

Original Paper

The Relationship between Critical Thinking and Gender in Second Language Learning

Mohammad Reza Khodashenas¹

¹ Mohammad Reza Khodashenas, PhD in TEFL, Ministry of Education, Mashhad, Iran

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Abstract

This study investigated the relationship between critical thinking and gender in second language learning. To do this, thirty students who participated in a TOEFL preparation course at Shokouh English language institute, Mashhad, Iran, were selected as the participants. Limbach, Waugh, and Duran's model of critical thinking was used as a guiding framework for teaching critical skills to the participants over the course of ten sessions. The model involved five steps: (a) determining and discovering learning objectives; (b) teaching through questioning; (c) practicing before assessing; (d) reviewing, refining and improving; and (e) providing feedback. To examine the development of critical thinking skills among the participants, a critical thinking questionnaire was designed. Results of the data analysis revealed a poor level of critical thinking among the learners, and showed that males and females were not significantly different from each other in applying critical thinking skills.

Keywords

critical thinking, gender, second language learning, education systems, reflective thinking

1. Introduction

Although the notion of critical thinking has been defined in different ways, there are core elements that can clarify the general framework of critical thinking. To enhance the analytical capacity of their members, modern institutions and education systems have increasingly relied on critical thinking skills/strategies. This specific mode of thinking is usually described as being a purposeful and goal-oriented process which an individual solves problems, make inferences, predict probabilities, and make decisions. These qualities indicate that modern methods of education should necessarily rely on the postulates of critical thinking (Sezer, 2008).

Second language learning represents a highly dynamic context for investigating various levels of critical thinking. On the one hand, teachers must receive sufficient training on how to successfully

implement critical thinking skills and how to assess them in their classrooms. On the other hand, critical thinking seems to have a significant effect on students' active involvement in their studies and class performance. Yet, to gain a better insight into how critical thinking works in a language teaching environment, many studies should be conducted on various variables in different cultural contexts. One of the seemingly influential factors is gender.

This study investigated levels of critical thinking in a context of Iranian English teaching/learning, and explored the possible impact of gender on the development of critical thinking among the participants. The main question was whether or not males and females are different in terms of expanding their critical strategies under similar conditions. To achieve this purpose, this study employed Limbach, Waugh, and Duran's (2006) critical thinking model as a guideline for teaching critical strategies to the participants. To examine the effectiveness of the method, Cottrell's (2005) questionnaire of critical thinking was used. Analyzing the data gathered through these procedures revealed any hypothetical difference between males and females in terms of developing critical thinking skills, in second language learning.

2. Review of Literature

Although various definitions of critical thinking have been proposed, there is still no universally acknowledged definition of the notion. According to Halpern (1999), critical thinking skills involve "the use of cognitive skills or strategies that increase the probability of a desirable outcome...., Critical thinking is a purposeful and goal-oriented process. This kind of thinking includes solving problems, formulating inferences, calculating likelihoods, and making decisions" (p. 70). Critical thinking skills normally demand the mastery of a combination of skills/strategies such as gaining knowledge and shaping perceptions, while applying, analyzing, synthesizing, and evaluating the data obtained from these skills/strategies when facing a new situation (Bloom, 1956).

According to Paul (1993), critical thinking encompasses a set of intellectual standards that individuals use while thinking. In another attempt to define critical thinking, Ennis (1985) regards the notion as reflective thinking focused on deciding what to do or believe. Bailin (2002) viewed critical thinking as a special mode of thinking that meets specified criteria or standards of adequacy and accuracy. Cottrell (2005) assumed that using mental processes, such as attention, selection and judgment, can help manifest critical thinking in cognitive activities.

