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The Effect of Teaching Critical Thinking Intervention on Enhancing the Level of Critical Thinking among In-Service EFL Teachers

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ABSTRACT

Keywords:

Critical thinking, Critical thinking intervention, In-service teachers, reading comprehension

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Critical thinking is a fundamental cognitive skill that significantly influences our thought processes. Without it, reaching impartial and accurate conclusions becomes challenging. This skill holds profound importance in educational settings. The focus of the present study was to examine how teaching critical thinking skills enhances the critical thinking and reading comprehension abilities of Iranian English as a Foreign Language (EFL) learners. A group of 40 in-service EFL teachers from Farhangian University in Iran underwent pretests on reading comprehension and critical thinking. Critical thinking interventions were systematically integrated into the course curriculum at 4-week intervals. Following the instructional period, posttests were conducted to evaluate the effectiveness of the critical thinking intervention program. Results indicated a notable improvement in both the knowledge and attitudes towards critical thinking. Moreover, the program positively impacted the students' reading comprehension levels, particularly their ability to critically approach reading comprehension tests. This highlights the significance of creating an environment where students feel comfortable expressing their thoughts without the fear of judgment. Educators play a crucial role in fostering optimal critical thinking behaviors and attitudes through effective modeling. Promoting a culture of open expression and critical thinking is key to nurturing well-rounded learners.

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1.1. Introduction

Initiating from the onset of the 21st century, sustained national dialogues have revolved around addressing education or achievement gaps, particularly concerning reading scores. The primary apprehension is that without educational reform, future generations may lack the essential knowledge and competencies needed for global competitiveness. Evolving job demands, such as innovative thinking, creativity skills, problem-solving abilities, and interdisciplinary connections, reflect the requisites of the contemporary global economy (Wallis, 2006; Wallis & Steptoe, 2006).

Nonetheless, the desired outcome of enriching teachers' knowledge and grasp of content, as outlined by the Illinois State Board of Education, is to enhance students' proficiency across diverse subjects. This goal can be accomplished through (1) the engagement of higher education institutions in a continuous professional development approach that continually stimulates the expansion of teachers' knowledge; (2) enhancing and broadening teacher training programs; and (3) integrating effective technology application training into both curricula and instruction.

Psychologists view critical thinking as higher-order thinking skills, emphasizing appropriate learning and teaching methods (Halpern, 1988, & Kuhn, 1999, as cited in Dam & Volman, 2004). Benesch (1993) argues that critical thinking goes beyond higher-order thinking, "involving an exploration of the societal, historical, and political foundations of traditional knowledge, aiming to reshape education and society" (p. 546).

In addition, as highlighted by Wright (2002, as referenced in Zohar and Dori, 2003), the concept of critical thinking has often been characterized by its inclination towards logical and sequential reasoning while disregarding the role of emotions. Criticisms have emerged, labeling this approach as gender-biased for favoring a conventionally "masculine" mode of cognition that overlooks the importance of emotions and intuition, causing a disconnect between the knower and the unknown. Fisher (2001) underscores the rising significance of critical thinking within educational settings in recent years. Educators have displayed a growing interest in nurturing various forms of "thinking skills" over traditional content-focused instruction. Despite the historical precedence of prioritizing subject matter such as history, physics, or

geography, educators have acknowledged a shift towards directly cultivating critical thinking abilities, also known as critico-creative thinking skills. The move towards explicit instruction in these skills signifies a departure from the previous indirect methods, reflecting a contemporary reevaluation of the efficacy of teaching critical thinking in educational spheres.

Numerous educators observe that within their classes, certain students possess strong thinking abilities yet often lack the tendency to apply these capabilities. Giancarlo et al. (2004) affirm that modern scholars emphasize the necessity of considering thinking skills and attitudes in any discourse on critical thinking. As highlighted by Facione et al. (1997), critical thinking attitude denotes "an individual's internal motivation to engage in critical thinking when confronted with problems to resolve, concepts to assess, or judgments to form" (p.348). Acquiring a skill becomes worthless if one doesn't employ it when the situation demands its usage. The essence of enhancing critical thinking lies not just in mastering the skill itself but in fostering an intrinsic motivation to actively employ it during moments of problem-solving, idea evaluation, or decision-making.

