

## PAPER

# Leveraging Problem-Based Learning via Virtual Environments to Enhance Business Students' English and Motivation

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## ABSTRACT

This study investigates leveraging a problem-based learning (PBL) approach via virtual environments (VEs) to enhance English reading and writing skills and motivation among business students. The random sample consisted of 60 students in the Customer Service Section of the Applied College. The students were divided into two groups: the experimental group, which was exposed to the PBL approach via the Blackboard system, and the control group, which received traditional instruction. The authors used a quasi-experimental design, a pre-post-test, and a motivation scale. A T-test was used to compare the two groups at the post-test. The findings revealed substantial differences between the experimental and control groups in English for business students (reading comprehension and writing). Additionally, there was a momentous variance between the two groups on the motivational scale. The study proved that using the PBL approach with the VEs positively influenced students' English for business and motivation. The study has some recommendations for future research, including evaluating virtual learning platforms, conducting longitudinal studies, and incorporating qualitative measures to enhance English language learning opportunities.

## KEYWORDS

problem-based learning (PBL), virtual environments (VEs), English for business, motivation

## 1 INTRODUCTION

The student-centred learning paradigm is a hallmark of 21st-century education; it rejects the idea of students as passive recipients of information and instead views them as active creators of their own learning. Concurrent with this has been the significant advancement in educational methodologies and their proactive implementation, guided by the tenets of constructivist theory and incorporating technological advancements, among other things. It has given the educational field access

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to digital platforms, systems, and virtual learning environments that offer features and tools to assist and improve student performance in a constructive, collaborative, and participatory way.

Problem-based learning, is an educational approach that provides students with the prospect of addressing authentic, real-world changes [10], [31]. PBL fosters the growth of autonomous learning, proficient problem-solving capabilities, and effective aptitudes for communication and collaboration. PBL exercises frequently involve students working together to solve problems while the instructor acts as a facilitator who provides guidance and oversight [37]. Furthermore, PBL is considered a manifestation of constructivism since it fosters students' active participation in their own learning via cognitive processing and interaction with their surroundings [36], [13].

Group projects involving real-world problems are an integral part of PBL courses. Scenario analyses and solutions supported by thorough research are its responsibilities. In light of the belief that knowledge advances via collaborative endeavours, deliberations, bargaining, and the scrutiny of principles, learners who participate in PBL cultivate a sense of accountability regarding the challenges and resolutions it entails. The utilisation of PBL has experienced a substantial surge in recent years, spanning numerous fields, grades, and academic disciplines. This trend is predicated on the notion that conventional pedagogical methods must sufficiently equip pupils to meet the dynamic demands of the modern labour market. An increasing amount of scholarly literature indicates that PBL might enhance the effectiveness of efforts to develop independent studies, address issues, conduct analysis, interact, and collaborate. [12], [19], [22].

In this context, [11] pointed out that PBL is a pedagogical approach that has gained prominence in recent years, offering a student-centred method to foster abilities in critical reasoning and problem-solving. In the context of English language education, particularly in the domain of reading comprehension, integrating PBL with VEs has emerged as a contemporary strategy to enhance the learning experience. This integration capitalises on the advantages of both PBL and VEs, creating a dynamic and interactive environment for learners to engage with English reading materials.

This study contributes to the body of knowledge in higher education by illustrating the benefits and potential limitations of PBL within the context of business education. Therefore, the current study provides an overview of its main findings, which are an evaluation of the effectiveness of the PBL approach combined with VEs in the context of teaching business English. Furthermore, the current study also addresses the growing demand for effective language instruction that aligns with the needs of business professionals in the modern world. PBL, as an instructional approach, emphasises problem-solving abilities, critical reasoning, and active student participation. Additionally, the integration of VEs such as the Blackboard System further enhances the learning experience by providing a platform for collaborative learning, resource sharing, and online communication.

Following the above introduction, the authors believe that there is not enough use of PBL via VEs in the teaching of English to business students. Accordingly, they attempt to determine how to best use PBL using VEs to improve the motivation and English proficiency of business students. In order to confirm whether this effect is possible or not, the following research questions will be addressed to determine the impact of this innovative strategy in helping students enhance their English reading and writing skills and motivation in the business field.

