Malaysian Journal of Social Sciences and Humanities (MJSSH) (e-ISSN : 2504-8562)
2025, Volume 10, Issue 8, e003517
DOI: https://doi.org/10.47405/mjssh.v10i8.3517

RESEARCH ARTICLE

Design and Development of a GPBL College English Module for First-Year College Students in China

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KEYWORDS:
ADDIE model
College English
Gamification
Problem-based learning
Instructional design

CITATION:
Liang, Z., & Siti Zuraidah Md Osman. (2025). Design and Development of a GPBL College English Module for First-Year College Students in China. *Malaysian Journal of Social Sciences and Humanities (MJSSH), 10*(8), e003517. https://doi.org/10.47405/mjssh.v10i8.3517

ABSTRACT

This study presents the design and development of a gamification and problem-based Learning (GPBL) College English module for first-year students at Chengdu College of University of Electronic Science and Technology of China (UESTC). The research addressed documented challenges in Chinese College English education, including low achievement in reading and speaking skills, moderate interest levels, and insufficient self-efficacy among students. Using the ADDIE model as a systematic framework, the study developed an innovative module integrating gamification elements with problem-based learning approaches. The development process involved analyzing the needs of 400 first-year students and five English teachers, designing learning activities based on four textbook units, developing online and offline materials, implementing a pilot test with 40 students, and evaluating the module through expert reviews and participant feedback. Results from the pilot study showed improvements in speaking achievement, learning interest, and learning self-efficacy among experimental group participants. The GPBL College English module incorporated challenge-based scenarios, point systems, leaderboards, and collaborative problem-solving activities that transformed traditional teacher-centered instruction into engaging student-centered learning experiences. This research contributes a practical framework for addressing persistent challenges in College English education through systematic instructional design that balances theoretical rigor with practical implementation needs.

Contribution/Originality: This study contributes to the existing literature by providing the first systematic integration of gamification and problem-based learning within the ADDIE framework for College English education in China, demonstrating improvements in speaking achievement, learning interest, and learning self-efficacy among first-year students.

1. Introduction

College English education in China faces significant challenges that affect learning outcomes among first-year students. Recent data from the National College English Test Committee shows that less than 40% of students nationwide pass the CET-4 examination, with particularly low performance in reading and speaking skills (Xindongfang, 2025). Research has documented moderate interest levels among Chinese college students, with an average score of 3.29 out of 5 (Cai & Shang, 2021), and below-average self-efficacy levels, particularly among first-year students (Li et al., 2020).

Current teaching methods in Chinese College English classrooms often emphasize grammar, vocabulary, and reading comprehension at the expense of practical communication skills (Cao, 2019; Yang, 2022). The predominant teacher-centered approach positions students as passive recipients of knowledge rather than active participants in their learning process (Fang, 2022). This pedagogical approach has proven insufficient for developing the comprehensive language abilities required in today's globalized context.

Problem-based learning (PBL) and gamification have emerged as promising approaches to address these challenges. PBL is a student-centered pedagogy that encourages active engagement in solving real-world problems, promoting collaboration and self-directed learning (Rézio et al., 2022). Research has shown that PBL enhances language acquisition and student autonomy in English learning contexts (Luo et al., 2021). Gamification, defined as the integration of game design elements into non-game contexts (Deterding et al., 2011), has demonstrated effectiveness in increasing student engagement and motivation (Li, 2022; Yin, 2021).

The ADDIE model provides a systematic framework for instructional design through five phases: Analysis, Design, Development, Implementation, and Evaluation. This model has been successfully applied in various educational contexts, including College English instruction in China (Xu, 2021; Xia, 2019). The structured approach ensures that instructional materials are developed to meet learners' specific needs while maintaining alignment with curriculum objectives.

This study presents the design and development of a GPBL College English module specifically created for first-year students at Chengdu College of UESTC. The module integrates gamification elements with problem-based learning activities to create an engaging and effective learning environment that addresses the documented challenges in achievement, interest, and self-efficacy.

1.1. Research Objectives

This study aimed to achieve the following objectives:

i. To analyze the learning needs, preferences, and challenges of first-year College English students at Chengdu College of UESTC.
ii. To design a GPBL College English module that integrates gamification elements with problem-based learning approaches using the ADDIE model.
iii. To develop instructional materials and activities that enhance reading and speaking skills while fostering learning interest and self-efficacy.
iv. To evaluate the effectiveness and feasibility of the GPBL College English module through pilot testing and expert review.