In the realm of professional development, numerous strategies are employed to foster critical thinking and enhance student-centered learning. Various methodologies, such as case studies, goal-oriented scenarios, problem-based learning, and action learning, are pivotal in this pursuit. Despite these efforts, a study by Lohman (2002) highlighted a prevalent lack of comprehension among high school educators regarding student-centered teaching methodologies.

The evolution of pedagogical approaches has seen a shift from behaviorist principles, which historically dominated classrooms, towards constructivist paradigms championed by Piaget in the late 1920s. Constructivism emerged as a response to elucidate the interplay between pre-existing knowledge and newly acquired insights. Subsequently, cognitive theory emerged to elucidate the mental processes associated with information retention and assimilation of novel concepts. Throughout the first half of the twentieth century, pioneers in educational technology spearheaded advancements in teaching by introducing innovative methods to underscore the efficacy of new teaching techniques (Reiser, 1987; Saettler, 1990). These transformative theories and

methodologies have steered educational practices towards a student-centered focus, marking a significant shift from traditional teacher-centered approaches (Reiser, 1987; Saettler, 1990).

Critical thinking, a cognitive skill, plays a crucial role in shaping our thought processes. Without it, individuals struggle to reach fair and accurate conclusions, leaving questions unanswered and lacking justification. Critical thinking is considered a teachable skill that holds significant importance in education, particularly in the modern era. As Halpern (1996b, cited in Yershova, De Jacghere, & Mestenhauer, 2000) emphasizes, it involves utilizing cognitive abilities to enhance the likelihood of achieving favorable outcomes.

However, a key consideration is whether educators possess the necessary knowledge of critical thinking skills themselves. It raises the question of whether teaching critical thinking can enhance the proficiency of EFL teachers in this area. If teachers are unable to develop their own critical thinking abilities, implementing these skills effectively in their classrooms becomes challenging. Thus, ensuring that educators are well-equipped with critical thinking skills is essential for fostering a culture of critical thinking among students.

In light of the shortage of entry-level students and the significance of possessing thinking skills, many educational institutions have incorporated a critical thinking component into their courses and institutional objectives. Colleges and universities have also introduced courses with a critical thinking aspect. Research studies have shown that most EFL teachers in Iran struggle to think beyond the text when reading for comprehension. We are convinced that by teaching critical thinking skills to teachers, they will be able to apply these skills in their own classrooms.

This exploratory study aimed to investigate the impact of teaching critical thinking skills to in-service EFL teachers at Farhangian University in Iran. The findings of this research offer practical methods to assist teachers in achieving their goals and fulfilling expected tasks. The research questions were formulated based on the study's objectives.

1. Is there any significant difference between Iranian in-service EFL learners' level of critical thinking skills before and after critical thinking intervention program among Iranian in-service EFL teachers?
2. Does critical thinking intervention have any impact on the reading comprehension performance of Iranian in-service EFL teachers?

2. Overview of Critical Thinking

In today's educational landscape, there is a growing emphasis on the importance of critical thinking in fostering academic excellence. The concept of thinking about thinking, commonly known as critical thinking, has been the subject of extensive discussion in educational circles. This notion has deep historical roots, dating back to ancient philosophers such as Socrates. It was John Dewey, a pioneering figure in the modern critical thinking tradition, who conceptualized it as "reflective thought" (p. 9). Dewey's definition of critical thinking as "the active, persistent, and careful consideration of a belief or supposed form of knowledge, in the light of the grounds which support it and the further conclusions to which it tends" highlights the depth and complexity of this intellectual process (p. 9). According to Dewey, critical thinking represents an attitude of being open to thoughtfully considering the problems and subjects encountered within one's experiences. Moreover, he stressed that knowledge of logical inquiry methods and reasoning, along with the ability to apply these methods effectively, are essential components of critical thinking.

Critical thinking encompasses a variety of interpretations, as demonstrated by Petress (2004). These definitions, including those with lesser direct emphasis, implicitly underscore the time, energy, skill, and dedication required to teach critical thinking. Schools and school districts must dedicate the necessary resources to integrate critical thinking into core curricula.

