


Enhancing Cross-Cultural Communication Skills and Cultural Sensitivity in EFL Students: Integrating GeoGuessr and Problem-Based Learning

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ABSTRACT

This study employs a mixed-methods design to assess the integration of GeoGuessr and problem-based learning (PBL) in enhancing cross-cultural communication skills and cultural sensitivity among English as a foreign language (EFL) learners in a Chinese context. The quantitative phase, utilizing pre- and post-test measurements with Likert scales, shows significant improvements in the cross-cultural communication skills and cultural sensitivity of the experimental group engaged with GeoGuessr and PBL compared to a control group. The qualitative component, involving systematic observations and semi-structured interviews, highlights differences in instructional environments, student interaction, cultural communication skills, sensitivity, and pedagogical strategies between groups and reveals themes related to increased cultural awareness, critical thinking, collaborative learning, and academic engagement. The findings endorse the potential efficacy of GeoGuessr and PBL in EFL settings, enriching EFL pedagogy and suggesting further research pathways.

KEYWORDS

Cross-Cultural Communication, Cultural Sensitivity, EFL Education, GeoGuessr, Problem-Based Learning (PBL)

INTRODUCTION

In an era characterized by rapid globalization, the ability to communicate effectively across cultures has become paramount. English, serving as a global lingua franca, not only aids in bridging linguistic barriers but also necessitates an understanding and sensitivity towards diverse cultures, especially within the domain of English as a Foreign Language (EFL) instruction (Deardorff, 2020; Byram, 1997; Anderson & Barnett, 2011). This transformation in EFL instruction mirrors the broader educational shift towards fostering global citizenship, recognizing our interconnected world and the critical role of international awareness.

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The rise of digital technologies has significantly influenced educational methodologies. GeoGuessr, a web-based geographic discovery game utilizing Google Street View, stands as an example of these innovations. In essence, GeoGuessr drops users into random locations worldwide, prompting them to deduce their whereabouts based on contextual clues. This platform offers a unique ‘virtual immersion,’ allowing users to engage with various cultures and locations, thus nurturing cultural familiarity and sensitivity.

In parallel, pedagogical strategies have evolved, with Problem-Based Learning (PBL) gaining traction in the EFL setting. PBL emphasizes student-led, real-world problem-solving, encouraging learners to apply their knowledge practically, diverging from traditional rote-learning methods (Vygotsky, 1978; Boctor, 2013; Norman, 2013; Hwang & Wu, 2012). The potential synergy between GeoGuessr and PBL offers a holistic, immersive learning environment, promoting active engagement and cultural competence.

China’s ascent as a global leader emphasizes the need for effective English communication and cultural understanding. Hence, a pivot towards interactive, technology-augmented EFL instruction is evident among educators (Young et al., 2012; Shute et al., 2013; Dostál, 2015; Croucher, 2020). While promising, challenges remain in transitioning from the prevalent teacher-centric paradigm to a more interactive, student-focused approach. GeoGuessr and PBL can play a pivotal role in addressing these challenges by encouraging learners’ active participation and intrinsic motivation.

However, despite the increasing emphasis on cultural sensitivity in EFL instruction, the fusion of innovative technologies like GeoGuessr and pedagogical strategies such as PBL remains largely uncharted, especially in the Chinese context. This research seeks to address this gap by exploring the following key questions:

- (a). How does integrating GeoGuessr and PBL influence cross-cultural communication skills and cultural sensitivity among EFL students in China compared to conventional teaching methods?
- (b). What are Chinese EFL students’ experiences and perceptions when introduced to GeoGuessr and PBL in their communication lessons?

This study hypothesizes that the incorporation of GeoGuessr and PBL into EFL curricula will facilitate contextualized learning experiences that deepen cultural understanding and enhance communication strategies. Through a mixed-methods design, the research aims to provide comprehensive insights, potentially benefiting EFL educators and policymakers keen on integrating digital tools and modern pedagogies.

In conclusion, this research aspires to augment the discourse on the convergence of digital technology and innovative teaching methodologies in EFL, particularly focusing on the enhancement of cross-cultural communication. By evaluating GeoGuessr and PBL’s efficacy within the Chinese EFL milieu, the study anticipates shedding light on how technology-fortified PBL can elevate cross-cultural communication skills and cultural acumen.

LITERATURE REVIEW

Over the past decade, the EFL instruction landscape has undergone transformative changes. The synergy of cultural understanding, digital innovation, and game-based learning has fundamentally altered the teaching dynamics and learning outcomes in EFL classrooms (Prensky, 2001; Roschelle & Pea, 2002; Skolnick & Puzo, 2002; Wang & Hannafin, 2005).

From the outset, there’s been a gradual yet profound shift in understanding language proficiency. Traditionally anchored in linguistic competence, the EFL discipline has broadened its horizons to incorporate components like cross-cultural communication skills and cultural sensitivity (Deardorff, 2020). This evolved definition of EFL education reflects the increasingly globalized world we inhabit.

