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Development and validation of a scale to probe into Iranian EFL teachers' perception of problem-based learning: PBL challenges in focus

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Abstract

Problem-based language learning approaches can prove advantageous in fostering meaningful language learning and enhancing language proficiency. The present sequential explanatory mixed-methods study aimed to explore the perspectives of Iranian EFL teachers regarding problem-based learning (PBL), and the challenges they confronted in its application. To this end, forty male and female Iranian EFL teachers from high schools and language institutes in Alborz province were selected using convenience sampling. In the course of the study first, a questionnaire was employed to gauge teachers' perceptions of problem-based language learning. To collect the required data, the Teachers' Perceptions of Problem-Based Learning (TPPBL)questionnaire was developed and validated. Afterwards, an interview was conducted to triangulate the data and provide nuanced insights into the challenges faced in implementing PBL. The gathered data were analyzed both quantitatively and qualitatively. The findings unveiled that the participants held positive perceptions regarding PBL implementation in language classes. However, they addressed various challenges including role adjustment, inadequate training and experience, lack of suitable instructional materials, and time constraints while implementing PBL techniques. The implications of these findings extend to EFL teacher educators, teachers, learners, and researchers, offering valuable insights for enhancing language teaching practices and addressing challenges associated with PBL implementation.

Keywords: Meaningful Learning, Problem-Based Learning, TPPBL, PBL Perception Questionnaire, Problem-Based Instruction

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1. Introduction

For some language researchers, certain methods can be efficacious in language education, while others argue that their efficacy is under question, contributing to the fact that teaching methods and approaches should be according to universal principles of learning (Gilabert & Vasylets, 2017). According to Chen et al. (2017), language teaching and learning settings are not always static, and teachers need to act reflectively based on the feedback from their teaching contexts. During the last few decades, EFL researchers have introduced various approaches to language teaching that focus on different aspects of learning. For example, communicative approaches focus on information exchange and true communication; while task-based approaches focus on language learners' tendency for accomplishment and learning by doing. In modern educational settings, however, the goal of education is to facilitate change and learning, which goes beyond cognitive education (Stentoft, 2017). It is in line with experiential meaningful learning which is characterized by active participation in knowledge construction and involves learners' active participation in knowledge construction in different contexts. Students may engage in real-world language tasks to deepen their understanding and to practice application of language skills authentically (Lin, 2015). Thus, unlike rote learning, which takes place in a rigid manner since it is limited to the transfer of knowledge and the student's recall of the knowledge, experiential learning leads to deep and meaningful learning, at a high level of learning involvement and facilitates the use of the knowledge acquired in different contexts and situations (Renol et al., 2017).

On the other hand, developments in educational psychology, especially those related to cognitive and metacognitive language processing, have demonstrated that teaching and learning approaches focusing on students' organizing, planning, and problem-solving abilities can be more effectively used in language education (Anita et al., 2013). To find the most efficient ways to teach a foreign language, various methods have been proposed and tested with varying results. As the understanding of effective learning strategies has evolved, there is an increasing need for innovative methods and promising approaches such as Problem-Based Learning (PBL) that enhance language acquisition (Gilabert & Vasylets, 2017).

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PBL is rooted in the constructivist theory of learning, which views learning and understanding as the outcome of interaction with real problems and the learning environment (Tan, 2003). PBL is designed to promote deep understanding along with enhancing higher-order thinking skills. This instructional method centers on the learners (Aryanti & Artini, 2017) and viewing them as knowledge seekers persuades them to frequently participate in analyzing, questioning, interpreting information, and applying newly obtained information in new contexts.

PBL has gained widespread acceptance not only in fields such as medicine and business but has also demonstrated success in disciplines like biology and physics. For example, universities in countries such as the United States (Dean et al., 2023), and Canada (Onwukwe et al., 2022) have reported positive outcomes from incorporating PBL into their curricula. PBL, thus, aligns with modern educational requirements that lead to meaningful lifelong learning through interaction and active engagement (Yew & Goh, 2016).

Despite the myriad studies on PBL in various EFL contexts (Azman & Shine, 2012; Keong & Mohammed, 2015; Othman et al., 2013), focusing on Iranian EFL teachers' perceptions and challenges concerning the implementation of PBL is crucial for several reasons. Firstly, cultural traces of traditional, teacher-centered approaches in Iran influence teaching and learning styles. Therefore, the implementation and effectiveness of PBL may differ significantly from other contexts (Nafisi et al., 2021), i.e., understanding how PBL can be integrated into this cultural framework is essential. Additionally, investigating the common challenges can provide valuable insights into how PBL can be adapted to meet the needs of Iranian students and teachers effectively (kaeedi et al.,2023). Therefore, focusing on Iranian EFL teachers, we can gain deeper insight into how PBL can be tailored to enhance language learning in this unique context.

Reviewing the related literature on PBL revealed that scant studies have been conducted in Iranian EFL contexts; consequently, no instrument for gauging EFL teachers' Perceptions of Problem-Based is available. Given the identified gap in understanding Iranian EFL teachers' perceptions and challenges related to PBL, the research questions are formulated to address this issue. The present study aimed to explore the perceptions of Iranian EFL teachers regarding teaching PBL-based language classes to explore their beliefs about the effectiveness of PBL, their experiences with its implementation, and their overall attitudes towards this innovative teaching approach. Along the same lines, a secondary purpose, the development and validation of an instrument to collect the required data emerged. Also, the

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study intended to investigate the specific challenges encountered by addressing these issues. So, the research intends to provide insights into these three questions:

1. How reliable and valid is the developed questionnaire of Teachers' Perceptions of Problem-Based Learning (TPPBL)?
2. What perceptions do Iranian EFL teachers hold regarding teaching PBL-based language classes?
3. What challenges do Iranian EFL teachers encounter in teaching problem-based language classes?

