Sustainable Development in Teaching: Examining Puzzle-Based Instruction, Professional Success, and the Role of AI-Driven Education

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Article Info	Abstract
	Background: Recent scholarship emphasizes critical pedagogy and learner-centered approaches as cornerstones of sustainable ELT, aligning with UNESCO's Education for Sustainable Development (ESD) goals. One promising pedagogical framework is Puzzle-Based Instruction (PBI), which engages learners through problem-solving, discovery, and critical thinking **Aims:** This study investigates the interplay between puzzle-based instruction (PBI), teachers' professional success, and the integration of AI-driven educational tools as a catalyst for sustainable development in English language teaching (ELT). Specifically, it examines the prevalence and application of PBI principles among Iranian English language teachers (IELTs) in high schools and universities, alongside the extent to which learner-centered approaches are adopted in classroom practice. **Methods:** A stratified random sampling method was used to select 35 IELTs from diverse EFL contexts in Iran. Data were collected using two validated instruments: The inquiry-led puzzle teaching review (comprising five subsections and nine scenarios) and the Successful Iranian EFL Teacher Questionnaire (SIETQ), which encompasses 12 professional competence factors. **Result:** The study found a significant link between knowledge of PBI and professional success, with BA- and MA-level teachers showing lower awareness and engagement with socio-political content. It highlights the need for targeted professional development to improve PBI competence and critical thinking. Additionally, the research underscores the transformative potential of AI-driven education, like adaptive learning systems and automated feedback tools, to enhance reflective practice and support personalized instruction. **Conclusion:** Implications are offered for policymakers, curriculum designers, and teacher educators seeking to integrate both critical pedagogical and technological dimensions into ELT.

INTRODUCTION

Sustainable development in education transcends environmental considerations, encompassing social equity, quality learning, and lifelong educational access. Within the domain of English language teaching (ELT), sustainable development implies the adoption of pedagogical and technological practices that promote enduring learning outcomes, learner autonomy, and adaptable teaching strategies. Recent scholarship emphasizes critical pedagogy and learner-centered approaches as cornerstones of sustainable ELT, aligning with UNESCO's Education for Sustainable Development (ESD) goals (Risdianto et al., 2025). One promising pedagogical framework is Puzzle-Based Instruction (PBI), which engages learners through problem-solving, discovery, and critical thinking. PBI aligns closely with "unplugged" teaching, or Dogme ELT, which minimizes reliance on prepared materials and prioritizes learner-generated content. While research supports the benefits of PBI for

language retention and learner engagement, its integration into ELT remains limited, particularly in contexts where traditional methods dominate. In parallel, AI-driven educational tools, including adaptive learning platforms, automated feedback systems, and intelligent content delivery, are transforming language education by personalizing instruction, providing real-time analytics, and fostering reflective teaching practices. These tools can bridge gaps between innovative pedagogy and sustainable outcomes by enhancing teacher competence, learner engagement, and curriculum flexibility (Barjesteh & Isaee, 2024).

Top-down approaches in language education have often failed to empower learners with self-awareness, voice, and real-world relevance, leaving even proficient students unable to express ideas meaningfully (Shor, 1992). In response, critical pedagogy (CP) emerged as a critique of shallow communicative methods, advocating for education that reflects learners' cultural and sociopolitical realities (Freire, 1970, 2005; Pennycook, 2001; Gore, 2003). Rooted in Dewey's progressive ideals, which emphasized experiential learning, democracy, and holistic development, CP promotes active engagement over rote instruction. Similarly, the Frankfurt School, influenced by Marx's focus on social justice and economic inequality, critiqued education for reinforcing hierarchical power and suppressing critical thinking (Kincheloe, 2004). Together, these foundations shape CP into a transformative framework that encourages students and teachers to challenge dominant ideologies and become agents of social change. Dogme ELT, influenced by the Dogme95 film movement, promotes a learner-centered, dialogue-based approach that rejects rigid curricula in favor of spontaneous, real-life communication (Thornbury, 2002). It positions teachers and students as co-investigators, encouraging critical thinking and mutual learning (Crompton & Burke, 2023; Freire, 1970; McLaren, 1989). This method challenges traditional top-down models and aims to expose and transform social inequalities embedded in education (Santana-Williamson, 2000; Hall, 2000; Pennycook, 1990; Caraganajarah, 1999). Aligned with critical pedagogy, Dogme ELT views education as political, empowering, and a means for fostering social change.

Unlike the traditional approach, education in PBI aims to have a transformative effect on learners by changing their attitudes through examining their social problems, which are real-life concerns of the learners (Isaee et al., 2024). Ford (2009) asserts that the last few decades have seen a growing interest in critical thinking both in EFL/ESL contexts. Despite the great potential of PBI teaching, its potential implications have not been well appreciated, and most of the references to the term have been limited to its conceptual dimension. By emerging PBI and its pedagogical implications for education and the hidden curriculum, local perspectives toward the ELT industry worldwide are also emerging. Despite the works done in professional ELT, Shor (1996) and Sweet (1998) are among others who assert that there is less literature that addresses how EFL/ESL teachers implement this theory in practice. To fill the gap, this study aims to find the probable relationship between teachers' knowledge of PBI and Professional Success. In so doing, the following research questions were formulated:

Q1. To what extent is Iranian teachers' understanding of Puzzle-Based Instruction (PBI) associated with their level of professional success?
Q2. How do Iranian EFL learners perceive and support the core principles of PBI in classroom practices?
Q3. How do Iranian EFL teachers adopt and apply AI-driven tools in Puzzle-Based Instruction, and what obstacles do they perceive in the process?

To answer the research questions, the following hypotheses were formulated

$H_0$1. There is no statistically significant association between Iranian EFL teachers' understanding of Puzzle-Based Instruction (PBI) and their level of professional success.

$H_0$2. Iranian EFL learners do not demonstrate a statistically significant positive perception of or support for the core principles of Puzzle-Based Instruction (PBI) in classroom practices.

$H_0$3. Iranian EFL teachers do not significantly adopt or apply AI-driven educational tools in Puzzle-Based Instruction, and no significant obstacles to AI integration are perceived.

Literature Review

Conceptual Framework

This study is grounded in a layered conceptual framework that integrates Critical Pedagogy (CP), Critical Language Pedagogy (CLP), Dogme ELT, Puzzle-Based Instruction (PBI), and AI-driven educational tools, each serving a distinct yet complementary function within the Iranian ELT context. At the macro level, CP provides the philosophical foundation by framing language education as a sociopolitical practice concerned with learner agency, equity, and critical consciousness (Freire, 1970, 2005; Giroux, 1992; Pennycook, 2001). CLP operationalizes these principles within language education by foregrounding critical literacy, negotiated curricula, and resistance to marginalization (Kumaravadivelu, 2003; Canagarajah, 2005). Building on this critical foundation, Dogme ELT functions as a pedagogical stance that prioritizes dialogic interaction, learner-generated content, and emergent classroom discourse, offering a practical response to the constraints of centralized syllabi and materials-driven instruction common in Iranian ELT contexts (Thornbury, 2000, 2002; Meddings & Thornbury, 2009). Within this learner-centered ecology, PBI serves as the core instructional design framework, translating critical and dialogic principles into structured inquiry through problem-posing tasks and linguistic puzzles that promote higher-order thinking and reflective practice (Ford, 2009). Finally, AI-driven tools operate as an enabling layer that supports PBI by providing adaptive feedback, personalized scaffolding, and data-informed reflection, without displacing the primacy of human interaction or critical intent (Godwin-Jones, 2020; Kessler & Hubbard, 2017). Together, these frameworks form a coherent model in which philosophical orientation, pedagogical stance, instructional design, and technological support are aligned to foster sustainable, context-responsive English language teaching.