Watson et al. (2011) and Dostál (2015) define cross-cultural communication skills as the capability to efficiently engage with individuals from diverse backgrounds. Concurrently, cultural sensitivity has emerged as an essential pedagogical aspect, focusing on the recognition and appreciation of global cultural diversity (Landis et al., 2003; Johnson et al., 2007; Kriz, 2008; Boctor, 2013; Wei et al., 2015; Creswell & Creswell, 2018).

As the digital era took hold, traditional classrooms underwent a metamorphosis. McLeod (2023) captured this shift, emphasizing the role of digital tools in invigorating learning environments. A key outcome of this evolution has been the integration of game-based learning and PBL (Belland et al., 2009). Watson et al. (2011) and Dichev & Dicheva (2017) asserted that these methodologies not only stimulate engagement but also become platforms to inculcate cultural elements in learners.

The intersection of these trends shows the rise of platforms like GeoGuessr. Adipat et al. (2020) posit it as a conduit that harmonizes game-based learning with geographical exploration, subsequently enhancing cross-cultural skills. Hofstede's (1980, cited in Watson et al., 2011) definition of culture underscores the role of such platforms in the pedagogical mix, suggesting the quintessential need to acquaint learners with shared cultural beliefs and behaviors.

To comprehensively explain the contributions and limitations of the studies that shape this landscape, Table 1 presents a comprehensive overview of pivotal studies shaping EFL instruction.

Table 1 charts the scholarly exploration of EFL instruction over a span of two decades, marking key developments in the integration of cultural understanding within language education. Beginning with Alptekin's 2002 analysis, the role of intercultural communication in English language teaching (ELT) was established, identifying a nascent gap for the application of GeoGuessr in teaching intercultural competence.

In 2011, Anderson and Barnett extended this discourse, theorizing cultural integration as a cornerstone of effective language education and hypothesizing GeoGuessr's role in enhancing cultural awareness. Their work, however, remained largely theoretical, underlining the necessity for qualitative research to support their propositions.

The dialogue takes a technological turn with Hwang & Wu's 2012 study, which underscored the educational potential of augmented reality, particularly through Google Maps. This study left room for comparative research to probe the learning impacts of GeoGuessr, particularly its capacity to provide a rich cultural milieu.

Boctor's 2013 investigation into game-based learning solidified the method's effectiveness but also highlighted a research void regarding GeoGuessr's specific impact on language acquisition. Concurrently, Shute et al.'s case study on geo-location games stressed their importance in cross-cultural skill enhancement and suggested the integration of GeoGuessr with problem-based learning for deeper cultural adaptation.

In the mid-2010s, Dostál (2015) reiterated the significance of cultural insight in ESL, hinting at GeoGuessr's potential to promote cultural sensitivity. Wei et al. (2015) advocate for practical communication experiences in language teaching, calling for exploration into GeoGuessr's application in EFL classrooms.

Dichev & Dicheva, in 2017, brought gamification into the limelight, recognizing its effectiveness for engagement and learning. Yet, they point out the lack of in-depth comparative studies on different GeoGuessr games and their educational impacts, suggesting this as a direction for future inquiry.

The ethnographic work of Ellis et al. in 2017 provides evidence of the efficacy of qualitative methods in fostering cross-cultural understanding, recommending the use of GeoGuessr to enhance these pedagogical strategies.

Creswell & Creswell's 2018 study introduced mixed methods in game-based teaching, yielding insights that advocate for a combination of research approaches to examine GeoGuessr's influence on cross-cultural communication. This line of investigation is paralleled by Qu & Johnson in the same year, who highlighted the role of technological tools like GeoGuessr in augmenting cross-cultural competencies.

