Practical Exploration of Present Tense Teaching Based on PBL-CDIO Approach

Jiamin Wu *

School of Jiamin Wu, Shanghai Ocean University, Shanghai 201306, China

* Corresponding Author Email: 1984976149@qq.com

Abstract. Currently, the teaching of English present tense faces many challenges, such as students' difficulties in comprehension, inaccurate application, and weak knowledge transfer ability. The flaws in traditional grammar teaching, including mechanical explanation and decontextualized content, further exacerbates these issues. This paper integrates the PBL (Problem-Based Learning) methodology with the CDIO (Conceive-Design-Implement-Operate) framework and applies this combined approach to the teaching of English present tense. Through theoretical analysis, this paper expounds the core concept and application value of the PBL-CDIO model; at the same time, it takes the simple present tense in junior high school English as a specific case, designing a teaching process of "Problem selection-Conception-Design-Implementation-Operation-Outcome evaluation" and conducting practical exploration. The results demonstrate that this model effectively breaks through the limitations of traditional teaching, stimulates students' interest and participation, significantly improves their language proficiency, team collaboration ability and logical thinking ability; furthermore it helps students to deepen their understanding and flexible application of the present tense through the creation of real contexts and practical operations. This study provides an innovative approach for English grammar teaching, confirms the effectiveness of the PBL-CDIO model in addressing the dilemmas of traditional grammar teaching, and holds significant importance in promoting the reform of English teaching and enhancing the quality of grammar teaching.

Keywords: PBL-CDIO model; English teaching; simple present tense; grammar teaching; teaching practice.

1. Introduction

In English teaching, grammar has always been an important component of student learning. At present, English grammar teaching in China is primarily completed during middle school, with grammatical competency constituting a certain proportion in both the Middle School Entrance Examination and the College Entrance Examination [1]. As a fundamental element of English grammar and syntax, the importance of the present tense is self-evident. However, the teaching of present tense still faces many challenges in current English teaching practice. Many students exhibit comprehension difficulties when learning the present tense, manifested as a vague understanding of abstract concepts, inaccurate application in practical contexts, and limited capacity to transfer acquired knowledge to new contexts [2]. These issues not only affect students' language expression ability but also weaken their interest and confidence in learning English.

In recent years, the PBL and CDIO approaches have earned increasing attention in the field of education. PBL is a group discussion-based teaching method that is problem-based, student-centered, and teacher-oriented in the teaching process [3]. Through real-life project tasks, PBL enables students to learn knowledge and skills while solving practical problems. This approach can effectively enhance students' participation and learning motivation. The CDIO approach, rooted in engineering education, is based on technology, integrating professional theory, practice and innovative abilities into the entire teaching process [4]. It cultivates students' comprehensive abilities and innovative thinking through a complete and interconnected process. Both approaches have been successfully applied in different disciplines. In the teaching of basic mathematics, students use the PBL approach to be set practical projects and apply knowledge of geometric statistics to integrate mathematical concepts into practice. The CDIO model is widely used in the medical field. In terms of medical design, students can "learn by doing", comprehensively enhancing their clinical thinking and problem-solving abilities. These

cases demonstrate that PBL and CDIO approaches can bring new vitality and innovative ideas to traditional teaching models.

However, the traditional English teaching model currently has some problems, such as difficulty in integrating teaching content with reality. Based on this, this paper attempts to combine PBL with CDIO, transfer them to disciplinary English teaching, and explore how it will affect students' understanding and application of the present tense.

It has important theoretical and practical significance to introduce PBL-CDIO into disciplinary English teaching. On the one hand, this approach can provide students with a more real and meaningful learning environment, helping them better understand and apply English tenses. For example, when teaching English tenses, teachers can design a simulated business negotiation project where students are grouped to play different roles as negotiation representatives and communicate by use of various tenses during the simulated negotiation. In this way, students no longer just mechanically memorize tense rules from textbooks, but can experience the application of tenses in real contexts, leading to better comprehension and mastery. On the other hand, through exploring project tasks, students can consolidate their learned knowledge and improve their language application abilities in practice. The PBL-CDIO approach can also stimulate students' interest and motivation in learning, making them more actively participate in the learning process, thereby improving learning outcomes.

This paper starts with the significance of teaching the present tense in current English language teaching and the challenges it faces (such as difficulty in comprehension, inaccurate application, and outdated examples), analyzing existing problems in current teaching situation; it then introduces the concepts of PBL (Project-Based Learning) and CDIO (Conceive-Design-Implement-Operate) that have emerged in the field of education in recent years, and explains their conceptual definitions, applications, and developmental trends. Building upon this foundation, this paper proposes an integrated PBL-CDIO approach as a solution for disciplinary English teaching; finally, the paper validates the effectiveness of this instructional framework through a concrete teaching design case focused on the present tense. Through investigating these research questions, this study aims to provide an innovative teaching model for English grammar teaching, foster students' in-depth comprehension and effective application of grammatical knowledge while stimulating their learning interest and motivation to enhance learning outcomes.

2. Literature Review

In recent years, the English grammar teaching system in China has remained at the stage influenced by structuralist linguistics and transformational generative linguistics [5], with the former lacking a holistic perspective and the latter neglecting semantic nuances, offering little help to English grammar teaching. Therefore, we need to seek new methods and new ideas. The integration of PBL and CDIO approaches undoubtedly opens up a new path for English grammar teaching. At present, more and more scholars have paid attention to the PBL-CDIO approach, which has made certain research progress in fields such as civil engineering, medical education, and artificial intelligence.