2. Literature Review

College English education in China has undergone substantial changes influenced by social, political, and economic developments. The current College English curriculum aims to enhance students' practical English application skills, strengthen cross-cultural communication abilities, and foster autonomous learning habits (Committee of College Foreign Language Teaching Guidance, 2020). Despite these objectives, significant challenges persist in actual classroom implementation.

Research has identified several key issues affecting College English education. First, achievement levels remain concerningly low, particularly in productive skills. The College English Test data reveals that speaking and reading comprehension represent areas of particular weakness among Chinese college students (Gao, 2020). Second, student interest in English learning tends to be moderate, with many students viewing English courses as obligatory rather than engaging (Cai & Shang, 2021). Third, self-efficacy levels among first-year students average only 2.99 on a 5-point scale, indicating widespread confidence deficits that may hinder language acquisition (Li et al., 2020).

Current teaching methods contribute to these challenges. Current College English instruction typically follows a teacher-centered model emphasizing explicit grammar instruction, vocabulary memorization, and text analysis (Wang, 2024). While these methods provide systematic language knowledge, they often fail to develop practical communication abilities or sustain student engagement. The focus on examination preparation further reinforces passive learning approaches that prioritize accuracy over fluency.

PBL offers an alternative pedagogical approach that has shown promise in language education contexts. By organizing learning around authentic problems, PBL creates meaningful contexts for language use while developing critical thinking and collaboration skills (Kokotsaki et al., 2016). In College English settings, PBL has been found to enhance speaking abilities by providing authentic communication opportunities (Yang, 2023; Zhou, 2023) and improve reading skills through active text engagement (Zhang, 2022; Xie, 2022).

Gamification represents another innovative approach gaining attention in language education. By incorporating game elements such as points, badges, and leaderboards, gamification can transform routine learning activities into engaging challenges (Nah et al., 2014). Research in Chinese College English contexts has shown that gamification enhances motivation and participation, particularly when integrated with meaningful learning tasks (Fu et al., 2021; Shen, 2021).

The integration of gamification with PBL has been explored in various educational contexts, though limited research exists specifically examining their combined application in College English education. Studies in other fields suggest that combining these approaches can enhance problem-solving abilities while maintaining high engagement levels (Kladchuen & Srisomphan, 2021; Nova et al., 2020). This integration addresses both cognitive and affective dimensions of learning, potentially offering solutions to the multifaceted challenges facing College English education.

The ADDIE model has proven effective for systematic instructional design in College English contexts. Xu (2021) successfully applied ADDIE to develop blended learning

modules that improved student engagement. Similarly, Xia (2019) used the model to create flipped classroom approaches for Business English speaking courses. These applications demonstrate ADDIE's flexibility in accommodating innovative pedagogical approaches while maintaining systematic design principles.

Despite growing interest in innovative approaches, research examining the systematic development of integrated GPBL modules for College English remains limited. Most studies focus on either gamification or PBL independently, without exploring their synergistic potential through structured instructional design frameworks. This gap highlights the need for comprehensive development processes that can guide educators in creating effective integrated learning experiences.

3. Research Methods

This study employed a design and development research approach guided by the ADDIE model. The systematic framework ensured comprehensive attention to all aspects of instructional design while maintaining flexibility for iterative improvements.

The research context was Chengdu College of UESTC, a regional university in southwestern China with approximately 17,000 undergraduate students. For the 2024 academic year, the total undergraduate student population includes 2,787 first-year students. Among them, 32 first-year students are English majors who do not enroll in the required College English course for non-English majors. Excluding these students, the target population for this study consists of 2,755 first-year non-English major students, all of whom take College English as part of their curriculum. The institution follows national College English curriculum guidelines while serving students from diverse academic and linguistic backgrounds. First-year students at the college typically demonstrate moderate English proficiency levels and face common challenges in developing practical communication skills. Ethical approval was obtained from the university's ethics committee before data collection commenced. All participants provided informed consent and were assured of confidentiality and the right to withdraw at any time.