Table 1. Timeline of EFL instruction

No.	Year	Authors	Study Focus & Methodology	Key Findings	Identified Gaps
1	2002	Alptekin	ELT & Intercultural Communication (Literature Analysis)	Highlights the crucial role of interpersonal communication in ELT	Need for studies on GeoGuessr's role in teaching intercultural competence
2	2011	Anderson & Barnett	Intercultural Language Instruction (Literature Analysis)	Cultural integration is key to effective language education	Qualitative analysis of GeoGuessr's potential in enhancing cultural awareness
3	2012	Hwang & Wu	Augmented Reality Game Impacts (Experiment)	Augmented reality, especially Google Maps, can elevate learning outcomes	Comparative studies on learning impacts between GeoGuessr and Google Maps
4	2013	Boctor	Game-Based Learning in Education (Experiment)	Confirms the efficacy of game-based learning, acknowledging challenges	Further research on how GeoGuessr impacts language acquisition
5	2013	Shute et al.	Geo-location Games and Cross-cultural Communication (Case Study)	Geo-location games play a vital role in enhancing cross-cultural skills	Role of GeoGuessr when integrated with problem-based learning for cross-cultural adaptation
6	2015	Dostál	Role of Culture in Second Language Instruction (Literature Review)	Emphasizes cultural understanding in ESL instruction	GeoGuessr's potential to foster cultural sensitivity in cross-cultural studies
7	2015	Wei et al.	Language Teaching Theory & Practice (Literature Analysis)	Practical communication experiences are paramount in language learning	Studies exploring GeoGuessr's practical application in EFL classroom situations
8	2017	Dichev & Dicheva	Gamification's Role in Education (Literature Review)	Gamification acts as a powerful tool for learning and engagement	Systematic comparison of various GeoGuessr games and their impact on student learning
9	2017	Ellis et al.	Ethnographic Interviews & Cross-Cultural Understanding (Case Study)	Ethnographic methods are effective in promoting cross-cultural understanding	Integrating GeoGuessr with pedagogies like problem-based learning for skill enhancement
10	2018	Creswell & Creswell	Mixed Methods in Game-Based Teaching	Comprehensive insights gained via Mixed methods in games	Combining methods to analyze GeoGuessr's influence on cross-cultural communication development
11	2018	Qu & Johnson	Technology & Cross-Cultural Competence (Experiment & Interviews)	Google Maps games notably enhance cross-cultural competencies	Evaluating GeoGuessr as a platform in cross-cultural learning contexts
12	2019	Grace	Enhancing Listening Skills through Games (Experiment)	Game-based approaches notably elevate listening skills	Investigating GeoGuessr's impact on listening skills via hybrid teaching methods
13	2020	Deardorff	Intercultural Competence Theory (Literature Analysis)	Intercultural sensitivity is essential for intercultural competence	Surveys and observations to assess GeoGuessr's role in nurturing intercultural sensitivity
14	2020	Croucher	Best Practices in Game-Based Learning Design (Experiment)	Specific games enhance cultural communication	Research on GeoGuessr's effectiveness in familiarizing students with global cultural locations
15	2022	Cenizo-Benjumea et al.	Gamification's Impact on Physical Abilities (Experiment)	Gamified approaches bolster physical fitness	Exploring gamified strategies within language instruction and cultural communication
16	2022	Jordan & Dhamala	Cognitive Advancements in Video Game Players (Experiment & Neuroimaging)	Gamers show improved cognitive functions	Assessing GeoGuessr's specific effects on cognitive functions in EFL contexts
17	2023	McLeod	Gamification Trends Among Educators (Surveys)	Educators view gamification favorably, but usage is low	Understanding barriers to GeoGuessr's integration in EFL classrooms

Grace's 2019 research on enhancing listening skills through game-based methods raised the possibility of employing GeoGuessr to investigate its impact on EFL learning, while Deardorff in 2020 focused on the theoretical aspect of intercultural competence, emphasizing the need for empirical research to assess GeoGuessr's role in this domain.

Croucher (2020) examined best practices in game-based learning, pointing to specific games that enhance cultural communication, and suggests that GeoGuessr's effectiveness in familiarizing students with global cultural contexts warrants investigation.

The narrative evolved with Cenizo-Benjumea et al. in 2022, linking gamification with physical abilities and proposing an exploration of gamified strategies, including GeoGuessr, within language instruction. Jordan and Dhamala, in the same year, investigated cognitive advancements in video game players, positing GeoGuessr as a potential tool for cognitive enhancement in EFL contexts.

McLeod, in 2023, identified a dichotomy between the positive perception of gamification by educators and its low implementation, indicating barriers to the integration of tools like GeoGuessr in EFL classrooms that need to be understood and addressed.

Table 1 thus presents a comprehensive narrative of EFL instruction's progression, with each study contributing to a broader understanding of the field and pinpointing avenues for future research. The trajectory of these studies reflects a growing sophistication in pedagogical approaches, with GeoGuessr emerging as a potentially valuable tool that, if integrated with innovative teaching methods like problem-based learning, could lead to a richer, more holistic EFL educational model that synthesizes linguistic aptitude with cultural and digital fluency.

METHODOLOGY

Participant Demographics

The study involved 60 undergraduate students from a university in China, all studying EFL. They were enrolled in a traditional four-year university where GeoGuessr had not been previously used. Participants were randomly assigned into experimental and control groups, each consisting of 30 participants.

The demographics for the 10 interview participants from both groups were as follows:

Table 2 outlines the demographics of 10 interview participants from the study, split evenly between experimental and control groups. Both groups had a balanced gender distribution and participants aged 18-20, all with a B1 English proficiency level according to the Common European Framework of Reference (CEFR).

Quantitative Component

The quantitative aspect of this study employs a quasi-experimental design, leveraging both pre-test and post-test assessments to gauge the potential of integrating GeoGuessr and PBL in enhancing cross-cultural communication lessons. This methodological choice is influenced by the theoretical frameworks of intercultural competence proposed by Deardorff (2020) and Byram (1997).

