

A meta-synthesis study on the effect of critical thinking on improving language skills

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ABSTRACT: The current meta-synthesis study investigated the effective strategies for improving critical thinking ability among EFL/ESL learners, and the relationship between language learning skills and critical thinking ability. To achieve this aim, meta-synthesis was selected as the design of the study. Therefore, some databases were searched using the defined key terms, in order to select the related qualitative, quantitative, and mixed-method studies. As a result, 550 articles were found, 43 articles of which were included in the final review. Using thematic analysis, the obtained data from these 43 articles were analyzed in 6 steps and then coded for each research question. Although no single method was proposed in this study as the best to improve critical thinking, it was indicated that a number of them together can be effective when properly implemented. It was shown that all 4 language skills can be improved by enhancing the level of critical thinking ability among EFL/ESL learners.

KEYWORDS: critical thinker; critical thinking; critical thinking in language learning; language learning skills; qualitative meta-synthesis

1. Introduction

One of the most widely discussed concepts in education and educational reform these days is critical thinking (Atkinson, 1997). The notion of critical thinking (CT) and the importance of developing its skills in students have long been under discussion (Webster, 2016). Moreover, there is no consensus among all the scholars in making a precise definition of critical thinking. Similarly, Halonen (1995) mentioned that critical thinking is a mystified concept, and no explanation can be widely accepted. As noted by Atkinson (1997), the role of critical thinking in second/foreign language learning and teaching is, nowadays, very important. In line with this argument, Moon (2008) argued that scholars should explore the relationship between critical thinking and educational processes.

In terms of its historical roots, the concept of critical thinking was initially introduced in the literature by Paul et al. (1997), who asserted that it can be primarily attributed to the Greek philosophers, particularly Socrates, who placed great emphasis on the significance of critical thinking. Also, Goatly (2000) maintained that dissimilar to the current meaning of the term, critical as a means of finding fault, the Greek Kriticos and Latin Criticus can be defined as being able to discern or distinguish a fault.

Ennis (1996) supports the concept of critical thinking directed to some skills like observing, inferring, generalizing, reasoning, evaluating reasoning, etc. He continued that critical thinking is a suitable method to assess statements. In a similar vein, Mason (2007) argued that critical thinking refers to having knowledge in a specific discipline. Accordingly, this implies that a critical thinker is a person who is knowledgeable in only that particular discipline.

In regard to the relationship between critical thinking and learning, Hutchinson (1994) stated that grammar and word knowledge (vocabulary) are not sufficient to master a new language, so learners must develop their language learning skills in speaking, writing, listening, and reading. As Hutchinson (1994) observes, achieving success in language acquisition requires a conscientious endeavor on the part of the learner. The concept of critical thinking and its importance in developing this skill in students has been a topic of discussion for an extended period of time, as noted by Webster (2016).

By considering all the above-mentioned statements and due to the importance of critical thinking in language learning as well as its remarkable effect on English as a Foreign Language (EFL) learners' improvement, this study attempted to investigate how critical thinking improves language learning in students. Moreover, some strategies claimed to improve critical thinking ability in EFL learners were gathered in a comprehensive review using a meta-synthesis design.

Since there are multiple definitions for the concept of critical thinking as well as many strategies for improving it, on which educators do not agree on their effectiveness (El-soufi, 2019), this study aimed to partially fill this gap by studying the relevant surveys in a meta-synthesis design to find the best strategies for improving this ability among students. Having reviewed the literature, the authors have found no meta-synthesis designs that have investigated the effect of critical thinking on EFL learners' language skills. So, to fill this gap, the present meta-synthesis attempted to find some common themes from the studies conducted on critical thinking and provided new insight on the effective strategies on enhancing the critical thinking ability. Moreover, the ways by which critical thinking improves language skills were investigated in the present study.