Glaser (1942), a psychologist, characterizes critical thinking as an attitude and the logical application of skills in problem-solving contexts. Ennis (1962) defines it as a logical process and product-oriented phenomena, emphasizing the accurate assessment of statements. According to Paul (1992), current conceptualizations suggest that critical thinking is a purposeful reflection process that demands logic. From the mid-1990s to

the present, researchers have maintained that critical thinking hinges on pre-dispositions and purposeful reflection (Ennis, 1993; Facione, 1990; Paul, 1993). However, as early as Glaser, researchers have suggested that dispositions were integral to this construct. Experts continue to debate whether critical thinking can be learned or if it is a developmental process influenced by motivations, dispositions, and personality traits. Despite differing opinions, contemporary researchers concur that critical thinking involves "purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteria-logical or contextual considerations upon which judgment is based" (Facione, 1990, p.2).

Critical thinking, as described by Banning (2006), involves the examination, differentiation, and evaluation of information, along with thoughtful reflection on the data used for making judgments and informing clinical decisions. Brookfield (2003) emphasizes the importance of identifying, challenging, and analyzing assumptions for their validity. He suggests that individuals with critical thinking skills, who possess curiosity and skepticism, are more likely to be motivated to find solutions that resolve contradictions.

There is a divergence of opinion among psychologists and philosophers regarding the teachability of critical thinking skills. However, Ennis (1989) and Lipman (1988) argue that critical thinking skills are not fixed but rather a form of intelligence that can be cultivated through education. The development of critical thinking skills can be likened to Piaget's concrete and formal operations, as stages of cognitive development are linked to intellectual potential and environmental experiences (Ornstein & Hunkins, 2004). Students who have not yet reached the formal operations stage may have limited ability to use critical thinking skills due to their inability to handle abstract ideas. This raises the question of what instructional strategies should be employed in learning environments to promote the development of students' critical thinking skills.

2.1. Critical Thinking and Higher Education

Despite the emphasis placed by higher education institutions on fostering critical thinking skills in graduates, there is a widespread apprehension regarding the actual

development of these higher-order cognitive abilities among college students. Furthermore, only a limited number of educational establishments are able to demonstrate a measurable improvement in the critical thinking capabilities of their graduates (Bollag, 2005; Burbach, Matkin, & Fritz, 2004). Even if students acquire critical thinking skills during their college education, there is minimal proof to suggest that they can readily apply these skills in practical, real-world scenarios (Brookfield, 1987).

In today's rapidly evolving society, there is a pressing demand for college graduates who are equipped to tackle real-world challenges. These challenges often involve uncertainty and evolving information, making it essential for graduates to navigate such dynamic situations effectively. Educating graduates to excel in such fluid circumstances can be a formidable undertaking. Educators are primarily responsible for cultivating an environment that promotes critical thinking; however, conventional teaching methods often fail to prioritize this crucial skill (Keeley & Meuti, 1999). Many educators prioritize mastering content and assume that critical thinking will naturally develop as students progress through college. This has led to a growing conflict between the need to cover and master content and the imperative to nurture the critical thinking skills necessary for comprehending and appraising that content (Meyers, 1986).

Despite the abundance of literature stressing the significance of critical thinking in the classroom, educators seeking guidance may encounter a lack of clear direction. Research indicates that many teachers who aim to enhance their students' critical thinking skills are uncertain about how to effectively cultivate these abilities (Meyers, 1986; Paul, Elder, & Bartell, 1997). Professional development programs may not offer adequate support, particularly in the community college setting, as Grubb (1999) characterizes these efforts as "formulaic, contrived, and often not focused on teaching" (p.285).

2.2. Importance of teaching critical thinking

Oliver and Utermohlen (1995) argue that students are often passive recipients of information, and the current abundance of information due to technology is overwhelming. This information overload is expected to persist in the future, making it

crucial for students to have guidance in navigating and not simply accepting the information passively. Students must "cultivate and effectively utilize critical thinking skills in their academic pursuits, in addressing complex challenges, and in making crucial decisions as a consequence of the information explosion and other rapid technological developments" (Oliver & Utermohlen, p. 1).

