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Teacher–Student Interaction in EFL Reading Comprehension Contexts at University Level: A Critical Thinking Perspective

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Abstract

In line with previous studies in English as a Foreign Language/English as a Second Language (EFL/ESL) contexts confirming the positive correlation between critical thinking and reading comprehension, this study was conducted to determine how frequently critical thinking is used in EFL reading comprehension contexts at the tertiary level in one Iranian university. To this end, all question types associated with general and Critical Reading Questions (CRQs), Vocabulary in Context (VIC), Literal Comprehension (LC), and Extended Reasoning (ER) were identified. The principal focus of the study was on ER questions leading to critical thinking. To classify the questions formulated by teachers and students for CRQs, Peterson's model was used. To specify critical thinking question types, a framework proposed by Academic Skills Unit was used as another model. To collect the data, the researchers observed all reading comprehension courses in one of the universities in Isfahan Province. They recorded 30% of the total number of sessions using two mini-size MP4 wireless recorders during the second semester of the 2010–2011 academic year. The findings seem to suggest that teachers' focus on each CRQ type strongly influences students' attention when reading different passages. It was noted that students had serious problems with textually implicit information included in reading passages. Given this finding and the fact that the observations illustrated most teachers devote the bulk of their attention to other CRQs, this study highlights the need for raising teachers' awareness of ER-based reading comprehension questions. Moreover, the findings have implications for researchers and teachers in EFL settings.

Keywords

critical thinking, EFL reading comprehension contexts, Iranian EFL settings, teacher–student interactions

Introduction

Critical thinking has become a notable entity in the realm of education in recent years. Critical thinking skills figure prominently among the goals set by educational policy makers as well as curriculum developers (Beyer, 1985). It is partly thanks to the fact that, in general, the format of lessons and their exercises, particularly in mathematics and natural sciences, bears little, if any, relevance to the way problems are in real life (Potts, 1994).

Problem finding can provide students a good opportunity for sharing what they and their teachers know, not only in mathematics, physics, and other hard sciences but also in the area of foreign language learning. Problem finding has been used largely for first language education in the United States; but today, its role in second and foreign language learning and teaching has increased in prominence (Atkinson, 1997).

A number of different strategies have been proposed for foreign language learning. John Dewey has viewed critical thinking as a “kind of thinking that consists in turning a subject over in the mind and giving it a serious consecutive

consideration” (1993, p. 3). Critical thinking in relation to the skill of reading has been the focus of the present study.

Given that learning a foreign language, specially at intermediate and advanced levels, calls for a good deal of flexibility and the deployment of higher order thinking skills (Liaw, 2007), critical thinking can be seen as a contributory factor to the success of foreign language learners and students in reading comprehension.

Today, making students more aware of and responsible for their own knowledge acquisition and the processes related to it is highly emphasized, and this represents a shift in the paradigm, which is applicable to numerous models such as Piagetian, Vygotskian, and situated learning theories (Anderson & Krathwohl, 2001; Marzano, Pickering, & Pollock, 2001).

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<p>Critical Reading Questions: The critical reading questions “assess your ability to understand what you read.”</p>
<p>1. Vocabulary-in-Context questions: These questions “ask you to define a specific word in the passage.”</p>
<p>2. Literal Comprehension questions: They “require you to identify information that is directly stated in the passage.”</p>
<p>3. Extended Reasoning questions: These questions “ask you to analyze, evaluate, and pull together information from the passage(s). They involve finding causes/effects, making inferences, analyzing and using logical reasoning.”</p>

Figure 1. Peterson’s model

Source: Adopted from Peterson’s (2008, p. 119).

<p>1. Clarity: Could you elaborate further on that point? Could you express that point in another way? Could you give an illustration?</p>
<p>2. Accuracy: Is that really true? How could we check that? How could we find out if that is true?</p>
<p>3. Precision: Could you give more details? Could you be more specific?</p>
<p>4. Relevance: How is that connected to the question? How does that bear on the issue?</p>
<p>5. Depth: How does your answer address the complexities in the question? How are you taking into account the problems in the question?</p>
<p>6. Breadth: Do you need to consider another point of view? Is there another way to look at this question? What would this look like from a conservative standpoint?</p>
<p>7. Logic: Does this really make sense? Does that follow from what you said?</p>

Figure 2. Academic Skills Unit framework

Source: Adopted from Academic Skills Unit (2008, pp. 112-113).

Theoretical Framework of the Study

The theoretical framework of the present study is Peterson’s (2008) model. Figure 1 summarizes the theoretical model of this study.

As the figure shows, Vocabulary-in-Context (VIC) questions test the learners’ ability to define difficult and unfamiliar words, whereas Literal Comprehension (LC) questions usually deal with information that can be found directly in the passage. In trying to answer these Extended Reasoning (ER) questions, learners have the opportunity to react to what they read, for example, by making inferences and combining contextual clues with what they already know to grasp indirectly stated textual information. Language learners read different texts to comprehend not only unknown words but also the meaning of the whole sentences. But, this is not the sole aim of reading passages. It is expected, especially from higher level learners and students, to go beyond the sentences; that is, to get the intended meanings of the writers through asking ER questions. The learners should be aware of their own ideas and those of the

others. As Peterson’s (2008) explains, “Most of the critical reading questions involve extended reasoning” (p. 119). So, the researchers chose Academic Skills Unit (2008) as a framework for examining critical thinking questions. Figure 2 shows the framework of Academic Skills Unit.

This framework consists of seven categories of reading questions: clarity, accuracy, precision, relevance, depth, breadth, and logic. Clarity questions are used when statements are unclear and one cannot determine whether they are accurate or relevant. Accuracy questions make students more conscious of statements that can be true, but not accurate. When students are able to explain the statements that can be clear, accurate, and precise, but not relevant, they try to pose relevance questions. Depth criteria indicate if statements are clear, accurate, precise, and relevant or not, but lack depth because they treat issues in a very superficial manner. Breadth questions probe deeply into an issue, but only recognize the insights of one side of the question. The last criterion is called logical question. When the combinations of thoughts are mutually supportive and make sense in combination, the thinking is said to be “logical.”