2. Review of the related literature

2.1. Critical thinking and language learning

The notion of critical thinking and the significance of emerging its skills in students have been under debate for a long time (Webster, 2016). Accordingly, as Freely and Steinberg (2000) stated, critical thinking is “the ability of questioning, criticizing, and promoting the ideas; to deduce inductively and deductively; and to obtain several factual or judgmental conclusions on some clear declarations of knowledge or belief” (p. 2). To define the term critical thinking, some studies' definitions are mentioned below. According to Moore (2013), critical thinking is a form of thinking that is essential for students as it enables them to effectively navigate the knowledge they require throughout their studies. In addition, to define it with more details, critical thinking is a determined, self-regulatory judgment, which consequently leads to having a precise interpretation, investigation, assessment, and conclusion, as well as clarifications of the thoughts on which that judgment is grounded (Abrami et al., 2014).

Critical thinking has different definitions, but its comprehensive definitions mainly focus on purposeful thinking or reflective judgment. Critical thinking is considered as high level thinking or higher order thinking skills, which are required to manipulate and analyze the received information (Şahin and Dogantay, 2018). Critical thinking helps us in solving problems, making decisions, and reaching our goals (Tosuncuoğlu, 2018). Therefore, it can be said that critical thinking can be considered for two goals: to achieve a goal and to make a decision (Tosuncuoğlu, 2018). In a definition, related more closely to language learning and teaching, Mahyuddin et al. (2004) argued that language learners who are capable critical thinkers are better in achieving the goals of the curriculum, making decisions and solving problems, and understanding language.

Developing the ability to think critically is known as a vital component of both real, meaningful

teaching and learning processes (Tosuncuoglu, 2018). Kahneman (2011), who won a Nobel Prize in 2002 for his study on decision making and judgment, provided evidence that critical thinking, defined by any definition, is not something we can do automatically or even something that can be taught to be done automatically. Moreover, he claimed that thought related processes are more motivated by the qualities of speed and cognitive laziness (Cargas et al., 2017). It was stated that we rely on biases and heuristics in order to make our fast decisions, and this process consequently provides shortcuts in our thinking. Common biases, emphasized by Kahneman (2011), are in a way that no one can escape from them, which include the halo effect as when we like or dislike all the things related to an idea or person based on our limited data; the mere exposure effect when we like or believe something or someone because we are frequently exposed to it; the confirmation bias or the tendency to identify the information that we agree with, instead of seeking for additional information related to our subject; and the affected heuristic that is more relying on emotions instead of evidence when making a decision, to list only a very few stumbling blocks for having a complex thinking process.

Since critical thinking is regarded as an active process, rather than a passive one, if students activate their critical thinking, they can achieve successful results (Tosuncuoglu, 2018). In a similar vein, Rezaei et al. (2011) suggested that teachers must support their students to become active critical thinkers. Also, they must assist them in acquiring the critical thinking techniques and critical outlooks to face the challenges that are increasing in the information age. In a wider viewpoint, critical thinking, critical reasoning, or higher-order thinking are the concepts, typically mentioned in relation with each other as having one main meaning. Dewey (1991) added to the above-mentioned terms by referring to critical thinking (CT) as reflective thinking. Besides, it was defined as “vigorous, determined, and cautious thought on any belief or any knowledge by considering the facts that support it” (p. 6).

In the study by Cargas et al. (2017), it was demonstrated that just educating critical thinking and its methods at any level does not necessarily convey the ability to think critically in students. Moreover, nowadays, it is very important to engage in ‘thinking’ process and develop that in the community (Tosuncuoglu, 2018). In the field of teaching, and by supposing that thinking is central to life, training can be critical if an individual has (a) a spirit of investigation and doubt, (b) the ability of criticizing one’s academic work, and (c) has self-criticism ability (Andrews, 2015). In this regard, many researchers have speculated that unless critical thinking is being taught explicitly, it is not enough to think that it is being taught effectively (Cargas et al., 2017).

Tosuncuoglu (2018), in a study, mentioned that the relationship between critical thinking skills and language, in many ways, involves the ability of a particular speaker to distinguish them. Correspondingly, one of the principal goals is to do routine tasks effectively in a basic level. For instance, a customer who intends to visit a supermarket would typically require a basic level of communication skills in order to effectively interact with the employees of that supermarket. In this regard, by considering the descriptions of critical thinking, a consensus might be reached on the characteristics of a learner who has the ability to think critically. Learners of critical thinking examine, evaluate, accept or deny the received data, and then assess them and come to conclusions at last (Tosuncuoglu, 2018).