2.1. PBL (Problem-Based Learning)

PBL (Problem-Based Learning) teaching method is an innovative educational model that is that is problem-based, student-centered, and teacher-oriented. The PBL teaching method was first introduced at McMaster University in Canada in 1969 [6], aiming to guide students to acquire knowledge and skills through self-directed learning, writing communication and problem-solving processes by means of a problem-driven approach. It takes students as the main body and organically combines theory and practice by independent completion of projects, which can help understand and master the knowledge points and skills required in the curriculum. At the same time, under the guidance of teachers, it can cultivate students' abilities in problem analysis, solution development and teamwork in a targeted manner [7], which is an efficient and inspiring teaching model. Barrows,

a representative scholar, emphasized that learning should be driven by problems through PBL teaching method, taking complex clinical cases as the starting point to cultivate students' abilities to learn independently and solve problems collaboratively. This method focuses on handling unstructured problems, forming a knowledge system through group cooperation and independent exploration, which is significantly different from traditional lecture-based teaching. The PBL teaching method emphasizes the comprehensive application of knowledge and the cultivation of practical abilities. By designing real or simulated problem scenarios, it stimulates students' learning interest and subjective initiative, promoting their transition from passive acceptance of knowledge to active exploration of knowledge. This teaching model not only enhances students' self-learning ability, but also strengthens their abilities in teamwork, critical thinking and innovation.

At present, PBL teaching method has been widely applied in the curriculum reform of English teaching field. Scholar Yang Xin introduced the PBL teaching model in English debates. Through project design and implementation, the PBL teaching method can help students build a relatively complete and systematic knowledge system and enhance their ability to apply and solve problems. In the argument that "teachers' salaries should be determined based on students" academic performance [8], the PBL teaching model brings students reflection and inquiry about themselves and the world around them, through which students' reflective ability can be cultivated and improved, and reflective ability is the key to "anticipate changes proactively, adapt to challenges responsively, and initiative transformations independently" [9]. These findings indicate that PBL combines theoretical knowledge with practical operation, significantly improving students' classroom participation, innovation ability, critical thinking ability, and reflective ability. In addition, Scholar Yue Ruiling has also introduced the PBL teaching model in English reading. Through collaborative projects involving teachers and student groups across project initiation, planning framework development, implementation, presentation and evaluation, it explores whether the application of PBL in university reading teaching can effectively stimulate college students' English learning motivation, improve their comprehensive English application ability, and cultivate their ability for cooperative learning. The experimental data of the study confirms the promoting effect of PBL learning on college students' English learning, and the overall research effect is satisfactory [10] It can be seen that PBL teaching method can stimulate students' interest and motivation in learning English, enhance their comprehensive English application ability, and cultivate cooperative communication skills through group learning and discussion.

2.2. CDIO (Engineering Education Learning Method)

The CDIO (Conceive-Design-Implement-Operate) engineering education model is an innovative engineering education paradigm based on the "full project lifecycle", aimed at promoting students' self-knowledge and experience construction in engineering practice. The CDIO teaching model is a new type of engineering talent training model established in 2004 through several years' research, exploration and practice by four universities, including the Massachusetts Institute of Technology in the United States and the Royal Institute of Technology in Sweden, with funding from the Wallenburg Foundation. The engineering talent training model under CDIO model advocates using product development to product operation as the carrier, emphasizing active and practical learning [11]. This concept is based on two core principles: "learning by doing" and "project-based education and learning", emphasizing the improvement of students' engineering abilities through practice and project driven approaches. CDIO represents the four closely interconnected stages of Conceive, Design, Implement and Operate, fully simulating the entire lifecycle of an engineering product or system from concept to operation. Through this systematic framework, CDIO aims to cultivate students' comprehensive abilities in systematic thinking, teamwork and solving complex engineering problems, enabling them to better adapt to the needs of modern engineering practice. Moreover, CDIO has broken through the limitations of traditional education (mainly based on knowledge transmission), emphasizing the cultivation of engineering abilities as the core, and building a four-dimensional ability cultivation system that covers basic engineering knowledge, individual abilities,

team collaboration and system macro awareness cultivation. Its teaching focuses on practical orientation and the entire process.

At present, CDIO teaching method has been widely applied in curriculum reform in teaching fields such as social sciences and humanities. As social sciences increasingly emphasize practice-oriented approaches and problem-solving abilities, CDIO has effectively enhanced students' comprehensive ability to deal with practical social problems through the system framework of "Conceive-Design-Implement-Operate". In specific applications, CDIO often adopts a dual track model of "theoretical teaching+practical teaching". Scholar Li Liangyan integrated the four stages, that is, conceive, design, implement and operate reflected in the CDIO education concept, into the teaching process to carry out the teaching by the use of deploying online learning platforms, optimizing in-person classroom interactions, strengthening project-based teaching and establishing a diversified evaluation system. Teaching practice demonstrate that the blended learning model of academic English has effectively enhanced students' language, academic and innovative abilities, offering valuable experience for cultivating new engineering talents with international competitiveness [12]. Thus, it can be seen that this exploration not only expands the application boundaries of CDIO concept in language teaching but also provides effective teaching examples for cultivating new engineering talents, fully reflecting the flexibility and foresight of the educational model.

Furthermore, the CDIO teaching method has significant effects on cultivating students' self-creative awareness and critical thinking in interdisciplinary fields and knowledge integration domains. For instance, Scholars Zhou Xien and Deng Xiaoyan proposed a teaching model for automotive comprehensive innovation practice curriculum that combines the PDCA (Plan-Do-Check-Action) cycle and CDIO (Conceive-Design-Implement-Operation) teaching concept to address the current problems in practical teaching in the field of vehicle engineering. Based on the PDCA cycle, a curriculum quality management system was constructed, and the CDIO teaching concept was introduced, so that a "dual-loop CDIO" teaching method was designed for teaching and learning, and a "project-based learning contextualized problem-solving" teaching method was used for curriculum design, making the teaching content restructured and achieving a student-centered teaching transformation. The practical results show that teaching reform can improve the quality of curriculum teaching, strengthen students' comprehensive mastery of vehicle engineering theory and practice, give full play to students' initiative, and enhance their scientific research and innovative practical abilities [13]. For another example, Scholar Duan Guoyan combined modular design with mechanical design in college mechanical innovation design [14], which adopted the CDIO engineering education model to carry out mechanical design practice in a simulated enterprise environment, so that students were able to complete the entire process from conceptual design to operational operation in team collaboration. Research has shown that the CDIO teaching model significantly enhanced students' comprehensive design abilities, strengthened their teamwork and communication abilities, and promoted the cultivation of their innovative consciousness and critical thinking. [15] It can be seen that the integration of CDIO concept with interdisciplinary fields has been widely applied and has achieved significant results.