2. Review of the Literature

PBL was introduced as an educational reform in the 1970s, countering the traditional lecture-based approach seen in medical education at McMaster University in Canada in 1969 (Savery, 2006, p.9). The basic idea behind PBL is to avoid the traditional lecture-based approach and instead engage students in the learning process actively so they can retain the information better (Robert & Kwan, 1997, p. 149). This idea resulted in the extensive use of PBL in medicine and business, and it quickly became popular in areas like biology and physics, with less adoption in history and geography (Larsson, 2001). Considering the potential for PBL to enhance students' communicative abilities in EFL/ESL environments, the utilization of PBL was first introduced in EFL and ESL settings (Larsson, 2001). In 1890, Dewey proposed PBL as an educational method, according to Douglas & Stack (2010). Habok and Nagy (2016) claimed that Dewey's idea mainly focuses on children and is most reliable when applied in genuine environments such as school. In 1900, Kilpatrick made changes to PBL that resulted in its implementation in educational institutions. Lequtke and Thomas (1991) describe PBL as a method of teaching and learning that focuses on the learner and task, arising from collaborative discussions among all participants (p.108). This indicates that PBL is an educational method that relies on self-directed learning, diverse classroom interactions, student collaboration, and a variety of tasks. Furthermore, Katz and Chard (2017) viewed it as a highly successful method that enables students to share viewpoints on subjects related to their areas of interest, inquire, assess, and formulate theories, utilize various resources, apply their skills in practical scenarios, devise solutions, and respond to queries creatively both inside and outside of the classroom.

The main idea of PBL is "that students would learn better if they were engaged in real-life problem solving" (Halpern, 2014, p. (11). Constructivism is the underlying theory of PBL, defined as students' knowledge construction according to their own understanding of the learning experiences (Tam, 2000). In the same vein, Savery (2006) defined constructivism as the continuous reshaping, building and

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acquisition of knowledge as a result of experience. in the constructivist view learning is a restructuring of existing knowledge, which indicates the adjusting ability of learners. As such, teaching is not simply a transfer of information to students since learning is a continuous process. As put by Shuell (1996)

> The learner does not keep in mind, remember or record the material that is going to be learned. Instead he builds a special mental representation of the material to be learned and the ongoing task or assignment. He chooses the data seen to be important, and decodes that data based on his existing needs and understanding. (p.9).

In this process, when necessary, the learner adds information not explicitly provided by the teacher to make sense of the material being studied. This is an intensive process in which the learner must perform a variety of activities on the new materials to be acquired meaningfully. This definition emphasizes the importance of active participation of the learners in the learning process, and their meaning-making from that knowledge. Furthermore, the definition of constructivism emphasizes the subjective and unique nature of knowledge for each individual since no two experiences are the same (Shuell, 1996).

2.1. *Main elements of problem-based learning*

Two unique characteristics of PBL are as follows: material instruction takes place without lectures or similar forms of transmission of knowledge, and learners are required to solve ill-structured problems that are the commence of PBL (Cho et al., 2015). Therefore, the first and most basic element of PBL is its student-centeredness, which provides students with the opportunity to take part in classroom decision-making which, according to Kruglanski (1978), results in higher quality engagement, output, and most importantly boosts students' effort and motivation. Students in PBL are given the responsibility to actively construct their knowledge. Unlike the traditional curricula, where the learners are merely knowledge seekers, in PBL, the students are responsible for their learning and actively join that process. Thus, the PBL environment leads to a clear shift in student roles. PBL also requires changes in the roles of teachers. The teacher acts as a facilitator in the PBL process rather than being the only source of knowledge.

Researchers have attempted to characterize and define a variety of PBL models using diverse sets of variables. Hung (2011), based on the two-dimensional spectrum of these variables, states that PBL is "a range of different approaches from pure PBL to lectures with problem-solving activities" (p.13), which

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gives a very broad definition of PBL. However, PBL includes a variety of models, encompassing anchored instruction, traditional PBL, hybrid models and problem-based science, each offering unique approaches to student-centered, inquiry-based learning.

Traditional PBL emphasizes student autonomy and collaboration in solving authentic, real-world problems, while anchored instruction integrates subject-specific anchor experiences to enhance relevance and context. Problem-based science engages students in scientific inquiry and experimentation, fostering a deep understanding of scientific concepts. Hybrid models blend elements of PBL with other instructional approaches, providing flexibility and customization. By understanding these diverse PBL models, educators can select and adapt instructional strategies to meet the needs of their students and curriculum, promoting engaging and meaningful learning experiences (Simbolon & Koeswanti, 2020). Hmelo-Silver (2004), on the other hand, offers three versions of PB instruction. problem-based science, PBL and anchored instruction. The format and tools of these versions of PBL are totally different.

2.2. *Problem-based learning in language teaching contexts*

Wee (2004) introduced a conceptual framework (Figure 1) for the implementation of PBL in the TEFL setting. Following this framework, students are initially presented with a complex real-world problem to serve as a trigger. This first stage acts as a start for investigation, encouraging students to use critical thinking abilities and work together on problem-solving techniques. In the following step, students who are organized into groups should take on the role of stakeholders who take ownership of the problem. Here, there is a change in the way things work, as teachers become facilitators who assist and encourage students as they work through problem-solving. Teachers simply serve as facilitators by introducing the problem and assisting in the problem-solving process. In this environment that promotes self-direction and collaboration, students have the autonomy to control their educational path. (Chaghazardi et al., 2013). They come up with effective ideas or potential solutions, locate relevant information regarding the problem and learning challenges, find resources, allocate tasks to different team members, collect and exchange information within the group. (Mathews-Aydinli, 2007).