On the other hand, critical thinking involves inquiry, emphasizing the importance of teaching students how to pose insightful questions and think critically to advance the very disciplines they are learning.

Elder (2000) highlighted the importance of equipping students with the necessary skills to become proficient workers at the community college level. In an increasingly intricate society with rapid technological advancements, "training students for job performance in narrowly defined skill areas no longer serves students well" (p. 1). Elder argued that students are ill-prepared for the demands of the current job market. Consequently, educators should foster in their students the cognitive abilities that "will render them mentally flexible and intellectually disciplined" (p. 2). Successful employees need to employ disciplined reasoning and metacognitive processes to effectively guide and adjust their thinking. Instead of focusing solely on the transmission of information, educators should prompt students to reevaluate their thought processes and to logically, analyze, assess, and interpret that information.

P. A. Facione (2006) highlighted the importance of critical thinking and the requirement for a well-educated populace capable of making sound decisions, while also presenting methods for fostering the mindset and tendencies necessary for critical thinking. He proposed that an exemplary critical thinker "can be defined not only by their cognitive abilities but also by their overall approach to life and existence" (p. 9). Facione emphasized the significance of cultivating individuals who possess the skills and attitudes to think critically in various aspects of life, enabling them to analyze, evaluate, and interpret information effectively.

2.3. Studies related to teaching critical thinking

In a study conducted by Paul et al. (1997), teacher preparation programs were examined to determine their effectiveness in equipping candidates with the skills to teach critical

thinking and problem-solving. The research findings revealed that while most faculty members emphasized the importance of teaching critical thinking, only a small portion could clearly articulate its definition. Paul et al. argued that despite the claims of commitment to teaching critical thinking, many teacher educators lacked in-depth knowledge of the concept, with only a vague understanding of its principles and successful integration into instruction. This highlights the need for teacher preparation programs to provide educators with comprehensive training in critical thinking and problem-solving to ensure that they can effectively impart these essential skills to their students.

Meinecke (1997), revealed that "business college faculty did not have a conceptual definition of critical thinking and often failed to teach critical thinking in their classrooms" (Meinecke, 1997, Abstract). Meinecke emphasized that critical thinking is a recursive process involving reason assessment, a critical spirit, and metacognition. She also argued that critical thinking can be nurtured through a reflective pedagogical paradigm and advocated for students to be "placed at the center of the classroom environment with autonomous control over their own learning process" (p. 208). This study underscores the importance of faculty members having a clear understanding of critical thinking and integrating it effectively into their teaching practices to empower students with essential critical thinking skills.

Tsui (1998) found that the cultivation of critical thinking skills is closely linked to engaging in substantive writing, critical discussions, student-led inquiry, class presentations, prioritizing analysis over recall, and embracing a constructivist approach to learning. Conversely, factors that hinder the development of critical thinking include traditional lectures and reliance on multiple-choice examinations. Additionally, Tsui found that the successful integration of critical thinking into the curriculum is contingent upon faculty members having confidence in their students, challenging them, and actively participating in collaborative discussions about effective pedagogy. This highlights the crucial role of faculty members in fostering an environment conducive to the development of critical thinking skills among students.

3. Methodology

3.1. Research Design

The study was conducted using a pre-experimental design, specifically a One Group Pretest Posttest study in the Iranian EFL context. This design was chosen based on the research questions. No control groups were included as the project aimed to compare the subjects' performance before and after treatment. The researcher, who was also the instructor of the selected classes, controlled all variables, including proficiency, gender, and age, for the experiment.

3.2. Participants

The study involved 40 students who were enrolled in an English language teaching program at Farhangian University in Tehran, aiming to become EFL teachers at the high school level. A background questionnaire was used to gather demographic information about the participants, who were all male and aged between 18 and 20, with an average age of 19. All the students were pursuing a Bachelor's degree in English language teaching. Initially, a TOEFL proficiency test with 40 multiple-choice items was administered to assess their proficiency level. Based on the normal probability curve, those falling within -1 to +1 standard deviations were selected as the main participants, resulting in 24 students being chosen for the main procedure.