2.3. PBL-CDIO model

For the PBL-CDIO teaching model, its core lies in integrating PBL's problem-driven nature with CDIO's project systematic nature. This model first constructs a real problem scenario to stimulate students' intrinsic motivation and then guides them to follow a structured process of "Conceive-Design-Implement-Operate" to advance the project. It breaks the traditional one-way indoctrination teaching method, encourages students to actively explore, collaborate in teams and directly apply theoretical knowledge to practical tasks, thereby effectively improving their cognitive level and practical ability in the process of problem-solving, and achieving the integration of learning and ability cultivation. The purpose of both PBL and CDIO teaching models is to improve students' learning motivation, but their emphasis is different. PBL teaching emphasizes a problem-oriented

approach, while CDIO model focuses on process practice. If PBL and CDIO are combined, complementary advantages can be realized [16].

Although PBL teaching method has effectively enhanced learning motivation and language practice ability through problem driven and student independent exploration in English teaching, it often lacks systematic project design, process management, and team collaboration mechanisms, which can easily lead to problems such as fragmented learning process, ambiguous goals, and difficult quantification of outcomes. In contrast, the CDIO model emphasizes the use of engineering projects as the carrier, and through the full process closed-loop management of "Conceive-Design-Implement-Operate", it focuses on structured implementation and team collaboration, which can precisely compensate for the shortcomings of PBL in project management and system execution. Nevertheless, the CDIO model has certain limitations in English teaching. While it has a rigorous process, it often focuses on the final outcomes and tends to overlook the creation of real contexts and the stimulation of students' intrinsic motivation. This is exactly what PBL teaching method can compensate for. By integrating CDIO with PBL, a more complete teaching process can be constructed in English teaching, forming a closed-loop optimization. PBL has shown significant application effects in cultivating students' self-learning ability, language practice ability, and innovative consciousness. Through its integration with CDIO, it not only strengthens students' comprehensive ability to use English in real contexts, but also enhances their teamwork, problem-solving, and project management abilities. It provides systematic support for cultivating high-quality and innovative foreign language talents, which is of great significance for promoting foreign language education reform and building a strong foreign language country.

At present, the application of PBL-CDIO teaching model has been very extensive. Zeng Qi et al. applied the "PBL+CDIO" teaching model to the electrical and electronics curriculum, established a diversified performance evaluation and assessment system, cultivated students' engineering and innovation awareness, and achieved good teaching results. It is worth noting that Zhu Mingwei et al. have applied the "PBL+CDIO" educational concept to the experimental teaching of functional materials, strengthened the teaching design of the experimental process, and achieved good results in mobilizing students' learning enthusiasm, cultivating their innovative thinking ability, and improving their ability to analyze and solve problems. This provides certain references and guidance for talent cultivation in universities [17]. However, the PBL-CDIO teaching model is currently widely used in fields such as engineering, medicine, and information technology, but its application in disciplinary English teaching remains relatively scarce. Therefore, interdisciplinary transfer can be attempted. The research on second language acquisition has an interdisciplinary nature, mainly involving multiple disciplines such as linguistics, psychology, education, sociology, etc. Its core viewpoints include language input, language output, language acquisition mechanisms, language learning strategies, etc., providing rich perspectives for learners and researchers to understand language acquisition. Applying these theories to English teaching can not only optimize teaching methods but also stimulate students' learning motivation and improve their language learning, development, and application abilities [18] The PBL teaching method emphasizes the real context, while the CDIO model emphasizes the practice loop, both of which can match the three-dimensional needs of "Form-Meaning-Application" in tense learning.

Therefore, this paper aims to combine the theoretical concept of PBL-CDIO teaching model with the practice of disciplinary English teaching, in order to conceive a new grammar teaching path. Traditional grammar teaching often focuses on isolated rule explanations and mechanical sentence structure exercises. Although students may master basic grammar points like present tense, it is difficult for them to flexibly and accurately apply them in real communication. The PBL-CDIO model, however, provides a potential solution for this dilemma: it can place grammar teaching in a real and meaningful task-based context. For example, during the project conception stage, teachers can pose a problem such as designing an English-language campus guide brochure for our school. While working on content design and language implementation to complete this task, students will naturally encounter a large number of scenarios that require the use of the present tense to describe campus

normalcy and introduce facility functions. At this point, grammar is no longer an abstract text, but a necessary tool for solving practical problems. By repeatedly applying and revising in project operations, students' understanding of the present tense will shift from rote memorization to profound internalization. Although there is currently limited research on the deep integration of systematic project processes with specific grammar teaching processes, especially in university English teaching databases, there is still a lack of literature directly exploring the application prospects of such combined teaching methods, which precisely indicates a broad research space. Future exploration can focus on how to design teaching task sequences that can drive project progress while accurately embedding different grammar points (such as present tense, past tense, subjunctive mood, etc.), thus truly achieving a transition of grammar knowledge from learning to acquisition and providing a vibrant practical example for English teaching reform.

