

Exploring Engagement and Efficacy in Secondary English Education in China: A Problem-Based Social Constructivism Approach

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Abstract—The English learning environment, both online and offline, can be improved through the implementation of effective pedagogical approaches. In response to secondary education needs, it is critical to establish comparable curriculum paradigms that address the knowledge acquisition gap and psychometric variation. This study aims to promote student engagement and self-efficacy in English education by implementing a problem-based learning (PBL) approach integrated with social constructivism (SC). A t-test and a correlation test were used in a single-group quasi-experiment with 45 participants. The results of paired samples t-tests show a significant difference in engagement ($M = 4.78$, $SD = 2.95$, $p = .001$, $p < .05$) and self-efficacy ($M = 6.49$, $SD = 16.59$, $p = .01$). Admittedly, both cognitive engagement and social engagement enhance grammatical and textual competence efficacy dramatically, leading to a spectacular improvement. After controlling for the pre-test, a correlation between engagement and efficacy remains significant ($r(43) = -0.40$, $p = .01$). In conclusion, the combination of PBL with SC education has demonstrated remarkable effectiveness in facilitating English language learning, meeting the needs of secondary education teenagers, whether in a physical classroom or engaging through online platforms.

Index Terms—problem-based learning, social constructivism, secondary students, engagement, self-efficacy

I. INTRODUCTION

Online learning, remote classrooms, and virtual collaboration tools have become the new norm, enabling uninterrupted learning experiences while prioritizing the safety and well-being of students and educators (Yan et al., 2021; Zuo et al., 2021). Nevertheless, the integration of technology into education has also demonstrated its potential benefits. It has facilitated personalized learning experiences, expanded access to educational resources, and empowered educators to reach students in remote and underserved areas. To explore the combination of classroom and online learning, the traditional approach is no longer suitable, and the roles of instructors and students must evolve (Chien & Hwang, 2022). Adolescents are educated and inspired through the implementation of constructive, impartial investigation teaching techniques, with a focus on shifting from teacher-centered to student-centered instruction and from passive to active training.

The Chinese Ministry of Education has been focusing on secondary English education for several decades to enhance the instructional strategies of the English curriculum (Chinese Ministry of Education, 2001). English instruction that prioritizes quality should improve learners' language usability, cross-cultural awareness, communication skills, and their capacity for autonomous study. However, many pupils often lack exposure to English in a setting where it is a desired output. Researchers contend that question training is a useful strategy that can be applied to motivate teenagers and enable them to incorporate their current abilities and competencies in a relevant setting, which consequently encourages scientific learning acquisition elsewhere in the epidemic era (Granle Jr., 2022). This approach also helps cultivate participants' autonomous learning abilities (Batubara & Mahardhika, 2020).

In high school, new teaching methods are needed as part of China's epidemic response policy. The combination of online and offline teaching has led to low participation and reduced learning efficiency. Addressing this issue can help overcome the traditional problem of students losing confidence in their learning abilities. When classrooms are problem-centered and student-focused, learners become more willing to engage, answer questions during class, stay active, and are motivated to learn English (Lee, 2022). On the other hand, when the acquisition or construction of knowledge relies on the direct correction of numerous erroneous English sentences by trainers, students tend to deny their awareness in a strict learning environment (Kristianto & Gandajaya, 2022).

Problem-Based Learning (PBL) refers to Yew and Goh (2016). Participants are facilitated to engage in the class because it is student-centered, with close attention paid to their input on everything from comprehension to application. This strategy places emphasis on the implications of how to suggest and encourage individuals' practice and understanding through addressing problems in real circumstances, inspiring them to actively study, discover, and question. Social constructivism (SC) suggests that learning cannot be a separate process of receiving knowledge; all processes need to be interactive (Amineh & Asl, 2015). Participants are likely to become increasingly involved as they experience numerous mentors and dynamics, making engagement easier.

Therefore, the proposal is to intervene and introduce PBL integrated with SC to Chinese high schools as an effective strategy for preparing teenagers to face the post-epidemic era. Based on this context, the research questions for this project are as follows:

RQ1: Does respondents' engagement significantly differ before and after implementing PBL integrated with SC in English language acquisition?

RQ2: Does respondents' self-efficacy significantly differ before and after implementing PBL integrated with SC in English language acquisition?

