clues (using text structure such as introductions, summaries, conclusions, titles, transitions, and using general background knowledge). These decoding skills can not
only help readers overcome a limited vocabulary, but also help them guess about the theme of an article. Such learning strategies can significantly increase the speed and raise reading efficiency (Winstead, 2004; Zhang, 1993).

2.2.4 Testing strategy
A number of test-taking strategies have been recommended by reading researchers. This is in line with the wide use of multiple-choice items in standardized testing (Zhang, 1993). Jacobs (1985) offer two suggestions for test takers. (1) Test takers should first read the questions and answers before reading a passage (skimming); (2) Test takers should answer each question through a process of elimination (for multiple-choice questions). The same testing strategies were recommended by Oxford (1990) with the assumption made that reading with a purpose would significantly improve both efficiency and test results.

2.3 Statement of the problem
One of the factors which seem to affect the use of reading strategies is critical thinking ability. A number of scholars and researchers (e.g. Halpern, 1999; Gelder, 2005; Willighum, 2007) believe that critical thinking is one of the main goals of education, so it should receive more attention and all of its possible effects on language learning should be investigated. According to them learners who think more critically are more successful in language learning; furthermore, some others (Oxford, 1990; Sighal, 2001; Shang, 2011; Nourmohammadi, et al., 2012) believe that successful readers use more effective and a wider range of strategies rather than unsuccessful readers. There have been some researches that have investigated the relationship between critical thinking and language learning strategies (Nikoopour et al., 2011; Fahim, et al., 2010), but research concerning the relationship between critical thinking and each specific group of strategies (listening, speaking, and reading) is limited. So this study is going to investigate the relationship between Iranian EFL learners’ critical thinking ability and their use of reading strategies.

For this purpose, four major groups of reading strategies will be employed: cognitive, meta-cognitive, compensatory, and testing strategies. The researchers believe the reason for selecting these four groups of strategies is that they are the most important learning strategies resulting in successful reading (Shag, 2011).

2.4 Significance of the study
To the best of our knowledge, in spite of diversity and increasing popularity of the research on critical thinking and different aspects of second or foreign language learning process reading, reading strategies and critical thinking relationship is still a new research area in universities in the EFL context. Since the acquisition and understanding of the idea from texts require various reading strategies and thinking skills, it is believed that critical thinking is one of the essential skills that students should gain for academic success and if students have sufficient critical thinking ability they will perform better in their reading comprehension (Nourmohammadi, et al., 2012). The aim of the present study was to explore whether EFL learners’ critical thinking ability is associated with their use of reading strategies. By considering the relation between critical thinking extent of Iranian EFL learners and their use of reading syllabus designers and material developers can create course books that consider skills as effective elements for academic success, and finally it helps learners to become better thinkers (Hale, 1999). He also believes that college students should receive explicit instruction in how to think.

2.5 Research questions
This study attempted to identify those categories of reading strategies that are mostly used by Iranian EFL learners and to investigate whether or not a significant relationship exists between Iranian EFL learners’ way of thinking and their use of reading strategies.

The present study tried to answer the following questions:
1. What categories of reading strategies are mostly used by Iranian EFL learners?
2. Is there any significant relationship between the critical thinking ability of Iranian EFL learners and their use of reading strategies?

3. Methodology
3.1 Participants
The participants of the present study were 30 Fresh English learners studying in a private Language Institute in Yazd. All of the subjects of the study were female students. The learners were between 19 and 26 years of age. They all participated in EFL classes only for 8 sessions.