RQ.1: What is the impact of PBL via VEs on enhancing English reading comprehension skills among business students?

RQ.2: What is the impact of PBL via VEs on enhancing English writing skills among business students?

RQ.3: How does PBL via VEs enhance motivation towards learning English in the business field?

## 2 LITERATURE REVIEW

### 2.1 Teaching English for business

Reading comprehension is the first important skill in business English. It is widely recognised as the foundational skill in business English, playing a pivotal role in effective communication and professional success. The ability to comprehend written texts is essential for understanding business documents, contracts, reports, and industry-related materials. Proficiency in reading and comprehension enables individuals to gather vital information, analyse complex concepts, and make informed decisions in various business scenarios [29]. Furthermore, it facilitates the acquisition of specialised vocabulary and industry-specific knowledge, enhancing one's ability to engage in meaningful discussions and contribute effectively to professional settings. Strong reading comprehension skills empower individuals to stay updated with current trends, research, and advancements in their field, enabling them to adapt to dynamic business environments and remain competitive in the global marketplace. Thus, mastering reading comprehension as the primary skill in business English is crucial for individuals seeking to thrive in the ever-evolving business landscape [13].

Moreover, business English writing is considered the second-most significant skill for business English majors because of its critical role in building business English competence [41]. Students' ability to effectively communicate in a global business setting through the use of suitable writing styles is the major goal of the business English writing skill [44]. In order to teach business English writing, scholars have used a range of instructional approaches, such as task-based, result-based, process-based, and genre-based methods [48]. However, due to the wide range of student and teacher competence, the impact of instruction varies greatly between educational institutions. Providing students with instruction in business English writing can be challenging for certain higher education institutions. Inadequate student motivation, limited progress in the development of writing abilities, the use of tactics already used in English writing courses for beginners, and the application of outdated pedagogical approaches are all part of the aforementioned problems [42].

[40] examines how the PAD Class Model influences Chinese undergraduates' ability to write proficiently in business English. Fifty undergraduates from Chinese universities took part in the study, and the results show that using the PAD Class Model improves students' business English writing in many ways, including their overall and sub-scores in content, language, appropriateness, grammar, and organisation. The results show that students were more motivated and satisfied with their learning when they received mixed instruction. In business English, most students exhibited a favourable attitude towards blended learning, and their grades went up [45].

According to [43], virtual reality technology is being used to create a business English immersion teaching approach, aiming to address students' poor performance under traditional methods. The virtual teaching page mimics business-trade

English negotiations, updating content and approach in real-time. The teaching assessment mechanism is also built. The experimental class has shown higher final scores than the regular class, addressing the issue of poor performance in standard teaching methods. The significance of employing suitable digital tools in the creation and delivery of courses is emphasised in the article's conclusion. The authors urge educators to investigate and implement appropriate digital tools in order to improve the process of teaching and learning [5].

## 2.2 Problem-based learning with business English

The benefits of PBL for students are widely acknowledged. On the other hand, a thorough review of the existing literature on PBL in EFL pedagogy [30] is necessary. Many studies have shown the systematic use of PBL in other domains, including commercial communication, biomedical English, and legal English. These studies have all been conducted by respected researchers, and their findings are still relevant today. With a focus on the unique challenges of second language acquisition, [15] introduces a persuasive pedagogical strategy known as project-based learning (PBL). The paradigm aims to adapt PBL to the context of language learning by placing an emphasis on the development of subject matter expertise and cognitive capacities alongside the study, application, analysis, and acquisition of the target language. Research on PBL's effects on vocabulary acquisition [25], language proficiency [21], and EFL learners' perspectives on PBL [9] has intensified.

[26] posits that students' resistance to active learning, lack of time, and lack of resources are some of the unfavourable conditions that necessitate more study of PBL in EFL. Goals are often established in language classrooms without considering the students or their surroundings. This method comprises teaching the language in a strict, linear, and organised way and then having students practice without any background knowledge. Therefore, it is generally necessary for language learners to show more proficiency in the pragmatic use of the language [48].

On the other hand, PBL views the target language as a tool for improving communication and problem-solving. According to [15], this approach encourages students to view the project as a group problem-solving exercise where they work together to learn and use English, with the goal of making the target language both the subject and the means of their education. Students are able to enhance their communication abilities through the use of contextualised materials, subjects, and exercises that help them apply the language in a practical setting. The audience is the student, even though the issue is brought up right away [33].