RQ3: Is there a significant correlation between respondents' engagement and self-efficacy after implementing PBL integrated with SC in English language acquisition?

II. LITERATURE REVIEW

A. *Problem-Based Learning Approach and Social Constructivism*

Problem-based learning can capture pupils' attention and enhance their affinity for learning, whether in offline or online settings. Teenagers collaborate in groups by formulating situational questions, organizing task distribution, discussing problems, organizing materials, and gradually encouraging trainees to actively participate in this process to boost their sense of self-efficacy. While the PBL method has been widely employed in other sectors, it remains in the research stage in English teaching (Lonergan et al., 2022). Learners evaluate valuable information, establish, and refine the relevant information in their minds. This iterative process involves problem-oriented search evaluation until enough information is acquired to formulate a hypothesis or possible hypotheses for making diagnostic and management decisions. Ge et al. (2022) emphasize the importance of using student-centered rather than teacher-centered techniques in the realm of English teaching and argue that PBL is one such technique, placing greater emphasis on students in the classroom. This method equips learners with the tools they need to engage in further research and put theories and exercises into practice, including utilizing relevant knowledge and techniques to discover optimal solutions to given problems (Kristianto & Gandajaya, 2022).

Researchers recommend the combination of student-centered teaching practices and curricula (Chien & Hwang, 2022) for effectively implementing PBL. To enhance teenagers' grammatical structures and proficiency in the English language, English instructors must possess the ability to identify common traits, such as instructors incorporating high school senior exchanges into the learning process. This approach, as opposed to the traditional one-way flow of information from educator to learner, offers adaptability, allows for alterations, and includes hyperlinks, laying the foundation for connections with other data structures (Amineh & Asl, 2015). Teenagers actively engage in curriculum integration within a social constructivist setting, fostering communication and discovery with instructors and interaction with classmates.

According to constructivism, learning is a meaningful dialogue that occurs when the learner constructs a unique underlying structure of knowledge and a distinct perception of their own participation (Muna Aljohani, 2017). Teenagers' engagement and self-efficacy are influenced by this constructivist approach. Constructivism suggests that educators should tailor their teaching to specific studies, working towards well-defined objectives and research questions that are challenging yet achievable with scaffolding assistance. The PBL model creates a zone of proximal development, where pupils collaborate in a suitable learning environment, with instructors providing support akin to scaffolding (Margolis, 2020).

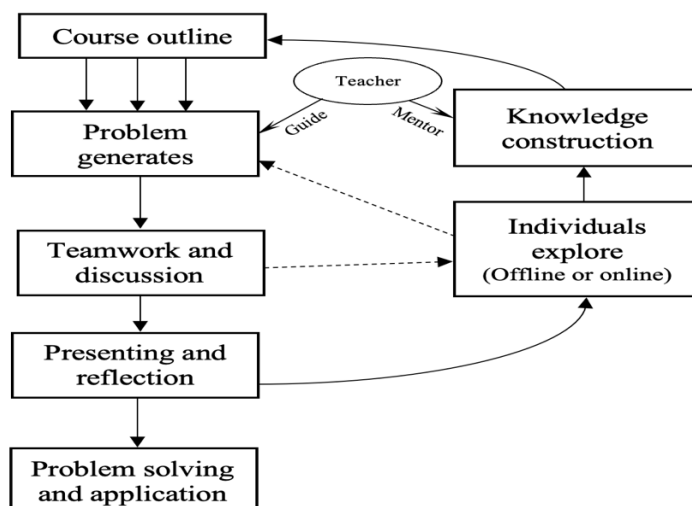


Figure 1. The Practice Framework of PBL Method Integrated Social Constructivism

B. Relations Among PBL, SC, and Students' Engagement

Engagement is defined as learners' level of responsibility, awareness, and involvement in the learning process, as well as their relevance to the learning context, enabling intellectual progress and, consequently, energizing academic accomplishment (Fredricks et al., 2016). Active learners, rather than passive observers in a traditional EFL study, take ownership of the learning and teaching processes, incorporating their interests (Kristianto & Gandajaya, 2022; Sousa & Costa, 2022). Behavioral engagement involves active participation in English lessons and diligent effort. Emotional engagement focuses on how individuals react positively or negatively to people and things on campus. Cognitive engagement pertains to being strategic and willing to invest the effort necessary to understand complex ideas or master difficult skills. Social engagement takes various forms in classroom tasks, including the quality of participation and social interaction with classmates.