The ADDIE model structured the development process through five interconnected phases. In the Analysis phase, data was collected through questionnaires administered to 400 first-year students and semi-structured interviews with five College English teachers. The sample size of 400 students was determined using Krejcie and Morgan's (1970) sample size determination table for the target population of 2,755 first-year non-English major students, achieving a 95% confidence level with a 5% margin of error. A stratified random sampling method was employed to ensure representative distribution across different academic majors and English proficiency levels. The student population was stratified by academic college (Engineering, Business, Arts, and Sciences), with proportional allocation ensuring each stratum's representation matched its proportion in the total population. Within each stratum, simple random sampling was conducted using a random number generator to select participants. The student questionnaire explored learning preferences, perceived challenges, and attitudes toward current teaching methods. Teacher interviews examined instructional challenges, resource needs, and openness to pedagogical innovation. Document analysis reviewed the *21st Century College English II* textbook, institutional syllabi, and available learning resources.

The Design phase translated analysis findings into specific learning objectives and instructional strategies. Learning objectives were established for four textbook units focusing on Animals, Sports, Advertising, and Health. Each unit allocated 90 minutes of classroom time following a structured sequence of activities. The design incorporated gamification elements including point systems, leaderboards, and rewards within problem-based scenarios requiring collaborative solutions.

During the Development phase, instructional materials were created for both online and offline components. Online materials delivered through the Chaoxing Learning App included vocabulary exercises, reading texts, and preparatory activities. Offline materials focused on problem scenarios, role assignments, and presentation frameworks. Expert reviews from six associate professors in College English teaching, curriculum development, and educational technology guided iterative refinements.

The Implementation phase involved pilot testing with 40 students selected from the initial 400 participants using stratified random sampling across four academic majors (Engineering, Business, Arts, and Sciences) to maintain representativeness. Students were randomly assigned to experimental (n=20) and control (n=20) groups using a random number generator to ensure equal distribution. Two trained College English teachers delivered instruction over four weeks, with the experimental group using the GPBL College College module and the control group following the current College English module in Chengdu College of UESTC. Both groups used identical textbook materials to ensure comparability.

The Evaluation phase employed both formative and summative approaches. Formative evaluation occurred throughout development through expert feedback and design team discussions. Summative evaluation assessed pilot test outcomes through pre- and post-tests measuring reading and speaking achievement, questionnaires evaluating learning interest and learning self-efficacy, and post-implementation interviews with participating students and teachers. Ten students from the experimental group were purposively selected for in-depth interviews based on their varied performance levels and willingness to participate. Both teachers who delivered the instruction were interviewed using semi-structured protocols.

Data analysis employed both quantitative and qualitative methods. Quantitative data from tests and questionnaires were analyzed using descriptive statistics to identify trends and patterns. Qualitative data from interviews and feedback sessions underwent thematic analysis to identify key insights and improvement areas. Triangulation across data sources strengthened the validity of findings and recommendations.

4. Results

The systematic application of the ADDIE model yielded comprehensive insights throughout each development phase. Results are presented following the model's structure to demonstrate the iterative refinement process and comprehensive evaluation outcomes.

4.1. Analysis Phase Results

Student survey results from 400 respondents revealed critical insights into learning needs and preferences. The findings demonstrated significant challenges across multiple dimensions as shown in Table 1.

Table 1: Student Learning Needs and Challenges (n=400)

Challenge Category	Specific Issues	Percentage	Student Count
Motivational	Lack of Interest	52%	208
	Low Self-efficacy	49%	196
Skill-based	Speaking Anxiety	61%	244
	Reading Difficulty	44%	176
	Writing Challenges	38%	152
	Listening Problems	33%	132

As shown in Table 1, the most significant challenge identified was speaking anxiety, affecting 61% of students, followed by lack of interest in learning (52%) and low self-efficacy (49%). These findings confirm the need for instructional approaches that address both skill development and motivational factors simultaneously.

Learning style preferences showed clear patterns favoring interactive approaches over traditional methods, as presented in Table 2. Nearly half of students (49%) preferred interactive and collaborative learning, while only 20.5% chose traditional lecture formats. When asked about improvement priorities, reading skills emerged as the most urgent need (30.8%), followed by speaking skills (24.5%).

Table 2: Learning Style Preferences and Improvement Priorities (n=400)

Learning Style	Percentage	Count	Improvement Priority	Percentage	Count
Interactive/Collaborative	49%	196	Reading Skills	30.8%	123
Visual/Multimedia	25.5%	102	Speaking Skills	24.5%	98
Traditional Lecture	20.5%	82	Writing Skills	13%	52
No Preference	5%	20	Listening Skills	11.7%	47

The data in Table 2 reveals a strong preference for interactive and collaborative learning approaches, aligning with the proposed GPBL methodology. This preference distribution supports the integration of gamification and problem-based learning as students clearly favor active engagement over passive learning methods.

