Impact of Project-Based Learning on Critical Thinking Skills and Language Skills in EFL Context：A Review of Literature

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Abstract

In the domain of Teaching English as a Foreign Language (TEFL), the cultivation of critical thinking skills (CTSs) and language skills (LSs) is imperative for the academic deveolpment of learners. Project-Based Learning (PBL), characterized by its integration of real-world challenges and emphasis on collaborative learning, demonstrates significant potential to positively influence the development of CTSs and LSs in English as a Foreign Language (EFL) learners. This systematic review of literature meticulously evaluates the effects of PBL on fostering critical thinking skills CTSs and language skills LSs among EFL learners over recent decades. It assimilates insights from a range of empirical studies, elucidating how PBL activities enhance EFL learners' critical thinking skills more effectively compared to conventional teaching methodologies. Additionally, this review underscores the beneficial impacts of PBL on language skills, encompassing vocabulary acquisition, speaking, writing, and reading comprehension, which are attributed to its focus on authentic tasks and practical real-world applications. The implementation of PBL is instrumental in promoting deeper engagement in learning within EFL classrooms. Moreover, the perceptions of PBL by EFL learners and teachers constitute a significant component of the findings. EFL learners typically demonstrate favorable attitudes towards PBL, while EFL teachers recognize its efficacy in nurturing critical thinking and creativity, acknowledging challenges in its practical execution and assessment design. Conclusively, the review pinpoints existing research gaps and delineates prospective research trajectories. There exists an exigent need for comprehensive exploration into the mechanisms by which PBL augments skill development, longitudinal investigations into its enduring impacts, and research across diverse educational settings. The incorporation of technology within PBL frameworks and the preparedness of teachers are identified as pivotal areas for further inquiry.

Keywords: Critical Thinking Skills, English as a Foreign Language (EFL), Language Skills, Project-Based Learning

I. Introduction

Critical thinking skills (CTSs) play an important role in developing language proficiency. Language proficiency consists of linguistic elements and cognitive elements, and the cognitive elements such as analyzing, reasoning, playing in the language input or output process (Zhang et al., 2020). Higher-order thinking skills, such as analyzing, reasoning, and evaluating, foster higher-order learning skills, and they allow students to achieve higher levels of language fluency (Ghanizadeh et al., 2020). Therefore, to help individuals think critically through thinking training has been a primary goal of language instruction (Cook, 2016). Many English Language Teaching (ELT) researchers have argued that critical thinking skills should be taught in English classrooms in order to increase students' English proficiency (Liaw, 2007; Masduqi, 2011).

Language skills (LSs) are fundamental and significant in the field of English as a Foreign Language (EFL) education. They serve as the foundational components that enable learners to effectively use the English language. Mastering language skills, including listening, speaking, reading, and writing, is essential for effective communication (Sadiku, 2015). Listening skills are crucial for comprehending spoken English, which are essential for understanding lectures and real-life conversations in academic situations (Alzamil, 2021). Speaking skills enable learners to articulate their thoughts and ideas coherently, facilitating effective interactions with English speakers (Pitura, 2022). Additionally, reading skills empower learners to access a wealth of academic and literary resources, enhancing their educational and cultural experiences (Grabe & Stoller, 2019). Finally, writing skills are vital for academic success and professional communication (Hyland & Shaw, 2016). In sum, mastering these language skills plays a vital role in equipping EFL learners with the tools they need to communicate globally.

EFL learners often face challenges in achieving sufficiently proficient language skills in English. Factors affecting EFL learners' language skills include cognitive ability (Luque & Morgan-Short, 2021), linguistic factors (Aizawa et al., 2020), and cultural factors (Peng & Patterson, 2022). While cognitive ability, linguistic factors, and cultural factors are indeed significant influential, pedagogical factors directly impact the practical application of language skills. Pedagogical factors, particularly the lack of authentic English language use in

real-life situations, play a crucial role in cultivating learners' language proficiency (Ramzan et al., 2023). Traditional pedagogical methods that emphasize rote memorization, standardized testing, and grammar-translation approaches may limit learners' exposure to authentic language contexts (Cui et al., 2023). On the other hand, EFL learners may struggle to apply their language skills effectively in real-life situations, such as everyday conversations, professional communication, or academic discourse, because traditional teaching methods lack situations for opportunities language practice.