Literature Review

Over the past few decades, a lot of attention has been devoted to critical thinking. As Gelder (2005) has suggested, “almost everyone agrees that one of the main goals of education, at whatever level, is to help students develop general thinking skills, especially critical thinking skills” (p. 1). Furthermore, Richards and Rodgers (2001) have indicated that foreign language learning is also believed to be motivating when students focus on something other than language, such as issues, ideas, and opinions.

Recent trends in the domain of English as a Foreign Language (EFL) reading comprehension have led to the placing of greater emphasis on the role of problem-solving techniques that are believed to enable students to identify, clarify, evaluate, and solve complex entities that arise while reading passages (Waters, 2006). In this respect, various definitions of critical thinking and its significance in educational systems as well as foreign language learning, especially skill of reading comprehension, have been proposed.

Definitions of Critical Thinking

In the 1980s, there was an explosion of interest in critical thinking (Dam, Volman, & Wardekker, 2004). Throughout the 1980s, many researchers attempted to offer satisfactory definitions for the term. Regarding diverse definitions of critical thinking, Beyer (1985) has pointed out that nearly all experts emphasize the ability and tendency to gather, evaluate, and use information effectively. The emergence of these different definitions is due to the complex cognitive nature of critical thinking, which is often regarded as an “ongoing activity” (Canagarajah, 2002, p. 101).

Critical thinking can also be defined as a cognitive ability blended with multiple skills such as identifying, understanding, and analyzing an issue by making inferences using top-down and bottom-up strategies to validate the reliability of claims and arguments (Pithers & Soden, 2000). Gabennesch (2006) has defined the term as “the use of rational skills, world-views, and values to get as close as possible to the truth” (pp. 36-41).

In a similar vein, Liaw (2007) has defined critical thinking as an entity that “involves the use of information, experience, and world knowledge in ways which allow [EFL students] to seek alternatives, make inferences, pose questions, and solve problems, thereby signaling understanding in a variety of complex ways” (p. 51).

Yet another definition of the term has been put forward by Rubenfeld and Scheffer (2010). They consider critical thinking the metaphorical bridge between information and action. They have provided three reasons as to why this metaphorical bridge “is invisible from one perception into something visible from a new perspective” (p. 26). The authors hold that critical thinking is tangible, very individual, and requires an effort today not tomorrow.

Components of Critical Thinking

According to McPeck (1981, as cited in Simpson, 2002), critical thinking involves both propensity and skills. It seems that affective and cognitive domains of reasoning play a significant role in turning a person into a good critical thinker. Recognizing McPeck’s work, Simpson (2002) has developed the idea that the following two components can be shaped: “(i) the context of discovery and (ii) the context of justification” (p. 7).

The website of American Society of Mechanical Engineers Professional Practice Curriculum (ASME PPC) has summarized a range of ideas referring to components of critical thinking. As the writers have noted, eight components that can be identified as parts of the critical thinking process are as follows:

1. *Perception*, which refers to the way we receive and translate our experiences;
2. *Assumption*, which underlies the ideas, beliefs, values, and actions that others and we take;
3. *Emotion*, which separates humans from machines and the lower animals;
4. *Language*, which carries the content and structures the form of the entire thinking process;
5. *Argument*, which is a claim, used to persuade others that something is (or is not) true and should (or should not) be done;
6. *Fallacy*, which is an incorrect pattern of reasoning;
7. *Logic*, which includes induction and deduction as its two different processes; and
8. *Problem solving*, which is solving “logic” problems and is like solving any problem that we encounter or identify in life (ASME Professional Practice Curriculum at <http://professionalpractice.asme.org>).

Educational Significance of Critical Thinking

Critical thinking has attracted the attention of educators over the past decades. The significance of critical thinking in education, particularly higher education, is now acknowledged by a large number of educators. Schafersman (1991) has indicated that education must involve not only what to think but also how to think. Students should be assisted in engaging in a type of thinking that is reflective, reasonable, and directed to what to believe or do (Ennis, 1962, as cited in Simpson, 2002).

Academically successful learners possess problem-solving, analytical, and critical thinking skills (De Boo, 1999; Gardner & Jeweler, 2000). In the academic domain, constructivists, like cognitive psychologists, look at learning as a perceptive process resulting from experience, and believe that developers and consumers of lesson plans should create a situation in which students can exercise critical

thinking and get engaged in reasoning-based debates that facilitate and accelerate interaction and analysis action (Zahorik, 1995). Hence, critical thinking is a necessary skill in promoting the students' thoughts.

Furthermore, Moon (2008) has asserted that critical thinking and its relationship with the educational process has become a central issue and it is the right time to explore it in depth. She has also noted that as critical thinking is a process that is involved in any research activity, it can be considered as a principal concept in education, especially at higher levels. In fact, it is a fundamental goal of learning.

Critical Thinking Significance in Language Learning

Clearly, language and thought are closely related. Language permits thoughts to be represented in our minds, helping us reason, plan, remember, and communicate. It is communication that gets all the press when we talk about language, but there are also questions to be asked about whether the language we use causes us to think in a certain way (Huddleston & Pullum, 2005). It is strongly believed that higher order thinking skills, especially critical thinking, should be an integral part of L2 curriculum to enhance language proficiency levels of EFL learners and students (Davidson, 1998, and Chamot, 1995, as cited in Liaw, 2007).

Van Lier and Corson (1997) have stated that the aim of critical language awareness in an educational context is "to achieve some critical distance on familiar practices in order to better understand the unfamiliar—to make the familiar strange and the strange familiar in ethnographic terms" (p. 245). Learning to think critically can lead to a sharp increase in levels of enthusiasm among language learners. Marshall and Rowland (1998) have described how critical thinking generates "joy, release, relief, and exhilaration as we break through to new ways of looking at our personal, work, and political worlds" (p. 34). Alan and Stoller (2005) have stressed that, to facilitate the learning of a foreign language, contents, and real-life skills, projects "require a combination of teacher guidance, teacher feedback, students engagements, and elaborated tasks with some degree of challenge" (p. 11).