This process not only raises deeper understanding of the problem at hand but also cultivates essential skills such as communication, teamwork, and information literacy. Ultimately, students collaboratively evaluate potential solutions and select the most viable option, which they then present to the class reinforced the collective learning experience and allowed students to showcase their critical

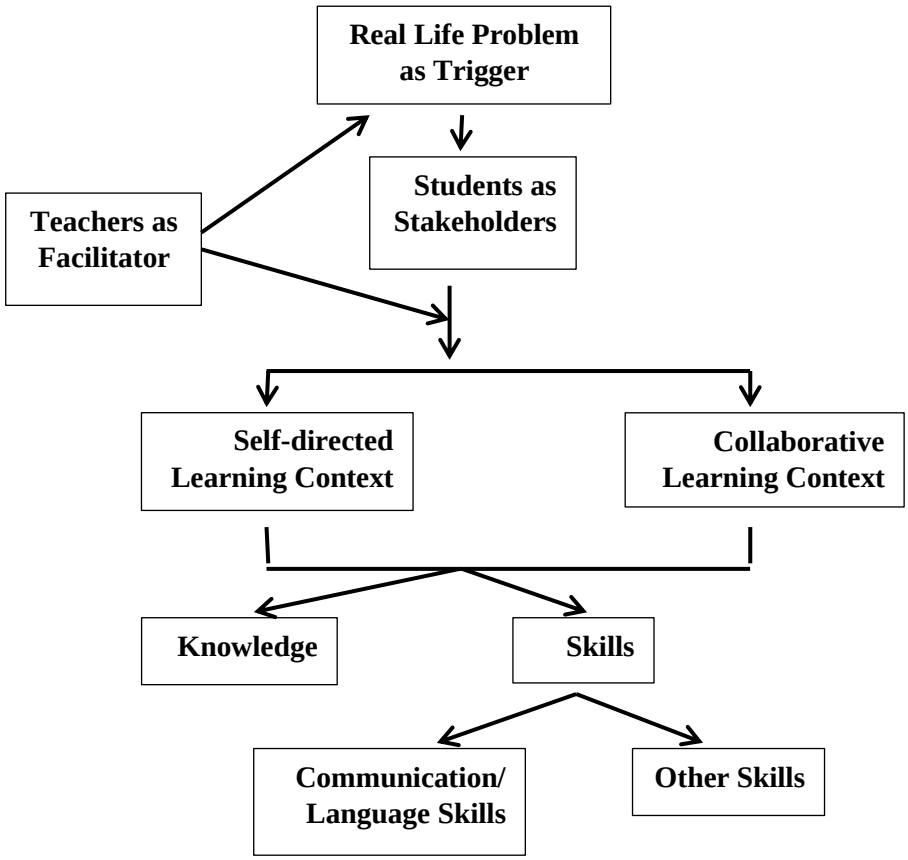
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thinking abilities and problem-solving process. This conceptual model by We (2004) presented in Figure 1 depicts the PBL implementation in language teaching. The model elucidates the key components and processes involved in PBL implementation.

Figure 1.

The Conceptual Framework of Implementation of PBL in Language Teaching Education (Adapted from Wee, 2004)



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2.3. Empirical studies on problem-based learning

A number of researches have been conducted on PBL in EFL settings. Moslemi Nezhad et al. (2023) recognized the possibly hindering components that prevent English language instructors from introducing PBL in their classes in spite of its detailed preferences. To this end, 20 EFL English teachers participated in a semi-structured interview. A questionnaire with 66 items was developed and given to 200 EFL teachers. The outcome showed that the variables that dissuade educators from utilizing this

approach are challenges in planning a PBL problem/scenario, teaching equipment role, teachers' unfamiliarity with planning a scenario/problem, restricting PBL to a particular skill, evaluation, PBL unfamiliarity to the students'/teachers', students' cross-cultural contrasts, and constraining PBL to a particular level of language knowledge.

Their study highlighted the importance of self-directed learning, collaborative problem-solving, and authentic real-life problems in PBL. Besides, it underscored the significance of fostering student autonomy and collaboration through authentic problem-solving experiences, emphasizing the value of overcoming barriers to PBL implementation. Building upon the insights from studies on PBL in EFL contexts, Moslemi Nezhad et al. (2023) identified barriers hindering the adoption of problem-based learning among language teachers.

Meanwhile, Sun and Zhu (2023) investigated how PBL affects the development of high school students' key competencies and the factors that play a role in enhancing these skills in learning English as a second language. The findings showed that PBL had a beneficial effect on the participants' key competencies in learning English as a second language. In the meantime, it was discovered that five factors impact the impact of PBL on high school students' key competencies: the teacher's grasp of PBL, their skill in project design and assessment, their guidance, and the students' interest and motivation. In the research by Sun and Zhu (2023), the main focus was on important aspects of PBL, such as the facilitator's role, student involvement, and instructional planning. The study emphasized the significance of teachers in maximizing the effectiveness of PBL in improving students' learning experiences and outcomes.

2.4. PBL in EFL education: insights, challenges, and methodological considerations

Tang et al. (2020) contrasted the pedagogical behaviors of an EFL teacher in traditional and PBL classroom environments at a Chinese university. They gathered six 45-minute videos, with three in each situation, discussing three modules: (a) introduction and vocabulary, (b) writing, and (c) writing format. The findings showed that the teacher dedicated a majority of the teaching time to presenting advanced thinking material in both traditional and PBL courses. The way the teacher organized the lesson impacted how the students interacted with each other. Even though the teacher incorporated additional group discussion tasks in the PBL classroom, lecturing remained the main way of presenting information in both classes. These findings indicate that implementing PBL approaches in the EFL classroom did not

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bring about a significant change in the teacher's teaching methods, ultimately falling short of the objective to enhance students' chances of enhancing their spoken English skills. Tang et al. (2020) analyzed key aspects of PBL, such as the facilitator's role, student-centered learning, and collaborative problem-solving, to highlight the significance of these elements through a comparison of pedagogical behaviors in traditional and PBL classrooms. The study highlights the importance of effective facilitation and student-centered approaches in enhancing the benefits of PBL and improving student learning outcomes.

In another study, Choochana (2020) investigated the effects of using PBL on EFL learners' speaking fluency and examined the participants' opinions towards the implementation of PBL in classroom learning. The results of the study indicated that the speaking fluency of the students had been developed after the use of PBL activity. The participants also had positive opinions toward PBL activities. They were satisfied with PBL classroom activities and wanted to join similar activities in the future. The researcher then underscored the benefits of students' engagement, collaborative learning, and real-world application in enhancing speaking fluency within a PBL framework.