3. Introduction of PBL-CDIO Model into English Tense Teaching

English tenses are a focal yet challenging aspect of language learning. Traditional tense teaching often relies on mechanical drills, resulting in fragmented understanding and weak practical application of students. The PBL-CDIO model, with its problem-driven approach and engineering-inspired "Conceive-Design-Implement-Operate" framework, injects new vitality into English tense teaching. This model transforms abstract grammatical rules into actionable language practices, which not only enhances students' interest in learning but also cultivates their ability to employ English tenses as tools for solving real-world problems.

As the core content of English majors, English tense teaching covers two major areas: theory and practice (see Table 1 for details). In the process of English learning, whether it is listening, speaking, reading, or writing, tense expression should be used [19]. Teachers need to guide students to systematically master basic theoretical knowledge and enable them to proficiently apply relevant sentence structures and grammar in practical situations, so as to cultivate students' scenario-based thinking patterns, thereby enhancing their innovation and practical abilities.

Table 1. Teaching Content of English Tenses (Source: Self-created by Author).

	Topic	Theoretical content	Practical content	Number of class hours	Target
Part 1 Introduction	Definition and importance of English tenses	Introducing the definition and importance of eight basic tenses	Guide students to discuss different tenses in groups based on actual situations	2 class hours	Cultivate students' basic understanding and recognition of English tenses
Part 2 Tense's introduction	Simple present tense	Rules and application scenarios of simple present tense	Practice using the simple present tense to make sentences	3 class hours	Enable students to understand and master the rules and application scenarios of the eight basic tenses and be able to distinguish and correctly use different tenses to describe various past, present, and future actions or activities, cultivating students'
	Simple past tense	Rules and application scenarios of simple past tense	Practice using the simple past tense to make sentences	3 class hours	
	Simple future tense	Rules and application scenarios of simple future tense	Practice using the simple future tense to make sentences	3 class hours	
	Present continuous tense	Rules and application scenarios of present continuous tense	Practice using the present continuous tense to make sentences	3 class hours	
	Present perfect tense	Rules and application scenarios of present perfect tense	Practice using the present perfect tense to make sentences	3 class hours	

	Past continuous tense	Rules and application scenarios of past continuous tense	Practice using the past continuous tense to make sentences	3 class hours	listening and speaking abilities.
	Past perfect tense	Rules and application scenarios of past perfect tense	Practice using the past perfect tense to make sentences	3 class hours	
	Past future tense	Rules and application scenarios of past future tense	Practice using the past future tense to make sentences	3 class hours	
Part 3 Language application	Application of eight basic tenses in writing	Review the rules and applications of the eight basic tenses	Each student should write a short essay on their own topic and use at least three different tenses	3 class hours	Through practical operation and application exercises, improve students' reading and writing abilities, while strengthening their understanding and flexible application abilities of different tenses, thus cultivating their core English literacy.
	Application of eight basic tenses in oral English	Review the rules and applications of the eight basic tenses	Conduct group discussions, with each group given a speaking topic, and present it on stage after the discussion	3 class hours	

However, the traditional teaching model has the following main problems (see Figure 1 for details): it is divided into three main parts: teaching, students, and future development. Firstly, in terms of teaching, the proportion of theoretical content in the teacher's curriculum is so high that the knowledge points are complex and abstract, and there may be situations where the teaching content is difficult to combine with reality or not consistent with reality. The content of textbooks lags behind and is detached from the development of the times. For example, in many traditional English textbooks, the teaching content of "letter writing" is still retained. However, with the development of technology, communication methods have long changed, and nowadays students use email more for communication and exchange. Yet textbooks persistently prioritize letter-writing as emphasis, which is a clear misalignment with contemporary needs. Moreover, the textbook presents a too single format, with obvious limitations in standardization. In the contrast, teachers' evaluation system for students pays more attention to knowledge mastery over core competencies; has single and solidified standard and ignores individual differences; focuses on short-term results and ignores process tracking. Secondly, students find it difficult to combine theory with practical application, resulting in low interest and participation in learning. And the traditional teaching model is mainly based on teacher lectures, with students passively receiving knowledge, resulting in insufficient classroom interaction and difficulty in stimulating students' initiative and creativity. In addition, the curriculum lacks practical teaching elements, and students have obvious deficiencies in the cultivation of practical problem-solving, teamwork skills, and critical thinking. These problems not only limit students' in-depth understanding of English tenses but also affect their comprehensive competitiveness in future career development.

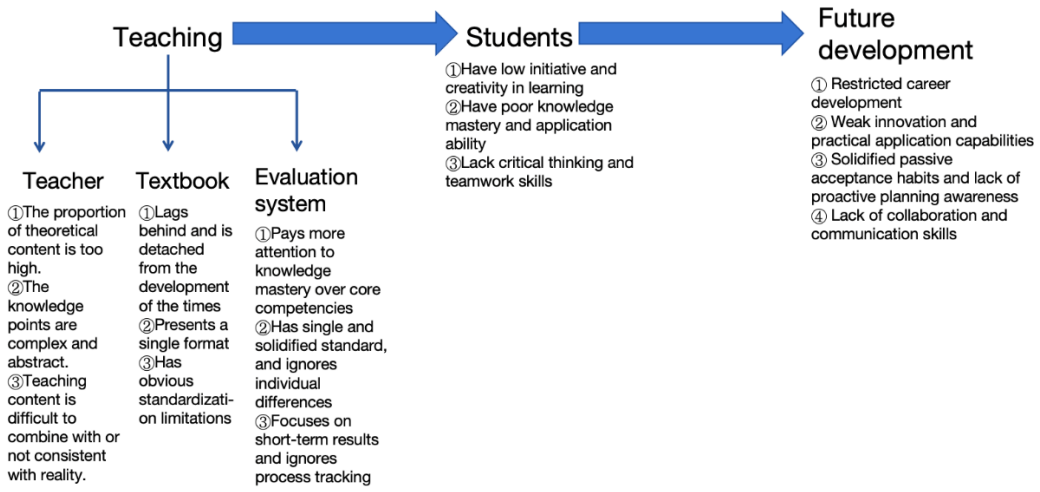

Figure 1. Main Problems of Traditional Teaching Model (Source: Self-created by Author).