Improving EFL learners' critical thinking skills and language skills is crucial for their academic development. However, there is a lack of effective teaching method that could potentially enhance the two sets of skills. Some teachers attempt to integrate CTSs in teaching but simply labeling class activities with CTSs activities (Wen & Sun, 2015), or mistakenly equate debate, positive and negative thinking, or in-depth discussion with critical thinking, and label these activities as CTSs practice. The test-oriented, text-based, grammar-translation teaching approaches are not conducive to improve learners' CTSs and LSs. These problems can likely be addressed with the shift from teacher-centered teaching methods to student-centered methods (Lu & Xie, 2019).

Project-Based Learning (PBL) has the potential to address these problems. It is a learning approach that students acquire knowledge, skills, and abilities by independently constructing in order to research a problem from real life or build product. Previous studies have shown some evidence on the effects of PBL on CTSs and LSs of EFL learners. For example, Affandi and Sukyadi (2016) proved PBL was effective in improving Indonesian EFL learners' writing skills. Yimwilai (2020) proved that PBL had a positive effect on Thai EFL learners' critical reading and 21st century skills. There are also qualitative studies that reveal learners' positive perceptions and attitude toward utilizing PBL in EFL classes (Kartika, 2020; Sultan & Javaid, 2018; Wongdaeng & Hajihama, 2018). However, there are currently no studies that systematically review the literature on the impact of PBL on CTSs and LSs. Therefore, this study aims to conduct a systematic review of relevant research in the past 10 years (2013-2023).

To achieve this aim, the current review endeavors to tackle the following questions:

1. What are the impacts of PBL on EFL learners' critical thinking skills in different EFL contexts?
2. What are the impacts of PBL on EFL learners' language skills in different EFL contexts?
3. What are EFL learners' perceptions of PBL?
4. What are EFL teachers' perceptions of PBL?

2. Background of the Study

Critical Thinking

Critical thinking (CT) is studied in several disciplines, but the most prominent definitions are in the fields of philosophy and psychology (Lewis & Smith, 1993), and later in education (Sternberg, 1986), and then in critical theory (Jeyaraj, 2020). The American Philosophical Association (APA) defined it as purposeful and reflective judgment, manifested as a reasonable inspection of evidence, background, methods, standards, and concepts in order to decide what to believe or do (Facione, 1989). This definition is popular and used widely. Another definition of critical thinking from philosophy is: a mode of thinking – about any subject, content or problem – in which the thinker improves the quality of thinking by skillfully taking charge of the structures inherent in thinking and imposing intellectual standards upon them (Paul et al., 1993). Wen et al. (2009) proposed that CT consists of a cognitive dimension and an affective dimension. The cognitive dimension includes three skills (analyzing, inferencing, and evaluating) and six standards (clarity, precision, relevance, logicality, depth, flexibility). The affective dimension includes six dispositions (curiosity, integrity, openness, fairness, confidence, perseverance). In brief, the philosophical approach focuses on a hypothetical critical thinker, listing the features and attributes rather than the behaviors or actions that the critical thinker can perform (Thayer-Bacon, 2000).

From the perspective of cognitive psychology, Glaser defined critical thinking as an attitude to consider the problems in a thoughtful way, knowledge of logic and reasoning, and skill in applying the knowledge (Glaser, 1941). This definition has a strong connection to Dewey's reflective thinking, but in varied expression and a bit extension. Halpern (1998) defined critical thinking as "the use of cognitive skills or strategies that increase the probability of a desirable outcome", and "it is goal-oriented, and purposeful reasoning that is used to solve problems, make conclusions, calculate probabilities, and make decisions". Willingham (2008) regarded critical thinking as not a set of skills but "a subset of three different types of thinking: reasoning, making judgments and decisions, and problem solving".