To measure the impact, two carefully designed and structured 10-statement questionnaires are used. Participants respond using a five-point Likert scale, a format informed by prior research (Dostál, 2015; Dichev & Dicheva, 2017). For comprehensive insights, these questionnaires are closely aligned

Table 2. Participants' demographics

Group	Participants	Gender Distribution	Age Range	English Proficiency Level
Experimental Group	5	3 males, 2 females	18-20	B1 (CEFR)
Control Group	5	2 males, 3 females	18-20	B1 (CEFR)

with the study's objectives. See Appendix B and C. For instance, question 8 in Appendix B, which focuses on rapport-building across cultures, is inspired and substantiated by studies emphasizing cross-cultural competencies (Wang & Hannafin, 2005; Watson et al., 2011).

Statistical evaluations, encompassing paired-samples and independent-samples t-tests, are conducted in alignment with research methodologies advocated by Creswell and Creswell (2018). This harmonization of theory, purposeful questionnaire design, relevant content, and meticulous statistical analysis collectively strengthens the study's evaluative structure.

However, it is paramount to acknowledge certain limitations. The study's sample size is limited, which may influence the generalizability of the findings. Furthermore, the research focuses on a specific educational setting, which might not be reflective of other varied contexts. While the data and analysis offer valuable insights, these constraints should be considered when interpreting results and their broader implications. A more extensive analysis, taking into account these limitations, will be further detailed in the "Results and Discussion" sections of this paper, elucidating GeoGuessr and PBL's impacts on students' cross-cultural communication proficiency and cultural sensitivity.

Qualitative Component

The qualitative aspect of the study employs both classroom observations and semi-structured interviews to delve into the students' experiences and perceptions of integrating GeoGuessr and PBL to enhance cross-cultural communication skills and cultural sensitivity in their EFL studies.

Two external observers, selected based on the previous studies, including a background in EFL and cross-cultural studies, were provided with training to align with the study's objectives (Kriz, 2008; Mayer, 2011; Boctor, 2013; Norman, 2013; Wei et al., 2015; Creswell & Creswell, 2018). The observation procedure encompassed pre-observation meetings with instructors and in-class observation documented using a five-question observation checklist and with detailed notetaking across multiple sessions (Pivec et al., 2003; Creswell & Creswell, 2017). See Appendix D for Observation Checklist. After the lesson interventions, a total of 10 participants from both groups were interviewed in 20 sessions with the same interview questions, each session lasting between 30-45 minutes, capitalizing on literature that emphasizes the importance of experiential understanding in intercultural learning and cultural sensitivity (Anderson & Barnett, 2011; Wu, 2015). Appendix E for Interview Questions.

The study's mixed-method approach enhances the examination, combining quantitative rigor with qualitative depth and aligning with accepted practices and theories in EFL education, intercultural communication, and cultural sensitivity (Smith & Bertrand, 2002; Landis et al., 2003; Hunicke et al., 2004; Hwang & Wu, 2012). This comprehensive methodological stance, rooted in well-established models, illuminates the potential benefits and challenges of technology-enhanced, problem-solving approaches in nurturing cross-cultural communication skills and cultural sensitivity, contributing valuable insights to the growing body of literature in these domains.

Teaching Materials

The selection of teaching materials was meticulously informed by the underlying objective of enhancing cross-cultural understanding and communication skills among students. These choices were rooted in existing literature, which emphasizes the transformative potential of digital game-based learning in educational contexts (Wu, 2015; Young et al., 2012).

For the experimental group, the lessons incorporated custom GeoGuessr challenges and PBL scenarios. This decision was influenced by Wu's (2015) work with an emphasis on the value of educational digital games in enhancing learning experiences. The "Cross-Cultural Scenarios Challenge" was particularly prominent, which employed images of iconic global locations and artefacts like the Statue of Liberty. This integration into the GeoGuessr game was designed to foster spatial awareness, sharpen observation skills, and promote nuanced cross-cultural communication (Figure 1).

Figure 1. Picture from GeoGuessr



On the other hand, the control group was anchored in more traditional pedagogical methods, utilizing lecture-based teaching materials. These materials, which covered significant global landmarks such as the Eiffel Tower and Times Square, emphasized conventional discussions around cultural differences. The choice was inspired by the findings of Young et al. (2012), who detailed the trends and implications of serious gaming for education, suggesting that traditional methods still hold intrinsic educational value, especially when juxtaposed against game-based learning for comparative purposes.

Both instructional approaches involved discussions, role-playing, and presentations centered on cultural facets. However, while the experimental group's lessons were made dynamic and interactive through GeoGuessr, the control group hewed closely to classic teaching methods. The underlying rationale for these pedagogical decisions was to compare and assess the differential impact of contemporary game-based learning versus traditional methods on students' cross-cultural proficiency.

Interventions

For a span of four weeks, the study employed two distinct instructional approaches to cultivate cross-cultural communication skills and cultural sensitivity. The experimental group immersed themselves in GeoGuessr challenges and PBL scenarios. This involved exposure to real-world images of global landmarks like the Statue of Liberty, Times Square, the Eiffel Tower, and Shibuya Crossing, pushing students to discern cultural nuances and tackle communication barriers. They delved deep into these cross-cultural scenarios, engaging in activities such as role-playing, presentations, and reflections, all while employing the PBL framework. These hands-on experiences allowed students to practically apply their theoretical knowledge.