Lee (2022) provides insights into using PBL in EFL lessons to enhance participants' dedication and promote meaningful engagement within a scientific framework. Given the teaching methods in South Korea, the PBL approach suggests that students can be encouraged to actively integrate into the classroom by coordinating their thinking, acquiring knowledge, and collaborating effectively. As demonstrated by published outcomes from a survey administered to 76 participants as part of an internet-based assessment, adopting the PBL technique has proven highly effective in enhancing learner commitment (Sousa & Costa, 2022).

C. Relations Among PBL, SC, and Students' Self-Efficacy

According to Sedighi et al. (2004), self-efficacy refers to learners' confidence in their skills. This belief is expected to empower them to become more active, have greater trust in dialogue, engage in research, and acquire new knowledge while learning. Textual competence, on the other hand, involves an awareness of the regularities and conventions of texts, genres, and text types, allowing individuals to use language effectively for interpreting, encoding, and decoding words and sentences as part of their grammatical competence.

In the context of group problem-seeking learning, secondary respondents gain self-inspiration, whether through external networks or peer experiences. In the study of Lonergan et al. (2022), participants, aged 13-14 and in Grade 8, attended ten mainstream Science classes in suburban Sydney, Australia. They explored spontaneously through PBL and shared their experiences and conclusions. In the classroom atmosphere of social constructivism, teenagers are no longer passive learners. Instead, self-efficacy is linked to the psychological assumption that promotes teenagers' success in tasks due to their confidence (Granle Jr., 2022).

Through increased communication and interaction, students' participation intensifies, and their self-affirmation also strengthens. Positive behavior from teaching to learning can significantly influence an individual's self-viability, and vice versa. A total of 48 Grade 4 trainees were recruited from an elementary school in Taoyuan City, Taiwan. They compared their abilities to those of their peers in the classroom environment (Chen et al., 2022).

D. Interaction Between Engagement and Efficacy

Self-efficacy plays a vital role in promoting pupils' willingness to engage in in-class activities. Participants with higher self-efficacy levels frequently receive positive feedback and maintain positive relationships and engagement. Lin (2021) investigated the relationship and correlation between engagement and self-efficacy in science learning. Teenagers with strong self-efficacy who master good scientific communication skills can enhance their social interaction and engagement in science. Moreover, learners who develop higher-order thinking skills tend to be more engaged in learning activities. The literature that the researcher reviewed also provides substantial support for the

association or relationship between engagement and self-efficacy. For example, Xu et al. (2022) demonstrated that learners also need to understand the value of activities during the learning process, which helps improve pupils' emotional engagement. Musenze et al. (2022) also indicated that respondents with higher self-efficacy levels in completing science assignments exhibited greater cognitive and emotional engagement in science learning, as well as increased behavioral and agentic engagement.

III. METHODOLOGY

A. Research Design

A single-group quasi-experimental research design is applied in this investigation to explore the effectiveness of PBL-integrated SC on engagement and self-efficacy among senior secondary teenagers. This approach is widely recognized as a rigorous method for documenting intervention effectiveness (Purswell & Ray, 2014). The conventional method involves selecting one high school in AnShun, chosen for its background and institutional support, with a population of 1200 pupils. Simple random sampling is used to select one intact class from among the 24 groups of grade 11 students. To protect the rights and interests of the participants, data collection is conducted anonymously.

After obtaining consent from the local education department and the high school administration, respondents will receive the 8-week PBL intervention. Pre-test measurements of engagement and efficacy will be distributed during the 1st week, and post-test data will be collected during the 8th week through the online platform named 'WenJuanXing'. In this study, the first instrument is the engagement questionnaire, which is administered in 'math and science' by Fredricks et al. (2016). It consists of 38 items on behavior (11), emotions (11), cognition (9), and social aspects (7) of engagement. The researcher has adapted it to the English curriculum. Items use a 5-point Likert scale, with five indicating 'strongly agree' and one indicating 'strongly disagree.' The second instrument is a self-efficacy questionnaire consisting of 40 items with 2 domains: grammatical competence and textual competence. This questionnaire is directly adopted from Sedighi et al. (2004) and adapted to a 5-point Likert scale.