In a similar vein, Norzaini (2019) conducted a quasi-experimental study on 32 undergraduate EFL learners and 2 English tutors. The findings revealed positive perceptions of the participants concerning problem-based language learning. PBL positively impacted the students' language skills, particularly their speaking skills. Moreover, the results indicated that PBL was not too challenging for first-year students and could be successfully implemented on a small scale. The results highlighted the need for the students to be well-trained in the theory and practices of PBL for its implementation to be successful. The researchers focused on the importance of student-centered learning and real-world application in PBL, emphasizing their relevance in enhancing language skills and learning outcomes.

Each study presents valuable insights into the application of PBL in English as EFL contexts, yet they also encounter limitations and challenges. For instance, Moslemi Nezhad et al.'s study (2023) counted on self-report measures, potentially introducing response bias, and its sample size may not fully capture diverse perspectives. Sun and Zhu's research (2023) focusing on high school students might limit generalizability, and Tang et al. (2020), relying heavily on observational data, may have overlooked contextual factors influencing PBL implementation. Choochana (2020), on the other hand, solely focused on speaking fluency neglecting other language skills. Similarly, Norzaini's research (2019) has limitations due to its quasi-experimental design and small sample size. Addressing these limitations and challenges clarifies the gap in the literature which necessitates ongoing efforts to enhance research

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methodologies, develop data collection instruments, ensure inclusive practices, and provide adequate support for educators implementing PBL in diverse EFL contexts.

The reviewed literature addressing the barriers to PBL implementation among language teachers brings valuable insights into PBL within EFL contexts and sheds light on its benefits and challenges. While the literature review provides valuable insights into the pedagogical behaviors associated with PBL and offers perspectives on the effects of PBL on specific language skills, it reveals the scarcity of research on Iranian EFL teachers' perceptions and the associated challenges of implementing PBL in the Iranian EFL context. Accordingly, the current study was an endeavor to fill such a gap in the literature.

3. METHOD

In the present study, a Convergent parallel mixed methods design was employed in which quantitative and qualitative data were collected simultaneously but analyzed separately. Then the results were integrated. the quantitative phase of the research was followed by an interview as the qualitative phase. Quantitative data was analyzed using statistical methods to identify patterns, trends, and associations. Concurrently, qualitative data from interviews underwent thematic analysis to uncover underlying themes and nuances. Then, we merged the findings from both methods by triangulating the results, associating, and contrasting quantitative findings with qualitative insights. This triangulation could help validate and enrich the interpretation of the data. Additionally, we used a matrix-based approach and data transformation techniques to compare quantitative and qualitative findings systematically. The integration of these data sets would contribute to the overall understanding of the research questions by providing a more comprehensive and nuanced perspective. It allowed us to go deeper into the phenomena under investigation, uncovering both the breadth and depth of the issues explored.

3.1. Participants

The participants of this mixed-methods study included 40 male and female EFL teachers selected through convenience sampling, with the age range of 27-50, from high schools and language institutes in Alborz province, Iran. They had different teaching experiences, backgrounds, and academic degrees. Table 1 provides the demographic information of the participants of the study.

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Table 1.

Demographic Information of the Participants

N	40
Gender	Male (n=22) Female (n=18)
Age	27-50
Academic Degree	B.A. (n=24) M.A.(n=16)
Native Language	Persian
Target Language	English

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3.2. Instruments

3.2.1. Teachers' perceptions of the PBL questionnaire

To investigate the participants' perception regarding problem-based language learning, the researchers developed a 20-item questionnaire based on a 5-point Likert scale with 1 representing "Strongly Disagree," 2 representing "Disagree," 3 representing "Neutral" or "Neither Agree nor Disagree," 4 representing "Agree," and 5 representing "Strongly Agree". It encourages the teachers to state their perspectives on implementing the PBL approach and its efficiency. To check the internal consistency of the questionnaire items Cronbach's Alpha reliability coefficient was run which yielded a consistency of 0.795, confirming the reliability of the questionnaire. The questionnaire was also piloted on 20 teachers, who were not among the main participants of this study, to identify its problems before implementing it in the main study, and to probe its validity.

3.2.2. Interview

To find the answers to the posed research questions, a semi-structured interview was designed. The interview included 12 questions concerning the teachers' perceptions of PBL and its challenges. To ensure the validity of the interview, three experts in educational sciences reviewed the interview. Subsequently, based on their comments, some items were modified or deleted. These experts were selected based on their expertise in the subject matter and familiarity with qualitative research methodologies. The interview protocol, including the questions and prompts, was presented to the expert

panel for evaluation. They assessed the clarity, relevance, and comprehensiveness of each interview question and provided feedback on the appropriateness of the questions for capturing the intended constructs. They also recommended any necessary revisions that could enhance the interview's overall validity and ensure an in-depth exploration of the research objectives. Based on the received feedback, removing redundant or ambiguous items, and including additional probes to further explore key concepts, iterative refinements were made to the interview protocol to boost its clarity. The final version of the interview protocol reflected the result of these validation efforts, ensuring that it was robust, comprehensive, and aligned with the research objectives.

3.3. Procedure

To investigate teachers' perceptions regarding problem-based language learning, the researchers developed a 20-item Likert scale questionnaire to fit the purpose of the study. Teachers' Perceptions of Problem-Based Learning (TPPBL) questionnaire provided the teachers with opportunities to state their perspectives on the implementation of the PBL approach and its efficiency and challenges. To develop and validate the PBL questionnaire based on Self-determination theory, guided by Dörnyei (2002), the following steps were taken. First, a thorough literature review was undertaken to examine the updated conceptualizations of PBL in EFL classes. It was important to check the internal consistency of the items for the questionnaire in a pilot study. To establish the reliability of the questionnaire, Explanatory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were conducted. In addition, to ensure the validity of the questionnaire, expert opinion on the content, language, and face validity of the developed questionnaire was sought. Furthermore, the experts were requested to give comments about whether the construct of PBL had been well-presented in the developed questionnaire and to suggest potential items if they thought the construct was misrepresented. Subsequently, based on the received feedback, some of the items were modified and deleted. The format of the questionnaire was adapted from Google Forms.