Critical Thinking in Reading

Rivers (1981) has pointed out that reading is the most important activity in any language class, not only as a source of information and a pleasure, but also as a means of consolidating and extending one's knowledge of the language. The ability to read is the most stable and durable of the foreign language modalities (Bernhardt, 1991). In language teaching, reading is recognized as an activity that engages students more actively with materials in the target language and encourages a deeper processing of it as it is considered to be a communicative process that conveys meaning from the writer's mind to the reader's mind (Nuttal, 1996).

Researchers have reported that college students with lower verbal skills are able to identify individual words and facts, but are unable to combine the information included in the texts with the previously acquired information (Baker, 1985). This inability to integrate ideas is often accompanied by an inability to draw logical inferences and check ideas while reading to see if the ideas contradict one another (Baker, 1985). A. L. Brown and Day (1983) have reported that Junior college students and college students are unable to summarize, select the topic sentence, and make a topic sentence if they are implied, or write the synopsis of a paragraph in the absence of explicitly stated topic sentences.

The primary goal of the reading tasks in many studies is to further develop and clarify the interpretation of texts, and to help students remember what they have individually created in their minds from the texts. As Phan (2006), Willingham (2006), and Grabe (1991) have asserted, "[R]eading is not merely a receptive process of picking up information from the page in a word-by-word manner" (p. 1). Pakhare (2007) and Phan (2006) have stated that reading is a selective process characterized as an active process of comprehending. The degree to which a passage or text is understood is called reading comprehension.

In this respect, Mc Namara (2007) has contended that Reading Thinking "(RT) is a well-validated approach to improving students' comprehension and self-monitoring skills through an apprenticeship model of learning" (p. 425). He has also asserted that "the teacher and students engage in an instructional dialogue about the text, constructing their understanding of the text as they apply several strategies: predicting, questioning, summarizing, and clarifying" (p. 425).

Furthermore, with active reading tasks, readers are encouraged to voice their own opinions about the texts and discuss their opinions with those of other students and the teachers. Another advantage of such tasks is that they contextualize reading; that is, they allow the readers to see the texts as part of a broader social context that includes the writer and the readers (Tomlitch, 2000). In addition, according to National Reading Panel (2000, as cited in Hernández-Laboy, 2009), "students who have effective reading strategies can engage in higher thinking skills about texts and their relations to those texts" (p. 4).

From the perspective of Paul and Elder (2006, as cited in Hernández-Laboy, 2009), to read well requires one to develop one's thinking about reading and, as a result, learning how to engage in the process of what is called "close reading." Their viewpoint deals with the active use of intellectual skills. They recommend that students not only need to learn how to determine whether a text is worth reading but also how to take ownership of a text's important ideas.

Role of Teachers

Huckin (1997, as cited in Ramos, 2010) has advised teachers to consider students' age and interests so that the lessons will

be more relevant to their experience and, thus more fruitful. Moreover, it is worth considering that, as Edge and Wharton (1998) have suggested, “if teachers can share some responsibility with learners, then not only will learners benefit, but teachers will be less burdened” (p. 298). Teachers can actively seek out students’ questions by having students write them down, by inviting students to hypothesize and ponder their own answers, and by having students write from differing perspectives (Dong, 2006).

Teachers are change agents (Pettis, 2002). In this relation, H. D. Brown (2001) contends that “[t]hey [teachers] can be agents for change in a world in desperate need of change: change from competition to cooperation, from powerlessness to empowerment, from conflict to resolution, from prejudice to understanding” (p. 445). Sanders and Rivers (1996) consider teachers as the single most important agents affecting students’ achievements. Likewise, King (2003) has stated that teaching is a complex activity that is influenced by the multitudinous facets of teacher quality, and teacher quality is a crucial predictor of students’ academic performance and success.

The findings of a study by Richardson, Morgan, Reymond, Charlene, and Fleener (2011) on how students learn to disengage with critical reading suggest that, with good scaffolding and a conscious focus on literacy, university teachers can promote the acquisition of critical reading skills and dispositions by their students.

In this respect, a number of scholarly investigations have been conducted on the relationship between critical thinking and reading ability of university students in EFL contexts. These studies aimed at achieving better language learning in EFL contexts. Considering the above-mentioned issues and some studies confirming the positive relationship between critical thinking ability and reading comprehension, the present research intends to investigate teacher–student interactions in reading comprehension contexts from a critical thinking perspective at university level in Iran.

The main justification for the current research stems from the fact that the notions of critical thinking and reading comprehension as well as their relationship with foreign language learning are considered to be important and have received scholarly attention by Iranian academics and researchers in the field of Teaching English as a Foreign Language (TEFL). The researchers have attempted to help Iranian academic EFL students to become more critical readers through inferring the intended meaning of the text. Having gone through the literature on critical thinking in relation to EFL reading comprehension, the researchers have formulated the research question below:

Research Question 1: Do interactions in EFL reading comprehension classes at university level advocate critical thinking?

Research Method

Participants

To conduct the intended research, a total of 300 male and female Iranian EFL students, including 30 from Reading Comprehension I, 74 from Reading Comprehension II (Teaching), 53 from Reading Comprehension II (Translation), 63 from Reading Comprehension II (Mixed groups), 22 from Reading Comprehension III, and 58 from Reading Comprehension IV, were included in this study. These students were studying at Sheikhbahae University. They were all native speakers of Persian who had 6 years of English instruction prior to their admission to the university. All the selected classes were held over the spring semester of 2010–2011. Their age varied, but all of them were adult EFL learners above 18. The reason for selecting this sample was its availability and convenience.

Materials and Instruments

All reading comprehension courses offered to the student participants at the above-mentioned university were used for the purpose of collecting requisite data for the study. The classes were held three times a week. The course books *Effective Reading for Advanced Students* written by Simon Greenall and Michael Swan (1988) and taught in Reading Comprehension II courses, *Communicative Reading Skills* written by Akbar Mirhassani and Mohammad Alavi (2008) and taught in Reading Comprehension I course, and *Active Book 4* (2002) taught in Reading Comprehension III were used in the study. Teacher of Reading comprehension course III used both the textbook and some articles. In the course of Reading Comprehension IV, only a selection of articles was used as texts.