In defining critical thinking in educational approach, the most influential scholar is Benjamin Bloom, whose taxonomy is a hierarchical classification system, with "comprehension" at the bottom and "assessment" at the top, and critical thinking encompassing the three highest stages (analysis, synthesis, and assessment) (Kennedy et al., 1991). In contrast to philosophical and psychological traditions, the educational tradition has the advantage that it was based on classroom experience and observations of students' learning (Sternberg, 1986). However, the educational tradition of understanding critical thinking often exhibits ambiguity regarding epistemological theory, which is the feature of philosophical and psychological traditions (Ennis, 1985; Sternberg, 1986).

From the perspective of critical theory, scholars understand critical thinking as critical pedagogy which is a teaching philosophy trying to face the problems existing in society. It is a teaching approach that considers the wider social surroundings of students in each discipline, with the goal of fostering critical consciousness and to achieve social change (Jeyaraj & Harland, 2019). Its aim is to effect social changes through education (Jeyaraj, 2020). As social goals can be found in institutional mission statements and other documentation in many

western, democratic countries, and often contain the principles of being ethical and socially aware (Jeyaraj & Harland, 2016). However, as critical pedagogy is emancipatory and aiming to create a political space that allows students to decide how they think and act and challenging the dominant social structures, it is an ideological, value-laden political activity, and its teaching practitioners need to consider and manage the potential risks it may bring (Jeyaraj, 2020).

Language Skills in English as a Foreign Language (EFL)

In the context of English as a Foreign Language (EFL), language skills are fundamental abilities that learners need to acquire to communicate effectively in the English language as a foreign (EFL). Language skills mainly comprise listening, speaking, reading, and writing. Richards and Schmidt (2013) defined language skills as the abilities that enable people to understand and produce spoken and written language for their communicating purposes. This definition emphasizes the holistic property of language skills, stressing their roles in both comprehension and expression in different linguistic contexts. However, from another perspective, Nunan (2003) defined language skills more specifically that language skills are traditionally divided into two main categories: receptive skills (listening and reading) and productive skills (speaking and writing). This perspective emphasizes a binarity of language skills, distinguishing between skills that involve receiving and processing information (listening and reading) and those that require generating language output (speaking and writing). This classification helps teachers design their language teaching to addresses the distinct cognitive processes involved in the skills. The way of definition acknowledges the significance of these skills in EFL education, but they differ in their instructive guidance in teaching practice, with Richards and Schmidt taking a broader view and Nunan providing a more practical view of language skills.

Project-Based Learning

Project-Based Learning (PBL) has its roots in the "Progressive Education Movement" in the United States in the first half of the 20th century. "Progressive Education Movement" advocated student-centered, experiential learning to explore real life, to inquire into problems in the living world and thus achieve deeper learning (Mason, 2020). Project-Based Learning (PBL) is a way of learning in which students acquire knowledge, skills, and develop abilities by constructing their own understanding in investigation of a question from real life or building products. It is student-centered teaching and learning method that engages students in authentic questions, planning, problem-solving, decision making, investigative activities, and doing the projects autonomously during a certain period, and end with substantive products or presentations (Jones et al., 1997).

This way of teaching and learning differs from traditional teacher-centered approaches, in which students are provided information through reading texts or practice skills in a textbook; while, in PBL students are given the structure, resources, and advice from teachers, but they are responsible for figuring out how to learn and discover things on their own (Stanley, 2021). Project-Based Learning allows students to learn to think, discover, choose, decide, and create, instead of passively receiving knowledge from teacher explanations and training as in traditional teaching. This is like the Chinese proverb, "It is better to teach a man to fish than to give him a fish." There are eight essential elements of project design, according to the Buck Institute for Education (BIE, 2019), which serve as the foundation for Project-Based Learning: essential knowledge, comprehension, and success skills as the learning objectives; challenging problem or question; sustained inquiry; authenticity; student choice and participation; self-reflection; revision and critique; the public product.