The questionnaire was also piloted among 20 EFL teachers, who were not among the main participants of this study, to see whether there was any ambiguity about any items, and to receive their suggestions for possible improvements of the items. The researchers clarified the ambiguous items of the questionnaires and made sure that all of the participants were cognizant of the questions. This pilot study also gave a rough idea of the distribution of the response to each item, which provided information concerning the existence of enough variation in the response. Feasibility and consideration of floor or

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ceiling effects guided the researchers in including or discarding each questionnaire item. Since participants' responses to questionnaires may be influenced by question order, after the first phase of validation, the items were revised while checking the results of the preliminary pilot testing.

Then, to achieve a deeper understanding of the teachers' perception of PBL and the challenges they see in the implementation of PBL, the second research instrument, i.e., a semi-structured interview, was conducted. The interview involved the presentation of oral-verbal stimuli. The interview included 12 questions concerning the teachers' perceptions of PBL and its challenges. While the teachers were being interviewed, their responses were recorded and transcribed afterward. Finally, the transcriptions underwent qualitative data analysis. Consequently, the researchers developed a theoretical model and a questionnaire of teachers' perceptions of PBL in the Iranian context.

3.4. Data analysis

The two types of data, i.e., qualitative and quantitative data were analyzed separately before being combined and re-analyzed. To analyze the quantitative data, the statistical analyses were conducted using the Statistical Package for Social Sciences (SPSS, version 22). Descriptive statistics (frequency, mean, and standard deviation) were used to address the research questions. In addition, Cronbach's Alpha was utilized for checking the instruments' reliability. The qualitative data analysis was done through thematic analysis. According to Cresswell (2009), inductive thematic analysis is particularly helpful when the research goal is to create new perspectives, theories, or knowledge from the data without using pre-set theoretical frameworks. Then, the initial codes were generated. Next, researchers reviewed the codes and grouped them into potential themes based on shared meanings, patterns, or relationships. Subsequently, the identified themes were refined, and the coherence and relevance of each theme to the research question or objectives were identified. Finally, the themes and their definitions, illustrative examples, and comprehensive narrative were documented and reported.

4. Results

4.1. *Reliability of the developed questionnaire*

The first research question examined whether the developed questionnaire on Teachers' Perceptions of Problem-Based Learning (TPPBL) was reliable and valid. To this end, while developing the preliminary

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draft of the research instrument, content validity was established by carrying out critical discussions with experts who reviewed the 29 statements selected for the first draft of the questionnaire. They had significant research contributions in the area of PBL, focused on innovative pedagogical approaches and various aspects of PBL implementation including instructional design, assessment strategies, and the integration of technology in language education. Twenty-four of them held teaching positions at renowned universities or language institutes, where they actively engaged in teaching PBL courses or providing professional development workshops for educators interested in adopting PBL methodologies. each item was critically examined by these experts to ensure the suitability and relevance of these items for TPPBL. Only the statements with at least 75%-85% agreement among experts regarding relevance of items were retained for the second draft. The experts believed that the remaining 17 statements were completely satisfactory and relevant to measure the teachers' perceptions of PBL. This confirmed the validity of the questionnaire for piloting.

4.2. Exploratory factor analysis

In the refinement phase, the next step involved carrying out an exploratory factor analysis (EFA) to determine the required number of items for data representation. Exploratory factor analysis assists in uncovering the potential underlying factor construction of a set of measured variables without enforcing a preconceived framework on the outcome (Child, 1990). Therefore, several repeated iterations of factor analysis were carried out on the data set to investigate the factors influencing teachers' perceptions on PBL. The thorough analysis is shown in Table 2.

Table 2.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.491
Bartlett's Test of Sphericity	Approx. Chi-Square	227.835
	Df	136
	Sig.	.000

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After each iteration, the total variance and the number of extracted factors were analyzed. Factors with low communalities were removed in order to streamline the factor structure and produce a matrix with more distinct loadings. This involved assessing the factorability of the 17 statements. Following the exploratory factor analysis, the sampling adequacy was assessed with a Kaiser-Meyer-Olkin (KMO) measure of .491. Bartlett's test of sphericity revealed a very low level of significance. Both indicators indicate that the sample data were suitable for conducting factor analysis. Table 3 displays the items along with their factor loadings. Factor loadings higher than 0.5 demonstrate a strong relationship between the items and their specific factors. This suggests a robust correlation between the measured variables and the underlying constructs depicted in the statistical analysis. Greater factor loadings indicate well-captured factors and the variability in the construct being measured, improving the reliability and validity of the measurement model.

Table 3.

Statements of TPPBL Questionnaire and Their Factor Loadings

Statements	Factor Loadings
1. PBL improves students' communication skills	.560
2. PBL promotes student-student interaction	.657
3. PBL improves students' confidence in decision-making	.701
4. PBL helps students to identify their strengths and weaknesses	.582
5. PBL improves students' self-directed learning on the topic	.664
6. PBL makes the topic more interesting and fun to learn	.682
7. PBL promotes to explore different resource materials	.656
8. PBL helps the students acquire relevant knowledge for their profession	.699
9. PBL contributes to the independence of students	.689
10. PBL helps students to evaluate their own knowledge	.766
11. PBL helps students share experiences	.524
12. PBL helps students to reach an optimal depth of knowledge	.594
13. PBL improves student learning by helping them to achieve their learning goals	.785
14. PBL helps students to fulfill the aims of the course	.522

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15. PBL provides a positive work environment for the group	.548
16. PBL encourages student learning by stimulating questions	.408
17. PBL stresses the importance of constant student reflection	.621

Next, a confirmatory factor analysis was conducted to validate the factor pattern of a group of measured variables. Confirmatory factor analysis allows researchers to examine if there is a relationship between the latent constructs and observed variables as hypothesized (Suhr, 2006). Cronbach's alpha was utilized to evaluate the internal consistency of the items. Table 4 shows the reliability calculations.