Conceptual Clarification of PBI, Critical Pedagogy, and Sustainability

In this study, Puzzle-Based Instruction (PBI), critical pedagogy, and sustainability are treated as conceptually related but functionally distinct constructs. Critical pedagogy provides the philosophical foundation, framing language education as a socially situated and transformative practice that foregrounds learner agency, equity, and critical awareness. Puzzle-Based Instruction serves as the pedagogical mechanism through which these critical principles are operationalized in classroom practice, translating abstract ideals into inquiry-driven, problem-posing instructional tasks. Sustainability, in turn, represents the educational outcome, referring to the development of durable learning practices, reflective teaching, and learner autonomy that extend beyond short-term instructional gains. By positioning critical pedagogy as the ideological lens, PBI as the instructional design, and sustainability as the long-term outcome, the framework avoids theoretical overlap and clarifies their complementary roles. This delineation highlights how PBI functions as a practical bridge between critical theory and sustainable English language teaching, particularly when supported by context-sensitive use of AI-driven tools

AI-driven educational tools to Puzzle-Based Instruction:

PBI is grounded in constructivist learning theory, encouraging learners to develop language competence through inquiry and problem-solving. By structuring tasks as linguistic puzzles (ranging from grammar challenges to discourse reconstruction), PBI stimulates higher-order thinking and contextualized language use. Previous studies indicate that PBI can improve communicative competence, learner motivation, and critical awareness, yet its implementation is constrained by teachers' methodological familiarity and institutional support. The integration of AI-driven educational tools into Puzzle-Based Instruction (PBI) offers significant potential for enhancing learner engagement, critical thinking, and sustainable language learning outcomes. PBI, as a constructivist approach, requires learners to solve linguistic or communicative "puzzles" through collaboration, discovery, and problem-solving, which inherently fosters deeper cognitive engagement. AI technologies, such as adaptive learning systems, automated feedback platforms, and intelligent tutoring systems, can complement this process by providing personalized scaffolding, tracking learner progress, and adapting task complexity in real time. For instance, an AI-based

platform could dynamically adjust vocabulary challenges or grammar reconstruction tasks based on learner performance, thereby maintaining the optimal level of difficulty essential for sustained motivation (Vygotsky, 1978). This synergy between PBI and AI-driven tools aligns with principles of sustainable development in education, as it promotes long-term skill retention, learner autonomy, and reflective teaching practice. By embedding AI into PBI frameworks, educators can bridge the gap between innovative pedagogy and data-informed personalization, ensuring that learners receive both cognitively stimulating and contextually relevant instruction.

Puzzle-Based Instruction and Dogme ELT:

PBI and Dogme ELT share a strong pedagogical affinity in their learner-centered, emergent, and context-responsive approaches to language teaching. Both methodologies reject overly prescriptive, materials-heavy instruction in favor of strategies that emerge from learner interaction, collaboration, and problem-solving. While PBI uses structured problem scenarios often framed as "puzzles" to stimulate critical thinking and foster communicative competence, Dogme ELT emphasizes conversation-driven learning, minimal reliance on pre-prepared materials, and the co-construction of meaning from learners' linguistic resources (Meddings & Thornbury, 2009; Thornbury, 2010). The ecological underpinnings of Dogme align closely with PBI's constructivist roots, as both view language learning as an emergent process shaped by the social and cultural environment of the classroom. In practice, PBI tasks can be embedded within a Dogme framework by drawing puzzles directly from learner-generated content, thus ensuring that problem-solving activities are relevant, authentic, and rooted in the immediate communicative needs of the group. This integration not only reinforces learner autonomy and intrinsic motivation but also aligns with sustainable ELT principles by minimizing dependency on externally produced materials and promoting adaptable, locally grounded teaching practices. Moreover, when augmented with AI-driven tools for adaptive feedback and real-time task customization, the synergy between PBI and Dogme can be further enhanced, offering teachers a dynamic way to balance structure and spontaneity in fostering long-term language development.

METHOD

Research Design:

Participant: A total of 130 participants comprised the subject pool of the present study. A stratified random sampling was employed to screen the participants from the Iranian English language teaching (ELT) community to account for the typicality of the recruited teachers and to offer a homogeneous population of participants. They were stratified according to their academic degree. It was made to choose the participants from different universities to have a comprehensive picture of dogme teaching. They were from both Azad and state universities, including Mazandaran, Islamic Azad University, Ayatollah Amoli, Tonekabon, and Ghaemshar branches. Notably, the participants were stratified into BA, MA, and Ph.D. degrees, i.e., the subject pool formed 80 M.A. teaching English as a Foreign language (TEFL) students, 30 private English language institution teachers, and 20 university instructors from state-run and Azad universities. A further categorization was conducted as far as the participants' field of study was concerned as TEFL and Non-TEFL. Of all subjects, 120 were majoring in TEFL, and 10 respondents were graduates of linguistics. About 80 respondents were school teachers, 25 were teaching at English language institutes only, and the rest were academic members at Islamic Azad and state universities around some of whom had been teaching EFL for minimum one year, with an age range of 23-55, the majority were 34. They all had experience in teaching English as a foreign language at Private English language institutes. Their experience ranged from 1 to 24. They were all native speakers of Persian who were teaching English as a foreign language. The detailed characteristics of the participants are provided in Table 1.

Table1. Participants' Demographic Information

Level of education	N	%	Male	Female	Age range
B.A.	14	10.7	14	0	27–63
M.A.	51	70.0	40	11	23–40
Ph.D.	25	19.3	20	5	—

EFL student	40	61.5	30	10	—
Private EFL teacher	30	23.0	30	0	—
University instructor	60	67.7	28	32	—

Sample Size

Although the initial participant pool comprised 130 individuals, the primary quantitative analyses were conducted on a subset of 35 EFL teachers for whom complete and matched data were available across the Inquiry-Led Puzzle Teaching Review (IPTR) and the SIET questionnaire. Inclusion in the analytic sample required full completion of both instruments and corresponding learner evaluations to ensure comparability and internal consistency. This sample size is consistent with methodological recommendations for correlational research, in which samples of approximately 30–50 participants are considered adequate for detecting medium to large effect sizes (Cohen, 1988). Notably, the observed association between IPTR and SIET scores was strong ($r = .72$), indicating sufficient statistical power despite the modest sample size. Furthermore, the use of stratified random sampling, validated measurement instruments, and rigorous data-screening procedures strengthens the robustness and interpretability of the findings.