2.2. Meta-synthesis

According to Cooper (as cited in Norris and Ortega (2000)), due to the growing nature of science, investigating reliable past studies are necessary for building new knowledge in an organized way. So, it can be assumed that reviewing the collected evidence in a specific research domain prior to conducting new research is necessary to prevent reinventing the wheel (Rezaee and Ghanbarpoor, 2019). Moreover,

Chung et al. (2012) by synthesizing quantitative, qualitative or mixed-method research, attempted to perceive a principal conclusion based on their evidence. Correspondingly, systematic reviews aim to decrease duplication and improve valuable studies databases to ease the access of researchers (Suri and Clarke, 2009).

A meta-synthesis can be defined as an empirical, inductive study, used in order to synthesize primary studies with the purpose of going beyond the contributions made in the original studies (Hoon, 2013). Likewise, much interest has been paid to performing further meta-synthesis on qualitative, quantitative, and mixed-method studies (Bondas and Hall, 2007). Notably, performing qualitative studies are growing in both quantity and quality in second language teaching and learning (Télliez and Waxman, 2006). Furthermore, much interest is paid to perform further meta-synthesis on qualitative studies (Bondas and Hall, 2007). Accordingly, this may be due to the reason that meta-synthesis is a process allowing investigators to recognize a definite research question and explore it by choosing, evaluating, summarizing, and combining qualitative and quantitative evidence (Erwin et al., 2011).

Despite bearing an uncanny resemblance to methodical reviews, synthesis is considered as the more general term covering any type of systematic review on quantitative, qualitative, or mixed methods primary research, and the one that is mostly preferred to be used due to having more comprehensive structure (Norris and Ortega, 2000). Notably, although meta-syntheses are usually used to synthesize the findings obtained from qualitative research, Bair (1999) extended the use of meta-synthesis to include the qualitative comparison on the quantitative, qualitative, and mixed-method studies. In other words, since methodological variations in performing research is unavoidable, “qualitatively synthesizing the quantitative and qualitative studies is an interesting concept” (Suri and Clarke, 2009, p. 403).

In the present qualitative meta-synthesis, qualitative, quantitative, and mixed-method primary studies were included in the data set. Therefore, this study was conducted with a meta-synthesis design to analyze the included studies related to critical thinking ability in EFL learners. To this end, the current study attempted to answer the following research questions by including the primary studies and performing this meta-synthesis in order to probe the effective strategies on improving critical thinking and to investigate how the four language skills of reading, writing, speaking, and listening are affected by critical thinking ability.

- 1). What are the most effective strategies for improving critical thinking ability of EFL learners?
- 2). How does the critical thinking skills of the students influence their four language skills?

3. Method

This study has a meta-synthesis design, which is known as a design aimed to uncover the gaps and weaknesses that exist in a certain field; that is, second language learning in our study.

3.1. Procedure

In the present meta-synthesis, in order to collect the research articles, five databases were searched, including Academic Search Complete, Education Resources Information Center (ERIC), Science Direct, Web of Science, and Google Scholar. Thereafter, data collection and selection were performed in two separate stages as follows: the first stage was finding the articles based on the given key terms, and 550 articles were found as a result.

3.2. Quality control

The second stage was controlling the quality of the collected studies in terms of the inclusion criteria

and selecting the final articles related to the research questions. After precise reading and re-reading the articles that were included in this meta-synthesis in the final stage, four items were controlled for each one of the studies, including context of research, type of research, definition of critical thinking in that study, and strategies proposed. The total number of retrieved papers was 43, which were reviewed independently by author, title and abstract, and then by full text.

Afterward, the goal was to determine how the included studies were connected to each other by examining their key themes, concepts or metaphors from their findings. Therefore, according to the research questions of the present study, the included studies were categorized into the following two groups: (1). studies that recommended strategies to improve critical thinking ability, and (2). studies that probed the association between CT and four language skills.