Table 4.

Reliability Statistics

Cronbach's Alpha	Number of Statements
0.783	17

The Cronbach's alpha of teachers' perceptions of PBL (α= .783) indicates good internal reliability. Thus, the reliability analysis suggests TPPBL is internally consistent.

The second research question of the present study examined Iranian EFL teachers' perceptions of PBL in language teaching. To answer this question, the data obtained from the teachers' questionnaire were analyzed and reported. Table 5 presents the results.

Table 5.

Perception of PBL Questionnaire (Teacher Participants)

Statements	Mean	SD
1. PBL improves students' communication skills.	2.28	1.320
2. PBL promotes student–student interaction.	2.40	1.446
3. PBL improves students' confidence in decision-making.	2.78	1.656
4. PBL helps students to identify their strengths and weaknesses.	2.05	1.154
5. PBL improves students' self-directed learning on the topic.	1.75	.981
6. PBL makes the topic more interesting and fun to learn.	2.30	1.400
7. PBL promotes the exploration of different resource materials.	2.63	1.334

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8. PBL helps the students acquire relevant knowledge for their profession.	2.28	1.240
9. PBL contributes to the independence of students.	2.35	1.350
10. PBL helps students to evaluate their own knowledge.	2.38	1.409
11. PBL helps students share experiences.	2.68	1.542
12. PBL helps students to reach an optimal depth of knowledge	2.40	1.464
13. PBL improves student learning by helping them to achieve their learning goals.	2.23	1.330
14. PBL helps students to fulfill the aims of the course.	2.00	1.109
15. PBL provides a positive work environment for the group.	2.17	1.375
16. PBL encourages student learning by stimulating questions.	2.23	1.291
17. PBL stresses the importance of constant student reflection.	1.92	1.023

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4.3. Results on teachers' perceptions

Table 1 shows the mean score and standard deviation of the teachers' perception of the PBL questionnaire. The overall analysis of the items indicates that in most of the questionnaire items they favored utilizing PBL in language teaching classes. The highest mean scores are related to Item 3 (PBL improves students' confidence in decision-making. M=2.78; SD=1.446), Item 11 (PBL helps students share experiences. M=2.68; SD=1.542), and Item 7 (PBL promotes to explore different resource materials. M=2.63; SD=1.334), respectively. The highest mean scores were observed for Item 3, which suggests that participants generally agreed the enhancement of students' confidence using PBL, in decision-making. Equally, Item 11 recorded a high mean score, indicating agreement with the statement that PBL facilitates the sharing of experiences among students. Moreover, high mean score of Item 7 indicates a consensus among respondents regarding the role of PBL in encouraging students to explore various resource materials.

The third research question inquired about the challenges Iranian EFL teachers encountered in teaching problem-based language classes. To answer this question, all of the transcribed interviews were qualitatively analyzed. One of the teachers argued that:

> While many students embraced their participation in PBL, they refrained from expressing unsure answers when the tutor was around. Students struggle to adapt to the new learning environment where they are expected to manage learning materials and take control of their own learning. Moreover, they must adjust their participation in the PBL team and specify their position within the team.

According to the details provided earlier, PBL demands additional time and detracts from studying other subjects. PBL's lack of organization causes some level of anxiety. At times, problems with group dynamics can hinder the effectiveness of PBL. Additionally, there may be a decrease in the amount of content knowledge acquired (e.g., the fourth interviewee).

Lack of familiarity and lack of experience with PBL caused teachers to feel uncertain and hesitant. I primarily utilized PBL in the language module. Learners struggled with taking on responsibilities for their learning, especially when it came to solving problems. Participants' responses show that teachers lack knowledge about PBLL and how to implement it in EFL classrooms. They also mentioned their lack of understanding of the essential principles for developing a PBLL setting. The interviewees all concurred that implementing different approaches necessitates teachers and students to be trained, along with providing classrooms with essential resources. The participants also argued that using PBL in conjunction with lecturing is preferable. They thought that for this approach to become ingrained as students' preferred method of learning, it needed to be utilized extensively. Interviewee No. 3 stated that utilizing PBL has a beneficial effect on our problem-solving, communication, and critical-thinking abilities. PBL boosts learners' critical thinking abilities.

The findings showed that PBL was recognized as an effective approach to enhance the growth of diverse skills in multiple educational sectors. PBL is successful in enhancing problem-solving, communication, critical thinking, argumentation, and collaboration skills. These abilities are directly below the language skills that students need to cultivate in all second/foreign language programs. Another teacher participating in the discussion suggested that the suitability of teaching materials presents a challenge to implementing PBL. Therefore, PBL implementation requires instructional materials that are centered around problem scenarios.

Evidence gathered from participants' answers indicates a requirement for instruction on creating problem scenarios that encourage the utilization of cognitive and metacognitive abilities. The lack of suitable teaching materials and instruction results in the improper use of the PBL method. Implementing

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PBL can be challenging, requiring additional preparation time and presenting management difficulties. This occurs because PBL requires a setup of an unrestricted problem prior to its execution. Participants highlighted several challenges they encountered during PBL implementation, such as limited control over curriculum coverage and increased teaching workload. One participant pointed out that PBL boosts students' self-esteem and drive, lessens anxiety, enhances their accountability in learning, fosters problem-solving and self-directed learning abilities, and increases self-esteem and motivation. The participants pointed out that while PBL has its benefits, its application in EFL teaching poses difficulties for teachers and students. They thought that students face difficulties due to changes in responsibilities, insufficient training and experience, and unorganized classes. Implementing PBL in teaching a second language led to difficulties for teachers and students, as well as obstacles in utilizing PBL resources. Regarding educators, the primary obstacles they encounter when implementing PBL include a scarcity of teaching materials and inadequate training opportunities. Some teachers have attitudinal barriers towards role reversal in PBL, thinking that allowing students to find answers on their own implies they are not fulfilling their teaching responsibilities. Truly, PBL is centered on self-directed learning and views teachers as facilitators who must shift from their traditional roles. Expanding the experience of both tutors and students with PBL could be a potential solution to address this challenge. Implementing PBL effectively requires a significant amount of time and can be challenging to control. Choosing groups that are both balanced and work harmoniously together can also pose challenges. Moreover, PBL learning may cause confusion among certain students who are unsure of the expectations from them.