In contrast, the control group's traditional, lecture-driven approach emphasized theoretical discussions on similar cross-cultural topics. Despite covering comparable content, this method leaned more towards conceptual understanding than real-world problem-solving.

Both approaches aimed to elevate cross-cultural communication skills, with the experimental method using GeoGuessr and PBL offering a more experiential learning journey. Comparatively, while the experimental group benefited from active problem-solving, the control group was rooted in conventional instruction. The study's intent was to evaluate which approach better-equipped students to handle real-world cross-cultural challenges.

Data Analysis

The data analysis in this study was carefully orchestrated through a comprehensive and multi-faceted methodology, integrating both quantitative and qualitative techniques to deeply explore the effects of GeoGuessr and PBL on cross-cultural communication skills and cultural sensitivity among EFL students. In the quantitative dimension, pre-test and post-test assessments were analyzed using statistical software to measure participants' competencies (Dostál, 2015). The qualitative portion involved observation analysis, which included transcription, thematic examination, and coding to identify patterns and themes (Watson et al., 2011). Additionally, interviews were transcribed and subjected to a rigorous thematic analysis, allowing for an in-depth exploration of participants' experiences and perceptions of the intervention (Ellis et al., 2017). This thematic examination of interviews added layers of insight, revealing the subtleties of participant engagement and satisfaction with the GeoGuessr and PBL scenarios. Inter-observer reliability was ensured, and all findings were carefully checked by the two observers. By synergizing questionnaires, observations, thematic analyses, and interviews, the study facilitated a profound and textured understanding of the intervention's impact.

RESULTS

This section details the findings of the study, evaluating the use of GeoGuessr and PBL in EFL education in China. The quantitative results establish the positive impact of these methods on cross-cultural skills, supported by statistical evidence. Complementing this, qualitative insights from classroom observations and interviews provide context and a nuanced understanding. Together, they offer a robust picture of the effectiveness of the interventions.

Quantitative Data Analysis

Table 3 reveals a strong foundation for the subsequent data analysis. Using SPSS 28.0 for reliability analysis, Cronbach's Alpha coefficients are 0.829 for cross-cultural communication skills and 0.818 for cultural sensitivity. Such coefficients, both exceeding the 0.8 thresholds, imply the questionnaire's robust reliability, thereby authenticating the subsequent examinations.

Table 4 presents the normality checks for data using the Kolmogorov-Smirnov and Shapiro-Wilk tests. For the experimental group, both pre-test and post-test data for cross-cultural communication skills and cultural sensitivity adhere to a normal distribution, as indicated by p-values exceeding 0.05. Similarly, the control group's data reflects this pattern. The consistent normality across tests

Table 3. Reliability statistics

Scale	Cronbach's Alpha	N of Items
Cross-Cultural Communication Skills	0.829	10
Cultural Sensitivity	0.818	10

Table 4. Tests of normality

Group	Timing	Measure	Kolmogorov-Smirnov	DF	Shapiro-Wilk	P
Experimental Group	Pre-test	Cross-Cultural Communication Skills	0.097	30	0.981	0.860
		Cultural Sensitivity	0.139	30	0.944	0.118
	Post-test	Cross-Cultural Communication Skills	0.141	30	0.944	0.116
		Cultural Sensitivity	0.158	30	0.968	0.496
Control Group	Pre-test	Cross-Cultural Communication Skills	0.134	30	0.968	0.488
		Cultural Sensitivity	0.112	30	0.963	0.377
	Post-test	Cross-Cultural Communication Skills	0.125	30	0.980	0.831
		Cultural Sensitivity	0.136	30	0.937	0.073

and groups validates the use of parametric analyses in the study, ensuring that the findings are both reliable and robust.

Table 5 indicates the initial proficiency of both groups prior to interventions. For cross-cultural communication skills, the experimental group slightly leads with a score of 3.30 ± 0.53 over the control group's 3.25 ± 0.58 . Conversely, in cultural sensitivity, the experimental group lags minutely with 3.19 ± 0.50 against the control's 3.22 ± 0.52 . With a small effect size of 0.090 and -0.059 for the respective domains, this data suggests that both groups embark on this journey from nearly identical starting points.

Table 6 presents the post-intervention outcomes, illuminating the marked distinction between groups. In cross-cultural communication skills, the experimental group scored 3.98, outperforming the control's 3.67, which, given an effect size of 0.678, translates to a medium practical significance. The experimental group's score of 3.91 in cultural sensitivity contrasts with the control's 3.57, with a substantial effect size of 0.814, indicating a large difference. These numbers testify to the robust impact of the experimental teaching strategies.