Critical thinking is specifically important in education. According to Dewey (1933), the key purpose of education is learning how to think. As part of their educational involvement, learners need to develop, expand and apply critical thinking skills and strategies to their academic studies (Kealey et al., 2005). Sezer (2008) believed that critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing and evaluating information gathered or observed. There are, of course, various definitions of critical thinking, each highlighting a particular quality of the notion:

- “the propensity and skill to engage in an activity with reflective skepticism” (McPeck, 1990, p. 8);
- “reflective and reasonable thinking that is focused on deciding what to believe or do” (Ennis, 1985, p. 45);
- “skillful, responsible thinking that facilitates good judgment because it relies upon criteria, is self-correcting, and is sensitive to context” (Lipman, 1988, p. 39);
- “purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteria based, or conceptual considerations upon which that judgment is based” (Facione, 1990, p. 3);
- “disciplined, self-directed thinking that exemplifies the perfections of thinking appropriate to a particular mode or domain of thought” (Paul, 1992, p. 9);
- “thinking that is goal-directed and purposive, thinking aimed at forming a judgment, where the thinking itself meets standards of adequacy and accuracy” (Bailin, Case, Coombs & Daniels, 1999, p. 287);
- “judging in a reflective way what to do or what to believe” (Facione, 2000, p. 61).

Regarding the characteristics of a critical person, the Critical Thinking Community (2011 as cited in Salahshoor et al., 2016, p. 143) has enumerated the several qualities. According to this understanding, an ideal critical thinker should (a) raise essential and critical questions and formulate them clearly and accurately; (b) gather relevant information and use it to interpret and discuss problems effectively; (c) suggest well-organized solutions and well-reasoned findings and evaluate them against relevant criteria/standards; (d) think open-mindedly and assess his/her assumptions and findings within alternative systems of thought; and (e) communicate and interact effectively with others and attempt to figure out solutions for complex problems.

Many studies have explored critical thinking and its relationships to various aspects of language learning, teaching and assessment, as well as other to other fields of language studies. In their study on the impact of critical discourse analysis on critical thinking skills, Hashemi and Ghanizadeh (2012) observed that critical discourse analysis had a positive and significant effect on learners’ development of critical thinking. The study also found that critical discourse analysis had a considerable impact on the interpretation and recognition of unstated assumptions, which was a skill associated with critical thinking. According to Healy (1990), critical minds constitute a community’s most valuable and important intellectual sources of capital that deserve the time and efforts to be fully cultivated.

Addressing the role of teachers and students in developing critical thinking skills, Slavin (2009) believed that teachers play a crucial role in this regard. He pointed out that developing and expanding critical thinking strategies and skills requires thoughtful, prepared, effective, intentional and reflective teachers. Similarly, Brookfield (2006) believed that through developmental stages of critical thinking, students are required to analyze and evaluate information, incorporate discovery strategies, and make judgments. Moreover, Tsui (2002) suggested that students as critical thinkers must be asked to challenge the current situation and understand and analyze complicated concepts.

Trottier (2009) stated that critical thinking strategies should be taught from the first session of the course, be practiced every session, and be pursued as one of the main objectives of the course. Schpersman (1991) proposed two approaches to the teaching of critical thinking skills. Based on the first approach, which emphasizes the role of teachers, students should be gradually exposed to advanced critical thinking skills, as teachers modify their pedagogical methods and testing procedures. The second approach involves the use of critical thinking tasks and exercises, programs, syllabi and language materials that have been prepared by a group of language experts and can be purchased and implemented by teachers.

Focusing on the importance of training teachers for the purpose of teaching critical thinking, Black (2005) contended that teachers should be sufficiently prepared to organize their activities based on critical thinking strategies. The reason for this preparation is that teachers usually permit their students to implement undisciplined and random thought. Black further emphasizes that the development of critical thinking skills requires clearly defined goals which allow the learners to reasonably engage in the subjects they learn rather than mechanically memorize them. As facilitators of classroom resources, teachers must encourage and stimulate learners to discover various dimensions of the topics they deal with. Another important issue is the assessment of critical thinking skills. Wal (1999) has proposed two main approaches: (a) assessing critical thinking skills in relation to other relevant academic skills, such as oral presentations, writing, reading or practical problem solving; (b) assessing learners' critical thinking skills by inviting them to complete an assessment scale. Paul (1992) assumed that the most suitable technique to evaluate and assess students' critical thinking skills/strategies is to teach them to evaluate their own critical thinking styles. Considering his research into how students can learn to assess their own learning process, Paul (1992) argued that students should only receive feedback from teachers, otherwise they may not develop an advanced level of critical thinking.