Teacher interviews revealed both opportunities and constraints for innovation in Table 3. All five teachers expressed willingness to try innovative approaches but cited significant barriers that needed addressing in the module design.

Table 3: Teacher Interview Themes and Frequencies (n=5)

Theme	Frequency	Representative Quote	Design Implication
Student Disengagement	5/5	"Students are physically present but mentally absent"	Need engaging activities
Time Constraints	5/5	"Covering required content leaves no room for creativity"	Integrate with existing curriculum
Assessment Pressure	4/5	"Everything comes back to CET-4 preparation"	Align with test objectives

Innovation Interest	5/5	"I want to try new methods but need support"	Provide detailed guidance
Resource Needs	3/5	"Better materials would help implementation"	Develop comprehensive materials

The teacher feedback shown in Table 3 indicates that while educators recognize current limitations and desire innovation, they require structured support and curriculum-aligned materials to implement new approaches successfully.

4.2. Design Phase Results

Learning objectives were refined through iterative consultation to ensure clarity and measurability. Each unit incorporated both cognitive objectives focusing on language skills and affective objectives addressing motivation and confidence, as is shown in Table 4.

Table 4: Learning Objectives and Assessment Alignment by Unit

Unit	Cognitive Objectives	Affective Objectives
Animals	Analyze conservation arguments; Synthesize wildlife protection strategies	Develop empathy for wildlife; Build environmental awareness
Sports	Evaluate sportsmanship examples; Compare cultural sport practices	Appreciate cultural differences; Foster teamwork values
Advertising	Critique media messages; Create persuasive arguments	Form ethical positions; Develop critical thinking
Health	Synthesize health information; Design wellness plans	Build body positivity; Promote healthy habits

The gamification system design incorporated multiple motivational elements with clear point distribution and reward structures to maintain engagement throughout the learning process, as outlined in Table 5.

Table 5: Gamification Point System

Point Category	Points Awarded	Criteria	Frequency
Daily Participation	1 point	Active engagement in activities	Per unit
Quality Solutions	3 points	Creative and viable problem solutions	Per unit
Peer Recognition	2 points	Voted "most helpful" by teammates	Per unit
Leadership	2 points	Effective team coordination	Per unit
Final Ranking	5/3/1 points	Top three teams overall	End of module

The point system presented in Table 5 was designed to reward multiple types of contributions, ensuring that students with different strengths could earn recognition. And the corresponding reward structure provided real incentives for student participation and achievement, as detailed in Table 6.

Table 6: Reward Structure

Reward Level	Requirements	Rewards Offered
Champion Team	Highest total points	Grade bonus + Mystery gift + Certificate

Runner-up	Second highest points	Grade bonus + Surprise item + Recognition
Third Place	Third highest points	Grade bonus + Participation prize
All Participants	Completion of module	Participation prize

The reward structure in Table 6 ensures that all participants receive recognition while providing additional incentives for high performance. This approach maintains motivation across different achievement levels.

The problem-based learning framework was systematically designed using the Illinois Model of PBL to provide authentic, challenging scenarios requiring collaborative problem-solving and meaningful language use across all four units, as is illustrated in Table 7.

Table 7: PBL Elements and Structure

PBL Component	Design Features	Implementation Strategy	Language Focus
Problem Introduction	Real-world scenarios requiring solutions; Multi-perspective challenges; Open-ended questions	Present problems without predetermined answers; Encourage multiple solution paths; Connect to students' experiences	Contextual communication; Problem-solving discourse
Role Assignment	Mixed-ability groupings (4-5 students); Rotating leadership roles; Defined responsibilities	Random assignment with role rotation; Clear accountability measures; Peer evaluation systems	Negotiation skills; Role-specific language;
Collaborative Inquiry	Guided research process; Resource provision; Discussion	Teacher as facilitator not information provider; Strategic questioning techniques; Progressive scaffolding	Research language; Information synthesis; Critical analysis discourse
Solution Presentation	Public sharing of findings; Peer questioning and feedback; Reflection on process	Structured presentation formats; Audience engagement requirements; Self and peer assessment	Presentation skills; Reflective communication

Table 7 outlines the comprehensive PBL framework that ensures authentic language use while developing collaborative and critical thinking skills. Each component was designed to maximize student interaction and meaningful communication.