Besides, [39] study aims to enhance undergraduate students' digital media and creative thinking skills through a cloud-based constructivist learning environment model for problem-based learning. The model includes five steps: problem identification, analysis, research, presentations, summary, and assessment. It incorporates six learning environments: problem-based, resource-based, cognitive tool-based, collaborative, scaffolding, and coaching. Data was collected using a problem-based evaluation form and analysed using descriptive statistics. The findings suggest the model is effective for bachelor's degree-level instruction.

Throughout the learning process, the instructor provides structured assistance to help the learner acquire autonomy. Consequently, people improve their academic, linguistic, social, and personal competence as they work their way through the events that resolve problems [14]. Students' critical thinking abilities, which are essential for efficient reading comprehension, are developed by PBL's immersion in

these difficulties, which also improves their language fluency. The use of problem-based learning as a strategy to improve students' reading comprehension is the central topic of [8]. They proved that students' performance on reading comprehension tests improved significantly after implementing PBL. Moreover, active participation, problem-solving skills, and a more thorough comprehension of reading materials were all positively impacted.

### 2.3 Virtual English learning environments

Virtual English learning environments (VELEs) are essential in modern language instruction, offering interactive, immersive platforms that surpass traditional classrooms. These environments allow students to interact with real-language materials and engage in conversations with diverse speakers [28]. VELEs promote a learner-centric approach, enhancing linguistic proficiency and cultural sensitivity. They also enable the use of advanced pedagogical methods, such as multimedia resources and virtual reality [1].

According to [35], their study proved the positive impact of virtual English instruction in a Bogotá private university. They explored the importance of virtual interactions, their benefits, and their drawbacks using observations, focus groups, and interviews. Additionally, [38] explored the benefits of the VELEs as they provide active learning approaches in remote English language instruction, focusing on basic-level learners. Their study used online surveys, Google Classroom conversations, and field observations to analyse the data. The research highlights three main advantages of VELEs: flexibility, autonomy, and interaction. Active approaches help students recognise grammatical flaws, solve difficulties, and answer questions, proving their beneficial effects.

Moreover, [18] used social interaction dynamics in online English lessons using a virtual ethnographic method. They proved the importance of virtual English classes as they improved student engagement and meaningful interactions in the learning environment. Advanced digital resources are enhancing online education through interactive activities such as videos, animations, virtual laboratories, and games. This was clear in the [47] study as they presented a virtual laboratory learning encounter incorporating video games, multimedia materials, and simulations to enhance students' understanding of wireless network planning.

The utilisation of VELEs has been increasingly prominent in the field of language instruction in recent years. Nevertheless, despite the potential advantages they offer, there are still obstacles and constraints that remain in their execution. These problems encompass a wide range of issues, including technological difficulties, pedagogical concerns, and the need for specialised training programmes [27]. They also involve hurdles to accessibility, limited chances for genuine contact, and different levels of student involvement. It is imperative to comprehend and rectify these limitations in order to optimise the efficacy of VELEs in facilitating the process of acquiring the English language [17].

### 2.4 Leveraging of problem-based learning with virtual environments

Various studies have explored the incorporation of PBL into language learning through the use of VEs. The Blackboard system (as a model of VEs) facilitates learning activities beyond the traditional classroom setting. This system enabled student

assessment and interaction with instructors [34]. Another study concentrated on developing and implementing a virtual learning content management system (V-LCMS) tailored for PBL courses [23]. The primary goal was to enhance the teaching and learning process by providing easier access to learning materials and fostering improved interaction between instructors and students.

Additionally, [46] proposed a learning model aimed at categorising students based on VEs. This underscored the importance of accurate assessment tools within the Blackboard System as a model of VEs for more informed decision-making regarding student enrolment and evaluations. Collectively, these findings underscore the potential advantages of integrating PBL with VEs in language learning, such as enhanced access to learning resources and more efficient student assessment.