3. Method of Review

Searching Process

To review literature on the impact of PBL on critical thinking skills and language skills, the researcher searched papers broadly from Scopus, ScienceDirect, Web of Science, and CNKI (China National Knowledge Infrastructure). Google Scholar was also used as a complementary resource. The researchers used the following search terms and their thesaurus: ("Project-Based Learning" OR "PBL" OR "learning through project" OR "teaching with project" OR "project teaching") AND ("critical thinking" OR "criticality" OR "higher-order thinking") AND ("language skills" OR "language proficiency" OR "listening" OR "speaking" OR "reading" OR "writing") AND ("English as a Foreign Language" OR "EFL"). Finally, 98 papers were retrieved.

Screening Criteria

The researcher conducted an in-depth screening of the retrieved 98 papers. The screening criteria are as follows: First, the paper should be an empirical study, and conceptual papers and book reviews need to be eliminated. Second, the journal in which the paper is published need to be a peer-reviewed journal. Third, the research topic of the paper must at least include PBL and critical thinking, or PBL and language skills. Fourth, the research scope of the paper is in EFL or TEFL context. 48 papers and book chapters were left after screening. The following findings were discovered from these screened papers and book chapters.

4. Findings from the Review

A.PBL's Effects on Critical Thinking Skills of EFL Learners

Project-based Learning (PBL) has been increasingly recognized for its positive effects on enhancing critical thinking skills. Over the years, studies have consistently demonstrated that PBL encourages students to engage in deeper analytical and evaluative thinking, which are key components of critical thinking. For instance, Yimwilai (2020) conducted an experiment that revealed significant improvements in Thailand's EFL students' critical thinking skills when engaged in PBL activities compared to traditional teaching methods. This study

focused on implementing PBL in a classroom setting to evaluate its impact on students' critical thinking skills. The research involved a control group that received traditional teaching methods and an experimental group engaging in PBL activities. The results showed a notable improvement in the critical thinking abilities of the PBL group, demonstrating PBL's effectiveness in fostering analytical skills of EFL learners.

Similarly, Sari and Prasetyo (2021) observed enhanced critical thinking skills among Indonesian EFL students participating in PBL. Their research delved into how PBL affects critical thinking in a specific subject area. They used several PBL activities and assessed students' critical thinking through standardized tests and observational methods. The findings indicated that EFL students in the PBL program showed a greater ability to analyze, evaluate, and create solutions compared to those in traditional learning environments. This trend was also noted in Rochmahwati (2015)'s research, which used a qualitative approach to understand PBL's impacts on EFL learners' critical thinking. This qualitative study explored the experiences of EFL students and teachers with PBL. It particularly focused on the ways PBL encouraged students to think critically, with emphasis on real-world problem-solving and active learning. Interviews and classroom observations revealed that PBL helped students develop a deeper understanding and enhanced their ability to critically assess information.

B. PBL's Effects on English as a Foreign Language (EFL) Skills

The studies interest in the domain of PBL's effects on language skills has evolved over time. There are studies focused on general observations of improvements in language learners' academic achievements or overall language abilities (Ali & Hasan, 2022; Chen & Yang, 2019; Essien, 2018; Poonpon, 2017; Putri et al., 2017). For instance, Chen and Yang (2019) conducted a meta-analysis of the effects of PBL on students' academic achievement and indicated that PBL has a medium to large positive effect on students' academic achievement compared with traditional teaching. On the other hand, there are studies providing more nuanced understanding, highlighting the positive effects of PBL on specific aspects such as vocabulary acquisition (Kimsesiz et al., 2017; Palashi et al., 2023; Reisi & Saniei, 2016; Sari, 2019), speaking skills (Sirisrimangkorn, 2018, 2021; Wuryantari Winasih et al., 2019), writing skills (Aghayani & Hajmohammadi, 2019; Alotaibi, 2020; Firdausah & Sari, 2020) and reading comprehension skills (Sari & Prasetyo, 2021; Sari et al., 2021).