Each unit featured specific problem scenarios aligned with the PBL framework, ensuring authentic communication contexts while targeting language development objectives, as shown in Table 8.

The scenarios presented in Table 8 were carefully selected to provide relevant, engaging contexts that connect to students' lives while requiring proper language use and critical thinking skills.

Table 8: Unit-Specific PBL Scenarios and Role Implementation

Unit	Problem Scenario	Student Roles	Expected Outcomes
Animals	*"How can zoos and sanctuaries better care for elephants' emotional and social needs, based on the 'Loving Memory: Elephant Reunion' article?"*	Ethical Advisor, Wildlife Specialist, Sanctuary Design Expert, + other roles groups can create	Solution that considers elephants' feelings and needs
Sports	*"How did Jesse Owens's experiences during the 1936 Berlin Olympics shape our understanding of sportsmanship, racial equality, and personal integrity?"*	Sportsmanship Expert, Racial Equality Advocate, Personal Integrity Analyst, + other roles groups can create	Analysis connecting Owens's story to today's context
Advertising	*"How does television advertising impact children's development, behavior, and worldview?"*	Media Analyst, Child Expert, Ethics Researcher, + other roles groups can create	Analysis of TV advertising effects on children
Health	*"How does the media's portrayal of the 'perfect body' affect people and society?"*	Health Impact Researcher, Media Content Analyst, Social Influence Expert, Solution Developer, + other roles groups can create	Analysis of media's impact on body image and society

4.3. Development Phase Results

Expert review yielded valuable refinements across multiple dimensions. Initial ratings identified areas needing improvement, with all criteria showing significant enhancement following revisions, as is shown in Table 9.

Table 9: Expert Review Results and Improvements (n=6)

Criterion	Initial Rating	Final Rating	Improvement	Key Changes Made
Content Alignment	4.8/5.0	5.0/5.0	+0.2	Tighter objective; clearer skill targets
Activity Design	4.3/5.0	4.7/5.0	+0.4	Clearer role descriptions; better scaffolding
Visual Design	3.2/5.0	4.5/5.0	+1.3	Enhanced graphics and layout; improved readability
Instructions	3.8/5.0	4.6/5.0	+0.8	Step-by-step guides added; examples provided
Feasibility	4.1/5.0	4.8/5.0	+0.7	Reduced activity complexity; realistic timing
Technical Quality	4.0/5.0	4.9/5.0	+0.9	Improved online platform integration

The expert review results in Table 9 demonstrate significant improvements across all evaluation criteria, with visual design showing the most substantial enhancement (+1.3 points). These improvements ensured the final module met professional standards for instructional design and practical implementation.

The final module structure incorporated all feedback and refinements, creating a comprehensive framework balancing online preparation with interactive classroom sessions, as demonstrated in Table 10.

Table 10: Final GPBL Module Structure and Components

Component	Time	Key Elements
Online Preparation	**40 min**	
Visual Lead-in	5 min	Topic images and engagement questions
Vocabulary Building	10 min	15 key terms with interactive exercises
Text Preview	15 min	Annotated reading with comprehension checks
Grammar Video	5 min	Focused mini-lesson on unit structures
Readiness Check	5 min	Self-assessment of preparation level
Classroom Session	**90 min**	
Sharing & Warm-up	5 min	Group sharing of online learning insights
Problem Introduction	10 min	Scenario presentation and role assignment
Team Brainstorming	10 min	Initial solution generation
Research Phase	10 min	Information gathering with resources
Solution Development	10 min	Synthesis and refinement
Team Presentations	30 min	Solution sharing with Q&A
Evaluation & Awards	10 min	Peer voting and point distribution
Reflection	5 min	Individual and group reflection
Post-class	**Variable**	
Individual Journal	Required	Personal learning reflection
Extension Activities	Optional	Additional practice opportunities

The structure outlined in Table 10 provides a clear framework for implementation, with specific time allocations ensuring efficient use of class time while maximizing student engagement and learning opportunities.

4.4. Implementation Phase Results

Pilot testing with 40 students revealed promising outcomes across multiple measures. Both groups showed similar baseline performance, confirming successful randomization, while post-intervention assessments demonstrated differential improvements favoring the experimental group. As shown in Table 11, the GPBL College English module produced substantial gains across all measured dimensions.