Furthermore, the integration of PBL with VEs amplifies its impact by providing a digital platform for organising, managing, and tracking the learning process [7]. VEs facilitate the seamless delivery of reading materials, collaborative activities, and assessments. Features such as discussion forums, online quizzes, and collaborative document editing within the Blackboard system enable students to engage with reading comprehension problems in a structured and technology-enhanced manner.

In their study, [2] researched the student needs analysis of a PBL model with blended learning (BL) in the context of EFL academic reading. The findings were that BL was employed to reinforce learning, with students taking an active role in the learning process. Also, the study emphasised the significance of problem-solving skills and effective communication, collaboration, creativity, leadership, and team management in enhancing student learning outcomes. Ismail and Edi's research contributes to the understanding of student needs in EFL academic reading and introduces a novel step in the syntax of the PBL model by incorporating a BL approach.

In their study [6], they explored public school students' reluctance to use the Darsak Educational Platform (DEP) during the COVID-19 pandemic. A qualitative study in Jordan, involving twelve students, found that factors such as lack of preparation, design inconsistencies, unsuitable learning environments, and teachers' insufficient digital competency contributed to their reluctance. The researchers suggest adjusting DEP's layout and providing students with appropriate advice to improve learning environments.

Within the same framework, problem-based learning presents numerous obstacles for business students studying English, including: facilitating managing teamwork and guaranteeing fair allocation of tasks among students; encouraging learners to sustain their enthusiasm throughout the entire process; helping students to move from passive recipients to active contributors in problem-solving; harmonising the requirements of PBL with the current curriculum demands; as well as developing essential ICT skills related to online learning to foster collaboration among students [20], especially with the current research adopted on VEs. These challenges were considered while teaching and applying the experimental treatment to the sample. Overall, these studies highlight the ongoing challenges faced in implementing PBL and the need for further support and research in this area.

### 3 METHODOLOGY

#### 3.1 Research design

Using the Blackboard system as a model of VEs, the current study uses a quasi-experimental research design with both a control group and an experimental group

to assess the impact of a problem-based learning approach on business students' English reading and writing skills as well as their motivation to learn the language. This design allows for the comparison of outcomes between the two groups, providing a basis for assessing the effect of the PBL approach via VEs in the specific context of business education.

### 3.2 Participants

The participants in the current study consist of a purposive sample of undergraduate business students from an academic institution. A total of 60 students are divided into two groups: the experimental group, exposed to the problem-based learning approach via the Blackboard system as a type of VE, and the control group, receiving traditional instruction. Careful consideration is given to ensure that the two groups are comparable regarding English proficiency, prior academic performance, and other relevant demographic variables, as well as the equality and homogeneity of the two groups (refer to Table 1).

**Table 1.** Differences between the mean scores of the pre-test for the control and experimental groups

G	Mean	N	Std.D	Std. Err	t	P(2-tailed)
Control	10.2	30	5.8	1.07	2.43	0.017
Experimental	10.95	30	4.3	0.89		

The pre-test results indicate a marginal difference between the control and experimental groups in terms of English reading and writing skills. While the mean score for the experimental group (10.95) is slightly higher than that of the control group (10.2), the standard deviation for the experimental group (4.3) is lower, suggesting a more consistent performance among its members. The t-test, yielding a value of 2.43 with a p-value of 0.017, does indicate statistical significance, but the magnitude of the difference is relatively small. Consequently, while there is evidence of a statistical distinction, its practical significance may be limited. These findings suggest that, although the groups exhibit some variance in their pre-test scores, the impact of the problem-based learning approach on English language skills might be insignificant at this early stage of analysis.

Further investigation, including post-test results and a more comprehensive examination of the intervention's effects, is necessary for a nuanced understanding of the educational implications. The statistically significant difference in the pre-test scores between the control and experimental groups suggests that there were baseline differences in English reading and writing skills before the intervention. This underscores the importance of considering pre-existing variations when interpreting the outcomes of the problem-based learning approach.