Instrument

The present study utilized a Puzzle-Based Learning Assessment (PBLA), Inquiry-Led Puzzle Teaching Review, the successful Iranian EFL teacher (SIET) questionnaire, and reflective journals. The details of each are explained below:

Puzzle-Based Learning Assessment

The PBLA aimed to identify the participants' attitudes toward the PBI in their L2 methodology course. To analyze the quantitative data obtained through the questionnaire, the researcher coded the items based on their compatibility with the dogme teaching. This was done based on a Likert scale from strongly disagree (1) to strongly agree (5) strongly agree. Particularly, the items were directed at three facets comprising (a) format and presentation, (b) content and sequencing, (c) monitoring and assessment (See Appendix). Format and presentation deal with 11 principles: Motivation, Four strands, comprehensible input, fluency, output, deliberate learning, time on task, depth of processing, integrative motivation, and learning style. Content and sequencing deal with 7 Principles: frequency, strategies and autonomy, language system, keep moving forward, teachability, learning burden, and interference. Monitoring and assessment deal with four principles: Ongoing needs and environment analysis, feedback, teacher role, and students' role. The schematic relationship between the construct, sub-constructs, and indices is presented in Table 2.

Table 2. Main and sub-dimensions of dogme teaching

Main Construct for Dogme Teaching		
	Sub-construct	Principle
1	Format and presentation	11
2	Content and sequencing	7
3	Monitoring and assessment	4
	Total	22

Next, some preliminary steps were taken to ensure the validity of the Puzzle-Based Learning Assessment (PBLA). Initially, three colleagues holding Ph. D. in TEFL were asked to evaluate the items for the theoretical rationale, any unnecessary jargon, and their feedback on the content and the comprehensiveness of the PBLA. Consequently, seven items were either removed or revised because they were confusing for the targeted participants. The experts rated the comprehensiveness of the

PBLA, yielding an overall score of 89%. As noted by Creswell and Clark (2011), the guidelines for the construction of a questionnaire were used to pilot an earlier version of the PBLA with 38 teachers. Based on the data obtained, some modifications were made. An estimate of the reliability of the PBLA was obtained in terms of internal item consistency. An acceptable mean internal consistency was established for the instrument with an alpha coefficient of 0.78.

Inquiry-Led Puzzle Teaching Review (IPTR)

To measure teachers' knowledge of dogme teaching, the researchers conducted a thorough literature review to determine the different principles and the theoretical underpinning of the PBI, which were used in the follow-up survey. This resulted in the main principles of critical language pedagogy (CLP) as defined by Crawford (1978) and Giroux (1992). The IPTR items were directed into five important dimensions of CLP: problem posing and political education system; use of authentic materials, learner empowerment, development of critical consciousness, and avoidance of marginalization. The dimensions were followed by 9 prompts describing the principles in detail. Later on, a tentative version of the IPTR was piloted among 31 EFL teachers to examine item analysis, to probe faulty items, and to estimate the internal consistency. In addition to improving the quality of the IPTR, three colleagues holding a Ph.D. in the field were asked to evaluate each prompt for any unnecessary jargon. The results enjoyed a moderate internal consistency with an alpha coefficient of 0.76.

Successful Iranian EFL Teacher (SIET) Questionnaire

To evaluate language teachers' performance and success in language teaching, the SIET questionnaire was employed. The SIET questionnaire comprised 47 items on characteristics of successful Iranian EFL teachers, which aimed to elicit comments and opinions of EFL teachers and learners. Each item is followed by a five-point Likert Scale, ranging from strongly agree to strongly disagree. The SIET was already developed and validated by Pishghadam and Moafian (2009). To probe the construct validity of the instrument, Pishghadam and Moafian conducted a factor analysis. The interfactor correlation matrix of their analysis revealed correlations of 0.25 or greater, suggesting that a varimax rotation would appropriately represent the underlying factor structure. Principal axis factoring extracted 12 factors with eigenvalues greater than 1.0, which accounted for 48% of the variance. The following factors were extracted: accountability, interpersonal relationships, attention to all, examination, commitment, learning boosters, creating a sense of competence, teaching boosters, physical and emotional acceptance, empathy, class attendance, and dynamism. The analysis also revealed a relatively high reliability (r = .94).

Reflective Journal

In addition to the survey instruments, a reflective journal was employed to gain deeper qualitative insights into teachers' personal experiences with Puzzle-Based Instruction (PBI) and the integration of AI-driven tools in their classrooms. Participants were asked to maintain brief, structured journal entries over two weeks, documenting their instructional practices, classroom challenges, and perceived impact of PBI on student engagement and learning. The journal prompts encouraged critical reflection on teaching decisions, adaptation to AI technologies, and the evolving understanding of professional success. This instrument enabled the capture of nuanced, context-rich data that complemented the quantitative findings and shed light on teachers' internalization of PBI principles and their pedagogical mindset in real teaching contexts

Instruments and AI-Driven Tools

Three primary instruments were employed in this study: the Puzzle-Based Learning Assessment (PBLA), the Inquiry-Led Puzzle Teaching Review (IPTR), and reflective journals. The PBLA was developed to assess teachers' orientations toward Puzzle-Based Instruction and underwent expert review by three PhD-level TEFL specialists, followed by piloting and item refinement, resulting in acceptable internal consistency (α = .78). The IPTR was designed to measure teachers' conceptual knowledge of PBI and its critical pedagogical dimensions; it was similarly validated through expert judgment, pilot testing, and reliability estimation (α = .76). Reflective journals were used as a qualitative instrument to capture teachers' and learners' lived experiences of PBI implementation and were guided by structured prompts to ensure focus and analytic coherence.

With respect to technology integration, AI-driven tools used in the study were limited to commonly accessible applications that supported specific phases of PBI rather than replacing pedagogical interaction. These included automated grammar-feedback tools (e.g., Grammarly), vocabulary and retrieval-practice platforms (e.g., Quizlet), and AI-supported writing and drafting tools for learner self-correction and reflection. No proprietary or experimental AI systems were introduced. The use of these tools was exploratory and supplementary, aiming to support scaffolding, feedback, and learner autonomy within the PBI framework rather than to function as standalone instructional systems.

Procedures:

To comply with the objective of the present study, two sets of questionnaires were initially utilized to probe the probable relationship between EFL teachers' knowledge of IPTR and their professional success. The targeted subjects were introduced to the procedure and the objective of the study before the questionnaires were administered.

First, an IPTR was distributed among the EFL teachers to evaluate their knowledge of dogme teaching. Before administering the IPTR, 50 EFL teachers were requested to read a passage reflecting the characteristics of the teaching and learning process in dogme teaching. The passage helps promote the quality of the data collection since it is assumed that some of the subjects are not supportive of the request unless they remember the theoretical underpinning of dogme teaching. After reading the passage, the teachers were asked to fill out the IPTR during their free time, through which they could freely voice their thoughts, feelings, ideas, and perceptions towards dogme teaching. IPTR would take approximately 10 minutes. Next, all teachers' professional success was examined by having their students fill out the SIET questionnaire during class. Accordingly, a total of 68 students were assessed to assess their teachers' professional success. Due to the subjective nature of students' answers, attempts were made to present a bias-free account of the subjects' opinions. Consequently, they were all notified that their answer could affect the outcome of the study. All were introduced to the significance, objective, and procedures of the study before filling out the SIET administered to them directly. The selection of participants was notified by consent from the target subject, pinpointing the voluntary nature of participation and addressing the ethical considerations such as privacy, anonymity, and confidentiality. Hence, they were free to write down their names or leave them empty. The questionnaires were delivered by the researcher either by attending each class or by sending an email. Of all completed questionnaires (N=118),48 questionnaires were not qualified for data analysis because they did not meet the accepted standard proposed by Cohen et al. (2000). Only 70 completed questionnaires met the requirements for the data analysis, indicating a valid response rate of 95%.