To be more specific and representative, Palashi et al. (2023) offers insights into PBL in the context of Teaching English as a Foreign Language (TEFL). It uniquely focuses on the integration of technology within PBL and its impact on learners' vocabulary development and social identity. By comparing traditional and technology-integrated PBL approaches, the study reveals that technology-enhanced learning environments lead to superior outcomes in EFL vocabulary acquisition and social identity formation. Sirisrimangkorn (2021) explores the impact of PBL on the speaking skills of undergraduate EFL learners. The results of this study indicated a significant improvement in students' speaking skills following PBL implementation. Students also expressed positive attitudes towards PBL using presentations. Alotaibi (2020) examines the effect of PBL on persuasive writing skills in Saudi EFL secondary students. This study found that the experimental group, taught using PBL, showed significant improvements in persuasive writing skills compared to the control group taught through traditional methods. Yimwilai (2020) delves into the impact of PBL on reading comprehension skills. Yimwilai's research focused on how PBL activities can lead to deeper engagement with texts and understanding. The study found that students involved in PBL were better at interpreting texts and demonstrating comprehension, as compared to traditional learning methods.

C. Role of PBL in improving EFL learners' Critical Thinking and Language Skills

Based on the literature review, it is evident that Project-Based Learning (PBL) plays a significant role in improving EFL learners' critical thinking and language learning. Studies have shown that PBL can promote learners' engagement and enhance critical thinking (Pang, 2022; Sari & Prasetyo, 2021). Moreover, PBL can provide a context for feedback and various types of challenging tasks, which can enhance EFL learners' critical thinking skills (Pang, 2022). Additionally,, PBL can foster creativity and language skills in EFL learners (Cosgun & Atay, 2021; Ngadiso et al., 2021). In a study conducted by Zhao and Wang, (2022), PBL was found to promote EFL college students' critical thinking and students demonstrated their thinking skills through a book report project in a reading course. The study concluded that successful PBL engages students in deeper learning by using language as a tool to facilitate discoveries about the language itself, content, and various skills in authentic contexts.

Another study conducted by Ghosheh Wahbeh et al. (2021) found that Project-Based Learning enhances individual and collaborative abilities among language learners by fostering their communication skills, both among peers and with instructors. Furthermore, this instructional approach cultivates mutual respect, boosts self-confidence, and promotes self-directed learning among students studying the Arabic language. In conclusion, some studies reveal that project-based instruction provides EFL learners with a challenging problem and inquiry environment, thus promoting their critical thinking skills or language skills. Additionally, studies demonstrate that PBL, as an integrative teaching method, integrates critical thinking and language skills in project-based research to improve proficiency in both areas.

D. EFL Learners' Perceptions of PBL

The research on students' perception of Project-Based Learning (PBL) indicates that students generally have positive attitudes towards this educational approach. This positivity stems from the interactive and engaging nature of PBL, contrasting with more traditional, lecture-based methods. Studies have shown that students appreciate the real-world relevance and hands-on experience that PBL provides, which often results in a deeper understanding of the subject matter. For instance, Sultan and Javaid (2018) found that students valued the practical application of knowledge in PBL settings, noting improvements in communication and problem-solving skills. Their study on Pakistani undergraduate students' perceptions of PBL in an English composition course reveals a nuanced perspective on PBL's impact.

Students appreciated the academic and non-academic benefits of PBL, including improved subject understanding, communication, negotiation, and critical thinking skills. However, they also encountered challenges, particularly in managing time and team work. This research underscores the multifaceted nature of student experiences with PBL, highlighting both its potential benefits and challenges in implementation.