Therefore, in order to meet the requirements of English curriculum education reform, the curriculum objectives need to shift from simply imparting knowledge to cultivating abilities and improving qualities through PBL teaching model. In terms of knowledge objectives, students need to master the basic points of tense definition, usage scenarios, structures, fixed collocations, time markers, etc., and be able to analyze them in combination with reality. In terms of ability objectives, it is to cultivate students' ability to analyze practical problems in English tense, such as being able to correctly use the eight basic tenses to introduce past holiday life and future goals. Simultaneously, it is to enhance students' teamwork, information retrieval, and innovation abilities. In terms of quality objectives, it is to cultivate students' scientific literacy, exploratory awareness, social responsibility, and sustainable development awareness, so that they can uphold a scientific attitude in English learning, care about social hotspots, and possess comprehensive language application abilities in various fields in the future.

At the same time, in terms of curriculum teaching design, the CDIO engineering education model takes "Conceive-Design-Implement-Operate" as the core concept, with project as the orientation and ability cultivation as the goal, which focuses on the deep integration of theory and practice, student engagement, and the construction of a diversified evaluation system, providing a scientific framework and practical path for the reform of English tense teaching curriculum. By introducing the CDIO model, it is possible to effectively optimize teaching design, enhance students' learning interest and practical ability, and cultivate high-quality English talents with innovative spirit and practical application ability, thus promoting the deepening of English teaching reform in the basic education stage.

In English tense teaching, the theoretical basis of PBL-CDIO model is introduced. Teachers, as learning process designers and facilitators, should address key problems in traditional language teaching through these essential steps. Firstly, grounded in PBL model, we can create tense application problems that are close to real contexts and provide contextual information. For example, we can set tasks containing tense confusion points around topics such as "daily communication, event narration, and future planning", to guide students to focus on tense functions and applicable scenarios. Secondly, based on the CDIO model, we can construct a student-centered and practice-oriented teaching system. Through the closed-loop process of "scenario analysis-tense selection-expression practice-outcomes optimization", students are able to understand the relationship between tense, temporal logic, and contextual requirements in the process of completing real language tasks, comprehensively improving the accuracy, flexibility, logical thinking ability, and innovation literacy of students' tense application. Finally, based on the PBL model, we can carry out process-oriented outcome evaluation and targeted feedback, and combine with students' understanding depth of tense rules and the rationality of contextual application in the task to help students identify weak points in tense learning and optimize their application strategies. (See Figure 2 for details)

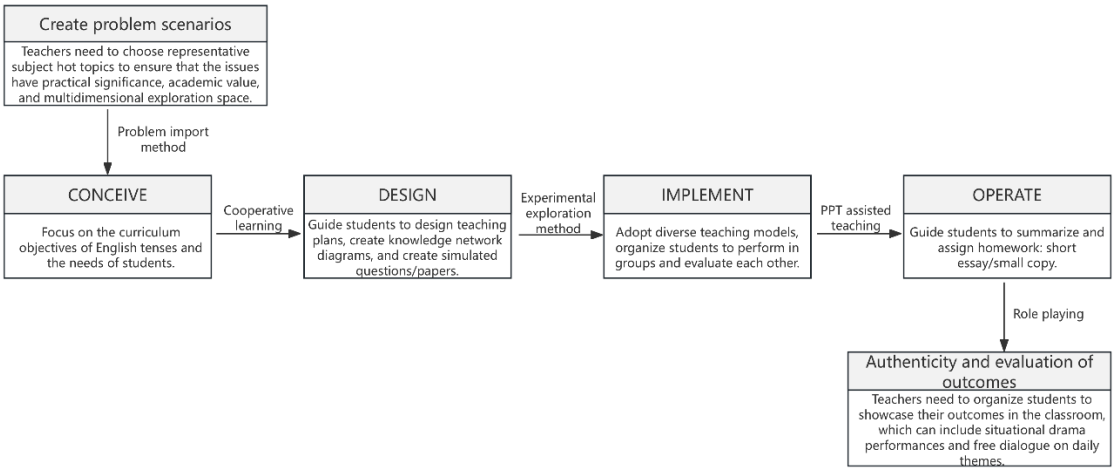

Figure 2. Theoretical Mechanism of PBL-CDIO Model (Source: Self-created by Author).

Step 1: Problem selection and provision of background information

Teachers need to choose representative subject hot topics to ensure that the issues have practical significance, academic value, and multidimensional exploration space. At the same time, the selection of problems should be based on reality. For example, when "describing the upcoming weekend plan", teachers need to provide students with basic knowledge of the simple future tense, including its definition, sentence structure, time markers, verb form changes, etc. In order to enhance the multidimensional exploration space of problems, teachers can guide students to think about the differences in weekend activities under different cultural backgrounds, how to balance learning and leisure, and the relationship between short-term planning and long-term goals. This design not only teaches language knowledge, but also cultivates students' cross-cultural awareness and planning ability, reflecting the unity of problem driven, knowledge construction, and ability development in the PBL model.