Table 11: Pilot Study Results

Measure	Group	Pre-test Mean (SD)	Post-test Mean (SD)	Change	Effect Size (d)
Speaking Achievement (50 points)	Experimental	25.30 (4.81)	35.26 (5.42)	+9.96	0.89
	Control	25.66 (5.04)	31.04 (4.80)	+5.38	0.52
Reading Achievement (50 points)	Experimental	24.08 (5.12)	32.85 (5.24)	+8.77	0.84
	Control	24.85 (4.98)	32.50 (5.02)	+7.65	0.73
Learning Interest (5 scale)	Experimental	2.62 (0.68)	3.25 (0.83)	+0.63	0.82
	Control	2.45 (0.86)	2.65 (0.72)	+0.20	0.25
Learning Self-efficacy (5 scale)	Experimental	2.65 (0.72)	3.40 (0.73)	+0.75	1.03
	Control	2.57 (0.77)	2.54 (0.73)	-0.03	-0.04

Note: Effect sizes interpreted as small (d=0.2), medium (d=0.5), and large (d=0.8) following Cohen's conventions

The results presented in Table 11 demonstrate that the experimental group showed substantially larger improvements in speaking skills compared to the control group, with an effect size of 0.89 indicating a large practical impact. Reading improvements were more comparable between groups, though the experimental group still showed slightly larger gains. Most notably, learning interest and self-efficacy showed dramatic differences, with the experimental group improving significantly while the control group remained static or declined slightly.

4.5. Evaluation Phase Results

Qualitative feedback from student interviews provided deeper insights into the transformation process and mechanisms underlying quantitative improvements. As indicated in Table 12, students identified multiple benefits from the GPBL College English module.

Table 12: Student Interview Themes and Frequencies (n=10)

Theme	Frequency	Representative Quotes
Engagement	10/10	*"I actually looked forward to English class"; "Learning became less like studying and more like playing"*
Reduced Anxiety	8/10	*"Speaking felt less scary when part of a game"; "Problems gave me something to focus on besides my mistakes"*
Meaningful Learning	9/10	*"Problems made English feel useful, not just academic"; "I could see why I needed these skills"*
Collaboration Value	10/10	*"Working together made difficult tasks manageable"; "My teammates helped me feel confident"*
Disadvantages	3/10	*"First class was chaotic but got better quickly"; "Took time to understand the system"*

The feedback summarized in Table 12 reveals that all students experienced increased engagement and valued the collaborative aspects of learning. The high frequency of positive responses across multiple themes suggests that the GPBL College English module successfully addressed key challenges identified in the needs analysis phase.

Teacher reflection journals documented the transformation process from instructor perspectives, revealing both benefits and challenges of implementation. As shown in Table 13, teachers observed progressive improvements in student engagement and learning behaviors.

Table 13: Teacher Reflection Themes and Implementation Insights

Week	Key Observations	Challenges Noted	Adaptations Made
Week 1	*"Students initially confused but excited"; "Classroom management more complex"*	Time management; Group dynamics	Clearer role definitions; Extended activity time
Week 2	*"Students adapting to structure" "Increased preparation time needed"*	Technical issues	Technical help

Week 3	*"Natural flow emerging"* *"Students self-directing more"*	Individual differences	Differentiated tasks
Week 4	*"Energized by student engagement"* *"Seeing genuine language use"*	Sustainability concerns	Peer support

The teacher observations recorded in Table 13 show a clear progression from initial confusion to natural implementation, with teachers noting increased student autonomy and authentic language use by the end of the pilot period.

5. Conclusion

This study demonstrates that a systematically designed GPBL College English module can effectively address persistent challenges in College English education in China. By applying the ADDIE model, the research developed an instructional approach that significantly improved students' speaking proficiency, learning interest, and learning self-efficacy. The module combined gamification and problem-based learning to create a classroom experience that was both engaging and meaningful, offering students authentic contexts for language use while supporting motivation and confidence.

The development process highlighted the value of evidence-based design. A thorough needs analysis allowed for targeted solutions grounded in real student and teacher needs. The synergy between gamification and PBL proved especially effective: game elements increased engagement, while problem tasks ensured purposeful language practice. Iterative refinement and expert feedback helped translate theoretical models into practical tools ready for classroom use.

Key success factors emerged throughout implementation. Clear role definitions within problem scenarios gave all students opportunities to contribute regardless of proficiency level. The point system made progress visible and celebrated incremental achievements. Collaborative problem-solving reduced individual performance anxiety while maintaining accountability. Online preparation ensured basic knowledge before active classroom application.