Similarly, Kartika (2020) reported that students enjoyed the critical reading discussions, journal reflections, and poster presentations involved in PBL, indicating a higher level of engagement and satisfaction compared to conventional teaching methods. The study investigates Indonesian EFL students' perceptions of PBL in a critical reading context. It employs a mixed-method approach, including surveys and interviews, and focuses on students' experiences and attitudes towards PBL. The findings indicate a generally positive perception of PBL, highlighting its effectiveness in enhancing critical reading skills and engagement in the learning process. The study provides valuable insights into the adoption of PBL in language learning, emphasizing its potential benefits in enhancing students' educational experience and skill development. Additionally, Yimwilai (2020) discovered that PBL not only significantly improved Thai undergraduate EFL students' critical reading skills but also had a positive influence on their attitudes towards PBL. Students exhibited highly positive perceptions of PBL, appreciating its role in enhancing collaboration, communication skills, and self-esteem. This study highlights PBL's effectiveness in developing both language skills and essential 21st-century skills, while also fostering positive student attitudes towards this learning approach.

E. EFL Teachers' Perceptions of PBL

The exploration of EFL teachers' perceptions of PBL reveals a complex and evolving perspective on this instructional approach. Generally, EFL teachers demonstrate a positive attitude toward PBL, valuing its interactive and dynamic nature that contrasts with the traditional, lecture-based methods. This positivity is primarily rooted in the real-world relevance and experiential learning opportunities that PBL offers. For instance, Trepper et al. (2022) found that teachers adopting PBL for the first time in English Language Arts classes experienced a significant shift in teaching methodology. They moved from a focus on traditional literary analysis to engaging students with "real-world" writing and assessment, highlighting the adaptability of PBL to different learning contexts and its potential to enhance learners' critical thinking skills and learning engagement.

Similarly, Bharati and Lestari (2019)'s study on project-based writing assessments in Indonesian high schools illustrated that while teachers acknowledged the benefits of PBL in fostering critical thinking and creativity among students, they faced challenges in developing effective assessments that could measure higher-order thinking skills. This indicates the gap between understanding the potential of PBL and applying PBL effectively in practical teaching scenarios. Devkota et al. (2017) explored the implementation of PBL in the Nepalese EFL context from EFL teachers' perceptions. They identified key challenges, such as finding qualified staff for PBL implementation, integrating PBL into a traditional curriculum, and the practical difficulties of introducing PBL in remote areas. Despite these challenges, the study highlighted PBL's potential to promote evidence-based learning and enhance research and problem-solving skills.

These studies underscore the multifaceted nature of teachers' experiences and perceptions with PBL. They highlight both the potential benefits, such as enhanced student engagement, critical thinking, and adaptability to various learning situations, and the challenges, including curriculum integration, assessment design, and implementation barriers. This body of research provides valuable insights into the adoption of PBL in EFL teaching, emphasizing its potential in enhancing the educational experience and professional development of teachers.

5. Gaps from the Literature

After reviewing the existing research on the topic, some research gaps and future directions were identified:

A. Exploring the Process of Skill Enhancement through PBL

Current literature often lacks an in-depth exploration of how exactly PBL facilitates the enhancement of critical thinking and language skills of EFL learners. Understanding the specific pedagogical actions and cognitive processes that occur during PBL can provide valuable insights for instructors to optimize their teaching methods and enhance the effectiveness of PBL in language learning contexts (Markula & Aksela, 2022; Ricaurte & Viloria, 2020). Future research should delve into the mechanisms and processes by which PBL influences these specific skills. This includes examining the cognitive and pedagogical strategies employed within PBL environments, and exactly how they contribute to the development of critical thinking skills and language skills.

B. Limited Longitudinal Studies

Despite the existing research on PBL's effectiveness, there is a scarcity of longitudinal studies that examine how PBL affects EFL learners' critical thinking and language skills over time (Birdman et al., 2022; Rodríguez-Peñarroja, 2021). Most of the previous studies have used short-term interventions or cross-sectional designs, which do not capture the cumulative and dynamic nature of PBL. This gap limits our understanding of how PBL can foster sustained and transferable learning outcomes for EFL learners in different contexts and levels. Therefore, future research should focus on tracking students' progress over extended periods, using multiple and diverse measures, to provide more comprehensive and nuanced insights into the benefits and challenges of PBL for EFL education.