Step 2 to Step 5: Conceive-Design-Implement-Operate

In the conceiving step, teachers need to guide students to think about the core issues of English tense teaching and stimulate their learning interest and exploration desire. By setting challenging and open-ended questions, students can clarify their learning objectives and lay the foundation for subsequent project-based learning. This step emphasizes inspiring students' thinking, cultivating their problem awareness and self-learning ability. In the step of design, teachers should guide students to design teaching plans based on project-based learning methods, including clarifying teaching objectives, planning teaching content, and selecting appropriate teaching methods. By creating a knowledge network diagram, students can clearly organize the connections between knowledge points and design simulation questions or test papers to prepare for subsequent practical activities. Teachers should pay attention to cultivating students' planning ability and logical thinking, ensuring the systematic and targeted nature of teaching activities. In the implementation step, teachers need to adopt the experimental inquiry learning method and organize students to participate in group practice activities through diversified teaching modes such as group discussions, experimental exploration, and case analysis. Students actively explore and apply their learned knowledge in the practical process, while promoting reflection and improvement through mutual evaluation. The subject status of students is emphasized to stimulate their interest and initiative in learning and cultivate teamwork and problem-solving abilities. In the operation step, teachers need to use PPT to assist in teaching and combine theoretical knowledge with practical situations, guiding students to summarize and assign relevant assignments, such as short essays or scripts.

Step 6: Outcome display and feedback evaluation

Teachers need to organize students to display their outcomes in the classroom, which can include situational drama performances, free expression of daily themes, etc. Teachers need to design reasonable evaluation indicators and methods to comprehensively evaluate students' learning

outcomes from aspects such as content depth, logic, innovation, and teamwork. Evaluation indicators should have process feedback and outcome evaluation, focusing on students' observation and recording of the learning process. Teachers need to help students reflect on their learning process and further enhance their problem-solving and teamwork abilities through immediate feedback and summative evaluation.

4. Analysis of Teaching Cases of Simple Present Tense Based on PBL-CDIO Model

4.1. Teaching content (3 class hours)

1st class hour: New Lesson Teaching
2nd class hour: Sentence Application/Guided Practice Exercises
3rd class hour: Scenario-based Play/Review

This lesson focuses on teaching the simple present tense, exacted from the middle school English textbook of People's Education Press. The content covers the definition and basic structure of the simple present tense (including affirmative sentences, negative sentences, general interrogative sentences, and special interrogative sentences), commonly used temporal adverbs (such as always, usually, often, sometimes, never, every day, etc.), and the rules for the variation of third person singular verbs. Through learning, students are able to use the simple present tense to describe regular and habitual actions, objective facts, truths, and current states.

4.2. Teaching objectives

4.2.1 Knowledge and skills:

① Students are able to accurately understand the definition and usage scenarios of the simple present tense and proficiently state at least 5 commonly used temporal adverbs.

② Students can master the basic structure of the simple present tense, including affirmative sentences (subject+base form of a verb/third person singular form+others), negative sentences (subject+don't/doesn't+base form of a verb+others), and general interrogative sentences (Do/Does+subject+base form of a verb+others?), special interrogative sentences (special interrogative words+Do/Does+subject+base form of a verb+others?), and can use them correctly.

③ Students can proficiently master the rules for the variation of third person singular verbs (divided into regular and irregular changes), master the rules of change and correctly write at least 10 third person singular forms of irregular verbs.

④ Students can use the simple present tense for simple conversations and short writing and accurately describe daily activities and objective facts.

4.2.2. Process and method:

① Through the problem-based learning, project design, and practical operations in the PBL-CDIO model, cultivate students' abilities in independent exploration, teamwork, and problem-solving.

② Guide students to observe, analyze, and summarize the usage of the simple present tense in real language contexts, and improve the flexibility and accuracy of language use.

3. Emotional attitude and values:

①Stimulate students' interest in learning English tenses and enhance their confidence and enthusiasm for learning English.

②Cultivate students' rigorous language learning attitude and logical thinking ability, as well as their awareness of effective communication and collaboration in teams.

4.3. Key and difficult points of teaching

4.3.1. Key points of teaching:

① Basic structure of the simple present tense and conversion of various sentence structures.

② Rules for the variation of third person singular verbs in irregular forms.

③Correct application of simple present tense in specific contexts, especially in describing frequent actions and objective facts, combined with the PBL-CDIO method for teaching practice.

4.3.2. Difficult points of teaching:

①in practical communication and writing, accurately determine when to use the simple present tense to avoid confusion with other tenses.

②Correct use of the third person singular form in different sentence structures, especially in negative and interrogative sentences.

③Understand the meaning of "objective facts and truth" expressed in the simple present tense and apply it correctly.

4.4. Teaching method

1. PBL (Problem-Based Learning): Design real-life language questions that are relevant to students' lives, such as "describing your daily routine" and "introducing your family's hobbies", to guide students in learning and using the simple present tense while solving problems.

2. CDIO (Conceive-Design-Implement-Operate): Build a student-centered teaching system and enhance students' mastery and application ability of the simple present tense by involving students in the closed-loop process of "scenario analysis-tense selection-expression practice-outcomes optimization".

3. Situational teaching method: Create various life situations related to the simple present tense, such as family scenes, school scenes, shopping scenes, etc., so that students can perceive and apply tenses in real situations.

4. Group cooperative learning method: Divide students into several groups and promote interaction and writing among them through activities such as group discussions, project collaborations, and achievement presentations, to jointly overcome learning difficulties.

4.5. Teaching process

1. Step 1: Question selection and background information provision (5 minutes)

Teachers pose a practical question: "Boys and girls, we have many regular activities every day, such as going to school, eating, sleeping, etc. How can we accurately describe these daily activities in English?" "Also, for the objective facts like the sun rising from the east, what tense should be used to express it?"

Provide students with a basic knowledge background of the simple present tense: briefly introduce the use of the simple present tense, which is used to describe frequent and habitual actions, objective facts, truths, and current states, and give examples: "I get up at 5:00 every day." (regular activities), and "The earth gods around the sun." (objective facts).

2. Step 2: Conceive (8 minutes)

Teachers guide students to think about the core question of "how to use the simple present tense to describe daily activities and objective facts", and encourage students to raise their own questions and ideas, such as "Do verb forms need to be changed when describing daily activities in different person?" and "Which temporal adverbs are often used in conjunction with the simple present tense?"