Finally, thematic analysis (Braun and Clarke, 2006) was used for extracting the required data and then for analyzing them. Thematic analysis was performed in the following 6 steps: (1). Being familiarized with the needed data; (2). generating the primary codes; (3). probing themes; (4). reviewing the obtained themes; (5). explaining and naming the attained themes; and (6). creating the report (Braun and Clarke, 2006).

4. Results

The results of each research question are provided below.

4.1. The most effective strategies on improving critical thinking ability of EFL learners

In regard to the first research question, 25 studies out of 43 articles included in this study, were reviewed. **Table 1** shows the strategies (themes and sub-themes) revealed by the current meta-synthesis.

Table 1. Themes and sub-themes revealed by the current meta-synthesis.

Theme 1: Enhancing critical thinking through assessment and using the washback is an effective strategy (Shirkhani and Fahim, 2011)
Sub-theme 1: Using ongoing assessment instead of one-shot exams at the end of the semester
Sub-theme 2: Including some activities in the assessment that encourage the learner to think about the main goals of the course
Sub-theme 3: Using criterion-referenced (CR) testing instead of norm-referenced (NR) testing
Theme 2: By the use of e-learning, EFL/ESL learners are accustomed to mastering critical thinking skills in terms of selection, interpretation, explanation, evaluation, and analysis (Supriyatno et al., 2020)
Theme 3: Differences of critical thinking ability lie in learners' gender, major, and grade (Zhou et al., 2015)
Sub-theme 1: They advised teachers to improve their teaching method and put more emphasis on arousing students' awareness of critical thinking
Sub-theme 2: Teachers should teach students according to their characteristics, in order to promote EFL/ESL learners' critical thinking ability
Theme 4: The use of exploratory talks and some special wording was investigated to be effective in improving critical thinking (Liang and Fung, 2020)
Theme 5: Learners' activity engagement in various forms (including individual and collaborative analysis, workshop learning, group consultation, critiquing, and presentations) could increase their CT skills (such as analysis, categorization, and interpretation) and CT dispositions (such as adaptiveness, flexibility, and open-mindedness) (Yuan et al., 2020)
Theme 6: Using performance tasks with corrective feedback on a common rubric may be useful on enhancing critical thinking (Cargas et al., 2017)
Theme 7: The use of open-ended questions could be effective on critical thinking if they are text-justified, hierarchically distributed, and integrated with a learner's own judgment (Li, 2020; Shirkhani and Fahim, 2011)
Sub-theme 1: These questions could be effective on critical thinking if they are text-justified, hierarchically distributed, and integrated with a learner's own judgment
Sub-theme 2: Asking more higher-order level questions can lead students to think more critically (Mustika et al., 2020)
Sub-theme 3: Reciprocal peer questioning as a useful strategy for promoting CT and critical reading skills (Zhou et al., 2015). In reciprocal peer questioning, students work in pairs or small groups, taking turns to pose their prepared questions and answer each other's questions
Sub-theme 4: Through questioning, the process that occurs in the student's mind creates thinking and learning (Sahamid, 2014)
Sub-theme 5: How Socratic Questioning, by using the "Elements of Reasoning", develops critical thinking in the language classroom (Jensen, 2015; Sahamid, 2014) (In Socratic Questioning, and by using the elements of reasoning, both the teacher and the student are active in a dialogue and try to uncover truth together (Raphael and Monk, 2003))