Figure 1 illustrates the intervention procedure. Initially, the instructor introduces the course outline and guides all learners to identify problems based on the Grade 11 high school English curriculum standard syllabus. Furthermore, 5-7 teenagers form small groups to gather useful information before creating cohesion. They engage in individual and teamwork activities, both offline and online, from hypothesis development to scheming and discussion. Moreover, they not only present and share their insights but also provide and receive timely feedback in the social constructivist atmosphere facilitated through QQ group chat software and the classroom setting, synchronously. This approach ultimately expands and extends the scope of English courses, ensuring a systematic acquisition of knowledge and laying the foundation for exploring new insights.

B. Validation and Reliability

The validation of two instruments is assessed by six experienced high school English experts. As Polit and Beck (2006) suggest, the Content Validity Index (CVI) is generally employed to evaluate content validity for multi-item scales. Additionally, the scale level (S-CVI) is calculated by summing these indices and dividing by the number of items. The S-CVI for engagement measurement is 0.93, exceeding the threshold of 0.90. Similarly, the S-CVI for self-efficacy is 1.0, indicating high validation (Polit & Beck, 2006).

Reliability is monitored through a pilot study involving 30 teenagers who did not participate in this research, from school X. Cronbach's alpha values are computed using SPSS software version 26 and are found to be 0.93 for assessments of teenagers' self-efficacy and 0.86 for their engagement with the material. All test results fall within the range of 0.70 to 0.95, indicating good reliability and high consistency (Yusup, 2018).

IV. RESULTS

A. Demographic Information

Students were selected from one high school in Anshun City, Guizhou Province, China, using random sampling techniques. An intact class from a pool of 24 was chosen to form the experimental group. After initial descriptive statistics cleaning, focusing on monitoring missing values, 45 valid data points were obtained, as shown in Table 1.

In terms of gender statistics, there were 15 female students and 30 male students, making up 67 percent and 33 percent of the total, respectively. Regarding age, there were 19 respondents aged 16, 18 respondents aged 17, and 8 respondents aged 18, representing 42 percent, 40 percent, and 18 percent of the total, respectively.

TABLE 1
DEMOGRAPHIC INFORMATION

Demographics	Detail	Number	Percent
Gender	Male	30	67
	Female	15	33
Age	16 years old	19	42
	17 years old	18	40
	18 years old	8	18

B. Description Analysis of the Respondent Results

Admittedly, after implementing the PBL teaching technique, the resulting outcomes reveal changes in the engagement and self-efficacy of trainees toward the English curriculum. Table 2 displays the mean pre-test score of 129.31 for 45 pupils' engagement, with a standard deviation of 10.15. The post-test scores show an increase ($M = 134.09$, $SD = 8.93$). Furthermore, there was an increase in behavioral engagement from 38.71 to 39.38, emotional engagement from 36.89 to 37.93, cognitive engagement from 30.53 to 32.00, and social engagement from 23.09 to 24.78.

Conversely, teenagers' self-efficacy in English learning was measured as ($M = 129.42$, $SD = 16.02$) before the intervention and ($M = 135.91$, $SD = 9.53$) after the intervention. Notably, there was a positive enhancement in the mean scores for engagement in specific sub-dimensions, with grammatical competence increasing to 74.20 and textual competence reaching 61.71.

TABLE 2
THE DESCRIPTIVE DATA ABOUT ENGAGEMENT AND EFFICACY OF RESPONDENTS

Category	Items	Pre-test				Post-test				
		Min	Max	M	SD	Min	Max	M	SD	
Engagement	38	107	145	129.31	10.15	114.00	158.00	134.09	8.93	
of	Behavioral	11	28	44	38.71	4.64	33.00	55.00	39.38	5.53
	Emotional	11	33	44	36.98	4.21	33.00	48.00	37.93	4.85
	Cognitive	9	25	36	30.53	3.28	22.00	36.00	32.00	3.52
	Social	7	18	28	23.09	2.60	21.00	28.00	24.78	2.76
Efficacy	40	86	160	129.42	16.02	116.00	160.00	135.91	9.53	
of	Grammatical Competence	22	50	88	71.42	8.70	63.00	88.00	74.20	6.22
	Textual Competence	18	36	72	58.00	9.27	53.00	74.00	61.71	5.34