### 3.3 Intervention

In order to enhance the instruction of English for business, the intervention in this study entailed the leveraging of PBL with the VEs framework. The intervention was implemented over the course of twelve weeks in a university business English course. By involving them in authentic business scenarios and problem-solving exercises, the PBL methodology was implemented to foster critical thinking and

active learning among the cohort. Through its technological infrastructure, the VEs enabled collaboration, communication, and the administration of educational resources. Students were capable of accessing course materials, engaging in online discussions, submitting assignments, and receiving instructor and peer feedback via the Blackboard. Additionally, guidance and support were provided to both students and the instructor regarding the effective utilisation of the PBL approach via VEs as a part of the intervention. Two measurement instruments were utilised to determine the impact of the intervention: student performance on assessments and a motivation scale. The objective of the intervention was to determine whether or not the PBL approach with VEs integration affected the motivation of business students to acquire English for business and their language proficiency (reading comprehension and writing skills). The subsequent sections provide comprehensive instructions, delineating meticulously planned sessions to assess the effects of leveraging PBL with VEs (refer to Table 2).

**Table 2.** Details of the procedures, outlining orchestrated sessions to evaluate the effect of PBL via VEs

W/S/A	Procedures
<b>Weeks 1–2</b>	Introduction to PBL and VEs Integration
<b>Session 1</b>	Introduction to the business English reading comprehension (critical analysis, inferential skills, skimming and scanning, and summarization) and writing skills (grammar and syntax, spelling and punctuation structural organization)
<b>Session 2</b>	Overview of Problem-Based Learning (PBL) and Virtual Environments (VEs) integration in language education.
<b>Activities</b>	Icebreakers, course orientation, and familiarization with the Blackboard interface.
<b>Weeks 3–4</b>	Understanding Authentic Business Scenarios
<b>Session 3</b>	Explanation of authentic business scenarios and their relevance to language learning.
<b>Session 4</b>	Group formation and initial exposure to a business scenario.
<b>Activities</b>	Group discussions, preliminary problem analysis, and initial engagement with the Blackboard discussion forums.
<b>Weeks 5–6</b>	Active Learning through PBL
<b>Session 5</b>	Deep dive into problem-solving tasks within the identified business scenarios.
<b>Session 6</b>	Role-playing and simulation exercises related to real-world business challenges.
<b>Activities</b>	Group-based problem-solving, case studies, and collaborative projects using Blackboard tools.
<b>Weeks 7–8</b>	Utilizing VEs for Communication and Collaboration
<b>Session 7</b>	Training on effective use of Blackboard tools for communication and collaboration.
<b>Session 8</b>	Online discussions, peer reviews, and collaborative document creation within the Blackboard System.
<b>Activities</b>	Guided practice on discussion forums, document sharing, and collaborative assignments.
<b>Weeks 9–10</b>	Assessments and Feedback
<b>Session 9</b>	Guidance on submitting assignments, quizzes, and assessments through the Blackboard System.
<b>Session 10</b>	Assessments and feedback.
<b>Activities</b>	Submission of individual and group assignments through Blackboard, instructor feedback, and peer evaluation.
<b>Weeks 11–12</b>	Review and Motivation Assessment
<b>Session 11</b>	Review of learning outcomes, challenges, and successes.
<b>Session 12</b>	Final assessments and administration of the motivation scale.
<b>Activities</b>	Summative assessments on language proficiency, final project presentations, and completion of the motivation scale survey.



After completing the experimental procedures shown in Figure 1, the study tools were applied later, which are the English language skills test and the learning motivation scale.