The most effective and important strategies and methods in terms of improving critical thinking with the highest frequency in different studies reviewed in the present research, were active learning (Gaskaree et al., 2010; Kusumoto, 2018; Zhao et al., 2016); scaffolding activities such as think-pair-Share, jigsaw reading, compare and contrast group discussion, and role-play and student engagement activities (Kurniawati et al., 2020; Kusumoto, 2018; Petek and Bedir, 2018; Zhou et al., 2015); using Bloom's taxonomy (Benjelloun and El Allame, 2019; Kusumoto, 2018) (Bloom's Taxonomy is a multi-tiered scale used to show the level of expertise. They are Knowledge, Comprehension, Application, Analysis, and Synthesis); Content and Language Integrated Learning and explicit instructions (El Soufia and See, 2019; Kusumoto, 2018; Zhao et al., 2016); argumentative essay-writing and paragraph writing (Chason et al., 2016; Nejmaoui, 2018; Sharadgah et al., 2019); Socratic Questioning (Jensen, 2015; Li, 2020; Sahamid, 2014; Shirkhani and Fahim, 2011). The frequency of the use of the most effective methods and strategies related to improving CT among EFL/ESL learners is shown in **Figure 1**.

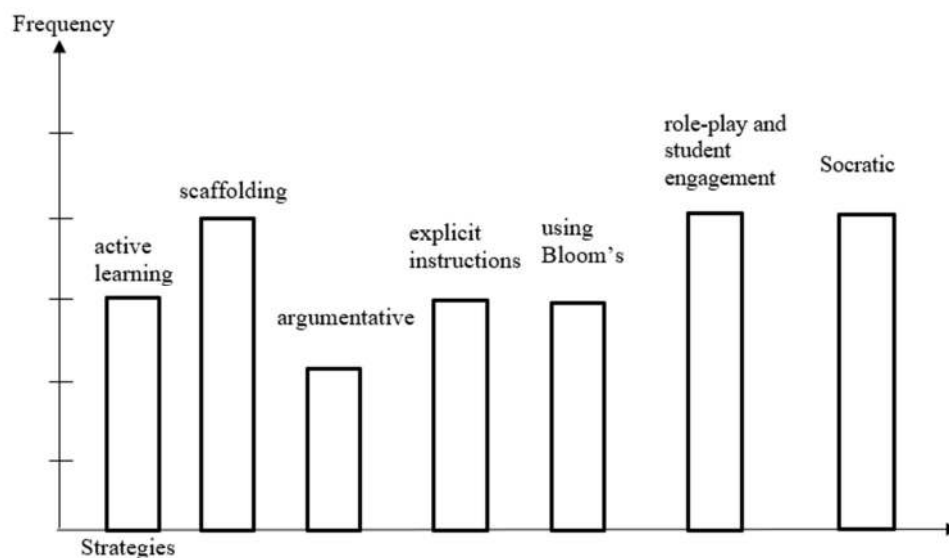


Figure 1. The frequency of the most effective strategies.

4.2. The relationship between language learning skills and critical thinking ability

Among 43 articles reviewed in the current study, 18 articles were related to the second research question. Accordingly, each one of the four language skills, including reading, writing, speaking, and listening, was studied in a separate category.

4.2.1. Reading

The study by Taşpınar and Çubukçu (2020) aimed to determine whether the explicit instruction of critical literacy skills with a genre-based approach could affect adult EFL learners' reading comprehension or not, and it was indicated that the explicit instruction of critical literacy skills through a four-week genre-based reading instruction did not elicit a statistically significant change in the Critical Literacy Group's posttest scores. However, it was stated that this result may possibly be due to the short-term follow-up of the study. Although these findings did not produce statistically significant results, the findings showed that a critical literacy approach to the instruction of reading through a variety of genres not only led to enhanced comprehension of texts but also to increased critical awareness for some of the participants. Therefore, EFL instructors should design curricula with an emphasis on the development of learners' critical literacy (Taşpınar and Çubukçu, 2020).

Another study using Bloom's taxonomy showed that critical reading strategies of skimming and scanning, as a means of processing the text, asking questions for better understanding, and taking notes are the brilliant critical strategies that improve reading among Iranian EFL students (Nasrollahi et al., 2015). Therefore, students need to be exposed to reading strategies related to higher levels of knowledge in the cognitive domain (Nasrollahi et al., 2015). Furthermore, the results of a study by Yildirim and Söylemez (2018) show that reading activities with critical reading questions have a statistically significant effect on both students' critical thinking and reading skills (Yildirim and Söylemez, 2018). In a study, Fahim et al. (2010) investigated the relationship between test takers' critical thinking ability and their performance on the reading section of TOEFL, and their findings indicated a statistically significant advantage for those with greater critical thinking skills.