Critical thinking could be also investigated in the light of other concepts or theories. Kuhn (1999) viewed critical thinking as a form of meta-cognition which includes meta-cognitive knowledge, meta-strategic knowledge, and epistemological knowledge. On the other hand, some researchers, such as Willingham (2007) and Van Gelder (2005), postulated that meta-cognition could fall under the umbrella of critical thinking, when it is seen as a set of strategies and skills to be employed. Nonetheless, others, such as Lipman (1988), believed that meta-cognition and critical thinking are basically different notions.

Another factor that seems to serve as a predictor of critical thinking is gender, which has been investigated in nearly all studies on critical thinking. Willson (1989) found that gender was an effective predictor of critical thinking ability. Ghadia et al. (2012) tried to determine males' and females' levels of critical thinking disposition. The result revealed that there was no statistically significant relationship between female and male students, as far as critical thinking disposition was concerned. Using Watson-Glaser's Critical Thinking Appraisal, Bagheri and Ghanizadeh (2016) revealed that gender did not have a function in students' critical thinking skills.

Kuhn (1992), similar to Baxter-Magolda (1992), concluded that neither male students nor female ones were different in terms of reasoning patterns and justifying thoughts, as they did not favor any particular patterns. On the other hand, Dow and Wood (2006) observed that contrary to males, females used problem-solving strategies and critical thinking skills in a style that was less direct and confrontational. Rahimi and Soryani (2014) conducted research into the relationship between teachers' critical thinking strategies and vocabulary learning strategies instruction in a sample of males and females. The study revealed that strategy which was used in teaching vocabulary was inversely associated with inference and analysis strategies. They also revealed that male teachers with higher inference skills used less vocabulary-learning strategies in their classes.

According to Watson and Glaser (2002), critical thinking is an amalgamation of knowledge, attitudes and practices developed by individuals: (a) attitudes of inquiry represents an individual's ability to recognize levels of difficulty of the content and existing problems and to provide evidence to support what is thought to be true; (b) knowledge of valid inferences help the individual deal with abstractions and generalizations in which the weight or accuracy of different kinds of evidence are logically determined; and (c) strategies involve practicing and implementing the attitudes and knowledge (as mentioned in the first two categories).

Limbach, Waugh, and Duran (2006) developed a five-step model to examine critical thinking skills, which are directly related to dynamic learning (Arias Rodriguez & et al., 2014). The steps proposed in the model are illustrated in Figure 1.