These course books provide some reading passages from authentic sources as well as exercises preceding and following them that involve learners in learning activities. All the above texts except articles included a variety of exercises related to the passages. The classroom activities included general class discussions on different topics of each passage in course books and other reading materials, including articles.

Procedures

To collect the data, the researchers observed 30% of the total number of sessions held during the second semester of the 2010–2011 academic year. They also recorded the interactions with two mini-size MP4 wireless recorders. All the collected data were solely based on the researchers’ observations. Greetings, roll calls, and homework-related interactions were not included in the analysis.

To make the analysis as authentic as possible, all the communicatively oriented interactions on topics plus

Table 1. The Coding Scheme Based on Peterson's (2008) Model and Academic Skills Unit (2008) Framework

Types of T-S questions	VIC*		LC*		ER*		EM		Gram		Y/N	
	E	Pers	E	Pers	E	Pers	E	Pers	E	Pers	E	Pers
Percentages of frequencies					ERC	ERC						
					ERP	ERP						
					ERR	ERR						
					ERL	ERL						
					ERA	ERA						
					ERD	ERD						
					ERB	ERB						
Total	39.1%	5.7%	28.1%	0.4%	13.9%	0.7%	—	—	5.7%	0.4%	6%	—

Note: T-S = teacher–student; VIC = Vocabulary in Context; LC = Literal Comprehension; ER = Extended Reasoning; EM = Extended Meaning; Gram = grammar; Y/N = yes/no; E = English; Pers = Persian; ERC = Extended Reasoning Clarity; ERP = Extended Reasoning Precision; ERR = Extended Reasoning Relevance; ERL = Extended Reasoning Logic; ERA = Extended Reasoning Accuracy; ERD = Extended Reasoning Depth; ERB = Extended Reasoning Breadth. *Critical Reading Questions

focus-on-forms or grammar-oriented interactions were recorded and transcribed. The teachers and the learners were not aware that the researchers intended to examine critical thinking. They had simply told that the purpose of the present study was to analyze classroom interactions. Consequently, the observations can be representative of what normally takes place in reading comprehension classes.

Data Collection and Analysis Procedures

The study used a coding scheme designed by the researchers to codify, classify, and analyze different question types. Carefully studying the definitions of Critical Reading Questions (CRQs) and the keywords of each category of critical thinking questions proposed by Peterson's (2008) model and Academic Skills Unit (2008) framework, the researchers developed a coding scheme based on them. The resulting coding scheme has been shown in Table 1. CRQs consist of three levels from the simple recall or recognition of difficult and unfamiliar words as the lowest level to increasingly more complex and abstract mental levels of finding unstated information. The categories have been labeled *Vocabulary in Context*, *Literal Comprehension*, and *Extended Reasoning*. Moreover, ER question that can lead to critical thinking questions comprises seven types of criteria: (a) clarity, (b) accuracy, (c) precision, (d) relevance, (e) depth, (f) breadth, and (g) logic. Therefore, ER classifications are Extended Reasoning Clarity (ERC), Extended Reasoning Accuracy (ERA), Extended Reasoning Precision (ERP), Extended Reasoning Relevance (ERR), Extended Reasoning Depth (ERD), Extended Reasoning Breadth (ERB), and Extended Reasoning Logic (ERL).

A further distinction has also been made between ER and Extended Meaning (EM), statements in which synonyms or

antonyms are used instead of providing examples or expressing statements using paraphrasing. Questions dealing with grammar have been labeled as Gram. The last classification pertains to whenever the learners respond to some questions with just *yes* or *no* without providing any explanation. This category of questions has been labeled (Y/N) yes/no questions. Moreover, English (E) and Persian (Pers) have been used to show the differences in the frequencies of the interactions in these languages.

This study's data were mainly questions preceding and following the reading passages. The first analysis procedure was the codification of these data. After codifying the questions, evaluation procedures were performed to determine what type of CRQ activities were advocated (see examples of CRQ types taken from data in Appendix A). This study was a qualitative type of research; however, some quantitative analysis was done for computing the frequencies of each type of CRQs based on Peterson's (2008) model. The rationale behind the selection of the above-mentioned model and framework was their comprehensiveness and recency.

Results

Initially, descriptive statistical procedures were carried out on reading comprehension questions in general and CRQs in particular. The results of the statistical analysis have been summarized in tables below.

Table 2 shows the frequencies of question types asked by the students and teachers in the above-mentioned courses. As the percentage of the questions indicate, the majority of ER questions, 110.6% and 144.6%, in this study occurred in the courses of Reading Comprehension III and IV, respectively.

Table 3 gives the percentages of all teacher-versus-student-initiated and student-versus-teacher-initiated question types. The percentages of ER questions are more in the

Table 2. Percentages of Frequencies of Student- and Teacher-Initiated Questions in All RC Courses

Types of CRQs	RC courses					
	RC I	RC II (teaching)	RC II (translation)	RC II (mixed majors)	RC III	RC IV
	Percentages of frequencies (%)	Percentages of frequencies (%)	Percentages of frequencies (%)	Percentages of frequencies (%)	Percentages of frequencies (%)	Percentages of frequencies (%)
VIC	80.6	146.2	92	102.65	29.5	33
LC	42.8	11.3	29.1	14.1	30.3	9.1
ER	57.5	22.9	77.7	77.6	110.6	144.6

Note: RC = reading comprehension; CRQs = Critical Reading Questions; VIC = Vocabulary in Context; LC = Literal Comprehension; ER = Extended Reasoning.