Organize students for group discussions to clarify the learning objectives of this lesson: to master the structure of the simple present tense, the rules for variation of third person singular verbs, and to be able to use this tense to solve the above problems. Each group selects a representative to record the discussion results and briefly shares them within the class.

3. Step 3: Design (9 minutes)

Teachers guide students to design teaching plans based on project-based learning methods. Firstly, let students work in groups to create a knowledge network diagram of the simple present tense, sorting out the connections between knowledge points such as the definition, structure, temporal adverb, and verb change rules of this tense.

Each group designs a simulation question or questionnaire related to daily activities based on their learned knowledge, such as designing several sentences for other groups to judge whether to use the simple present tense and whether the verb form is correct. Teachers conduct inspections and provide guidance to ensure that the content designed by each group is closely aligned with teaching objectives, so as to be targeted and challenging.

4. Step 4: Implement (15 minutes)

Use experimental inquiry learning methods to organize students to participate in group practice activities. Each group chooses a topic that interests them, such as "My Weekend Life", "My Friends' Hobbies", "The Laws of Nature", etc., and uses the simple present tense to express and practice it.

During the practical process, students can determine the content and methods of expression through group discussions, such as writing dialogues, short articles, situational drama performances, making PPTs, etc. Teachers inspect tours between groups and provide timely guidance and assistance. The use of simple present tense structures and third person singular forms of verbs by students should be emphasized.

After completing the practical tasks, each group shall evaluate each other within the group, point out the problems in tense usage, and propose improvement suggestions.

5. Step 5: Operate (8 minutes)

Teachers shall use PPT to assist in teaching, combine theoretical knowledge of the simple present tense with students' practical outcomes, sort out and summarize the key content of this lesson, and emphasize how to use this tense in different contexts.

Assignment: Let students write a short essay on the topic of "My Family's Daily Life" with the simple present tense, including no less than 5 different verbs, and correctly using the third person singular form. The group shall collaborate to write a simple situational drama script, with the plot revolving around campus life. The dialogue between the characters in the drama should use the simple present tense.

6. Step 6: Outcome display and feedback evaluation (using school English corner/after-school tutoring time)

Organize students to present their outcomes (short articles/situational drama performances).

Teachers should design reasonable evaluation indicators and methods, specifically from the following aspects:

① Content fit: Evaluate whether the learning outcomes are closely aligned with the core theme, ensuring that the content is focused and targeted.

② Language accuracy and fluency of expression: Focus on the use of basic language elements, such as the correctness of the simple present tense, as well as the accuracy of details such as structure, verb form and temporal adverbials. And examine whether the language is organized naturally and coherently, and whether it can convey information clearly.

③ Team collaboration: Evaluate whether the cooperation among group members is tacit and whether the division of labor is reasonable.

④ Innovative expression: Encourage students to break through conventions and evaluate whether the outcomes have uniqueness in content, form, or approach.

During the implementation of evaluation, teachers should pay attention to immediate feedback and summative evaluation. After students complete their presentations or performances, timely feedback should be given it is necessary to clearly affirm their strengths and progress to enhance their learning confidence; but also, specifically, point out the existing problems and shortcomings to help them accurately identify their weakness. On this basis, by evaluating common problems, students can be guided to optimize their learning strategies and encouraged to continuously improve through targeted exercises after class, realizing the improvement of their learning outcomes.

4.6. Blackboard design

Simple Present Tense

Definition: Describing regular and habitual actions, objective facts, truths, and current states.

Common temporal adverbs: always, usually, often, sometimes, never, every day.....

Basic structure: 1. Affirmative sentence (subject+base form of a verb/third person singular form+others)

2. Negative sentences (subject+don't/doesn't+base form of a verb+others)

3. General interrogative sentences (Do/Does+subject+base form of a verb+others?)

4. Special interrogative sentences (special interrogative words+Do/Does+subject+base form of a verb+others?)

The rules for the variation of third person singular verbs:

1. Generally, add 's': e.g. play-plays

2. Add 'es' to words ending in s, x, sh, ch, o: e.g. watch-watches

3. For words ending in a consonant y, replace y with 'ies': e.g. study-studies

4.7. Teaching reflection

This class hour adopts the PBL-CDIO model for teaching, and by designing real problems and project tasks, it successfully stimulates students' learning interest and exploration desire and significantly improves classroom participation. In the practical step, students actively cooperate and apply their learned knowledge to solve practical problems, effectively improving their language proficiency and teamwork skills. In the application of PBL-CDIO model, the design of project-based tasks effectively promotes students' initiative and creativity in learning; The application of situational teaching method has also achieved good results, which guides students to perceive and use the simple present tense by creating real contexts and helps them to more intuitively understand the meaning and usage of tenses; The creation of knowledge network diagrams and the design of simulated problems further enhance students' logical thinking and self-learning abilities. At the same time, issues that need to be improved were also identified during the teaching process: firstly, students still have difficulties in mastering the rules of third person singular verb changes, especially for some special verbs. In response to this issue, we will strengthen the specialized exercises and consolidation of this part in our future teaching. Through specialized training, subsequent exercise classes, review classes, and summary classes, we will help students solidly grasp the relevant content. The second issue is that some groups were unable to fully display their outcomes due to inadequate scheduling during the presentation phase. In subsequent teaching, time allocation will be optimized to ensure that each group can fully present their learning outcomes.