C. The Need for More Diverse Contextual Applications of PBL

The majority of PBL studies have been conducted in specific educational contexts or regions, limiting the generalizability of their findings to other settings. To understand how cultural, institutional, and curriculum differences affect PBL's effectiveness, there is a need for research in varied contexts. Expanding research to diverse settings can offer a more global perspective on PBL's potential and challenges. It can also help identify the factors that facilitate or hinder the implementation and sustainability of PBL in different environments. Similarly, PBL may be more suitable for some language classes that require problem-solving, critical thinking, and real-world application, while it may be less suitable for others that require memorization, repetition, and mastery of basic skills. Therefore, future research should aim to investigate the contextual factors that influence PBL's effectiveness and explore how PBL can be adapted and optimized to meet the diverse needs and goals of learners in different cultural and educational contexts.

D. The Need for Integration of PBL with Technology

While some studies have begun exploring technology-integrated Project-based Learning (PBL), there remains a gap in comprehensively understanding how different digital tools and platforms enhance PBL outcomes (Meng et al., 2023). For example, Rahmawati et al. (2020) found that social media and learning management systems were the most popular technologies integrated with PBL in pre-service teacher education. However, they also found that the success of technology integration in PBL depends on various factors, such as the teacher's ability to give guidance, the students' readiness to use technology, and the alignment between technology and pedagogy.   Additionally, the effectiveness of technology integration in PBL depends on various contextual factors, such as the learners' needs, goals, and preferences, the subject matter, the learning environment, and cultural and ethical considerations. Therefore, future research should aim to investigate the contextual factors that influence the effectiveness of technology integration in PBL and explore how PBL can be adapted and optimized to meet the diverse needs and goals of learners in various contexts.

E. Teacher Preparation and Training

Limited research has addressed the preparation and ongoing support teachers need for effective PBL implementation. Several studies have highlighted the importance of teacher training, challenges, and professional development in the context of PBL. For example, a professional development guide by Edutopia.org provides an overview of how to use PBL in the classroom and offers practical strategies for teacher training and support (Edutopia, 2007). Grossman et al. (2019) proposed that effective project-based teachers needed to improve subject-area learning; build a classroom culture of production; pay attention to feedback, reflection, and revision; and construct a student community. These studies suggest that teacher preparation and training are critical for successful PBL implementation and sustainability. Teachers need to be equipped with the necessary knowledge, skills, and attitudes to design, implement, and assess PBL effectively. They also need their peers, administrators, and other stakeholders to overcome the challenges and barriers of PBL implementation. Therefore, future research should aim to investigate the best practices and models of teacher training and support for PBL and explore how to integrate them into existing teacher education and professional development programs.

6. Future Research Directions

Despite consolidating various studies on the impact of Project-Based Learning (PBL) on critical thinking skills (CTSs) and language skills (LSs) in the EFL context, there still remain a few areas worthy of further exploration. Firstly, longitudinal studies are needed to track the evolution of CTSs and LSs over a long period of time. The majority of existing studies are short-term ones, leaving the long-term effects of PBL on EFL learners' skills relatively unexplored. Secondly, studies should broaden their scope to cover a wider range of educational settings and contexts. Although many studies reviewed in this research focus on Asian countries, it would be beneficial to investigate how PBL impacts EFL learners in different cultural and educational contexts. Thirdly, as technology continues to advance, future research should delve into how digital tools and resources can be incorporated into PBL to boost critical thinking and language skills. Studies could examine the effectiveness of various technologies, such as virtual reality, gamification, and online collaboration platforms, in PBL activities. Fourth, the role of teachers, which is crucial in the successful implementation of PBL, need to be studied. Future research should explore the types of training and professional development that can best prepare teachers to apply PBL into their teaching. This includes understanding the challenges teachers face and providing practical solutions and strategies. Last but not the least, there is limited research on how PBL affects EFL learners of varying language proficiencies. Future research could examine whether PBL is equally effective for beginners, intermediate, and advanced learners, and tailor PBL activities to meet the needs of different proficiency levels.