4.2.2. Writing

According to Garrison et al. (2001), the 6 + 1 trait writing model assists promotion of writing skills and yields exact thinking. The 6 + 1 trait writing model involves the following components of writing: ideas, organization, word choice, sentence fluency, conventions, and presentation. In regard to writing skill, in a study by Qoura and Zahran (2018), the effectiveness of the 6 + 1 trait writing model on ESP university students' critical thinking and consequently on their writing achievement, was investigated. As a result, critical thinking ability was improved among students using this method, which led to some significant writing achievements. Also, Sham (2016) aimed to teach ESL writing by adopting critical thinking, and as a result, using critical thinking techniques built students' own thought and led them to enjoy their writing course.

Moreover, Yamin and Purwati (2020) stated that in order for students to have a critical insight towards any matter, they need critical thinking in writing. Correspondingly, they should reflect, explore, and resolve in different domain of life. It was shown that by improving critical thinking ability, critical writing can be achieved. This can help students in finding a research topic and enables them to elaborate and organize the required background literature and establish the required method. Similarly, the results of another study by Trang and Anh (2020) reported that tasks requiring critical thinking enhanced students' paragraph writing.

4.2.3. Speaking

Regarding speaking skill, Ramezani et al. (2016) in their study found that those English learners who were recognized as critical thinkers also performed better in their speaking. In another study, Nur (2017) explored the effect of debate on improving critical thinking and reported that critical thinking enhanced the speaking skill (including fluency, pronunciation, grammar, and vocabulary). Also, Akatsuka (2019) in a study indicated that critical thinking can be fostered when students are asked questions that require higher-order thinking skills (HOTS) in EFL courses. This study results showed that critical thinking enhanced speaking skills among students, so if EFL teachers ask HOTS questions, students would become aware of critical thinking attitudes and then acquire English speaking skills by answering the questions in an EFL context (Akatsuka, 2019). Besides, Yaprak and Kaya (2020), by proposing a model based on the principles of Task Based Language Teaching (TBLT) and Critical Thinking (CT), aimed to improve speaking ability and oral performance in students. As a result, in terms of the standards of critical thinking, all participants reported critically enhanced oral performance in their tasks (Yaprak and Kaya, 2020).

4.2.4. Listening

Having reviewed the literature, the researchers found a paucity of research regarding the

relationship between critical thinking and listening. In a study by Erkek and Batur (2019), they stated that critical listening in a classroom environment is needed in order to indicate whether what is listened is accurate or not (Erkek and Batur, 2019). Moreover, those students with higher critical listening ability were more active, more sensitive, completely meticulous, think systematically, and they seek clarity (Erkek and Batur, 2019, 2020).

5. Discussion

The purpose of this study was to identify the most effective strategies for enhancing critical thinking ability and explore the relationship between critical thinking and language skills. Regarding the first research question, various strategies, methods, and techniques were proposed to improve critical thinking, including active learning, scaffolding activities, student engagement activities, Bloom's taxonomy, Content and Language Integrated Learning (CLIL), explicit instruction, argumentative essay-writing and paragraph writing, and the Socratic Method. Notably, CLIL has recently emerged as a new trend in Europe, where foreign language is utilized for teaching curricular content (Koopman et al., 2014). With CLIL, students learn foreign language and content simultaneously (Coyle et al., 2010). These findings are of great value to all educators, particularly language teachers, as they can select a range of effective strategies and methods to improve students' critical thinking abilities, depending on the context and available resources. Moreover, as found by Yu et al. (2022), mobile learning technologies can be used as an aid to enhance the quality of language learning.