Table 7 details the considerable growth within the experimental group. Cross-cultural communication skills soar from 3.30 to 3.98, and the large effect size of -1.435 underscores this remarkable progress. Cultural sensitivity exhibits a jump from 3.19 to 3.91, emphasized by an even larger effect size of -1.700. These amplifications highlight the transformative power of integrating GeoGuessr and PBL in bolstering key competencies among EFL students.

Table 5. Pre-test score comparison

Pre-Test	Experimental Group (n=30)	Control Group (n=30)	T	P	Cohen's d
Cross-Cultural Communication Skills	3.30 ± 0.53	3.25 ± 0.58	0.324	0.747	0.090
Cultural Sensitivity	3.19 ± 0.50	3.22 ± 0.52	-0.228	0.820	-0.059

Table 6. Post-test score comparison

Post-Test	Experimental Group (n=30)	Control Group (n=30)	T	P	Cohen's d
Cross-Cultural Communication Skills	3.98 ± 0.41	3.67 ± 0.50	2.612	0.011	0.678
Cultural Sensitivity	3.91 ± 0.33	3.57 ± 0.49	3.149	0.003	0.814

Table 7. Pre-test and post-test comparison for the experimental group

Experimental Group	Pre-Test	Post-Test	T	P	Cohen's d
Cross-Cultural Communication Skills	3.30±0.53	3.98±0.41	-9.490	0.000	-1.435
Cultural Sensitivity	3.19±0.50	3.91±0.33	-9.548	0.000	-1.700

Table 8 showcases the control group's advancements. Cross-Cultural Communication Skills escalated from 3.25 to 3.67, with a substantial effect size of -0.776, indicating a large shift. Cultural Sensitivity improved from 3.22 to 3.57, yet the effect size of -0.693 points to a medium level of practical significance. These distinctions serve to highlight the enhanced capability of GeoGuessr and PBL techniques in cultivating these essential skills.

Qualitative Data Analysis

The Findings of Observations. During the study, observational methods shed light on participants' interactions with GeoGuessr and PBL in the classroom. These recorded interactions, transcribed meticulously and thematically analyzed, anchor them within broader theoretical frameworks. Five pivotal themes are delineated: (a) Classroom Environment, capturing the learning ambience and student receptivity; (b) Student Engagement, reflecting motivation and active participation levels; (c) Skill Development, assessing the translation of theoretical knowledge to practice; (d) Teaching Techniques, evaluating instructional method efficacy; and (e) Overall Impact, presenting a holistic view of the educational experience. Together, these themes provide a comprehensive lens to discern the distinct advantages of integrating GeoGuessr and PBL over traditional teaching approaches.

The observational findings, as delineated in Table 9, provide profound insights into the EFL instructional landscape, particularly highlighting the symbiotic integration of GeoGuessr and PBL vis-à-vis conventional teaching techniques. Within the experimental group, a vibrant classroom environment is evident, characterized by the strategic integration of GeoGuessr landmarks and the dynamic nature of PBL. This ambience fosters a robust collaboration and facilitates spirited discussions. In contrast, the control group demonstrates a more restrained atmosphere, predominantly anchored in lecture-centric methodologies, leading to minimal group interactions.

Student engagement further paints a telling narrative. The experimental group, buoyed by GeoGuessr's interactivity and the immersive nature of PBL, showcases multifaceted engagements. They delve deep into digital explorations, are actively involved in role-playing exercises, and exude a pronounced emotional connectivity to the learning materials. Conversely, the control group's engagement remains largely unilateral, chiefly revolving around instructor-led interactions.

The trajectory of skill acquisition between the two groups is notably distinct. The experimental group adeptly navigates cultural nuances presented via GeoGuessr and efficiently contextualizes these in PBL's practical scenarios. This dexterity in merging theoretical knowledge with practical applications underscores their rapid skill development. Meanwhile, the control group,

Table 8. Pre-test and post-test comparison for the control group

Control Group	Pre-Test	Post-Test	T	P	Cohen's d
Cross-Cultural Communication Skills	3.25±0.58	3.67±0.50	-11.029	0.000	-0.776
Cultural Sensitivity	3.22±0.52	3.57±0.49	-5.868	0.000	-0.693

Table 9. Observation notes

Observation Themes	Observer 1: Experimental Group	Observer 1: Control Group	Observer 2: Experimental Group	Observer 2: Control Group
Classroom Environment	GeoGuessr landmarks integration, active PBL, robust collaboration.	Lecture-centric, minimized group interactions.	Vibrant GeoGuessr participation, dynamic PBL involvement.	Primarily lecture-oriented, less interactive setting.
Student Engagement	Comprehensive GeoGuessr use, deep PBL immersion, role-playing, heightened emotional connectivity.	Dominantly student-teacher interactions, passive engagement.	Extensive GeoGuessr activity, rich PBL interactions, emotional resonance.	Predominantly passive, with a lecture being the main medium.
Skill Development	Effective cultural cue identification via GeoGuessr; strategic application in real-time scenarios.	Limited practical application of cultural cues, with a more theoretical inclination.	Pronounced cultural sensitivity and hands-on application in diverse scenarios.	Reliance on theory, gradual pace of skill acquisition.
Teaching Techniques	Proactive GeoGuessr facilitation, insightful PBL feedback, tailored guidance.	Predominantly lecture-driven, broad feedback without personalization.	Dynamic GeoGuessr direction, affirmative feedback mechanisms.	Instruction-led, with sparse personalized feedback.
Overall Impact	Tangible GeoGuessr and PBL synergy, enthusiastic student feedback.	Observable challenges with GeoGuessr, diverse student reactions.	Seamless GeoGuessr-PBL amalgamation, overall positive student impact.	Muted successes, varied student perspectives, and responses.

albeit progressing, exhibits a more tempered approach, with a pronounced inclination towards theoretical paradigms.