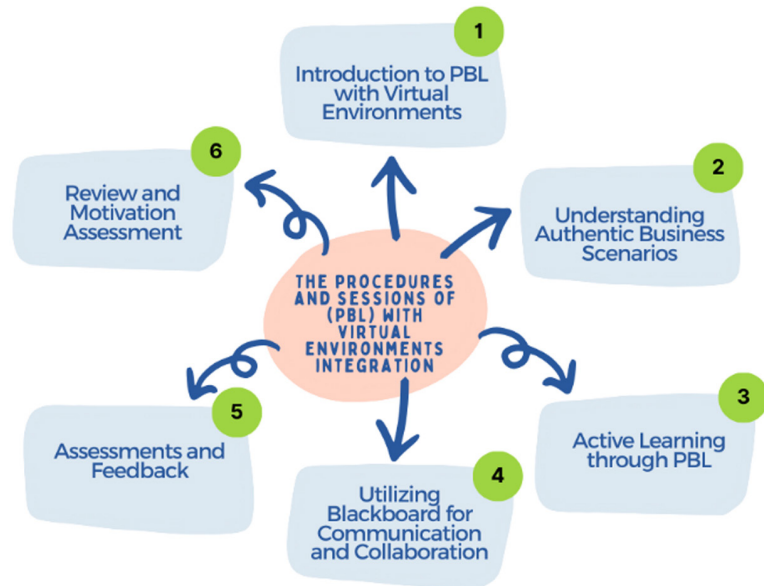


Fig. 1. Procedures and sessions of PBL via VEs

### 3.4 Data collection analysis

Quantitative data are collected to measure the impact of the interventions. Pre- and post-tests are administered to assess changes in English reading and writing skills. T-tests are employed to analyse the quantitative data, comparing the performance of the experimental and control groups. In the context of business education and business students' willingness to learn English, the quantitative analyses guarantee a robust and comprehensive assessment of the effectiveness of the PBL via VEs in improving English reading comprehension and writing skills.

## 4 RESULTS

After the fundamental research procedures were finished, the statistical analysis tool (SPSS) was applied in light of the data that had been obtained. The statistical analysis steps are as follows:

**In response to the first research question:** What is the impact of problem-based learning via VEs on enhancing English reading comprehension skills among business students?

**Table 3.** Differences between the mean scores of the post-test for the control and experimental groups in English reading comprehension for business

Dimension	Sample	N	Mean	Std.D	Std. Err	T	P(2-ailed)
Reading Comprehension	Control Group	30	64.57	5.08	58	12.34	0.01
	Experimental Group	30	84.87	7.44			

The results of this research question, as shown in Table 3, reveal interesting insights into the impact of PBL with the integration of a learning management system on students in the experimental group compared to the control group. The mean score for the control group was 64.57, with a standard deviation of 5.08, while the experimental group exhibited a notably higher mean of 84.87 and a slightly larger standard deviation of 7.44. However, the t-test with a low value of 0.01 and the associated p-value did not reach statistical significance at the 0.05 level, raising questions about the practical significance of the observed difference.

**In response to the second research question:** What is the impact of problem-based learning via VEs on enhancing English writing skills among business students?

**Table 4.** Differences between the mean scores of the post-test for the control and experimental groups in English writing for business

Dimension	Sample	N	Mean	Std.D	Std. Err	T	P(2-tailed)
Writing Skills	Control Group	30	63.33	4.27	58	15.43	0.01
	Experimental Group	30	86.80	7.06			

The results of this research question, as shown in Table 4, suggest that the experimental group, which likely received a PBL approach with the integration of VEs, had higher scores in writing skills (grammar and punctuation, clarity and conciseness, structure and organisation, proofreading, and editing) compared to the control group. The difference in means (86.80–63.33) indicates a notable increase in the scores of the experimental group. The findings of the study reveal compelling evidence regarding the effectiveness of the implemented instructional approach. The experimental group, presumably exposed to PBL methodology integrated with the Blackboard system as a model of VEs, exhibited significantly higher scores in writing skills when juxtaposed with the control group. The mean score difference between the two groups, calculated as 86.80 for the experimental group and 63.33 for the control group, signifies a substantial and noteworthy increase in writing proficiency among the experimental cohort.

**To answer the third research question:** How does problem-based learning via VEs enhance motivation towards learning English for business?

**Table 5.** Differences between the mean scores of the post-test for the control and experimental groups in the motivation towards learning English for business

Dimension	Sample	N	Mean	Std.D	Std.Err	T	P(2-tailed)
Motivation	Control Group	30	63.63	4.49	58	6.09	0.01
	Experimental Group	30	74.47	8.63			

The results of the third question, as shown in Table 5, suggest that the experimental group, which likely received a PBL approach with the integration of VEs, had higher scores in motivation towards learning English for business compared to the control group. The difference in means (74.47–63.63) indicates a notable increase in the scores of the experimental group. The statistical analysis of motivational scale data underscores a significant positive influence on business students’ motivation when employing a PBL approach via virtual environments.