3.2 Instruments
The researcher employed two kinds of instruments to conduct this empirical research, a questionnaire of critical thinking and a questionnaire of reading strategies. The Persian version of a critical thinking questionnaire including 30 multiple choice items was administered to the participants to evaluate the skills of analysis, inference, evaluation, inductive reasoning and deductive reasoning. The critical thinking questionnaire was adopted from Naeini’s thesis (2005), which in turn was adapted from Honey. According to Naeini the English version of critical thinking questionnaire was translated by her to guarantee the full comprehension of the questions by participants. Baker and Boonkit’s (2004) English Reading Strategies Questionnaire adapted from Shang(2012), and the researcher’s own teaching experiences was integrated and employed to elicit subjects’ reported frequency of using the selected reading strategies. The questionnaire was distributed to all the subjects who were invited to complete it within 15 minutes. The questionnaire, containing altogether 43 items, consisted of four major categories of general use of reading strategies: cognitive, metacognitive, compensatory, and testing strategies. Subjects were asked to rate certain statements on a 5-point Likert scale ranging from 1 (never or almost never true of me) to 5 (always or almost always true of me). These reading strategies were categorized into four groups (see Table 2): cognitive (items 1-13), metacognitive (items 14-25), compensation (items 26-35), and testing (items 36-43) strategies.

3.3 Procedure
The researcher administered the Reading Strategy Questionnaire to the participants in one session and to prevent participants tiring she postponed the Critical Thinking Questionnaire to the next session. The participants were requested to select the most appropriate answers to the questions. Having collected the two completed questionnaires, the researchers analyzed the data through using the Statistical Package for Social Sciences (SPSS). The descriptive statistics were calculated primarily to determine what kinds of reading strategies Iranian EFL learners use. Since the research aimed to find out the relationship between critical thinking and reading strategy use, Pearson Product-Moment Correlation was used.

4. Results and Discussion
As it can be detected from table 1 the participants used all four types of reading strategies (cognitive, meta-cognitive, and compensation, and testing) but differently; however, the extent of using each strategy was different. According to the results, the most frequently used reading strategy was found to be meta-cognitive strategy and, followed by cognitive strategy, and then followed by compensation strategy, and finally followed by testing strategy. In other words, the participants used reading strategies in the following order: meta-cognitive (mean=7.2788), cognitive (mean=4.835), compensation strategies (mean=4.083), and testing strategy (3.738).

Table 4.1 Descriptive Statistics of Reading Strategies (Cognitive, Meta-cognitive, Compensation, and Testing)
Comparing the means of table 4.1, the researcher concluded that the subjects of the study mostly used cognitive strategies to solve their deficiencies in reading comprehension. Table 4.2 below shows the result of the ANOVA test.

Table 4.2 ANOVA Table

<table>
<thead>
<tr>
<th>Variable of treatment</th>
<th>Sum of squares</th>
<th>Df</th>
<th>Mean square</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>5544.092</td>
<td>3</td>
<td>1848.31</td>
<td>69.483</td>
<td>.000</td>
</tr>
<tr>
<td>Within groups</td>
<td>3085.233</td>
<td>116</td>
<td>26.597</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>8629.325</td>
<td>119</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As it can be seen in table 4.2, there is a significant difference between different categories of reading strategies ($F (3, 116) = 69.49, p<0.05$). Table 4.3 below shows the result of the Scheffe test.

Table 4.3 Comparing Means Based on Scheffe Test

<table>
<thead>
<tr>
<th>Sub test for Alpha</th>
<th>Treatment</th>
<th>N</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>30</td>
<td>43.10a</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>30</td>
<td>39.73a</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>30</td>
<td></td>
<td>29.87b</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>30</td>
<td></td>
<td>26.60b</td>
</tr>
</tbody>
</table>

Based on the above table and by comparing the means of different strategies used by the subjects, the researcher deduced that there is no difference between metacognitive and cognitive strategy. There is also no significant difference between compensation and testing strategy, but there is significant difference between metacognitive and cognitive strategy and two next reading strategies, compensation and testing strategy.
To answer the second research question, *Pearson r* was also calculated between critical thinking and each one of the cognitive, meta-cognitive, and compensation strategies separately. Table 4. shows the related results. According to the results, the researchers found no correlation between critical thinking and each one of the cognitive, meta-cognitive, compensation, and testing strategies with the observed value of *Pearson r* =0.053, with meta-cognitive strategies with the observed value of *Pearson r* = 0.030, and with compensation strategies with the observed value of *Pearson r* = 0.116, and with testing strategy with the observed value of 0.115.