Table 3. Percentages of Frequencies of Teacher-Versus-Student-Initiated and Student-Versus-Teacher-Initiated Questions in All RC Courses

RC courses	Types of CRQs					
	VIC		LC		ER	
	T-initiated (%)	S-initiated (%)	T-initiated (%)	S-initiated (%)	T-initiated (%)	S-initiated (%)
RC course I	44.8	42.8	28.5	14.3	14.6	42.9
RC course II (teaching)	80.4	65.7	5	6.3	13.6	9.3
RC course II (translation)	40.2	51.6	24.9	4.2	33.5	44.2
RC course II (mixed)	45.6	57.1	14.1	—	34.8	42.9
RC course III	23.9	5.5	21.9	8.3	43.8	66.8
RC course IV	31.5	1.5	4.6	4.7	60.2	84.4

Note: RC = reading comprehension; CRQs = Critical Reading Questions; VIC = Vocabulary in Context; LC = Literal Comprehension; ER = Extended Reasoning; T = teacher; S = student.

courses of Reading Comprehension III and IV. They are 43.8% versus 66.8% and 60.2% versus 84.4%, respectively.

Table 4 represents the percentages of frequencies of CRQ types that were answered by the teachers. The percentages of correctly answered ER questions answered by the teachers of the courses Reading Comprehension I, II (Teaching, Translation, and Mixed groups), III, and IV were 26.8%, 41.4%, 51.7%, 22%, 45.2%, and 66.2%, respectively.

Discussion and Conclusion

To offer a descriptive picture of the amount of focus devoted to critical thinking in the above-mentioned reading comprehension classes, this study reveals that focus on VIC occurred more frequently than on ER in Reading Comprehension I and II courses (Teaching, Translation, and Mixed groups). Therefore, the highest percentages of question types asked were about VIC form. Table 2 (see Tables A1-A12 in Appendix A) shows that the majority of

ER questions in this study occurred in the courses of Reading Comprehension III and IV. Such a discrepancy between the proportions of ER questions and other types of CRQs such as 29.5% VIC and 30.3% LC in Reading Comprehension III as well as 33% VIC and 9.1% LC in Reading Comprehension IV among these observed courses is considered. Consequently, the minority of VIC questions occurred in these courses. Obviously, the higher the proficiency level, the more the learners are expected to be ready to deal with complex questions because ER questions are more complex than other question types.

Regarding the data in Table 3 (see Tables A1-A6 for teacher-initiated questions and Tables A7-A12 for student-initiated questions in Appendix A), whenever the teachers focused attention on ER questions (14.6%, 13.6%, 33.5%, 34.8%, 43.8%, and 62.6%) the students raised questions about them (42.9%, 9.3%, 44.2%, 42.9%, 66.8%, and 84.4%), respectively. The data reveal consistency between various interactions concerning critical thinking. Therefore,

Table 4. Percentages of Frequencies of CRQs Answered by Teachers

Types of CRQs	RC courses					
	RC I	RC II (teaching)	RC II (translation)	RC II (mixed majors)	RC III	RC IV
	Percentages of frequencies (%)	Percentages of frequencies (%)	Percentages of frequencies (%)	Percentages of frequencies (%)	Percentages of frequencies (%)	Percentages of frequencies (%)
VIC	7.4	19.4	17.8	12.1	30.4	23.5
LC	3.6	30.8	27.0	9.6	28.6	40
ER	26.8	41.4	51.7	22	45.2	66.2

Note: CRQs = Critical Reading Questions; RC = reading comprehension; VIC = Vocabulary in Context; LC = Literal Comprehension; ER = Extended Reasoning.

it seems plausible to assume that the students tended to ask ER questions whenever such questions were posed more frequently. As can be seen in Table 3, it is more noticeable in the course Reading Comprehension IV. The higher level of learners' language proficiency can be regarded another reason for such frequency. The other reason may be the result of the teacher's efficiency and expertise to involve students in critical thinking.

However, the percentages of VIC frequencies asked by the students in the courses of Reading Comprehension III and IV were 5.5% and 1.5%, respectively. They were statistically low compared with other CRQ types. Hence, the focus of the teachers on different question types may demonstrate that their focus played an important role in asking questions and paying attention to different types of CRQs while reading.

Regarding the percentages of LC questions, teachers of all the reading courses except Reading Comprehension I asked fewer VIC and ER questions. In addition, the number of LC questions asked by the students was fewer than other forms of CRQs.

The difference between the number of ER questions asked by the students of Reading Comprehension I and II (Teaching, Translation, and Mixed groups) and those doing courses Reading Comprehension III and IV may be attributed to the kind of ER questions. Such ER questions, multiple-choice tests, or questions eliciting short answers were all used in the courses of Reading Comprehension I and II (Teaching, Translation, and Mixed groups) and they may not have triggered the students to ask more questions.

As the data in Table 4 (see Table A13 in Appendix A) demonstrate, the students' inability in answering ER questions in all the Reading Comprehension courses of this study seems to be outstanding. In this regard, the percentages of

correctly answered ER questions answered by the teachers of the courses Reading Comprehension I, II (Teaching, Translation, and Mixed groups), III, and IV were 26.8%, 41.4%, 51.7%, 22%, 45.2%, and 66.2%, respectively. These percentages indicate that the inadequacy of students concerning ER questions (resulting in critical thinking) is salient and should be taken into consideration by both teachers and their students.

In this sense, as far as textually implicit questions asked by the teachers are concerned, it seems that the students were less able to analyze and solve their problems concerning critical thinking in reading.

It is likely that some teachers regard VIC questions as effective means of comprehending texts and, therefore, frequently incorporate them into their lessons. However, they may consider ER questions time-consuming. As the data in Table 4 suggest, the percentages of VIC questions answered by the teachers in Reading Comprehension courses I and II (Teaching, Translation, and Mixed groups) were fewer than those of Reading Comprehension courses III and IV.

Another reading inadequacy of the students in this study falls into the category of textually explicit information. Teachers can use LC questions to help students comprehend the text better and deeper. Simply put, it is the most basic level of understanding reading passages. However, statistical frequencies of textually explicit or direct questions answered by the teachers are smaller than those of implicit ones.