3.3. Instruments

Considering the study's hypotheses, the study utilized the following assessment tools:

General English Proficiency Test

The TOEFL proficiency test (Appendix A) was employed to gauge the participants' English proficiency level. This test consisted of 40 multiple-choice items covering vocabulary, grammar, and reading comprehension. Prior to the main study, a pilot test was conducted with 20 students possessing similar characteristics and English proficiency levels in an Iranian EFL context. An item analysis was performed to determine the difficulty level of each item. Subsequently, based on the analysis results, certain items were revised, removed, or substituted with new ones.

COMPASS Reading Placement Test

The COMPASS Reading Placement Test, typically used for placement purposes by an ACT Program for Educational Planning, was utilized as both the pre-test and post-test in this study to evaluate the participants' reading comprehension skills. The reading comprehension items in this test encompass two main categories: referring and reasoning. Each category includes several subcategories that specify the skills and knowledge assessed by the items. Referring items inquire about explicit information in a passage, while reasoning items evaluate the ability to make appropriate inferences, develop a critical understanding of the text, and determine specific meanings of challenging words based on contextual cues.

Critical Thinking Test Questions

The Questions were adapted from the Collegiate Assessment of Academic Proficiency (CAAP), developed by American College Testing. This test assesses students' capacity to clarify, analyze, evaluate, and extend arguments. It comprises multiple-choice questions derived from essays related to issues commonly encountered in postsecondary education.

Critical Thinking Skills Pamphlet

The study incorporated a Critical Thinking Skills Pamphlet sourced from the office of academic affairs at East Tennessee State University. This pamphlet, a well-established resource for teaching and assessing critical thinking skills in ESL/EFL centers, consists of seven steps, each divided into several subsections outlining the associated skills. All teaching and testing instructions were derived from this validated resource, with content validity established through expert opinion from the supervisor and English instructors.

3.4. Procedure

The aim of this research was to examine the impact of instructing critical thinking abilities on improving the critical thinking and reading comprehension levels of Iranian EFL students.

In June 2016, a formal request for research authorization was submitted to the institute's manager to conduct a study within a critical thinking course during the Fall

semester. A comprehensive explanation of the research's objectives was included in the request. In the initial week of the course, the researcher and students reviewed and deliberated on the critical thinking course outline, where a detailed overview of the research was presented, and students were invited to participate. Student involvement in the research was entirely voluntary. The data collection process commenced, and those interested in partaking in the study were provided with an informed consent form. Students were assured that their participation was entirely voluntary, and it would not impact their grades in any way, while also guaranteeing that their personal information would remain confidential within the thesis. At the conclusion of the first week of the semester, the informed consent forms were gathered from students who expressed their desire to join the study.

Initially, the students' English learning background and characteristics were assessed through a demographic survey at the program's outset.

Following this, a General English Proficiency Test (TOEFL) was administered to gauge the participants' proficiency levels and ensure the selection of homogeneous subjects.

Subsequently, a pretest for reading comprehension was conducted to ascertain the students' initial comprehension levels.

Finally, a pretest comprising critical thinking questions was administered to gauge the students' critical thinking abilities.

Incorporated into the curriculum of the critical thinking course, interventions to enhance critical thinking skills were methodically integrated into the researcher's instructional methods at 4-week intervals over the course of the semester, which was extended to 7 weeks of class sessions. The instructor imparted various critical thinking skills to students, elucidating the expectations for each skill and the related assignments.

Subsequently, a critical thinking posttest was administered upon the conclusion of the training program to assess the impact of the critical thinking intervention.

Finally, a posttest for reading comprehension was administered to evaluate whether there was a notable disparity in the students' level of reading comprehension before and after the training program.

4. Results and Discussion

To respond to the initial research question, the data were analysed and finally produced the following tables.

Table 1. Mean pre- and posttest of critical reading scores for samples

	Mean	N	Std. Deviation	Std. Error Mean
Critical Pretest	5.67	24	1.341	.274
Critical Posttest	10.29	24	1.944	.397

Table 2. Paired sample test for pre- and posttest critical reading

		Paired Differences				T	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	criticalpre – criticalpost	-4.625	1.439	.294	-5.233	-4.017	-15.746	23	.000

Table 2 indicates a significant difference in the pretest to posttest session in an Iranian EFL context, with a 't' value of 15.746 and a P value of .000, demonstrating the effectiveness of the critical thinking skill intervention program. Furthermore, referring to Table 1, the selected Iranian samples had mean scores of 5.67 in the pretest, which increased to 10.29 in the posttest. Considering the results from these tables, we can conclude that teaching students how to read critically can enhance their level of critical thinking skills in reading.