Regarding the frequency of reading strategy use, and descriptive statistics related to the use of reading strategies, the results of the present study demonstrated that students usually employ all four subcategories of reading strategies in English reading process: cognitive strategies, meta-cognitive strategies, compensation strategies, and testing strategies. Such results support findings in the literature (Chamot, 2005; Shang, 2011; Wende, 1998; Zhang, 2008; Nourmohammadi, 2012), suggesting that it is more effective for students to reach their learning goals if they have a higher frequency of employing a variety of strategies in their reading process.

The results of comparing different reading strategies support the findings of Shang (2010) and Li and Wang (2010). Shang (2010) in his study found that Chinese learners used all three reading strategies (cognitive, meta-cognitive, and compensation) in the following order: meta-cognitive strategies followed by compensation strategies, and then followed by cognitive strategies. Li and It is reported that learners used all three reading strategies (cognitive, meta-cognitive, and social/affective) in the following order: meta-cognitive strategies, followed by cognitive strategies, and then followed by social/affective strategies.

This study is in contrast to Shang (2010). Shang's finding of his study indicates that students particularly use more testing strategies to reach a higher level of reading comprehension performance. According to Shang such a result is not surprising since Taiwanese students have been traditionally branded “rote” learners, who seem to master testing strategies to overcome language deficiency and obtain better reading achievement on language proficiency tests (Zhang, 2008). Second, regarding the differences in the strategy use between good and poor readers’ performance, the finding of Zhang's study demonstrates that good readers seem to have distinguished themselves from poor readers in their reported frequency of having the strategic knowledge. This frequency is reflected in their understanding of how to use these strategies (Chamot & Kupper, 1989; Zhang, 2001). That is, students with a higher reading ability frequently use more reading strategies than do students with a poorer reading ability.

The findings of the present study seem not to confirm the important role of critical thinking in L2 learning. As discussed before, through the analysis of the results, the researchers found no significant relationship between critical thinking and the overall use of reading strategies with the related observed value at the 0.01 level of significance (Table.4). The indicated results was in contrast to the role of critical thinking in language learning and is in contrast with the findings in the literature (Nikoopour, et al., 2011; Fahim & Komijani, 2011). By analyzing the results of their study the claim these researchers who reported that EFL learners’ critical thinking levels have significant effects on their reading comprehension ability when faced with unknown vocabulary items. Improvements in critical thinking are paralleled by improvements in reading comprehension. They believe that the presence of such a strong relationship may be due to the fact that critical thinking and reading are both cognitive abilities which have some identifiable cognitive skills in common.
5. Conclusion
To sum up, the result of the study showed that the most frequently used category was metacognitive strategies, and the least frequently used one was testing strategies. In addition, the results showed that there is no correlation between critical thinking level and the subject using different reading strategies. Based on the research results the researcher concluded that despite the undeniable effect and importance of critical thinking and its effect on education, the fresh subjects of this study were not able to think critically. This study implicitly support the idea of teaching students to think critically, or minimally raise the student attention and awareness to think critically, in order to improve their second or foreign language learning. So, enhancing learners’ critical thinking can be considered as one of the language teachers’ tasks (Nourmohammadi, et al., 2012). This study recommends language teachers to cultivate learners’ critical thinking and their awareness of reading strategy use simultaneously because their integration will contribute to better reading comprehension.

References

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**Mansoor Fahim**, was born in Nahavand in 1946. He received a Ph.D. in TEFL from Islamic Azad University in Tehran, Iran in 1993. As for his professional background, he was a member of the faculty of English Language and Literature at Allameh Tabataba’i University in Tehran, Iran from 1981 to 2008 when he was retired as an associate professor of TEFL. At present, Dr. Fahim runs Research methods, Psycholinguistics, Applied Linguistics, Second Language Acquisition, and Seminar classes at MA level, and First Language Acquisition, Psycholinguistics, and Discourse Analysis courses at PhD level at a number of universities including Allameh Tabataba’i and Islamic Azad Universities, Science and Research Campus, Tehran, Iran. He has also published several articles and books mostly in the field of TEFL and has translated some books into Farsi.

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