5. Conclusion and Prospect

This paper introduces the PBL-CDIO model into English present tense teaching, and through theoretical analysis and practical design, confirms the effectiveness of this model in solving the difficulties of traditional grammar teaching. It not only breaks through the limitations of mechanical explanation and passive acceptance in traditional grammar teaching but also drives students to actively explore real problems and project tasks; While consolidating grammar knowledge, it effectively enhances students' comprehensive abilities in language use, teamwork, and logical thinking, and expands the practical and interactive path of grammar teaching through situational creation and practical operation. In the future, the application scope of this model can be further expanded to other grammar points to construct a teaching framework that covers the entire English grammar system; At the same time, we can expand the research sample and scenarios, conduct practice across different stages and English proficiency groups, and explore the application of blended learning scenarios online and offline; In addition, it is necessary to improve the evaluation and feedback mechanism, establish a more scientific and comprehensive evaluation system, and integrate interdisciplinary elements to expand students' thinking horizons. All of these are the directions that need to be further explored at this stage.

References

[1] https://www.baidu.com/link?url=PhCNwwlQmD0dbuJTjN8NTDX5kveToco8TkTSHSf8pAC2MBB64-jDfhEQQWOzCVqHsQC4SQ-aaUf3BiF-0K1lUKSKnEih9V3ej7fuu8QBYlO&wd=&eqid=82d3349b00668ac3000000046883a580.

[2] Zhou Xuan, Prototype Category Theory and English Tense Teaching-Taking Simple Present Tense as an Example [J]. Journal of Jining University, 2010,31(03):82-86.

[3] Wu Suozhu, Yi Li, Yu Zhihui, et al. Reform and Practice of "Food Chemistry" Teaching with International Perspective and PBL/CDIO Concept [J]. Agricultural Product Processing, 2022, (08):96-98+101.DOI: 10.16693/j.cnki.1671-9646(X).2022.04.053.

[4] Wu Suozhu, Yi Li, Yu Zhihui, et al. Reform and Practice of "Food Chemistry" Teaching with International Perspective and PBL/CDIO Concept [J]. Agricultural Product Processing, 2022, (08):96-98+101.DOI: 10.16693/j.cnki.1671-9646(X).2022.04.053.

[5] Han Huanhuan. A New Path to Breakthrough the Difficulties in English Grammar Teaching: A Review of *English Cognitive* Teaching *Grammar: Theory and Application* [J]. Journal of the Chinese Society of Education, 2025, (05):116.

[6] Niu Bei, Ye Peng, Li Ziqi, et al. Analysis and Research on the Basic Thinking Patterns of Students in PBL Teaching Based on Bloom Tennet Questioning Mode [J]. Technology Wind, 2025, (20): 26-28.DOI: 10.19392/j.cnki.1671-7341.202520009.

[7] Wei Shuai, Mao Weijie, Liu Shucheng, et al. Exploration of PBL Teaching Model in Food Technology Curriculum [J]. Guangdong Chemical Industry, 2024,51(16):225-226+218.

[8] Yang Xin. Research on PBL Teaching Model in English Debate Class- Problem-Thinking-Exploration Path [J]. Foreign Language Research, 2021, (03): 70-74.DOI: 10.16263/j.cnki.23-1071/h.2021.03.012.

[9] Yang Xin. Research on PBL Teaching Model in English Debate Class- Problem-Thinking-Exploration Path [J]. Foreign Language Research, 2021, (03): 70-74.DOI: 10.16263/j.cnki.23-1071/h.2021.03.012.

[10] Yue Ruiling, Research on the Application of PBL in College English Reading Teaching [J]. Contemporary Education Science, 2014, (13):63-64.

[11] Hu Xingzhi, Ding Feiji. Engineering Systems, Engineering Education, and CDIO Curriculum Reform [J]. Modern Educational Science, 2015, (03): 77-83.DOI: 10.13980/j.cnki.xdjykx.gjyj.2015.03.017.

[12] Li Liangyan. Research on the Academic English Blended Teaching Model Based on CDIO Education Concept under the Background of New Engineering [J/OL]. Heilongjiang Education (Theory and Practice), 1-3[2025-08-01]. https://link.cnki.net/urlid/23.1064.G4.20250508.1525.002.

[13] Zhou Xien, Deng Xiaoyan, Mao Caiyun. Teaching Reform of Automotive Comprehensive Innovation Practice Curriculum Based on PDCA and CDIO [J]. Laboratory Research and Exploration, 2025,44(04):184-187+218.DOI: 10.19927/j.cnki.syyt.2025.04.036.

[14] Duan Guoyan, Bian Ge, Yang Xingxing. Innovative Mechanical Design for College Students Based on CDIO[J]. Science and Technology Vision, 2024,14(34):20-22.

[15] Duan Guoyan, Bian Ge, Yang Xingxing. Innovative Mechanical Design for College Students Based on CDIO[J]. Science and Technology Vision, 2024,14(34):20-22.

[16] Zhu Mingwei, Li Hongmei, Huang Zhenwei, et al. Exploration of Comprehensive Experimental Model for Applied Functional Materials Based on PBL-CDIO Concept [J]. Chemical Engineering and Equipment, 2024, (01): 152-154.DOI: 10.19566/j.cnki.cn35-1285/tq.2024.01.045.

[17] Zhao Zifang, Feng Jingteng, Huang Weifeng, et al. Exploration and Practice of "PBL+CDIO" Teaching Model in Cultivating Innovative Thinking of Chemical Engineering Students [J]. Jiangxi Chemical Industry, 2025,41(03): 108-111.DOI: 10.14127/j.cnki.jiangxihuagong.2025.03.019.

[18] Wang Yujie. Application of Second Language Acquisition Theory in College English Teaching: A Review of "Contemporary College English Teaching and Second Language Acquisition Research" [J]. Research on Educational Development, 2025,45(01): 85.DOI: 10.14121/j.cnki.1008-3855.2025.01.004.

[19] Li Daren. English Tense Teaching in Primary and Secondary Schools from the Perspective of Cognitive Linguistics[J]. Journal of Dalian University of Education, 2024,40(03):27-29.