Considering the recent critical notions on the role of critical thinking as a significant issue in language learning and reading comprehension, it seems necessary to pay more attention to ER questions and their outcomes in critical thinking. Finally, it is hoped that findings of this study will encourage the well-planned instruction of critical thinking and problem solving in EFL contexts.

Appendix A

Table A1. Percentages of Frequencies of Teacher-Versus Student-Initiated Question Types in RC I

Types of T-S questions	VIC*		LC*		ER*		EM		Gram		Y/N	
	E	Pers	E	Pers	E	Pers	E	Pers	E	Pers	E	Pers
Percentages of frequencies	39.1%	5.7%	28.1%	0.4%	ERC	ERC	—	—	5.7%	0.4%	6%	—
					11%	0.7%						
					ERP	ERP						
					2.1%	—						
					ERR	ERR						
					—	—						
					ERL	ERL						
					0.4%	—						
					ERA	ERA						
					—	—						
					ERD	ERD						
					—	—						
					ERB	ERB						
					0.4%	—						
Total	39.1%	5.7%	28.1%	0.4%	13.9%	0.7%	—	—	5.7%	0.4%	6%	—

Note: RC = reading comprehension; T-S = teacher–student; VIC = Vocabulary in Context; LC = Literal Comprehension; ER = Extended Reasoning; EM = Extended Meaning; Gram = grammar; Y/N = yes/no; E = English; Pers = Persian; ERC = Extended Reasoning Clarity; ERP = Extended Reasoning Precision; ERR = Extended Reasoning Relevance; ERL = Extended Reasoning Logic; ERA = Extended Reasoning Accuracy; ERD = Extended Reasoning Depth; ERB = Extended Reasoning Breadth.

*Critical Reading Questions

Table A2. Percentages of Frequencies of Teacher-Versus Student-Initiated Question Types in RC II (Teaching)

Types of T-S interactions	VIC*		LC*		ER*		EM		Gram		Y/N	
	E	Pers	E	Pers	E	Pers	E	Pers	E	Pers	E	Pers
Percentages of frequencies	75.9%	4.5%	5%	—	ERC	ERC	—	—	1%	—	—	—
					4.8%	0.2%						
					ERP	ERP						
					6.4%	—						
					ERR	ERR						
					—	—						
					ERL	ERL						
					0.6%	—						
					ERA	ERA						
					0.4%	—						
					ERD	ERD						
					0.8%	—						
					ERB	ERB						
					0.4%	—						
Total	75.9%	4.5%	5%	—	13.4%	0.2%	—	—	1%	—	—	—

Note: RC = reading comprehension; T-S = teacher–student; VIC = Vocabulary in Context; LC = Literal Comprehension; ER = Extended Reasoning; EM = Extended Meaning; Gram = grammar; Y/N = yes/no; E = English; Pers = Persian; ERC = Extended Reasoning Clarity; ERP = Extended Reasoning Precision; ERR = Extended Reasoning Relevance; ERL = Extended Reasoning Logic; ERA = Extended Reasoning Accuracy; ERD = Extended Reasoning Depth; ERB = Extended Reasoning Breadth.

*Critical Reading Questions

Appendix A (continued)

Table A3. Percentages of Frequencies of Teacher-Versus Student-Initiated Question Types in RC II (Translation)

Types of T-S questions	VIC*		LC*		ER*		EM		Gram		Y/N	
	E	Pers	E	Pers	E	Pers	E	Pers	E	Pers	E	Pers
Percentages of frequencies	38.7%	1.5%	24.3%	0.6%	ERC	ERC	0.2%	—	0.8%	—	0.4%	—
					6.3%	0.4%						
					ERP	ERP						
					9.4%	—						
					ERR	ERR						
					7%	0.2%						
					ERL	ERL						
					2%	—						
					ERA	ERA						
					7.6%	—						
					ERD	ERD						
					—	0.2%						
					ERB	ERB						
					0.4%	—						
Total	38.7%	1.5%	24.3%	0.6%	32.7%	0.8%	0.2%	—	0.8%	—	0.4%	—

Note: RC = reading comprehension; T-S = teacher–student; VIC = Vocabulary in Context; LC = Literal Comprehension; ER = Extended Reasoning; EM = Extended Meaning; Gram = grammar; Y/N = yes/no; E = English; Pers = Persian; ERC = Extended Reasoning Clarity; ERP = Extended Reasoning Precision; ERR = Extended Reasoning Relevance; ERL = Extended Reasoning Logic; ERA = Extended Reasoning Accuracy; ERD = Extended Reasoning Depth; ERB = Extended Reasoning Breadth.

*Critical Reading Questions

Table A4. Percentages of Frequencies of Teacher-Versus Student-Initiated Question Types in RC II (Mixed Groups)

Types of T-S questions	VIC*		LC*		ER*		EM		Gram		Y/N	
	E	Pers	E	Pers	E	Pers	E	Pers	E	Pers	E	Pers
Percentages of frequencies	42.1%	3.45%	14.1%	—	ERC	ERC	4.5%	—	0.7%	—	0.35%	—
					15.2%	—						
					ERP	ERP						
					6.9%	—						
					ERR	ERR						
					4.8%	—						
					ERL	ERL						
					3.1%	—						
					ERA	ERA						
					3.1%	—						
					ERD	ERD						
					0.7%	—						
					ERB	ERB						
					1%	—						
Total	42.1%	3.45%	14.1%	—	34.8%	—	4.5%	—	0.7%	—	0.35%	—

Note: RC = reading comprehension; T-S = teacher–student; VIC = Vocabulary in Context; LC = Literal Comprehension; ER = Extended Reasoning; EM = Extended Meaning; Gram = grammar; Y/N = yes/no; E = English; Pers = Persian; ERC = Extended Reasoning Clarity; ERP = Extended Reasoning Precision; ERR = Extended Reasoning Relevance; ERL = Extended Reasoning Logic; ERA = Extended Reasoning Accuracy; ERD = Extended Reasoning Depth; ERB = Extended Reasoning Breadth.