Pedagogically, the experimental group benefits from a harmonious blend of GeoGuessr-guided explorations and tailored PBL feedback. This individualized approach enriches the learning experience and sharply contrasts with the learning experience of the control group. The latter, despite its reliance on lectures, displays a notable paucity of diversified teaching techniques and lacks in-depth, personalized feedback mechanisms.

Collectively, the overarching impact of these observational themes mirrors the granular insights. The experimental group's feedback leans heavily positive, emphasizing the seamless fusion of GeoGuessr with PBL, while the control group offers mixed reactions, hinting at an underlying yearning for more engaging and interactive instructional methodologies. Through these findings, it becomes unequivocally clear that the integration of digital tools like GeoGuessr with dynamic pedagogies such as PBL holds significant advantages in enhancing cross-cultural communication skills and cultural sensitivity among EFL students.

The Findings of Interviews. In the qualitative dimension of this research, semi-structured interviews were meticulously conducted with students from both the experimental and control cohorts to delve deeply into their experiences with cross-cultural communication. Utilizing the thematic analysis framework proposed by Qu and Johnson (2018), an iterative approach was taken to sift, categorize, and interpret the dense layers of interview data, ensuring a methodical extraction of genuine themes grounded in participants' firsthand experiences.

Five discernible themes crystallize from this rigorous exercise: (a) increased cultural awareness and sensitivity, capturing the participants' nuanced understanding of varied cultural landscapes; (b) strengthened problem-solving and critical thinking skills, echoing their ability to pragmatically deploy cultural insights; (c) fostering collaboration and peer learning, spotlighting the intrinsic value of collective insights and experiences; (d) enhanced engagement and motivation, gauging the allure and efficacy of the integrated teaching strategies; and (e) challenges and criticisms, presenting invaluable feedback and areas of potential refinement. Guided by the structural insights of Qu and Johnson's (2018) framework, these themes collectively offer an

Table 10. Participant perspectives on teaching methods

Theme	Participant Quote (Experimental Group)	Participant Quote (Control Group)
Cultural Awareness & Sensitivity	“GeoGuessr and PBL enhanced my consciousness of cultural differences, improving communication with diverse backgrounds.” (Participant A)	“Lectures provided a foundation in cultural differences but felt theoretical.” (Control Participant A)
Problem-Solving & Critical Thinking	“PBL developed my problem-solving and critical thinking, especially in real-life cultural scenarios.” (Participant B)	“Lectures introduced cross-cultural scenarios, but lacked hands-on exercises.” (Control Participant B)
Collaboration & Peer Learning	“PBL collaboration deepened understanding and discussion of cultural scenarios.” (Participant C)	“Post-lecture discussions allowed some peer learning but were infrequent.” (Control Participant C)
Engagement & Motivation	“GeoGuessr made cultural learning interactive, though initially challenging to navigate.” (Participant D)	“Content was engaging, but lecture-based method felt repetitive.” (Control Participant D)
Challenges & Criticisms	“GeoGuessr was sometimes confusing, especially without PBL integration.” (Participant E)	“Lectures lacked interactive activities and practical aspects.” (Control Participant E)

encompassing view into the multifaceted implications of intertwining GeoGuessr with PBL in the pedagogical domain, affirming the intricate tapestry of students’ experiences and insights within the larger educational narrative.

Table 10 offers a compelling comparison between participants’ experiences with two distinct teaching methods: (a) the integrated GeoGuessr-PBL technique and (b) the traditional lecture-based approach.

Delving into the realm of cultural awareness and sensitivity, the experimental group, exposed to GeoGuessr and PBL, found their cultural consciousness tangibly augmented. This hands-on method, integrating virtual exploration and scenario-based learning, not only heightened their awareness but also improved their communication across diverse cultural spectrums. In contrast, the control group recognized the foundational knowledge lectures provided but highlighted its limitation by describing it as more theoretical than experiential.

When focusing on problem-solving and critical thinking, the experimental group felt that PBL’s emphasis on real-world cultural scenarios honed their analytical and problem-solving skills. The control group, while appreciative of the conceptual understanding from lectures, expressed a clear preference for a more interactive and hands-on learning experience.