With respect to the Socratic Method, numerous studies have highlighted the significance of employing appropriate questioning techniques as a means of enhancing critical thinking within language classrooms. Notably, the incorporation of questions that necessitate the use of higher-order thinking skills (HOTS) has been strongly recommended. Examining the impact of questioning methods on learners within an educational setting, Mustika et al. (2020) concluded that an increased emphasis on higher-order level questions can effectively stimulate critical thinking among students. Zhou et al. (2015) recommended reciprocal peer questioning as a useful strategy for promoting CT and critical reading skills. Additionally, Sahamid (2014) reported that through questioning, the process that occurs in the student's mind creates thinking and learning. So, in this study, it was proved that how Socratic Questioning, by using the "Elements of Reasoning", develops critical thinking in the language classroom (Jensen, 2015; Sahamid, 2014). In this regard, although no single method was proposed in these studies as the best, it was indicated that some of them can be effective when properly implemented.

In agreement with the findings of the current study, several studies have previously investigated the strategies to improve critical thinking ability of EFL learners. The gap between teachers' beliefs and their performances in classroom based on CT shows that a synthesis of some effective strategies could be useful for appropriately teaching CT (Abrami et al., 2014). As an example for the strategies that can promote the critical thinking skills, group discussions and the effectiveness of performing cooperative activities can be named. In this regard, Kasper and Weiss (2005) conducted an investigation into the impact of inter-class collaboration on the development of academic literacy skills, particularly with regards to critical thinking. The authors advocated for the use of cooperative learning, as it fosters an environment where students can share and consolidate their knowledge, engage in constructive debates, and explain their understanding to one another, thereby enabling their peers to evaluate and analyze tasks. Consequently, this approach can effectively enhance critical thinking abilities. As such, the present study reviewed various strategies and methods that have been demonstrated to be effective in improving critical thinking. These findings are thus congruent with the results obtained in the current study. In line with the

results of Yu and Gao's (2022) findings, the authors of the present study suggest using short videos in flipped classes.

Concerning the second research question, some studies reported the relationship between critical thinking ability and the 4 language skills (reading, writing, speaking, and listening). In this regard, some findings of these studies that proved the significant and positive effects of critical thinking on these language skills were mentioned in separate categories. Based on these results, it was shown that all 4 language skills can be improved by enhancing the ability of critical thinking among EFL/ESL learners. Therefore, the findings are helpful both for teachers and students, especially those who crave to improve a language skill or skills they are weak. In other words, one can hit two birds with one stone; that is, different stakeholders can develop students' critical thinking ability and their four language skills, accordingly.

In line with these results, Yusri (2018) posited that integrating critical thinking instruction with learning models can have a profound impact on students' writing proficiency. Other studies have also investigated the relationship between critical thinking and the speaking ability of English as a Foreign Language (EFL) learners. For instance, Arfae (2019) conducted a study to examine the influence of critical thinking instruction on the speaking proficiency of EFL learners. The findings of the investigation revealed a significant correlation between the advancement of critical thinking skills and the improvement of EFL learners' speaking abilities. This outcome is particularly noteworthy. Correspondingly, this is in agreement with results of the current review. In regard to the impacts of critical thinking on reading skill, many studies have been conducted. A study by Kamali (2011) discovered that the level of critical thinking in learners can affect their reading comprehension ability. Furthermore, the outcomes of the present study align with the findings of Facione (2006), who posited that there is a substantial correlation between reading comprehension and critical thinking abilities. Thus, improvement in one ability can lead to a corresponding advancement in the other. Correspondingly, this association may be due to the reason that reading and critical thinking are both known as cognitive abilities that have several similar cognitive skills (Kamali, 2011).

Moreover, regarding the relationship between critical thinking and language skills, Hutchinson (1994) stated that grammar and word knowledge (vocabulary) are not sufficient to master a new language, so learners must develop their language learning skills in speaking, writing, listening, and reading, and this needs a mindful effort to become successful in learning a language that can be achieved by improving the ability of critical thinking (Hutchinson, 1994). Finally, listening skill was not studied comprehensively regarding its relationship and critical thinking, so the results related to this skill must be accepted with cautious.

Altogether, based on the findings of this review, it was indicated that critical thinking and the strategies to improve it, if incorporated and implemented in the programs and curriculum designed for EFL/ESL learners, can equip them with better language knowledge and enhance their language learning abilities. The results of this study, due to its meta-synthesis design and providing a comprehensive framework regarding the importance of CT in language learning, the most effective strategies for its improvement, and its effect on language skills, can be applied to make better decisions on how to improve this ability among language learners from every society and culture appropriately.