The secondary focus of the current paper was to investigate whether Iranian EFL students advocate the basic tenets of PBI in their classroom. To undertake this phase, the principles of PBI were implemented in an obligatory course of L2 teaching methodology offered in the first year of a master's program of TEFL studies at a university. The class consisted of 40 students (28 females and 12 males). At the end of each session, students were requested to write a reflective journal focusing on different aspects of the class procedure, including materials selection, teaching method, and the teacher, as well as the student's role in the classroom. They were directed to write freely and anonymously on various aspects of the course, including teacher and student roles, materials selection, assessment criteria, and whatever they might think about the class procedure. The student wrote a total of 476 journal entries. Some of the journals were not qualified for the content analysis since around 15% of the students were reluctant to write the assignments. The data were qualitatively and quantitatively analyzed.

Data Analysis:

This study adopted a mixed-method orientation. The data were collected at two different but interactive phases, with qualitative data derived from the content analysis of reflective journals being triangulated with quantitative data derived from PBLA (Creswell & Clark, 2011). Particularly, an exploratory design was employed to conclude when there is little familiarity regarding the construct under analysis. Following the guidelines proposed by Le Compte & Presseile (1993, cited in Cohen et al., 2000) for the features of ethnographic studies, the qualitative phase of this study enjoyed an

ethnographic research method in a small scale to collect the data in a natural setting and holistic view with a hope to detect the emergent themes in students' writing. To comply with the objective, Pearson's product-moment correlation was run to probe the relationship between IPTR and SIET. At the qualitative phase, a content analysis was conducted by coding the contents into reductionist categories. This was informed guidelines for the theme analysis to determine the emergent themes.

RESULTS AND DISCUSSION

Results
1.1 The First Research Question

To examine the first research question, i.e., Is there any relationship between Iranian teachers' knowledge of PBI and their professional success? Pearson's product-moment correlation was conducted. Prior to running the correlation, the four assumptions of normality, homoscedasticity, linearity, and continuous variables were taken into account. Table 3 illustrates the descriptive statistics of all the participants who completed the *IPTR* and were evaluated through SIET.

Table 3. Descriptive statistics of the IPTR and SIET

Measure	n	Mean	SD	SE	95% CI (LL)	95% CI (UL)	Min	Max
IPTR	35	31.0	13.04	2.2	26.52	35.48	18.0	63.0
SIET	35	35.0	15.23	2.57	29.77	40.23	15.0	67.0

Welch's t-test: t(66.42) = 1.18, p = .24, Mean difference = 4.00, 95% CI [-2.76, 10.76], Hedges' g = 0.28, 95% CI [-0.19, 0.74].

The descriptive statistics in Table 3 indicate that participants' scores on the *IPTR* measure (M = 31.00, SD = 13.04, 95% CI \[26.52, 35.48]) were, on average, lower than their scores on the SIET measure (M = 35.00, SD = 15.23, 95% CI \[29.77, 40.23]). Minimum and maximum values suggest a wider observed range for SIET (15–67) compared to *IPTR* (18–63). Standard errors were relatively small (2.20 for *IPTR*; 2.57 for SIET), indicating reasonable precision in the mean estimates. A Welch's t-test revealed that the difference between the two measures (mean difference = 4.00, 95% CI \[–2.76, 10.76]) was not statistically significant, t(66.42) = 1.18, p = .24. The standardized mean difference (Hedges' g = 0.28, 95% CI \[–0.19, 0.74]) indicated a small, non-significant effect size. These results suggest that although SIET scores tended to be higher than *IPTR scores*, the difference could plausibly be due to sampling variability rather than a systematic difference between the two measures. To probe the corresponding hypothesis, Pearson's product-moment correlation was conducted. The results are presented in Table 4.

Table 4. *Pearson correlation coefficient between IPTR and SIET*

	IPTR	SIET
IPTR	1.00	0.72**
SIET	0.72**	1.00

Note. N = 35. **p < .01 (two-tailed). Pearson correlation between IPTR and SIET = 0.72, p = 0.000.

As indicated in Table 4, the Pearson correlation between IPTR and SIET was **r** = .72, *p* < .01, indicating a strong, positive association. This suggests that participants who scored higher on the IPTR measure also tended to score higher on the SIET measure. The strength of this correlation implies substantial overlap between the two constructs, although the relationship is not perfect, leaving room for measurement or conceptual differences between the two assessments.

1.2 The Second Research Question

To explore if Iranian EFL students advocate the basic tenets of PBI in their classroom, the data were analyzed at two distinct but connected phases. The analysis was conducted at both qualitative and quantitative levels. At the qualitative phase, the targeted subjects were asked to write reflective journals. As informed guidelines for the theme analysis, all the qualified data were codified into reductionist categories to determine the emergent themes. Next, the corresponding themes were double-checked with an experienced colleague in the field, TEFL, to enrich the credibility of the results. The theme analysis resulted in four conspicuous categories illustrated in the students' reflective journals. The categories were outlined on four aspects, namely *negotiated syllabus, alliance*

of theory and practice, improving self-efficacy and motivation, and breaking the culture of silence. Each theme is presented along with some illustrations of students' writing. In the second phase of the analysis, quantitative data analysis was employed. Particularly, the students were requested to fill out a questionnaire. The results are presented in what follows:

Negotiated Syllabus

Within the ideology of dogme teaching, no one methodology works for all learners in all situations. As Giroux (1997) and Shor (1992) assert, there is no fixed program in this philosophy because the needs and interests of students are taken into account in all decisions. Within the framework of critical literacy, Degener maintains that the curriculum is formulated with learners' realities and their real-life concerns. Such a curriculum can affect students' social, political, and economic realities (Giroux & McLaren, 1992).

Adopting a dogme approach in an L2 methodology course, the researcher based the course content on dialogue and negotiation. It was assumed that a predetermined syllabus contradicts the philosophy of dogme teaching. Accordingly, a negotiated syllabus was run to encourage students to actively take part in the process of designing and running the course content. In so doing, a variety of topics pertinent to the L2 methodology course were introduced to the students in a course schedule. It was aimed to follow egalitarian and democratic forms of interaction. Thus, the readings and the sequence of the materials were negotiated by taking into account the students' needs, interest, background knowledge, and their real-life concerns. Students were free to study the materials from the proposed reading lists to find topics from journals and books. Some topics were also assigned based on the ideas that popped up during the class discussions. Believes that the course content should be immediate and meaningful to students in order to make them aware of both the reproductive nature and the possibility of resistance to problematic content.

This type of materials selection was new to the learners. Incorporating learners' needs and involving them in the process of selecting materials provided an opportunity for them to challenge their assumptions concerning the course, to feel humanized pedagogy and to run the class cooperatively. This theme was illustrated by the reflective journals extracted below. To maintain privacy, each student was designated by a pseudonym in alphabetical order.