The theme of collaboration and peer learning saw experimental participants praising the collaborative nature of PBL. They highlighted its power in fostering in-depth discussions and sharing diverse perspectives on cultural scenarios. Meanwhile, the control group felt their experience lacked consistent peer interactions, pointing out the sporadic nature of post-lecture discussions.

In terms of engagement and motivation, GeoGuessr emerged as a key driver of interactive learning for the experimental group, even though it presented initial navigational challenges. The control group, while finding the lecture content engaging, criticized its repetitive nature and clamored for a more dynamic learning approach.

Lastly, under challenges and criticisms, the experimental group acknowledged occasional complexities in integrating GeoGuessr without the PBL framework but still commended its overall contribution to their learning. In juxtaposition, the control group’s feedback consistently leaned towards a desire for more hands-on, interactive learning experiences, indicating the limitations of purely lecture-based methods.

In synthesizing the insights from Table 10, it becomes abundantly clear that integrating innovative tools like GeoGuessr with a PBL framework can greatly enrich the learning experience in EFL

settings. While traditional lectures serve as a foundation, the modern learner evidently craves more immersive, interactive, and collaborative learning environments.

DISCUSSION

The domain of EFL instruction, especially within China's distinct pedagogical milieu, is undergoing a marked evolution. This study delves into the confluence of the digital platform GeoGuessr and the progressive pedagogical method of PBL to ascertain their collective potential in amplifying cross-cultural communication skills and cultural sensitivity. This endeavor builds upon the foundational perspectives of Alptekin (2002) and others who emphasize the indispensability of interpersonal communication in ELT.

Observational data offers a nuanced understanding of pedagogical dynamics. Within the experimental group, the synergistic melding of GeoGuessr's digital interface with the immersive tenets of PBL fosters a stimulating academic environment. This vibrant backdrop, characterized by active collaboration and rich cultural immersion, starkly contrasts with the more traditional and lecture-centric approach observed in the control group. The extent of student engagement further illuminates this differential. Immersed in GeoGuessr's virtual terrains and further catalyzed by PBL's contextual challenges, the experimental group exhibits pronounced emotional connectivity and active participation. Conversely, the control group's engagement spectrum leans towards a predominantly instructor-driven modality.

When evaluating skill acquisition, the trajectory of the experimental group is particularly enlightening. Through GeoGuessr, complemented by PBL's scenarios, students exhibit a seamless transition from theoretical comprehension to applied knowledge, resonating with the insights offered by Dostál (2015), whereas the control group demonstrates a more deliberate and theory-focused progression.

Interview feedback further enriches the study's findings. Participants from the experimental group voice a consistent appreciation for the integrated GeoGuessr-PBL methodology, highlighting its instrumental role in refining their cultural acumen and critical thinking abilities. In contrast, while recognizing the fundamental importance of lectures, the control group exhibits a palpable desire for a more experiential and immersive learning paradigm.

Within the broader literature context, the study's findings align with and extend prior academic discourses. For instance, Alptekin (2002) and subsequent scholars emphasize the intricate interplay between culture and efficacious ELT strategies. This research amplifies these insights by showcasing GeoGuessr's potential in scaffolding intercultural competence. Furthermore, scholars such as Hwang and Wu (2012) illuminate the pedagogical potential of augmented reality platforms. The current study's exploration of GeoGuessr is reminiscent of such forays, offering empirical validation for its effectiveness. Likewise, the potency of game-based learning paradigms, as highlighted by researchers like Boctor (2013) and Dichev & Dicheva (2017), finds resonance in this study, further underpinning GeoGuessr's educational merits.

In summation, this investigation underscores the transformative capabilities of digital platforms like GeoGuessr, especially when harmoniously integrated with structured pedagogies like PBL. As the contours of EFL instruction evolve, the overarching objective should remain unwavering: the crafting of an academic milieu that is progressive, innovative, and dedicated to nurturing adept cross-cultural communicators.

The conclusions, although supported by the data, might benefit from discussing potential alternative explanations for observed improvements to demonstrate a thorough consideration of potential confounding variables.

CONCLUSION AND LIMITATIONS

This investigation highlights the integration of GeoGuessr and PBL as a potent strategy to enhance cross-cultural communication skills and cultural sensitivity in EFL settings, particularly within the Chinese educational milieu. The findings offer significant insights into the capabilities of modern pedagogies in cultivating cross-cultural competencies and promoting interactive learning environments. However, the study's nuanced conclusions come with inherent limitations. The chosen sample size and the specific educational context within China may pose challenges to the broader extrapolation of results. The simultaneous use of both GeoGuessr and PBL, without distinct experimental delineations for each, blurs the lines when trying to discern the individual impact of each approach. This underscores the imperative for future research endeavors to consider larger and more varied samples, diversify educational settings, and delve deeper into isolated methodological comparisons to further illuminate the effects and applications of such integrated tools. Overall, the research accentuates the transformative potential of leveraging innovative tools in EFL pedagogy while advocating for continuous evaluation and innovation.

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CONFLICT OF INTEREST

The author of this publication declares there is no conflict of interest.

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