6. Implications

Based on the findings of this review, critical thinking and the strategies to improve it must be included

in the programs and curriculum designed for EFL/ESL learners to equip them with better language knowledge and enhance their language learning abilities. Moreover, the results of this study may give more insight into how critical thinking affects EFL/ESL learners' abilities and lead them to perform more effectively in their language classrooms as a result of critical thinking ability. The results can have insights both locally in Iran and globally. Within the context of education in Iran, critical thinking has not traditionally been prioritized in either schools or universities. The authors of this study aspire that the findings of their investigation will serve as an initial, albeit modest, stride towards potentially transforming or at least amending the existing educational system of the country. Other countries with similar educational systems can benefit from the results of this study.

As it was revealed by the results of this study, there is a strong and significant relationship between critical thinking and the improved language learning. So, the society at large should provide a supportive atmosphere to improve this ability from the young age among students. Subsequently, it is imperative that the government and policy makers devote greater attention towards incorporating efficacious strategies and methods for enhancing critical thinking abilities into educational programs. Moreover, language teachers themselves should also be informed about the importance of this concept and the ways to implement and enhance it among their students.

The results of this study, due to its nature that was a meta-synthesis, will help language teachers, policy-makers, and curriculum developers to understand the importance of critical thinking and then to pay more attention to include it in teaching programs. The present investigation can be perceived as a progressive advancement towards broadening our comprehension of the impact of critical thinking on language acquisition overall, as well as on language skills and the distinctive characteristics and abilities of EFL/ESL learners in particular.

In subsequent research endeavors, conducting more comprehensive investigations that concentrate on diverse approaches to teaching critical thinking in varying cultural and contextual settings would be advantageous, as the concept of critical thinking and its implications may differ across cultures. Moreover, the results of the study conducted by Yu (2023) revealed better results in gamified English vocabulary learning, and also the results of the study by Yu et al. (2023) supported better language learning strategies in mobile English language learning classes; however, future studies can explore the effect of gamified critical thinking, and the use of mobile English language learning strategies to enhance critical thinking. In addition, more longitudinal research should be conducted by concentrating on whether these teaching approaches and strategies that are used to enhance critical thinking in language classroom, would have long term benefits for students. Moreover, listening skill was the most neglected skill regarding its association with critical thinking, so conducting more studies on this subject could fill this research gap.

7. Conclusion

The current study attempted to review the published studies on the importance of critical thinking in language learning and teaching. As was revealed by the results of the first research question, the following were found to be the most effective strategies in improving critical thinking: active learning; scaffolding activities such as think-pair-Share, jigsaw reading, compare and contrast group discussion, and role-play and student engagement activities; using Bloom's taxonomy; Content and Language Integrated Learning and explicit instructions; argumentative essay-writing and paragraph writing; and Socratic Questioning. However, it was stated that no single method can be considered as the best one, and a combination of strategies and methods should be used to improve critical thinking among EFL/ESL learners.

In regard to the second research question, it was found that all four skills can be enhanced as a result of critical thinking. However, the results on listening skill were limited and some of them were insignificant. On the other hand, it was shown that speaking, reading, and writing are strongly influenced by the critical thinking ability. Concerning listening skill, although it was the most neglected skill regarding its relationship and critical thinking, a study included in this review reported the significant effect of critical thinking on the developed listening skill among students. So, it can be concluded that the higher the critical thinking ability, the higher the level of language skills.

Author contributions

Conceptualization, RT; methodology, RT and MG; software, MG; validation, RT and MG; formal analysis, RT and MG; investigation, RT and MG; resources, RT and MG; data curation, MG; writing—original draft preparation, RT and MG; writing—review and editing, RT; visualization, RT and MG; supervision, RT; project administration, RT and MG. All authors have read and agreed to the published version of the manuscript.

Conflict of interest

No conflict of interest was declared by the authors.

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