*Critical Reading Questions

(continued)

Appendix A (continued)

Table A5. Percentages of Frequencies of Teacher-Versus Student-Initiated Question Types in RC III

Types of T-S questions	VIC*		LC*		ER*		EM		Gram		Y/N	
	E	Pers	E	Pers	E	Pers	E	Pers	E	Pers	E	Pers
Percentages of frequencies	22.9%	1%	20.9%	1%	ERC 20.9%	ERC 2.1%	—	—	8.3%	—	2.1%	—
					ERP 11.5%	ERP 1%						
					ERR —	ERR —						
					ERL 3.1%	ERL —						
					ERA 1%	ERA —						
					ERD —	ERD —						
					ERB 4.2%	ERB —						
Total	22.9%	1%	20.9%	1%	40.7%	3.1%	—	—	8.3%	—	2.1%	—

Note: RC = reading comprehension; T-S = teacher–student; VIC = Vocabulary in Context; LC = Literal Comprehension; ER = Extended Reasoning; EM = Extended Meaning; Gram = grammar; Y/N = yes/no; E = English; Pers = Persian; ERC = Extended Reasoning Clarity; ERP = Extended Reasoning Precision; ERR = Extended Reasoning Relevance; ERL = Extended Reasoning Logic; ERA = Extended Reasoning Accuracy; ERD = Extended Reasoning Depth; ERB = Extended Reasoning Breadth.

*Critical Reading Questions

Table A6. Percentages of Frequencies of T-S Interactions in RC IV

Types of T-S interactions	VIC*		LC*		ER*		EM		Gram		Y/N	
	E and Pers		E and Pers		E and Pers		E and Pers		E and Pers		E and Pers	
Percentages of frequencies	31.5%		4.6%		ERC 18.5%		—		3.7%		—	
					ERP 13%							
					ERR 4.6%							
					ERL 7.4%							
					ERA 5.6%							
					ERD 6.5%							
					ERB 4.6%							
Total	31.5%		4.6%		60.2%		—		3.7%		—	

Note: T-S = teacher–student; RC = reading comprehension; VIC = Vocabulary in Context; LC = Literal Comprehension; ER = Extended Reasoning; EM = Extended Meaning; Gram = grammar; Y/N = yes/no; E = English; Pers = Persian; ERC = Extended Reasoning Clarity; ERP = Extended Reasoning Precision; ERR = Extended Reasoning Relevance; ERL = Extended Reasoning Logic; ERA = Extended Reasoning Accuracy; ERD = Extended Reasoning Depth; ERB = Extended Reasoning Breadth.

*Critical Reading Questions

(continued)

Appendix A (continued)

Table A7. Percentages of Frequencies of Student-Versus Teacher-Initiated Question Types in RC I

Types of S-T questions	VIC*		LC*		ER*		EM		Gram		Y/N	
	E	Pers	E	Pers	E	Pers	E	Pers	E	Pers	E	Pers
Percentages of frequencies	28.5%	14.3%	14.3%	—	ERC 14.3%	ERC 14.3%	—	—	—	—	—	—
					ERP 14.3%	ERP —						
					ERR —	ERR —						
					ERL —	ERL —						
					ERA —	ERA —						
					ERD —	ERD —						
					ERB —	ERB —						
Total	28.5%	14.3%	14.3%	—	28.6%	14.3%	—	—	—	—	—	—

Note: RC = reading comprehension; S-T = student-teacher; VIC = Vocabulary in Context; LC = Literal Comprehension; ER = Extended Reasoning; EM = Extended Meaning; Gram = grammar; Y/N = yes/no; E = English; Pers = Persian; ERC = Extended Reasoning Clarity; ERP = Extended Reasoning Precision; ERR = Extended Reasoning Relevance; ERL = Extended Reasoning Logic; ERA = Extended Reasoning Accuracy; ERD = Extended Reasoning Depth; ERB = Extended Reasoning Breadth.

*Critical Reading Questions

Table A8. Percentages of Frequencies of Student-Versus Teacher-Initiated Question Types in RC II (Teaching)

Types of S-T questions	VIC*		LC*		ER*		EM		Gram		Y/N	
	E	Pers	E	Pers	E	Pers	E	Pers	E	Pers	E	Pers
Percentages of frequencies	56.3%	9.4%	6.3%	—	ERC 3.1%	ERC 3.1%	—	—	12.5%	6.2%	—	—
					ERP 3.1%	ERP —						
					ERR —	ERR —						
					ERL —	ERL —						
					ERA —	ERA —						
					ERD —	ERD —						
					ERB —	ERB —						
Total	56.3%	9.4%	6.3%	—	6.2%	3.1%	—	—	12.5%	6.2%	—	—

Note: RC = reading comprehension; S-T = student-teacher; VIC = Vocabulary in Context; LC = Literal Comprehension; ER = Extended Reasoning; EM = Extended Meaning; Gram = grammar; Y/N = yes/no; E = English; Pers = Persian; ERC = Extended Reasoning Clarity; ERP = Extended Reasoning Precision; ERR = Extended Reasoning Relevance; ERL = Extended Reasoning Logic; ERA = Extended Reasoning Accuracy; ERD = Extended Reasoning Depth; ERB = Extended Reasoning Breadth.

*Critical Reading Questions

(continued)

Appendix A (continued)

Table A9. Percentages of Frequencies of Student-Versus Teacher-Initiated Question Types in RC II (Translation)

Types of S-T questions	VIC*		LC*		ER*		EM		Gram		Y/N	
	E	Pers	E	Pers	E	Pers	E	Pers	E	Pers	E	Pers
Percentages of frequencies	43.3%	8.3%	4.2%	—	ERC 10.8%	ERC 20.8%	—	—	—	—	—	—
					ERP —	ERP 4.2%						
					ERR —	ERR —						
					ERL —	ERL 4.2%						
					ERA —	ERA —						
					ERD —	ERD —						
					ERB 4.2%	ERB —						
Total	43.3%	8.3%	4.2%	—	15%	29.2%	—	—	—	—	—	—

Note: RC = reading comprehension; S-T = student–teacher; VIC = Vocabulary in Context; LC = Literal Comprehension; ER = Extended Reasoning; EM = Extended Meaning; Gram = grammar; Y/N = yes/no; E = English; Pers = Persian; ERC = Extended Reasoning Clarity; ERP = Extended Reasoning Precision; ERR = Extended Reasoning Relevance; ERL = Extended Reasoning Logic; ERA = Extended Reasoning Accuracy; ERD = Extended Reasoning Depth; ERB = Extended Reasoning Breadth.