> **D:** *To my surprise, the class is not teacher-based and there is not a single book as a source of study because … At first, it seemed complicated to me, but after a week, I figured out that it's my favorite one…*

> **P:** *I was shocked by the syllabus when you said there is no textbook. At first, I was disappointed, but writing a reflective journal and inviting us to read from different sources was a good experience…*

As mentioned above, the reason why the students considered the course different from their background was due to the following factors: (*a) the type of syllabus, (b) materials selection, and (c) incorporating their needs in the classroom*. Most of them reported that the course content was practical. The following excerpts illustrate some examples:

> **M:** *I hope this class happens to us again and again. I think it is the most practical one we have experienced. But I wish we had a single, clear textbook.*

> **R:** *… The negotiation was very interesting and practical because we could experience teaching and learning practice.*

Alliance of theory and practice

In Dogme ELT, students are engaged in a learning that has been co-constructed by themselves (Thornbury, 2009). Students' voices and critical standpoint cannot be achieved unless the individual engages in action and reflection. A real reflection and action are unattainable in the undialectical vacuum driven by a departure of the individual from the object of their study. Views reflection and

action as a complex activity by which learners create culture and society and develop consciousness through a cycle of action-reflection-action that is central to liberatory education.

From the perspective of the participants, writing a reflective journal as a course assignment provided a space for them to make sense of their theoretical knowledge, internal thought, and helped them critically connect the theoretical aspect to their real-life concerns.

> *A: I wrote my first reflective journal about the direct method and mentioned my experience. At first, writing was awesome, but honestly, it helped me develop my thinking and writing competencies.*

> *I: It was a brilliant opportunity to develop this way of thinking that I had never been exposed to before. It helped me to generate my ideas based on what I have learned.*

> *S: Writing the journals was a chance to discuss what we learned in a stress-free situation, to express our views. I could practice teaching, learning, and thinking.*

Some of the students wrote that they enjoyed class activities because it helped them understand vague and abstract topics while they read the texts:

> *E: I really enjoyed writing my experience because we had to discuss in the class through exchanging our viewpoints… I know my weak points.*
> *L: Discussion and writing were just excellent because I could understand the abstract ideas, which was [were] vague when I read alone.*

Improving Self-efficacy and Motivation

The content analysis of students' writings delineates a minor theme toward an improvement of students' self-confidence. The researcher found some references in gaining the learners' self-confidence. What is more, the researcher found occasional references to the learners' internal motivation and their evaluation of their ability to perform the class activities.

The following examples reveal the development of learners' self-confidence in general and their self-efficacy in particular, as well as their tendency toward learning.

> *D: The class made us search about the subjects…presenting lectures helps us gain self-confidence.*
> *G: In my opinion, this was a useful method that motivated me to improve my self-confidence.*
> *H: …the class encouraged me to study and find some new data. I was interested in writing and reading… I have more self-confidence than before.*
> *T: …Your class reduced my stress to speak in front of the others. I like this class to happen again…*

Breaking the Culture of Silence

Willingness to communicate depends on various variables, such as the interlocutor's personality, context, topics, tasks, anxiety, and a host of other variables. L2 professional literature enumerates several factors that might affect learners' willingness to participate in a class discussion: (a) tasks and activities, (b) proficiency level of learners, (c) cultural constraints, (d) familiarity of topics, and (e) relation of the topics to learners' lives. For this study, some students were reluctant to express their ideas in the class activities. Thus, they did not voice their ideas on the topics. In addition, they were not interested in writing reflective journals. Shor (1996) used the metaphor *Siberian Syndrome* to refer to "students' reactive desire to crowd themselves in the distant corner seats, a socially constructed response to unequal power and intuitional discipline" (p. 14). Shor believed that the seats students choose in a classroom imply the extent to which they are willing to communicate. The content analysis revealed that a small number of students could overcome this problem. Some of them were reluctant to take part in the class discussion, but they could start to participate in the discussion:

K: I had very stress at the beginning because I thought my ideas might be funny to my classmates, but when I listened to my classmates [s'] ideas, I think I am not much further from them.
R: You did not force us to speak, but you run the class in a way that we have to speak. I am a silent person in my L1, but I was happy when you said I can speak through my journal.
T: …I understood I should work more on my general English because I'm scared to speak at first. Many thanks you encouraged us to both inside and outside of classroom to express our ideas.

To cross-validate the findings of content analysis in the reflective journals and elicit the students' attitudes toward the dogme teaching, students were requested to fill out a questionnaire in the second phase of the analysis. To do so, the principles of the dialogic teaching were put into a five-item Likert scale format questionnaire to identify their attitudes toward the new method. The questionnaire was distributed online via email to 40 of the respondents who were absent for less than 3 weeks during the course.

Additionally, to come up with the objective of the present study, the ordinal data of the questionnaire were changed into interval data by assigning values. More specifically, the choices were first given value: Strongly agree (5), agree (4), fairly agree (3), disagree (2), and strongly disagree (1). Then, the scores obtained by the prospective teachers in the PBLA were divided into two main categories, namely positive and negative. Scores ranged from 24-120 (24 to 47= strongly disagree; 48 to 71= disagree; 72 to 95= fairly agree; 96 to 115=agree; 116-120= strongly agree).

Table 5. Distribution of Scores by Scale and Attitude

Range of scores	Scale	Attitude	N	%	Cumulative %
24–47	Strongly disagree	Negative	2	5.0	5.0
48–71	Disagree	Negative	5	12.5	17.5
72–95	Fairly agree	Positive	11	27.5	45.0
96–115	Agree	Positive	20	50.0	95.0
116–120	Strongly agree	Positive	2	5.0	100.0
Total			40	100.0	100.0

Note. N = number of participants; % = percentage within the sample; Cumulative% % = running total percentage.

As indicated in Table 5, 82.5% fell on the positive side of the scale (27.5% Fairly agree, 50.0% Agree, 5.0% Strongly agree), whereas 17.5% were negative (5.0% Strongly disagree, 12.5% Disagree). The modal category was Agree (50.0%), and very few participants chose the extremes (5.0% at each tail), indicating low polarization. The cumulative curve rises slowly through the negative categories (to 17.5%), reaches 45.0% by 'Fairly agree', and then jumps to 95.0% at 'Agree', confirming a right-skew toward agreement with most respondents endorsing positive attitudes.
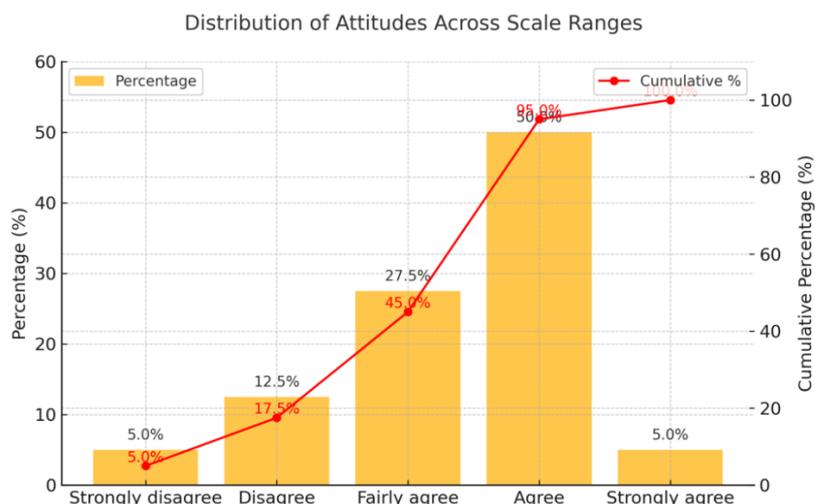

Figure 1. Distribution of attitudes across scale ranges with cumulative percentages