C. Findings of Students' Engagement

The pupils' engagement normality test reveals that the pre-test skewness score is -0.29, and the kurtosis is -0.98, both of which fall within the acceptable range of -1.0 to 1.0, confirming the normal distribution of this data. In contrast, the post-test engagement shows skewness and kurtosis values of 0.17 and 0.11, respectively. The submissions for behavioral, emotional, cognitive, and social engagement in the pre-test are (-0.23, -1.21), (0.59, -1.12), (0.15, -1.40), and (0.56, -0.82), respectively, all within the range of ± 2.0 , indicating a normal distribution. Similarly, the post-test values for these components are (0.86, 0.45), (0.39, -1.27), (-0.66, -0.18), and (-0.20, -1.51), respectively, demonstrating normal distribution as well. Furthermore, the Q-Q plot patterns for the pre-test and post-test scores of total and subdivision engagements show a linear pattern.

Paired-sample t-tests were conducted to compare the pupils' engagement scores before and after the intervention. The results indicate a significant positive mean difference ($M = 4.78$, $SD = 2.95$) in engagement, with $t(44) = 10.85$, $p = 0.001$ ($p < 0.05$), following the implementation of PBL integrated with the SC technique. Further investigation into the cognitive and social components also reveals positive effects ($M = 1.47$, $p = 0.02$) and ($M = 1.69$, $p = 0.001$), respectively, although there was only a slight increase in behavioral and emotional engagement. In summary, participants' engagement showed a significant positive increase through the use of PBL in the English curriculum.

TABLE 3
PAIR SAMPLE T-TEST IN STUDENTS' ENGAGEMENT

Post - Pre	Paired Differences		t	df	Sig. (2-tailed)	
	M	SD				
Engagement	4.78	2.95	10.85	44	0.00	
of	Behavioral	0.67	4.55	0.98	44	0.33
	Emotional	0.96	5.21	1.23	44	0.23
	Cognitive	1.47	3.98	2.47	44	0.02
	Social	1.69	3.26	3.48	44	0.00

D. Findings of Students' Self-Efficacy

According to the inferential statistics of the scores, the skewness and kurtosis values of the pre-test scores in self-efficacy are -0.23 and 0.20, respectively, while those for the post-test are 0.23 and -0.14. Being within the range of ± 1.0 indicates that these data are normally distributed. The subsection on grammatical competence and textual competence shows skewness and kurtosis results for the pre-test as follows: (0.27, -0.02) and (-0.67, 0.02) individually, and for the post-test: (0.43, -0.43) and (0.29, -0.74) separately. Furthermore, the Q-Q plots for both the pre-test and post-test of self-efficacy exhibit a linear pattern, as do the subdimensions.

When comparing the pupils' self-efficacy scores before and after the experiment, the results reveal a significant difference ($M = 6.49$, $SD = 16.59$), $t(44) = -2.78$, $p = 0.01$ ($p < 0.05$), in teenagers' English project influenced by PBL innovation. Additionally, not only grammatical competence but also textual competence shows significant

improvements at the levels of ($M = 2.78, p = 0.04$) and ($M = 3.71, p = 0.02$) respectively. Thus, when students are engaged in a student-centered classroom, teenagers' efficacy in learning English is strengthened after the intervention.

TABLE 4
PAIR SAMPLE T-TEST IN STUDENTS' SELF-EFFICACY

Post - Pre		Paired Differences		<i>t</i>	<i>df</i>	<i>Sig. (2-tailed)</i>
		<i>M</i>	<i>SD</i>			
Efficacy		6.49	16.59	2.62	44	0.01
<i>of</i>	<i>Grammatical Competence</i>	2.78	9.01	2.07	44	0.04
	<i>Textual Competence</i>	3.71	10.61	2.35	44	0.02

E. Correlations of Students' Engagement and Self-Efficacy

The correlation test shows that there is a significant relationship between teenagers' engagement and self-efficacy after using the PBL in the experimental group (Table 5). Meanwhile, there is no significant correlation in the pre-test ($p = 0.13, p > 0.05$). Pupils' efficacy scores are consistently associated with engagement scores toward the new instructional strategy, $r(41) = 0.47, p = 0.002 (p < 0.05)$. Increased interaction in the classroom is based on the social constructivism associated with PBL, and learners' self-efficacy is influenced by those engaged in learning English.