4.4. Extracted themes

The analysis of the data concerning the challenges of implementing PBL in the Iranian EFL context yielded several themes. The emerged themes included students' difficulties in adapting to the PBL environment and participating effectively, facing uncertainties in articulating solutions and navigating group dynamics, time constraints, and organizational anxiety. Besides, teachers' unfamiliarity with PBL made it a challenge to guide students through self-directed learning and managing their new roles. Moreover, the lack of adequate training and resources hampers effective PBL implementation, highlighting the need for comprehensive support and instructional materials aligned with PBL principles (Table 6).

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Table 6.

Themes of Challenges in Perception of PBL Questionnaire

Theme	Description
Student Adaptation and Participation	Students face challenges articulating uncertain solutions in the presence of tutors.
Time Constraints and Organizational Anxiety	Challenges include additional time demands, reduced study time for other subjects, and anxiety due to the less organized nature of learning in PBL.
Teacher Unfamiliarity and Inexperience	Teachers encounter uncertainty and hesitancy due to the lack of familiarity and experience with PBL.
Lack of Training and Resources	the lack of understanding of PBLL principles and creating a PBL environment among teachers.
Instructional Material Appropriateness	The need for instructional materials based on problem scenarios for effective PBL implementation.
Management and Implementation Difficulty	Substantial time demands for preparation and effective management of PBL.
Ambiguity in Teacher and Learner Roles	Challenges for teachers in shifting roles from traditional teaching methods and concerns about neglecting their roles.

5. Discussion

In this study, we conducted a comprehensive exploration of Iranian EFL teachers' perspectives regarding the integration of PBL in language teaching, shedding light on the challenges they confronted while implementing problem-based language classes. Alongside this investigation, we meticulously scrutinized the reliability and validity of the developed TPPBL questionnaire. Our thematic analysis unearthed a spectrum of insights, illuminating the predominantly affirmative attitudes among Iranian EFL educators towards the adoption of PBL in language instruction. Despite this favorable disposition, our findings underlined a myriad of challenges that impeded the seamless implementation of PBL. These challenges encompassed the dynamic shift in roles necessitated by PBL, inadequacies in requisite training and experiential background, dearth of suitable instructional resources, and the considerable time investment demanded by the PBL approach. Such multifaceted obstacles pose significant considerations for educators aiming to integrate PBL effectively into language teaching curricula.

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5.1. PBL challenges: insights from Iranian EFL educators

The identified challenges propose significant implications for the successful implementation of PBL in language teaching contexts. Initially, the dynamic shift in teacher roles demands a substantial adjustment period and ongoing support to ensure real adaptation. This challenge is exacerbated by insufficient training and experience, as educators may struggle to navigate their new roles without satisfactory preparation. This inexperience can prevent the smooth and empowering dynamic of PBL sessions and undermine students' learning experiences. Moreover, the scarcity of appropriate teaching materials constrains the richness of problem scenarios and limits the scope of authentic, real-world learning opportunities afforded by PBL. Furthermore, the time-intensive nature of PBL implementation poses logistical challenges, mainly within constrained academic schedules, potentially leading to a rushed or superficial commitment to problem-solving tasks. The findings of the present study align with previous research findings. For instance, Fidan and Tuncel's (2019) study also indicated a preference among participant teachers for implementing PBL. Similarly, other studies (Azer, 2007; Charoensakulchai et al., 2019; Fernandes, 2021; El-Aziz et al., 2013; Pastirik, 2006) recommended training teachers in PBL administration. Likewise, Charoensakulchai et al. (2019) stressed the necessity of pre-PBL course training for teachers, echoed by Chan (2021), emphasizing the pivotal role of teachers as facilitators in PBL classes. Additionally, studies by Radzuwan (2018), Norzaini and Ling (2012), and Zulida (2013) highlighted participants' positive perceptions of PBL, emphasizing its effectiveness, enjoyment, and motivational impact. In the same vein, Fukuda et al. (2017) highlight how this autonomy encourages learners to think and act independently, taking control of their own learning processes. When self-directed learning is coupled with collaborative learning in PBL, it maximizes engagement in deep, active learning (Hamed et al., 2015). Britton et al. (2017) emphasize that PBL enhances various student abilities, notably their capacity for teamwork. In many instances, PBL projects necessitate cooperation and a well-structured division of labor among team members, underscoring the significance of collaborative skills in PBL.

The study findings directly address the research aims outlined in the literature review by uncovering Iranian EFL teachers' perceptions of PBL in language teaching and the challenges they face in its implementation. The thematic analysis and questionnaire assessment results illuminate the practical implications of adopting PBL in language education while ensuring methodological rigor. These insights bridge theoretical frameworks with empirical observations, advancing our understanding of the

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complexities surrounding PBL implementation in EFL contexts and highlighting the need for tailored strategies to address these challenges effectively.

5.2. Insights from cooperative learning and student-centered education in PBL contexts

Drawing on the theory of Teamwork Ability, cooperative learning organizes classroom activities to blend academic and social learning experiences. Condliffe (2017) elucidates that effective cooperative learning extends beyond mere group arrangements; it involves collective task completion toward academic objectives. In such settings, students in cooperative learning environments outperform those in individualistic or competitive setups, showcasing enhanced reasoning, self-esteem, peer relationships, and perceived social support. Our study findings align with the principles of cooperative learning outlined in the Teamwork Ability theory. By investigating Iranian EFL teachers' perceptions of PBL, the research reveals how cooperative learning strategies can stand in collective problem-solving and enhance academic outcomes in language education. Through thematic analysis of the collected data, the study revealed the practical implications of implementing PBL in language teaching contexts.