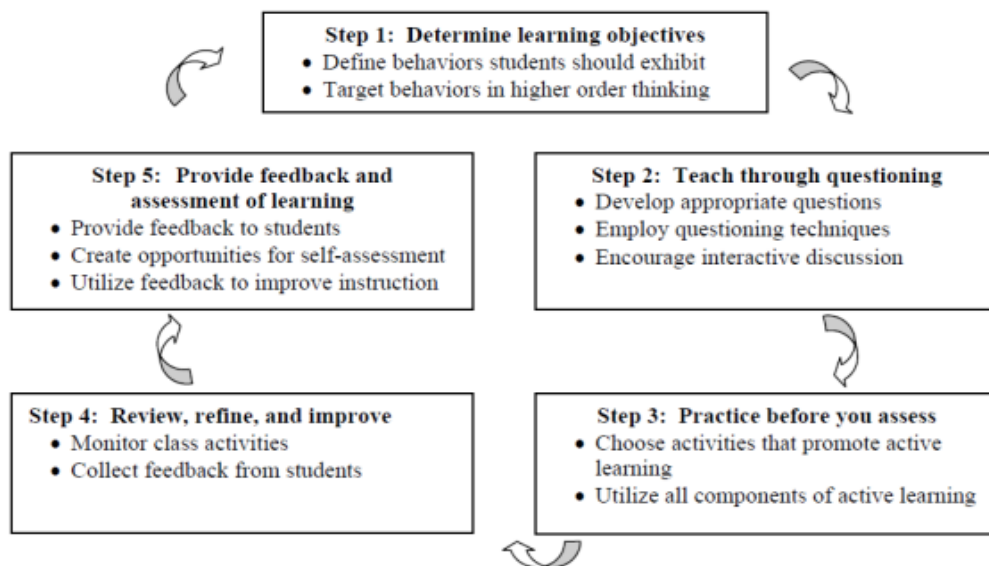


Figure 1. Limbach, Waugh, and Duran (2006) Critical Thinking Model

To understand the importance of this model, one has to consider the increasing significance of teaching critical thinking strategies in pedagogical contexts. Piaget (1952) and Vygotsky (1986) emphasized the needs for critical thinking, concluding that the development of critical thinking strategies and formal

operational thought should begin from late childhood and should hopefully mature throughout adulthood. Learners' knowledge of their levels of critical thinking can help them expand and improve the breadth of critical thinking, thus enhancing the quality of their learning process. Therefore, because of the importance of critical thinking in all aspects of life and education, and because this issue is rarely discussed in some educational settings in terms of gender (especially in third world countries like Iran), the present study investigated the relationship between critical thinking skills and gender, drawing on Limbach, Waugh, and Duran's (2006) model of developing critical thinking.

3. Method

3.1 Participants

The participants of this study were thirty students who took part in a TOEFL course at Shokouh English language institute, Mashhad, Iran. They were divided in two equal groups of males and females (fifteen in each group), aged 20-34. The average age for females was 23.42 years old and that of males was 26.23. All the participants had the same background language (Persian).

3.2 Instrumentation

The main instrument used in this study was the questionnaire primarily designed by Cottrell (2005). It was designed to assess students' critical thinking skills and abilities. The questionnaire consisted of 25 questions. The items made it possible to comprehensively assess the participants' critical thinking ability. The intensity for each item in the scale ranged from 0 (strongly disagree) to 4 (strongly agree).

3.3 Procedure

After the participants were selected, over the course of ten sessions, the course syllabus was presented to the students based on Limbach, Waugh, and Duran's (2006) critical thinking model. Step 1 of the model addressed the learning objectives; at the beginning of the course, the importance of the course and its objectives were explained to the participants. Further, the outlines of the TOEFL exam and the course were mentioned. Similarly, the course syllabus and the activities and tasks to be implemented during the course were presented and explained. Step 2 addressed the idea of teaching through questioning, as an important part of the teaching/learning process. At this stage the researcher used questions to encourage interaction between him and students and challenging them to defend their positions. Using both convergent (closed-ended) and divergent(open-ended) questions, the teacher was able to foster the students' thinking skills.

Step 3 of the model, concerned with practicing before assessing, involved an investigation of the objectives, purposes and questions that could be realized by using a variety of tasks and activities. Through implementing an active learning approach (Bonwell et al., 1991), the teacher tried to involve the students in activities that made them scrutinize their assumptions. Students were given a reading task and then a short reading comprehension quiz was administered at the beginning of the class to provide both practice and feedback about the knowledge and comprehension aspects of the topic raised. Whenever possible, direct kinds of learning activities, such as journaling, acting in an authentic setting,

and practicing dialogue in or outside the class, were used by the researcher.