The chart shows a clear skew toward positive attitudes. Only 17.5% of participants reported negative views (*Strongly Disagree* or *Disagree*), whereas 82.5% expressed positive views, with the majority (50.0%) selecting *Agree*. The cumulative percentage curve climbs gradually through the negative categories (reaching 17.5%), accelerates in the *Fairly agree* category (45.0%), and peaks sharply at *Agree* (95.0%). The minimal proportion at the extremes (5.0% in each of the *Strongly Disagree* and *Strongly Agree* categories) indicates a consensus toward moderate to strong agreement with low polarization. The majority of respondents agreed with the principles of Dogme ELT, with 41.7% selecting *Agree* and *22.9%* selecting *Strongly agree*, totaling 64.6% in clear support. A smaller portion (18.8%) indicated moderate agreement (*Fairly agree*). Negative responses were less frequent, with 11.5% selecting *Disagree* and *5.0%* selecting *Strongly Disagree*. These results indicate a generally favorable attitude toward PBI ELT, with over three-fifths of respondents endorsing it strongly or moderately, though a minority remain unconvinced.

Table 6. Distribution of Responses to Principles of PBI

Scale	Frequency	Percent	Valid percent
Strongly agree	220	22.9	22.9
Agree	400	41.7	41.7
Fairly agree	180	18.8	18.8
Disagree	110	11.5	11.5
Strongly disagree	48	5.0	5.0
Total	958	100.0	100.0
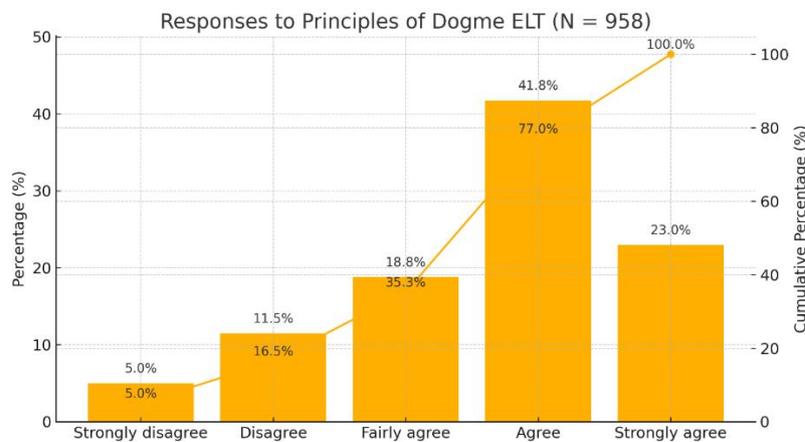
**Figure 2.** Responses to the Principles of PBI ELT with cumulative percentage

The distribution is positive-leaning. Only 5.0% selected *Strongly Disagree* and 11.5% *Disagree* (cumulative 16.5%)**,** while 18.8% reported *Fairly agree*. Agreement dominates: 41.7% chose *Agree* and 22.9% *Strongly agree*, bringing the cumulative proportion to ~100% by the highest category. Overall, 64.6% indicated clear agreement (*Agree* or *Strongly agree*), with a further 18.8% indicating moderate agreement, suggesting broad support for Dogme ELT principles, with a minority expressing disagreement. In order to confirm the above statement, a Chi-square goodness of fit test was run on the categorized test scores. Table 7 below presents the observed frequencies, the expected frequencies, and the result of the Chi-square test for the attitudes of EFL prospective teachers as far as positive and negative categories are concerned. EFL teachers' attitudes toward the principles of dogme teaching.

Table 7. Chi-Square Goodness-of-Fit for Agreement Levels

Scores	Observed N	Expected N	Residual
Disagree	8	13.3	-5.3
Agree	22	13.3	8.7
Fairly agree	10	13.3	-3.3
Total	40		

With three categories (Disagree, Fairly agree, Agree) and an equal expected distribution (13.3 per category; N= 40), the observed frequencies (Disagree = 8, Fairly agree = 10, Agree = 22) departed significantly from expectation, χ^2(2, N= 0) = 8.60, p=.014. Residuals indicated more "Agree" responses than expected (+8.7) and fewer "Disagree" (–5.3) and "Fairly agree" (–3.3) responses** than expected. The effect size was Cramér's V=0.33, suggesting a moderate deviation from a uniform distribution. Practically, responses cluster toward agreement, rather than being evenly spread across the three levels.

The findings indicate that the positive scores gained by the learners were significantly higher than the negative scores. Thus, we can safely claim that the attitudes expressed by the participants have not been random, and the differences between the distributions of choices are significantly meaningful. The results of the survey are illustrated in Figure 3.
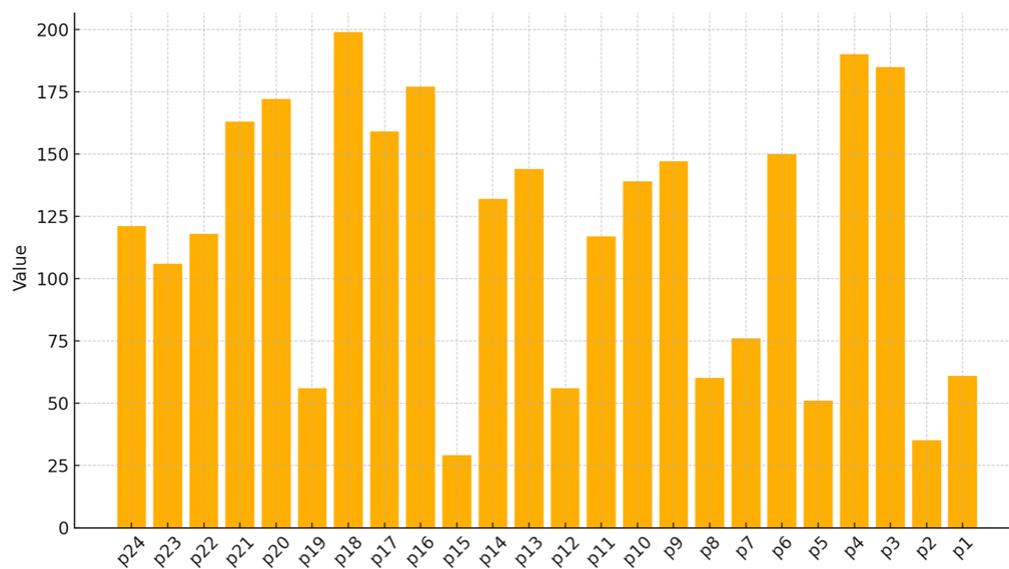
Figure 3. Frequency of use for the PBI principle

As It can be seen in Figure 3The distribution shows pronounced variability across principles: p18 and p4 emerge as clear leaders, reaching the top of the scale, with a second tier, including p20, p17, p5, and p3, also performing strongly. In contrast, p16 and p2 sit at the bottom, and p15 and p1 are comparatively weak, indicating areas that may need clarification, support, or curricular emphasis. There is no monotonic trend by index (p24→p1); rather, endorsement appears principle-specific, producing multiple peaks and troughs. Overall, the pattern suggests a small cluster of highly prioritized principles, a broad middle with moderate endorsement, and a few lagging principles that likely warrant targeted intervention or further investigation