Despite its obstacles and drawbacks, problem-based learning, when effectively implemented in the Iranian EFL setting, has the potential to improve ELT results by fostering students' autonomous learning skills. Stefani et al. (2000) state that in the 21st century, the student-centered approach is the predominant method of learning. The main goal is to change traditional teacher-focused education to a student-focused education approach. It has the ability to unleash the potential of students, allowing them to select learning materials and techniques that align with their interests. It enables them to utilize their strengths to the fullest extent (Holmes & Hwang, 2016). In student-centered teaching, students become independent by taking the initiative to gather information and develop strategies for the best learning outcomes in student-centered learning. Therefore, students unknowingly practice self-learning skills, leading to the formation of positive study habits. Stefani et al. (2000) outlined the theoretical foundation of student-centered learning, which was later elaborated on by Holmes & Hwang (2016), aligning closely with PBL principles and goals by focusing on empowering students to be in charge of their own learning journey. PBL emphasizes self-directed learning and problem-solving by prioritizing student autonomy and agency over the traditional teacher-centered model.

During the process of problem-based learning, the teacher plays a role as a facilitator by guiding students in establishing project goals and offering appropriate assistance and direction. Students must devise their own learning schedule, procedures, and strategies while facing the demands of completing

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assignments. During this procedure, students will enhance their ability to study independently, whether they realize it or not, which is extremely advantageous for students. This procedure is a process that enables students to gain a deeper comprehension of information. Understanding the work of a specific project is simpler than receiving information passively in educational activities. Students have the capability to independently combine knowledge from various courses into a single project, leading to enhanced self-learning skills.

6. Conclusion and implications

PBL offers a significant advantage through fostering self-directed learning, a crucial aspect of effective problem-solving. This approach empowers learners to become independent by providing an environment that supports autonomy. It is also concluded that PBL reinforces teamwork learning, enabling students to collaborate, and share experiences, knowledge, and skills (Condliffe, 2017). This collaborative environment facilitates knowledge accumulation through challenging discussions, information gathering, data analysis, and the creation of unique products that reflect newfound understanding.

Based on the results of the present study, it can be argued that alleviating the challenges of implementing PBL by providing teachers with the required psychological, methodological, and language tools is of great significance for the Iranian ELT community. EFL teachers should have access to authentic problem scenarios that align with their language teaching objectives. Teachers should be trained to employ the required strategies and techniques to promote student engagement and motivation. They should be empowered to create collaborative learning environments to conduct their teaching and manage their mindset on the nature of problem-based learning principles. Meanwhile, factors such as intercultural differences, and learners' proficiency should also be taken into consideration. The findings of this study hold significant theoretical and practical implications for various stakeholders in the EFL domain including learners, teachers, teacher educators, and materials developers. It reinforces existing PBL theories pertinent to English language learning while contributing to the expanding body of scholarly research on PBL, specifically in the Iranian EFL context, affirming its potential in language teaching.

Material developers could harness the benefits of PBL activities in crafting teaching aids. However, this study serves as a preliminary exploration, paving the way for further investigations within Iranian EFL contexts and offering a reference point for future research endeavors. For language schools,

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integrating PBL can spark students' interest and autonomy in language learning, fostering improved efficiency.

The literature review emphasizes that PBL is a successful teaching method in the field of EFL instruction. However, feedback from participants shows that there are numerous obstacles for teachers when implementing PBL in EFL education. The primary obstacles teachers encounter when using PBL include limited preparation time, challenging management, less control over content coverage, high teaching workload, and insufficient instructional resources and training. The teachers are eager to have a good understanding of PBL and how it can be applied in EFL classrooms, but they admit they lack knowledge about the essential principles for creating a PBL setting. The interviewees concurred that implementing different tactics necessitates education for both educators and students, as well as equipping classrooms with the essential materials. The participants argued that combining lecturing with PBL is more effective than using PBL alone.

The teachers believed that allowing students to find answers on their own implies that they are not fulfilling their duties as educators (Atai & Asadi, 2014). Certainly, PBL is centered around self-directed learning and views teachers as mentors who must adapt their traditional roles. One way to address this uncertainty is by increasing the exposure of both tutors and students to PBL, thereby enhancing their understanding and boosting teachers' ability to cope with ambiguity.

Moreover, as put by Stentoft, (2017) encouraging cooperative active learning aligns with effective learning practices, promoting social constructivist learning environments. Emphasizing self-directed learning is pivotal for personal growth and the authentic acquisition of knowledge applicable in real-life scenarios. Considering the empirically supported benefits of PBL, the results of the present study underscore the need for alleviating the detected challenges against implementation of PBL in the Iranian EFL context to enhance the quality of EFL learning experiences and to foster high-level cognitive processing. This highlights the necessity of tailored support mechanisms to ensure success within a PBL framework.

Recognizing the lack of instruments for collecting data on teachers' perceptions of PBL led this study to develop and validate tools tailored to this specific context. The significance lies in the creation of reliable instruments that can be utilized by researchers and educators to systematically gather insights into teachers' perspectives on PBL. This contributes to the methodological robustness of future studies in this area, allowing for more comprehensive and accurate data collection.

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Like any other research, the present study was constrained by a number of limitations and delimitations. One of the limitation of this study was due to the inability to control all the factors influencing the participants' perceptions and the small sample size which may not have accurately represented the population limits the generalizability of the findings. Moreover, since the data was collected through interviews and questionnaires the participants may have provided socially desirable responses rather than the ones reflective of their true beliefs, which might have affected the validity of the data. The participants were deliberately only 40 EFL teachers in the Iranian EFL context; thus, the research was done in an EFL setting. Moreover, this study was delimited to explore the participants' perceptions of PBL, and other variables such as gender, motivation, and other characteristics were not taken into consideration.

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