During step 4, which involved reviewing, refining and improving, classroom activities were closely monitored and students' participation was tracked by using a diary and by keeping portfolios assessing students' progress through the course sessions. For example, a particular task of writing was given to students and they were asked to write a paragraph about the problem in the given task; then each student would read his/her solution and finally received his/her classmates' comments for the revision of his/her task. In the last step of the model, which dealt with providing feedback and assessing the learning process, the students were asked to monitor and assess their own learning and determine their own level of learning. They were also encouraged to engage in peer assessment and give comments about each other's progress through the course. Finally, the teacher administered an exam to judge and analyze his students' progress through the term. In the last session of the class, the researcher distributed the questionnaires among the students and asked them to check the items honestly and meticulously. The interval data collected were analyzed through analyzed descriptive statistics (mean and standard deviation) and t-test. To understand the performance of both (males and females) groups in terms of critical thinking skills and to find their differences, the mean scores of both groups were calculated. T-test was conducted on the obtained mean scores to determine any statistically significant difference between them.

4. Results

To answer the main question of this study, whether males and females were different in terms of critical thinking skills, the data gathered were analyzed. The total mean scores for both males and females were then calculated (see Table 1).

Table 1. Total Mean Scores for Males and Females

| Grou | N | Mean | Std. Deviation |
|-------------|----------|-------------|-----------------------|
| Males | 15 | 60.53 | 7.85 |
| Females | 15 | 59.38 | 8.15 |

As Table 1 shows, regarding the total mean scores of males and females, the obtained mean for males (60.53) was relatively higher than that of females (59.38), which superficially supported the hypothesis that males outperformed females on critical thinking strategies. Yet, to precisely compare the means of both groups, a t-test was run (Table 2).

Table 2. Independent T-test Results for Males' and Females' Scores

| | t-observed | df | t-critical |
|-------------------------|-------------------|-----------|-------------------|
| Equal variances assumed | 1.33 | 28 | 2.04 |

Based on the result of the t-test, there was not any significant difference between the critical thinking skills used by females (mean=59.38, SD=8.15) and males (mean=60.53, SD=7.85) ($t(28)=1.33$ was lower than the critical $t(2.04)$). Thus, it can be concluded that gender did not affect the critical thinking level of the learners. The results of the comparison of the total mean scores of both males and females on the questionnaire is shown in Figure 2.