Moving on to the second research question, SPSS was used to analyze the data and derive the following tables for further investigation.

Table 3. Mean pre- and posttest of reading scores for samples in

	Mean	N	Std. Deviation	Std. Error Mean
Reading Pretest	8.75	24	2.192	.447
Reading Posttest	12.83	24	1.949	.398

Table 4. Paired sample test for pre- and posttest reading

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Readingpre - post	-4.083	1.381	.282	-4.666	-3.500	-14.490	23	.000

As presented in Table 3, the Iranian sample exhibited a mean score of 8.75 in the pretest, which subsequently increased to 12.83 in the posttest. Additionally, the paired sample 't' test demonstrated a significant difference between the pre- and posttest sessions ($t=14.490$; $P=.000$), indicating that the effectiveness of the critical thinking intervention likely led to improved performance by students in answering reading comprehension tests.

The outcomes of this study suggest that an intervention focused on teaching critical thinking can not only enhance students' knowledge of critical thinking skills and

their attitudes toward critical thinking, but also elevate scores on standardized tests assessing critical thinking skills. Moreover, this intervention appeared to positively impact students' level of reading comprehension following their instruction on reading critically.

It is important to acknowledge certain limitations that may have influenced the results of this study. Due to the lack of control over student enrollment and the reliance on convenience sampling rather than random sampling, this study deviated from the parameters of a true experimental design. Specifically, there was no random assignment of subjects to groups, but rather the random assignment of sections to conditions.

Similarly, Bessick's study (2008), similar to the present research, explored the impact of direct instruction in critical thinking using van Gelder's rational argument mapping and Paul's Thinker's Guides. In her study involving freshman students, no significant effect of the intervention group on subjects' critical thinking skills as measured by the CCTST-2000 was observed. However, students did display improvement in academic achievement, attributed to individual tutoring and the repetition of courses. Bessick emphasized the importance of facilitating the transfer of learned skills in the classroom to real-life situations.

Van Gelder (2005) also recognized the necessity for guided instruction to enhance students' critical thinking, particularly through argument mapping. Although students had limited time to practice and develop this skill during interventions, improvement and appreciation of argument mapping occurred as a result of effective instruction, repeated modeling of procedures, and extended practice periods.

The study aligns with Fong et al. (2003) in providing insights into the evaluation of information and decision-making related to everyday life events. It offers promising indications that critical thinking training is not only viable but also influential. Furthermore, Leshowitz et al. highlight how the instructional program implemented in the study empowered students to apply scientific methodological principles to their reasoning about life situations. This served to steer students toward evaluating information by demanding facts and scientific evidence, and encouraged them to ask pertinent questions such as, "What data were collected?" and "How was the study designed and implemented?" Ultimately, the collective research on critical thinking

interventions underscores the critical need for effective instruction, repeated practice, and thoughtful consideration of the transferability of skills outside of the classroom.

Scholars (Halpern, 1998; Fong et al., 1986; Leshowitz et al., 2002) have noted a significant challenge in teaching critical thinking—that is, the ability to transfer these skills beyond the classroom setting. It is crucial for individuals to consistently recognize the need for these skills and be willing to apply them in their everyday lives. Fong et al. (1986) emphasized that individuals tend to reason using abstract rules, adapting these rules according to specific domains. However, relying solely on domain-specific rules can conflict with the principles of formal logic and statistics. When faced with familiar domains, individuals tend to apply specific rules that enable problem solving within that particular context. Halpern (1998) proposed that flawed reasoning occurs due to the complexity of critical thinking, requiring individuals to be prompted to initiate the critical thinking process when addressing real-world problems or decisions. Teaching individuals to retrieve these skills based on problem structures or types is necessary.