1.3 The third research question

The last research question deals with the way Iranian EFL teachers adopt and apply AI-driven tools in PBI. The integration of AI-driven tools in Puzzle-Based Instruction (PBI) classrooms reveals a notable divide not only in usage frequency but also in pedagogical readiness and perceived value among IELTs. Among the 35 participants, only 10 (28.6%) reported frequent engagement with AI tools. These teachers typically demonstrated a higher level of digital literacy and professional autonomy, often aligning AI integration with specific phases of PBI, such as vocabulary recycling through apps like Quizlet or grammar refinement via platforms like Grammarly during learner self-correction tasks. In contrast, the 25 remaining teachers (71.4%) either used such tools sporadically or not at all. However, qualitative responses suggest that many of these teachers recognized the potential of AI tools, particularly in supporting scaffolding, feedback loops, and learner agency central to PBI methodology. What emerged was not a lack of awareness, but a systemic misalignment between institutional provisions and pedagogical intentions. Three primary deterrents were identified: (1) *Lack of institutional infrastructure,* cited by 80% of non-users, which included issues such as limited device availability, poor internet access, and the absence of licensed platforms. (2)

Minimal professional development, noted by 72%, especially in integrating AI meaningfully into communicative, student-centered frameworks. (3) *Unclear instructional fit,* acknowledged by 68%, as teachers struggled to harmonize real-time AI feedback with the emergent, collaborative nature of PBI. This analysis suggests that adoption is constrained not by conceptual resistance but by operational hurdles. Many non-users expressed conditional interest (i.e., willingness to integrate AI tools if technical and pedagogical support were provided). This hints at a latent capacity for widespread adoption if targeted interventions are introduced (Table 8).

Table 8. Teacher Profiles, Tool Application Contexts, and Reported Support Needs

Category	Subcategory	Frequency (n)	Percentage (%)
AI Tool Adoption	Frequent adopters (digitally literate, autonomous)	10	28.6%
	Potential adopters (interested but constrained)	17	48.6%
	Resistant/non-adopters	8	22.8%
AI Tool Applications	Grammar correction (drafting feedback)	10	100.0% (of 10 users)
	Vocabulary practice (pre/post-task)	9	90.0%
	Speaking/pronunciation (discussion prep)	8	80.0%
Teacher-Reported Needs	Institutional access (devices, licenses)	20	80.0% (of 25 non-users)
	Pedagogical training (hands-on modeling)	18	72.0%
	Curriculum-aligned integration strategies	17	68.0%

Integration of Quantitative and Qualitative Findings:

The mixed-method findings of this study are mutually reinforcing and reveal a coherent pattern across statistical outcomes and teachers' reflective accounts. Quantitatively, the strong positive correlation between teachers' knowledge of PBI and professional success indicates that greater conceptual awareness of inquiry-driven pedagogy is associated with higher levels of perceived teaching effectiveness. This statistical relationship is substantiated qualitatively by teachers' reflective journals, which illustrate how increased familiarity with PBI translated into more deliberate instructional choices, heightened learner engagement, and enhanced reflective practice. Teachers who demonstrated higher PBI awareness frequently described shifts toward dialogic interaction, problem-posing tasks, and learner autonomy pedagogical behaviors that align closely with the dimensions measured by the professional success questionnaire. Conversely, reflections from teachers with lower engagement in PBI practices echoed the quantitative patterns by revealing uncertainty, reliance on traditional methods, and limited integration of critical or inquiry-based elements. Together, these findings show that the qualitative insights do not merely contextualize the statistical results but explain the mechanisms through which PBI knowledge manifests in observable professional practice, thereby strengthening the internal coherence of the mixed-method design.

Discussion

The present study aims to probe the relationship between Iranian EFL teachers' knowledge of PBI and their professional success. The findings attested that there was a significant positive relationship between the two variables in question. The size of this relationship reveals a relatively high levels of PBI are associated with high levels of teacher success as evaluated by EFL learners. This finding is unexpected since teachers' knowledge of critical thinking in general and PBI in particular can affect different professional decisions on various how, why, and what, such as how to foster learners' autonomy, how to promote learning strategies, how to motivate learners, to name a few. This surprising result is incongruent with the second research question, which aims to probe

Teachers' attitudes toward classroom practices. The finding of the second research question illustrates that most EFL teachers are not familiar with the concept of PBI. A possible justification might be the unsystematic variance at the level of teachers' education. There might be more consistency in teachers 'conception of PBI at a higher education level, like a PhD, than at a BA and MA level. This justification echoes (Atai & Mazlum, 2012), who conclude that teachers' knowledge of critical language pedagogy depends on their level of education and field of expertise.

The findings of the present study are in line with Safari and Pourshamsi (2012), who conclude that EFL teachers are not familiar with the critical language pedagogy. They postulate that unfamiliarity with critical thinking constrains the practicality of CP in Iran. Similarly, (Alibakhshi, 2012) conclude that teachers are not able to apply the principles of CLP in their classroom due to conservative forces. The findings support Pishghadam and Mirzaee (2008), who conclude that there is no room for the practicality of postmodernism at any level of education in Iran. Their justification was the top-down language policy and centralized education, which hindered the practicality of critical language teaching. They suggested a number of changes in the system of education, such as fostering learners' autonomy, encouraging action research, and decentralizing the system of education. This top-down policy promotes traditional standards. Thus, students' needs, creativity, and adaptability are neglected in a centralized system of education (Atai & Mazlum, 2012 ;Bartlett & Burton, 2007 Isaee & Barjesteh, 2025; Manoocherzadeh et al., 2025). Postulates that various factors impede the practicality of CLP in the EFL context of Iran. In the study conducted among EFL teachers, the following factors were reported by all teachers that impede the practicality of CLP in Iran: top-down policy, centralized educational system, authoritarian nature of schools, prior syllabus, prescribed standard tests, short period for instruction, and large classroom.

The participants of the present study reported that incorporating the mother tongue in the classroom hurt the students. This idea contradicts a number of authors' perspectives (Atkinson, 1987 ;Cook, 2001; Wells, 1999) regarding the use of L1 in an L2 classroom. L2 suggests a number of possible advantages of using the mother tongue as follows: discussion about the syllabus, classroom management, language analysis, presenting the rules of grammar, phonology, explaining errors, receiving feedback, morphology, and spelling. One reason for positing this perspective is the lack of teachers' knowledge of critical language pedagogy. In addition, teachers disagree with the notion that the classroom should pave the way for the students' creativity. This finding supports the findings of Mozafari and Barjesteh (2016), who concluded that teachers should enhance the critical literacy of learners by applying critical-oriented strategies in their classroom. This finding reflects (Alibakhshi, 2012), who conclude that without the principles of CLP in an educational setting, teachers become the transmitter of knowledge Who sacrifices creativity in school? This finding supports Beydogan (2002), who postulates that teachers as transmitters of knowledge would change their role as a part of course books, unit periodicals, and information sheets. On the other hand, schools should pave the way for students to foster a perspective on life itself in such settings. Finally, the results support the theoretical foundation of dogme teaching proposed by Thornbury (2002), Giroux (1980), and Freire (1970), who have postulated the political nature of education. They believed that teachers and students should become transformative intellectuals and cultural workers who prepare students for society by transforming their knowledge and raising students' awareness of a better life. Since the model was practically implemented within an L2 methodology course, its applicability can be more confidently assessed in real instructional settings. In light of the encouraging outcomes and the participants' positive perceptions, the researcher found the use of the proposed model both relevant and effective for his teaching practice. The findings further suggest that the PBI-based model offers a preliminary framework for integrating the principles of Critical Language Pedagogy (CLP) into materials development. Supporting this need, argue that many existing ELT materials predominantly transmit decontextualized content, often neglecting socio-political dimensions. Addressing this limitation, the proposed model strives to enhance learners' linguistic competence while simultaneously raising their awareness of social structures. According to participant feedback, over 80% felt that the course encouraged them to derive meaning from their social positions. Who advocate for materials that concurrently foster communicative skills and critical engagement with the world, empowering learners to contribute to societal transformation. In essence, these results indicate that the conceptual and practical elements of CLP can gradually be introduced into Iranian EFL classrooms. Given the current lack of standardized textbooks that reflect