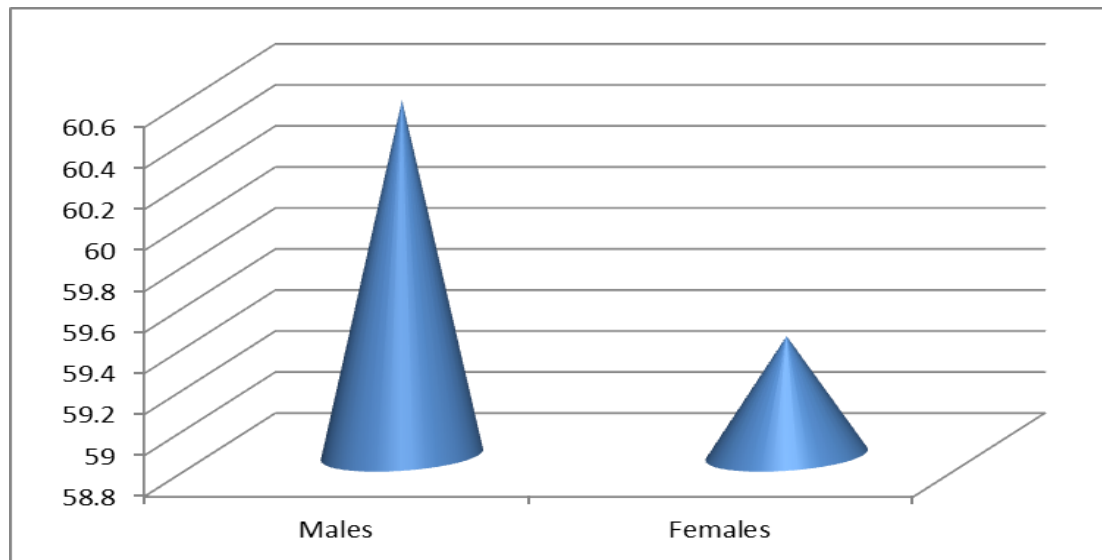


Figure 2. Comparison of the Total Mean Scores of Males and Females

5. Discussion and Conclusion

Modern education systems, including language teaching/learning institutes, have shown increasing interest in integrating critical thinking strategies into their methodologies. There are, however, many questions to be answered before critical thinking strategies can be perfectly implemented in educational settings. The purpose of this study was to investigate the relationship between gender and critical thinking skills through Limbach, Waugh, and Duran's (2006) model of developing critical thinking. The obtained total mean scores of both males and females (59.95) showed that the participants of both groups did not reach the minimum acceptable level (62.5). As a result, the participants showed a relatively limited command of critical thinking strategies in the process of second language learning. The results of the quantitative data analysis indicated that there was no difference between female and male learners in terms of their critical thinking skills.

The findings of this study were in line with Salahshoor and Rafee's (2016) observations. They used Watson-Glaser Critical Thinking Appraisal Test (2002) (WGCTA) questionnaire, finding a poor condition of critical thinking among Iranian EFL learners. Considering the importance of critical thinking strategies in the modern world, this level of critical thinking was not satisfactory for learners of an international language. Students' poor performance, as revealed through the results of the critical thinking questionnaires, could be assigned to different factors. According to Sariolghalam (2007), the

deficiency in thinking ability in the Iranian education context and consequently among its students is partly rooted in a long history of methodological inconsistency and a lack of any long-term institutional philosophy.

Sariolghalam (2007) further argued that the Iranian educational system merely presents raw materials to students without satisfactory instruction on how to critically apply, analyze, synthesize, and evaluate these materials. Moreover, Ghanbari (2011) believed that people in a collectivist society, especially in Iran, judge the appropriateness of issues by trying to match them with what is conventionally considered as right or proper from a societal viewpoint. According to Aliakbari and Sadeghdaghighi (2012) lack of consideration of critical thinking strategies, and inconsistent ways of implementing critical strategies in the educational environment, the students' unawareness of these skills and strategies may account for the poor status of critical thinking among Iranian learners. According to Hashemi (2010), the major problem that the Iranian educational system faces is the goal-centered attitude it pursues, because it emphasizes memorizing materials in learning and knowledge transmission. Yet, if schools and universities applied critical thinking skills as one of their objectives, students could develop better critical thinking levels.

The findings of the present study could be regarded as a guideline for teachers and syllabus designers to empower themselves with critical thinking strategies. Meanwhile the findings could be seen as a warning signal to teachers and the education system policy-makers who are expected to pay more attention to developing critical thinking skills among students. In practice, all teachers must take seriously the poor condition of critical thinking in Iranian educational settings and must try to equip such settings with methods of critical thinking. Following such a strategy, they may manage to teach critical skills to their students, enabling them to be powerful thinkers who possess sharp analytical minds. Furthermore, this study can be a guideline for both material developers and decision-makers who focus on formulating useful critical thinking courses for both students and teachers in an educational context.

The present study, of course, was not intended to be an all-encompassing study on critical thinking strategies and gender. Because this study was conducted at an English language institute with a limited number of participants, the findings may not be generalized to other educational institutions. The following recommendations and suggestions for further studies can inspire interested researcher who can:

1. Explore the effect of critical thinking skills on the four main language skills, speaking, listening, reading and writing;
2. Investigate the effect of critical thinking skills on language sub-skills, such as grammar and vocabulary;
3. Examine the attitudes of teachers and material developers towards the successful critical thinking models;
4. Study the relationship between one's critical thinking skills and one's field of study;

5. Investigate educators' perceptions about the necessity of critical thinking skills as implemented in educational settings;
6. Examine the perceptions of teachers, students and decision-makers about the value and necessity of teaching critical thinking skills'
7. Determine the physical and financial costs of training teachers, syllabus designers, material developers, and generally costs of implementing critical thinking skills programs;
8. Scrutinize the effectiveness of courses meant to develop critical thinking skills in various fields of study.

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