The fields of critical thinking, cognitive sciences, and behavioral sciences offer numerous paths for exploration. While this study suggests that critical thinking skills can be enhanced through instructional interventions, further research is essential to ascertain whether these skills can be effectively translated across different domains and maintained over an extended period.

5. Conclusion

This study offers valuable insights into the challenges of implementing instructional strategies and fostering environments that support critical thinking in contemporary classrooms. An urgent need to enhance the quality of education programs is evident, and a crucial aspect lies in improving class curriculum and practices. This necessitates a focused effort to provide interventions for practicing teachers to develop critical thinking skills.

The critical thinking intervention model employed in this study led to notable enhancements in students' critical thinking abilities and reading comprehension. These positive changes in test scores and teaching practices are pivotal in cultivating classrooms that are conducive to promoting critical thinking. Consequently, there is a

clear need for institutions to invest resources in providing teachers with extensive professional development opportunities to sustain this growth.

Notably, feedback from teachers highlighted the heightened enthusiasm among students during critical thinking sessions, expressing increased comfort with engaging in academically rigorous activities. Therefore, it is imperative for schools and English language institutes to make enduring commitments to implementing an effective model for teaching critical thinking—rooted in current research and instruction that fosters inquiry-based decision-making and reflective practices, thereby enabling teachers to embed these methods within their own classrooms.

The findings from this study contribute to the existing research base by underscoring the importance of teacher educational programs in equipping future educators with effective classroom strategies that integrate critical thinking skills with core curricula. Both the quantitative and qualitative analyses offer valuable insights into utilizing critical thinking as a foundation for academic achievement, emphasizing the role of learning communities, teaching focused on cognitive processes, and a learner-centered theoretical framework.

Furthermore, enhancements to the critical thinking course could involve placing greater focus on instructional strategies that specifically target fundamental critical thinking skills such as analysis, interpretation, inference, evaluation, and explanation. This may encompass dedicating more time to analyzing the logic of various arguments, identifying bias, and scrutinizing rhetoric for its credibility. Additionally, students often demonstrate a tendency to base their decisions on preconceived notions, assumptions, and inferences, while struggling to accommodate opposing viewpoints. Encouraging students to adopt a fair-minded approach through discourse and role modeling, as well as guiding them to recognize logical and fallacious reasoning in texts, media, and their own thought processes, writing, and reading, can foster the development of fair-mindedness and the critical thinking skills necessary for sound, effective decision-making. As expressed by P. A. Facione, Facione, and Giancarlo (2000), "To the open-minded, imaginative, and intellectually adventurous, reflection on human experience can reveal a rich array of possibilities" (p. 7).

While promoting students' critical thinking abilities and implementing pedagogical strategies to nurture these skills is a commendable pursuit, observations made by teachers and researchers in the critical thinking course indicated that student motivation played a significant role in their success and achievements. P. A. Facione et al. (2000) argued that focusing solely on developing critical thinking skills without nurturing the "internal motivation to use those skills in appropriate circumstances" (p. 34) is not sufficient. An effective approach for nurturing students' critical thinking dispositions, such as deliberate and more frequent use of modeling good critical thinking behaviors by the researcher in the critical thinking course, could have been beneficial.

Brought to prominence as a crucial component of scientific reasoning and sometimes taken to the extreme by positivists, the concept of critical thinking was explored in this study within a less straightforward but adaptable area of human knowledge—specifically in the context of language education, particularly concerning the professional success of language teachers. Before the emphasis on nurturing communicative competence among language learners, the image of a proficient language teacher was one tasked with the simple act of imparting knowledge of the target language onto the receptive minds of the learners, metaphorically likened to a repository of information filling the minds of empty receptacles (Richards & Rodgers, 2001). This conceptualization underwent a significant revision with the increase in demands placed on language educators within the communicative language teaching (CLT) framework, which prioritized the interactive elements in the classroom and moved away from pre-established methods. This paradigm shift, as highlighted by Brown (2000), underscored the evolving nature of language teaching, emphasizing the need for individual teachers to devise effective approaches suited to diverse language classrooms, presaging a fresh era where traditional methods are no longer in vogue (p.14). This perspective portrays language teachers as discerning critical thinkers, distinct from the preconceived notions of others, as individuals who are adept at developing innovative and successful approaches tailored for specific settings. To refine one's unique approach and determine the pedagogical strategies likely to prosper in a particular environment, critical thinking should be employed by reflecting on the following considerations:

- Drawing conclusions and considering the potential short-term and long-term impacts of different choices.
- Utilizing and reflecting on all available past and present evidence, including research findings, input from other educators, and information obtained through diverse assessment methods.
- Assessing others' proposed theories and arguments, carefully weighing their strengths, weaknesses, and relevance to their specific teaching context.
- Questioning the validity of others' conclusions about the effectiveness or ineffectiveness of specific practices, methods, and materials, being cautious about accepting them without conclusive evidence and examining their underlying cultural, social, and political assumptions.

To the best of the researcher's knowledge, teacher evaluation tools, especially questionnaires, have not explicitly included critical thinking and its components as key elements of teachers' pedagogical success (e.g. see Feldman, 1996; Lowman, 1996; Saroyan and Snell, 1997). They may contain certain items that indirectly measure teachers' critical thinking abilities.

Furthermore, EFL teacher educators can likely improve the effectiveness of their courses by dedicating time to familiarize prospective teachers with the concept and significance of critical thinking, and by incorporating tasks and activities to enhance their critical thinking skills.

The findings of this study can be utilized to enhance academic achievement, which aligns with previous research in the field of education. The study's sample population represents the necessity of teaching critical thinking skills in today's classrooms. The literature review indicates a clear consensus regarding effective models for integrating critical thinking into classroom practice. This is encouraging as it demonstrates the effectiveness of an intensive critical thinking program in improving academic achievement, particularly in reading skills. This validates the calls from state and national advocates for improving academic achievement through intervention programs focused on critical thinking skills.

5.1. Recommendations for Practice

To enhance students' critical thinking knowledge, skills, and attitudes, educators can design instructional approaches that include purposeful learning activities to promote critical thinking abilities. It is crucial for students to learn how to think critically, with teachers providing clear and frequent demonstrations of critical thinking skills.

Additionally, students should have consistent opportunities for repeated practice of these skills over an extended period. Support from the school administration and the implementation of teacher training in critical thinking instructional strategies are also essential.

Creating a classroom environment that fosters collaboration, open dialogue, and an appreciation for diverse values, beliefs, and perspectives is of great importance. Students should feel comfortable expressing their opinions without fear of judgment, and educators can promote effective critical thinking behaviors and attitudes by modeling those behaviors.

5.2. Implications for EFL teachers

Professional Development for Classroom Teachers: It is important for professional development to be closely linked to the specific context of the community and classroom. The teachers in this study clearly indicated their desire to further their understanding of critical thinking skills and the impact that teaching these skills has on their practice. Teachers require opportunities to explore and implement strength-based additive models that can help them better engage with students. Additionally, they need targeted guidance on teaching and learning strategies in the classroom that prioritize critical thinking as a pathway to academic success.

Effective Teaching Models: The thorough examination of the teaching process in this study using qualitative data has significant implications for professional practice in the realm of critical thinking and its impact on academic achievement. The effective instruction of critical thinking skills necessitates knowledgeable and skilled coaches or mentors proficient in current teaching methods, language, literacy, and adult learning. The viewpoints expressed by teachers in this study underscore the importance of expertise in this domain. Consequently, professional development initiatives should

collaborate with both established and emerging researchers to equip educators with the necessary expertise to effectively fulfill the demanding responsibilities of their role.

Emphasis on Cognitive Processes: Critical thinking models should focus on cognitive processes and reasoning. Educators require opportunities to participate in decision-making based on inquiry and to cultivate reflective practices. As teachers hone these abilities, they become more adept at recognizing how shifts in their thinking influence their instructional methods and benefit students. The survey and interview responses from teachers in this study transitioned from discussing how they acquired new concepts, to how they "expanded" their ideas, and ultimately to planning methods for sustaining reflective practice and ongoing professional growth. These processes are vital for ensuring the continued delivery of high-quality instruction grounded in the critical thinking model. When teachers utilize critical thinking skills, it enhances their effectiveness as practitioners.

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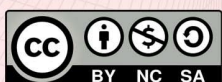
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