Quantitative results demonstrated the module's effectiveness across multiple dimensions. Speaking proficiency showed the greatest improvement with an effect size of 0.89, confirming that interactive problem-solving enhances productive skills. Learning interest increased significantly (d=0.82), addressing the documented motivation crisis in College English education. Self-efficacy improvements (d=1.03) suggest lasting impact beyond immediate skill gains.

Qualitative findings illuminated transformation mechanisms. Students reported that game elements made language learning enjoyable while reducing anxiety barriers. Problem scenarios provided authentic contexts where English became a tool rather than a subject. Collaborative structures created peer support networks extending beyond classroom walls. Teachers observed increased voluntary participation and creative language use.

Several limitations warrant acknowledgment. The single-institution study limits generalizability across diverse Chinese higher education contexts. The four-week implementation period cannot capture long-term sustainability or skill retention. Focus on speaking and reading leaves questions about writing and listening development.

Sample size constraints prevented subgroup analyses by proficiency level or learning style.

Nevertheless, the study offers practical value for multiple stakeholders. Curriculum designers can adopt a structured yet flexible approach using the ADDIE model. Teachers benefit from ready-to-use lesson materials that support innovation without increasing workload. Administrators gain evidence to support resource allocation for sustainable improvement. Most importantly, students experience English not just as a subject but as a useful, engaging tool—laying the foundation for lifelong learning.

Theoretical contributions advance understanding of integrated instructional approaches. The study demonstrates how multiple theoretical frameworks work synergistically rather than competitively. Gamification theory provides engagement mechanisms, PBL offers authentic contexts, constructivism guides knowledge building, and situational learning ensures relevance. This integration suggests moving beyond single-theory adherence toward comprehensive design frameworks.

Future research should explore the long-term impact of the GPBL College English module, test its effectiveness across varied educational contexts, and investigate how individual learner differences affect outcomes. Further integration of digital technologies—such as AI-powered feedback and immersive VR scenarios—may enhance personalization and engagement. Establishing dedicated training programs for teachers adopting GPBL strategies would support broader implementation.

The study contributes evidence that systematic instructional design can successfully address complex educational challenges. By demonstrating how established frameworks like ADDIE can guide innovative module development, this research bridges the gap between theoretical potential and classroom reality. The GPBL College module represents not merely a specific instructional product but a model for educational transformation.

As College English education evolves to meet changing societal needs, systematic approaches to innovation become increasingly vital. This study demonstrates that engaging, effective language learning experiences can be created within existing constraints through careful design, iterative refinement, and evidence-based implementation. The success of the GPBL College English module suggests that persistent challenges facing College English education are not insurmountable but require systematic, theory-informed, and student-centered solutions.

The integration of gamification with problem-based learning offers particular promise for addressing interconnected challenges of achievement, interest, and self-efficacy. By making language learning simultaneously meaningful and enjoyable, such approaches may develop not just immediate proficiency but lifelong learning dispositions. As English transitions from academic requirement to professional necessity in China's globalized economy, fostering genuine engagement becomes as important as skill development.

In conclusion, this research shows that meaningful educational innovation can emerge not through radical change, but through thoughtful, systematic enhancement of existing resources. The GPBL College English module worked within current curricula, schedules, and technologies while transforming the learning experience. As College English

instruction continues to evolve to meet new societal and professional demands, this approach offers a scalable, student-centered path forward. By making language learning both enjoyable and effective, such models can support millions of Chinese learners in becoming confident, capable users of English in a globalized world.

Ethics Approval and Consent to Participate

The researchers used the research ethics provided by the Research Ethics Committee of Universiti Kebangsaan Malaysia (RECUKM). Ethical approval was obtained from the Research Ethics Committee of Chengdu College of University of Electronic Science and Technology of China and Universiti Sains Malaysia. All procedures performed in this study involving human participants were conducted in accordance with the ethical standards of the institutional research committee. Informed consent was obtained from all participants according to the Declaration of Helsinki.

Acknowledgement

Part of this article was extracted from a doctoral thesis submitted to Universiti Sains Malaysia, Penang.

Funding

This study received no funding.

Conflict of Interest

The authors reported no conflicts of interest for this work and declare that there is no potential conflict of interest with respect to the research, authorship, or publication of this article.

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