## 5 DISCUSSION

Firstly, the results of the first research question, as shown in Table 3, suggest a potential positive trend in favour of the experimental group, indicative of enhanced reading comprehension skills (identifying main ideas, skimming and scanning, contextual understanding, making inferences, and critical thinking). Moreover, it is pertinent to consider recent literature on problem-based learning with the integration of a management learning system and its impact on language skills. Studies by [11] have highlighted the effectiveness of problem-based learning in promoting critical thinking and language acquisition. However, it is crucial to note that the contextual factors influencing the outcomes of such interventions can vary, and the present study contributes to this discourse by examining the specific context of business education. The results of this research question align with [34], [23], and the broader discourse on the potential benefits of active learning methods in language education, providing a foundation for further exploration and refinement of instructional strategies within the business education domain.

Subsequently, the second research question explores how business students might improve their English writing skills by implementing problem-based learning in virtual settings. The efficacy of these techniques in enhancing students' grammatical accuracy, clarity of expression, organisational structure, and editing skills is demonstrated by the statistical analysis presented in Table 4. These results are supported by previous studies [40] and [32], which highlighted the advantages of incorporating learning management systems (LMS) and problem-based learning into language training, especially when it comes to improving writing skills. The observed improvement in writing scores highlights the significance of creative teaching strategies in promoting language proficiency among business students, as well as the benefits of implementing an innovative pedagogical approach that integrates problem-based learning with a strong LMS. Furthermore, the way in which these findings correspond with earlier studies indicates a pattern of efficacy that is consistent, which strengthens the case for applying these pedagogical strategies in language learning environments.

Consequently, the third research question explores motivation in language acquisition among business students, focusing on problem-based learning in VEs. It highlights the potential effectiveness of novel teaching approaches in fostering a positive attitude towards language acquisition in professional settings. The findings in Table 5 have significant implications for educators and curriculum developers to improve learning environments for long-term student engagement and academic success. These findings of the third research question resonate with prior studies that highlighted the effectiveness of PBL in motivating language learners. [32] emphasised the benefits of incorporating an LMS in educational settings. Moreover, other studies [16], [3], [4], [24] align with the current study results. These studies proved that using VEs can enhance motivation towards learning through factors such as workstation design, gamification, integration into personal learning environments, and multimedia. The amalgamation of PBL and VEs in this study demonstrated a statistically significant increase in motivational scores within the experimental group, surpassing those in traditional instructional settings. This convergence of evidence strongly supports the assertion that the PBL-VEs model catalyses heightened enthusiasm and engagement among business students in learning English for business purposes. Such corroborative insights contribute to the growing body of literature affirming the motivational benefits derived from the integration of PBL with VEs,

reinforcing its potential impact on language learning outcomes, and fostering a positive attitude towards mastering English within the business domain.

## 6 CONCLUSION

In conclusion, the findings of this study highlight the substantial positive impact achieved by integrating a problem-based learning approach with VEs on students' proficiency in English for business, specifically in the Customer Service Section. The study, conducted with a sample of sixty students, demonstrated marked improvements in both reading comprehension and writing skills among the experimental group exposed to PBL via the Blackboard as a type of learning management system, compared to the control group receiving traditional instruction. The discernible enhancements in English for business suggest that the integration of PBL with the VEs provides a highly effective pedagogical approach, particularly within a business context. Noteworthy improvements were observed in the targeted language skills, reinforcing the potential of this innovative approach for comprehensive language development. Furthermore, the significant variance in motivational levels between the experimental and control groups underscores the positive influence of the PBL-VEs integration on students' engagement and enthusiasm in the learning process. This outcome implies that not only does the integrated approach contribute to language skill enhancement, but it also fosters a more motivated and participatory learning environment. Looking ahead, future research endeavours in this area may focus on investigating the long-term effects of PBL-VEs integration, exploring its adaptability in diverse educational settings, and examining the specific mechanisms through which this approach influences language acquisition and motivation. Exploring the sustained impact over an extended period will provide valuable insights into the durability and lasting benefits of this innovative pedagogical strategy. Additionally, researching its applicability in different educational contexts will contribute to a broader understanding of its versatility and effectiveness. Analysing the underlying mechanisms will offer a slightly varied understanding of how the PBL-VEs integration affects language learning and motivation, paving the way for more targeted and informed educational practices. The suggested research directions aim to significantly contribute to the continual refinement of language pedagogy and the optimisation of learning environments, particularly within the realm of business English.

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