Through the Smart-PLS bootstrap program, the data for teenagers' engagement and efficacy after the problem-based teaching method, as well as their second-dimension structural model, are shown in Figure 2. It can be observed that behavioral tendency ($\beta = 0.62, p < 0.001$) has the strongest influence on overall engagement, while trainees' grammatical ($\beta = 0.85$) and textual ($\beta = 0.79$) competitiveness scores exceed expectations in terms of efficacy.

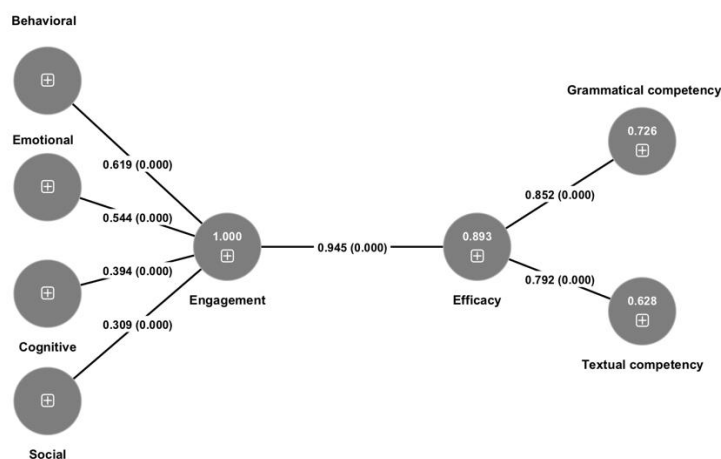


Figure 2. The Engagement and Efficacy Construct Model

V. DISCUSSION

A. Engagement vs PBL and SC Instruction

Pupils' engagement in English learning significantly differs between PBL integrated with SC settings and conventional instruction, particularly in the domains of cognitive and social engagement. This outcome aligns with Lee (2022), who suggests that a more positive psychological attitude stimulates pupils to acquire knowledge online/offline and actively participate in discussions by establishing a comfortable and relaxed educational atmosphere. Teaching assistants effectively support participants by facilitating seamless integration into the course. Within an interactive learning environment, teenagers have more room to showcase their strengths and experience less pressure related to their training. Educators transition into the roles of guides and mentors, while learners enjoy flexible and exciting activities. Teenagers can experience the joy of learning English, as advocated by Sousa and Costa (2022). Collaboration and connectivity among their peers make teenagers more likely to feel successful.

In the cognitive subsection, participation in question-based and collaborative learning settings leads to a significant increase in awareness among individuals with average grades or weak academic backgrounds, both in terms of their own potential and that of their peers (Batubara & Mahardhika, 2020). Furthermore, social engagement experiences a dramatic boost through collective interaction, both online and offline. The utilization of group activities also enhances the competitive consciousness among peers, as they assist trainees in feeling more confident about their self-perceptions by offering support and collaborating when facing similar challenges. Online and offline classrooms foster greater user engagement when there is a clear division of responsibility and cooperation, allowing teenagers to construct their own understanding of textbook material (Chien & Hwang, 2022). Intelligence thrives through social interaction, especially in

the context of language studies. These interactions within individuals and their networks, along with their discussions of various components, deepen the impact of language acquisition.

B. Efficacy vs PBL and SC Instruction

Self-efficacy is enhanced when social constructivism interacts with the PBL pedagogy, resulting in greater grammatical competence and coherence compared to before. Pupils can intensify their psychological awareness, in line with Chen et al. (2022), through vicarious experiences gained by observing their peers. This is a key factor contributing to the improvement of students' self-efficacy. The exchange of information through teamwork, as well as the encouragement and compliments from peers and social members, further reinforces self-efficacy. In both online and offline social communication settings, individuals can leverage their respective strengths through collective interaction. Additionally, as emphasized by Lonergan et al. (2022), each learner plays a role distinct from the cognitive tasks or abilities they might acquire from their peers, making it easier for students to develop a positive self-concept. Learners become the focal point of the class, actively engaging in exploration and critical thinking.