critical pedagogy in teacher education, the PBI model may serve as a useful preliminary tool for materials development tailored to the sociocultural realities of Iranian learners. The model has the potential to support both teachers and local materials developers in designing content that promotes critical engagement with knowledge rather than passive reception. The data also demonstrate that the model positively impacted participants' personal, educational, and social development. Their reflective journal entries revealed a noticeable shift in their attitudes toward learning, likely influenced by the CLP-oriented structure of the course. Considering the traditionally conservative nature of the learning environment, these transformations suggest that critical pedagogy holds feasible potential within Iran's EFL context. The findings of this study echo broader trends in AI integration within EFL contexts, revealing a clear capacity–use gap among Iranian EFL teachers. Although 28.6% of participants reported frequent use of AI-driven tools mainly for grammar correction, vocabulary development, and speaking practice the majority (71.4%) indicated infrequent or no use. This discrepancy aligns with previous research indicating that access alone does not guarantee integration (Kessler & Hubbard, 2017)

Structural barriers such as limited institutional access, lack of hands-on training, and uncertainty about pedagogical alignment with learner-centered frameworks like Puzzle-Based Instruction (PBI) were key inhibitors. These findings are consistent with Godwin-Jones (2020), who noted that many teachers are unsure how to embed AI technologies into communicative and emergent instructional designs effectively. Moreover, while AI tools like Grammarly and Quizlet are praised for their utility in skill development, their integration into PBI tasks remains underexplored. The observed tension between the teacher-controlled logic of AI feedback and the student-driven spontaneity of Dogme ELT (Thornbury, 2000) underscores the need for pedagogically grounded professional development. Without deliberate efforts to contextualize AI use in learner-driven environments, its adoption risks remaining superficial and detached from meaningful classroom practice.

Contribution of the Study

This study contributes to the field of EFL education by establishing a significant link between teachers' knowledge of Puzzle-Based Instruction (PBI) and their professional success, as evaluated by learners. It highlights the critical gap in teacher familiarity with PBI, particularly within the Iranian EFL context, offering empirical evidence that supports prior theoretical claims about the constraints imposed by centralized education policies and conservative pedagogical practices. By practically implementing the PBI model within an L2 methodology course, the research advances the conversation on integrating Critical Language Pedagogy (CLP) into materials development and teacher training. Moreover, this study sheds light on the interplay between emerging AI technologies and traditional language instruction, identifying structural barriers that hinder AI's effective integration in learner-centered environments. These insights provide a valuable foundation for future research and curriculum design aiming to modernize EFL teaching in Iran and similar contexts.

The findings concerning systemic barriers to the implementation of Puzzle-Based Instruction and AI-supported pedagogy warrant further elaboration at the policy and practice levels. Participants consistently identified constraints related to centralized curricula, limited institutional autonomy, insufficient technological infrastructure, and the absence of sustained professional development as major impediments to pedagogical innovation. For policymakers, these findings underscore the need for flexible curricular frameworks that allow teachers to adapt instructional practices to local contexts and learner needs, as well as targeted investment in basic digital infrastructure and licensed educational technologies. For practitioners and teacher educators, the results point to the importance of practice-oriented professional development that models the integration of AI tools within learner-centered and dialogic pedagogies rather than treating technology as an add-on. Addressing these systemic conditions may enable teachers to move beyond surface-level adoption of innovative methods toward more sustainable and context-responsive instructional change.

Implications

The findings imply that Iranian EFL teacher education programs need to place greater emphasis on familiarizing educators with PBI and critical pedagogical approaches to enhance their professional success and effectiveness. Educational policymakers should reconsider the centralized and top-down policies that restrict teacher autonomy and creativity, as these policies impede the

practical application of CLP principles. The demonstrated potential of the PBI model to foster both linguistic competence and socio-political awareness suggests that curriculum developers should incorporate critical pedagogy elements to make learning more relevant and transformative for students. Additionally, the identified capacity-use gap in AI tool adoption calls for institutional support, including targeted professional development and improved access to resources, to help teachers integrate technology meaningfully into their instructional practices. Finally, fostering a classroom culture that encourages creativity and critical thinking is essential to move beyond traditional transmission models of teaching toward more learner-centered and emancipatory approaches.

Suggestions

To bridge the gap between theory and practice, it is suggested that teacher education curricula explicitly incorporate training on PBI and CLP frameworks, ensuring that teachers at all educational levels understand and can apply these concepts. Teacher professional development workshops should be designed to build competence in utilizing AI tools aligned with learner-centered methods like PBI, focusing on practical classroom integration rather than mere technological familiarity. Educational authorities are encouraged to decentralize curriculum control and encourage action research to empower teachers as reflective practitioners and innovators. Moreover, textbook developers and materials designers should collaborate with local educators to create contextually relevant resources that promote critical engagement with language and society. Future research might explore longitudinal impacts of PBI-informed instruction on learner autonomy and academic outcomes, as well as investigate strategies for effectively blending AI technologies within critical pedagogy frameworks.

CONCLUSION

This study contributes to the growing body of ELT research by empirically demonstrating that teachers' conceptual understanding of PBI is strongly associated with professional success and by showing how this relationship is enacted in classroom practice through reflective, inquiry-driven pedagogy. By positioning PBI as an operational bridge between critical pedagogy and sustainable teaching, the study advances a coherent framework that links theory, practice, and long-term educational outcomes. The findings further indicate that AI-driven tools, when used as pedagogical supports rather than substitutes for interaction, can enhance key dimensions of PBI, including feedback, scaffolding, and learner autonomy. Despite the positive relationship between the two variables, most of the teachers revealed that the concept of IPTR was new to them. Thus, a straightforward implication for this study is a need to reexamine ELT education through the lens of critical aspects such as critical theory, critical pedagogy, and unplugged teaching, so that language policy makers involve teachers in socio-political considerations. L2 professional literature reiterated that language teaching does not happen in a vacuum. Thus, a simple conclusion for the present study is that there is a link between language studies and different aspects such as society, culture, economics, and politics. Incorporating PBI in general and the principles of critical language theory in particular can pave the way for the above-mentioned factor. One justification for such a claim is that in PBI, teachers are not bound to the classroom. They are invited to move beyond the classroom and connect the very principles to real-life concerns (Isaee & Barjesteh, 2023). This sort of curriculum may pose a challenge to teachers. The present study suggests that language policy makers and syllabus designers, in general, and teachers in particular, to ponder globally but act locally by utilizing the major tenets of PBI.

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I am the only Author of this paper.

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