*Critical Reading Questions

Table A10. Percentages of Frequencies of Student-Versus Teacher-Initiated Question Types in RC II (Mixed Groups)

Types of S-T questions	VIC*		LC*		ER*		EM		Gram		Y/N	
	E	Pers	E	Pers	E	Pers	E	Pers	E	Pers	E	Pers
Percentages of frequencies	42.8%	14.3%	—	—	ERC 28.6%	ERC 3.5%	—	—	—	—	—	—
					ERP 3.6%	ERP —						
					ERR —	ERR —						
					ERL 3.6%	ERL —						
					ERA —	ERA —						
					ERD 3.6%	ERD —						
					ERB —	ERB —						
Total	42.8%	14.3%	—	—	39.4%	3.5%	—	—	—	—	—	—

Note: RC = reading comprehension; S-T = student–teacher; VIC = Vocabulary in Context; LC = Literal Comprehension; ER = Extended Reasoning; EM = Extended Meaning; Gram = grammar; Y/N = yes/no; E = English; Pers = Persian; ERC = Extended Reasoning Clarity; ERP = Extended Reasoning Precision; ERR = Extended Reasoning Relevance; ERL = Extended Reasoning Logic; ERA = Extended Reasoning Accuracy; ERD = Extended Reasoning Depth; ERB = Extended Reasoning Breadth.

*Critical Reading Questions

(continued)

Appendix A (continued)

Table A11. Percentages of Frequencies of S-T Interactions in RC III

Types of S-T questions	VIC*		LC*		ER*		EM		Gram		Y/N	
	E	Pers	E	Pers	E	Pers	E	Pers	E	Pers	E	Pers
Percentages of frequencies	5.5%	—	2.8%	5.5%	ERC 27.8%	ERC 13.9%	—	—	13.9%	5.5%	—	—
					ERP 11.1%	ERP 5.6%						
					ERR —	ERR —						
					ERL —	ERL —						
					ERA 2.8%	ERA —						
					ERD 2.8%	ERD —						
					ERB —	ERB 2.8%						
Total	5.5%	—	2.8%	5.5%	44.5%	22.3%	—	—	13.9%	5.5%	—	—

Note: S-T = student-teacher; RC = reading comprehension; VIC = Vocabulary in Context; LC = Literal Comprehension; ER = Extended Reasoning; EM = Extended Meaning; Gram = grammar; Y/N = yes/no; E = English; Pers = Persian; ERC = Extended Reasoning Clarity; ERP = Extended Reasoning Precision; ERR = Extended Reasoning Relevance; ERL = Extended Reasoning Logic; ERA = Extended Reasoning Accuracy; ERD = Extended Reasoning Depth; ERB = Extended Reasoning Breadth.

*Critical Reading Questions

Table A12. Percentages of Frequencies of Student-Versus Teacher-Initiated Question Types in RC IV

Types of S-T questions	VIC*		LC*		ER*		EM		Gram		Y/N	
	E and Pers	E and Pers	E and Pers	E and Pers	E and Pers	E and Pers	E and Pers	E and Pers	E and Pers	E and Pers	E and Pers	E and Pers
Percentages of frequencies	1.5%	—	4.7%	—	ERC 26.6%	—	—	—	9.4%	—	—	—
					ERP 18.7%							
					ERR 4.7%							
					ERL 12.5%							
					ERA 4.7%							
					ERD 3.1%							
					ERB 14.1%							
Total	1.5%	—	4.7%	—	84.4%	—	—	—	9.4%	—	—	—

Note: RC = reading comprehension; S-T = student-teacher; VIC = Vocabulary in Context; LC = Literal Comprehension; ER = Extended Reasoning; EM = Extended Meaning; Gram = grammar; Y/N = yes/no; E = English; Pers = Persian; ERC = Extended Reasoning Clarity; ERP = Extended Reasoning Precision; ERR = Extended Reasoning Relevance; ERL = Extended Reasoning Logic; ERA = Extended Reasoning Accuracy; ERD = Extended Reasoning Depth; ERB = Extended Reasoning Breadth.

*Critical Reading Questions

(continued)

Appendix A (continued)

Table A13. Percentages of Frequencies of CRQs Answered by Teachers

RC courses	RC I	RC II (teaching)	RC II (translation)	RC II (different groups)	RC III	RC IV
	Percentages of frequencies (%)	Percentages of frequencies (%)	Percentages of frequencies (%)	Percentages of frequencies (%)	Percentages of frequencies (%)	Percentages of frequencies (%)
VIC	7.4	19.4	17.8	12.1	30.4	23.5
LC	3.6	30.8	27	9.6	28.6	40
ER	26.8	41.4	51.7	22	45.2	66.2

Note: CRQs = Critical Reading Questions; RC = reading comprehension; VIC = Vocabulary in Context; LC = Literal Comprehension; ER = Extended Reasoning.

Below are examples of Critical Reading Question (CRQ) types taken from data:

Vocabulary-in-Context (VIC) question

Teacher: "What is the meaning of 'solitary'?"

Students: "Alone"

Literal Comprehension (LC) question

Teacher: "Was he in Los Angeles on Thanksgiving Day?"

Student: "No, He was away from his home and city."

Extended Reasoning (ER) question (Clarity)

Student: "I don't understand this sentence! By 1:00 p.m. the floor will be washed around your feet."

Teacher: "It means you are sitting on your seat and they are washing the floor. It's unrespectable in this sense when you are eating in restaurant. They say please go out we want to wash. So they are washing the earth around your feet or the surface of the restaurant."

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Bios

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