Additionally, textual competence is reinforced through problem-solving skills and exploration of the English curriculum, as well as through continuous access to online and offline materials. Since each participant has a unique learning style, instructors embrace PBL instructional strategies, enabling learners to actively confirm their personal identity while working and to establish an educational mode that suits their pace (Lonergan et al., 2022). Admittedly, grammatical competence is enhanced because the same meaning is expressed by different people in an interactive setting. Customers create their own unique insights after acquiring knowledge through inspired questions, benefiting from the convenience and efficiency of network-based awareness construction (Granle Jr., 2022). Teenagers who receive high marks take on the role of experts in solving issues during group discussions, which they find satisfying.

C. Correlation Between Engagement & Efficacy After the Instruction

Engagement becomes apparent in learners' self-efficacy following the introduction of the innovation, even though it remains low. These results align with those of Xu et al. (2022), who also indicate a significant correlation between self-efficacy and engagement in their Pearson correlation analysis. Learners' engagement can be enhanced through collaborative techniques and activities that boost their self-efficacy. In such scenarios, teenagers are exposed to resources from various sources, be it social interactions or internet mining. Students with higher self-efficacy tend to receive frequent appraisals and maintain positive relationships and engagement, thanks to the refinement of the constructivist approach in the PBL model of instruction. Additionally, these findings are in line with those of Musenze et al. (2022), who also found a significant positive correlation between self-efficacy and engagement. This underscores the importance of helping teenagers understand the value of activities during the learning process, which, in turn, enhances their emotional engagement with the material.

VI. CONCLUSION

The English learning project has detailed, argued, and analyzed dependent variables related to pupils' engagement and self-efficacy among Grade 11 high school teenagers in the Chinese region of Guizhou province. Furthermore, through quantitative experimental research, this study confirms the effectiveness of new instructional strategies within the post-epidemic era of English education. The Project-Based Learning (PBL) technique integrated with Self-Concept (SC) can properly assist and benefit pupils' comprehension of the English language, especially in response to China's policy adjustments due to COVID-19. Additionally, the PBL innovation is applicable to Chinese high schools, as it transforms learners from passive participants in conventional English learning approaches to active initiators. This approach fulfills the expectations of students at all proficiency levels, including top students, intermediate learners, and those with limited proficiency, fostering engagement and reducing anxiety in teenagers.

The researcher intends to provide suggestions for future studies comparing the use of PBL and SC in other academic domains. Since different regions exhibit distinct characteristics and socioeconomic backgrounds, increasing the sample sizes in larger districts may prove more useful in representing all demographic types. Alternatively, connecting different parts of schools through the internet, such as using a learning management system, can offer a fresh perspective on applying PBL instruction. Further investigation into specific relationships between the use of PBL, engagement, and efficacy, utilizing both quantitative and qualitative research approaches, can expand the research field.

A. Significant and Limitation of This Study

This research transforms the outdated teaching methods of the past by combining problem-based learning with constructivism, placing learners at the center of the classroom. Through the application and guidance of practical classroom pedagogy, trainers can engage trainees in acquiring English knowledge and enhance teenagers' learning self-efficacy. Additionally, it offers a strategic perspective on the English curriculum in Chinese high schools, even amidst chaotic and collaborative course conditions.

The research sample is limited to only 45 intact members, and the study is conducted in a single district in China. Due to these limitations, the results cannot be generalized to the millions of secondary school teenagers in China unless

they share the same cultural context. This limitation is particularly significant given the prevalence of conventional teaching strategies and fixed-class instruction in China.

B. Pedagogical Implications

Nowadays, pupils are becoming increasingly sophisticated in digital experiences and personalized insights, especially in the Covid-19 pandemic post-era. Secondary teenagers require a more comprehensive educational pedagogy to activate their engagement, and trainers need to focus on attracting and interacting with them rather than strict supervision. Instructors claim to be aware of the importance of guidance and care in facilitating knowledge acquisition and problem-solving skills mastering, as awareness is fostered through cooperative teaching and learning among participants. Additionally, these study outcomes provide Chinese educators with implications aligned with current circumstances. In the classroom, instructors' responsibilities include overseeing the teaching process and serving as facilitators, researchers, and observers while pupils acquire new skills. School administrators should provide training for instructors and organize communication meetings to foster dual learning, creating a seamless environment for both trainers and trainees to utilize innovation.

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