7. Conclusion

In conclusion, this systematic review of the literature from 2013-2023 has provided comprehensive insights into the impact of PBL on the development of critical thinking skills and language skills among EFL learners. The findings indicate that PBL, as a student-centered approach, fosters an environment conducive to enhancing both critical thinking and language proficiency, crucial competencies in the modern educational landscape.

This comprehensive review found substantial evidence supporting the effectiveness of PBL in fostering critical thinking skills among EFL learners. This instructional approach, which immerses students in real-world challenges and collaborative learning environments, is instrumental in cultivating essential higher-order thinking skills. These include analysis, where students learn to dissect and understand complex information; evaluation, which involves assessing and making judgments based on evidence; and creation, where students apply their knowledge to develop innovative solutions. Such skills are pivotal not just in the realm of language learning, enhancing students' ability to understand and use English effectively, but also extend to their overall academic and professional spheres. Thus, the integration

of PBL into EFL education emerges as an important strategy, which will not only facilitate EFL learners' language learning but also prepare them for future academic pursuits and career opportunities in a globalized world.

The review also highlighted the positive impact of Project-Based Learning (PBL) on language skills, such as vocabulary acquisition, speaking, writing, and reading comprehension among EFL learners. These enhancements are particularly notable in PBL's application of authentic, real-world tasks, which offer students unique opportunities to immerse themselves in practical language use. This immersion allows for a more contextualized and engaging learning experience, fostering deeper understanding and mastery of new vocabulary. In speaking and writing, PBL encourages learners to articulate their ideas more effectively in communications and presentations. Reading comprehension also benefits, as PBL tasks often require critical engagement with diverse texts, promoting a more analytical and reflective approach to reading. Overall, PBL's focus on real-world application boosts specific language skills of EFL learners', preparing them for real-life communication and academic challenges.

However, this review has identified several gaps in the current literature that need to be addressed in future research. First, there is a need for more in-depth exploration of the specific mechanisms by which PBL enhances critical thinking and language skills. Second, longitudinal studies are required to better understand the long-term effects of PBL on these skills. Third, research in diverse educational and cultural contexts is necessary to ascertain the generalizability and adaptability of PBL. Fourth, the role of technology in PBL, particularly in a post-pandemic world, warrants further investigation. Lastly, the preparedness and ongoing support of teachers for effective PBL implementation are critical areas that require more focus. Furthermore, this study also suggests several directions for future research: the need for longitudinal studies, broader cultural and educational contexts, integration of digital tools, teacher training, and considering learners' varying proficiency levels in PBL research.

Last, this study has limitations and delimitations. The current study is not without limitations. Firstly, the review is primarily based on empirical studies from a limited number of educational institutions, potentially restricting the generalizability of the findings. Secondly, the study focuses primarily on quantitative data analysis, overlooking qualitative aspects that may provide a deeper understanding of the learners' experiences and perspectives. Furthermore, the study does not take into account the diverse cultural and educational backgrounds of EFL learners, which may affect their engagement and learning outcomes within PBL frameworks. On the other hand, this study has delimitations. The delimitations of this study are primarily the scope and focus of the review. The study reviewed the impacts of PBL on EFL learners' critical thinking skills and language skills, but it does not delve deeply into other potential outcomes such as learners' self-confidence, self-efficacy, and motivation. Additionally, the study focuses primarily on the impact of PBL in the classroom, overlooking the broader societal implications of this teaching method.

In summary, the findings from this systematic review underscore the potential of PBL as a transformative educational approach in EFL contexts. By addressing the identified gaps, future research can contribute to optimizing PBL's implementation, ensuring that it meets the diverse needs of learners and educators, and reinforcing its role as a significant contributor to the development of critical thinking and language skills in global education.

Competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Obtained.

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No additional data are available.

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