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**Developing Dual Language Skills and Intercultural Communication Strategies in a
Bilingual Learning Environment: Investigating a Project Based Learning Programme**

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ABSTRACT: *This study investigated a project-based learning approach and explored developing bilingual language skills and enhanced intercultural communication within an existing Bilingual Learning Community. The study mainly looked at the increased importance of bilingualism and intercultural understanding needed to be successful in a global society. It investigated the effectiveness of using Project-based learning to promote these essential skills and competencies. The research used a mixed methods approach that integrated qualitative and quantitative data collection and analysis methods. The study took place in an international school setting in China within a bilingual learning community using English and Chinese, project-based learning, and STEM activities to enhance language proficiency and intercultural understanding. The qualitative component of the study involved interviews with various teachers involved in the Bilingual Learning Community study, and the specific students in the classes were analysed regarding their understanding of intercultural communication. Questionnaires gathered information about the teacher's and student's knowledge of the concepts. Observations and comprehensive notes were utilised, and natural interactions with students were encouraged so they could be observed under normal circumstances. The quantitative phase employed pre-and post-tests to measure the students' language proficiency and focused explicitly on developing cognitive academic language proficiency (CALP) skills. These tests also measured the student's intercultural learning and competencies. The data collected was analysed using statistical methods. These statistical methods determined the effectiveness of Project-based Learning as a pedagogy to promote bilingual language acquisition and develop intercultural understanding and communication. The findings of this study contributed to the existing body of knowledge on bilingual learning communities, intercultural understanding, and Project-based learning. The study also significantly contributed to the theoretical scientific knowledge by creating a detailed framework with descriptors that related to bilingual language development for students and intercultural communication competence that other scholars could develop further. It was also expected to contribute significantly to applied scientific knowledge. It provided practical information about the students' language skills, communicative behaviours, and difficulties when dealing with problems and will be helpful for teachers in China and abroad.*

KEYWORDS: interculturalism, bilingualism, project, learning, teaching

BILINGUALISM AND COMMUNICATION

Communicating with and appreciating different cultures is becoming increasingly important in our global and linked world. Students with solid bilingual language skills, cultural understanding, and effective intercultural communication strategies are highly regarded in this competitive global society. Bilingualism has long been acknowledged as an essential asset and advantage for people, especially students. According to current education policies in Europe and worldwide, practices should promote the bilingual and multilingual competencies of the students at schools, constituting a micro view of society (Suárez-Orozco & Suárez-Orozco, 2009). All over the world, the composition of student populations is changing; students are using several languages, and teachers are constantly looking for ways to make language and culture understandable for students. Communication has been initiated in modern classrooms within this language and cultural diversity society. Students are developing such learning competencies, interacting, and generally communicating with others in a way that simulates real-life situations. To clarify more, intercultural communication is not only encouraged in such classrooms of bilingual and multilingual students but can be regarded as an essential element in facilitating the teaching and learning processes. One very favourable teaching pedagogy that is effective in encouraging and teaching these skills is project-based learning (PBL). Project-based learning programs create a collaborative, active learning environment that encourages students to learn through real-world problems and projects. This makes learning authentic and helps develop critical thinking and higher-order thinking skills. Genesee and Gandara (1999) highlight the importance of using student-centred, research-based practices and the role this plays in developing effective bilingual learning communities and programmes. The authors investigate language development, academic achievement, and the development of cognition, as well as the socio-emotional effects of such pedagogies.

Project Based Learning and Bilingualism

This experiential learning makes learning more meaningful for the student. Notwithstanding the cross-curricula content covered in the PBL, students learn new subject matter better and master the content more fully (Halvorsen et al., 2012). The bilingual language programme using PBL as a medium of delivery of instruction will attempt to develop these language and cultural skills. This student-centred, experiential learning experience is where students solve real-world problems that can be understood in all languages. Students will be encouraged to use both their native and second languages and strive to ensure high proficiency of Cognitive Academic Language Proficiency skills in both languages. Intercultural communication and understanding entail understanding and respecting other cultures' norms, beliefs and values. Opportunities will be sought for students from all cultures and languages to learn about different perspectives on similar problems and experiences. It is essential to understand how language and identity traverse in learning communities and the need to go past purely building language competency and look deeply into the holistic development of these bilingual students (Kanno, 2017). Nunan and Choi (2010) explain how personal experiences relate to language learning, the connections between language and culture, and the critical effect this has on

Publication of the European Centre for Research Training and Development-UK developing language and cultural development. This can be achieved through careful planning, designing appropriate projects, and providing scaffolding for the different language and cultural groups. Using culturally fair assessments to suit all bilingual or multilingual learning community participants is paramount. Existing research and literature will be used as a point of departure for further exploration of bilingual education and PBL. Furthermore, ways of language acquisition, intercultural understanding and communication will establish a theoretical framework for the study.

Dual Language Development and Intercultural Understanding

This study will investigate whether a project-based learning programme, including STEM-type activities, contributes to primary-aged children's dual language and intercultural communication in an International School in China. The investigation will ascertain whether this project-based learning program positively impacts the acquisition of English and Chinese language skills in a Bilingual Learning Community. While bilingual education has not been a new context of teaching and learning, this study has been initiated by the great need for teachers to be provided with a detailed framework of students' competencies in a language and culture-enriched educational context, which is missing. Apart from the framework that needs to be clarified, no research activity combines Project-based learning and is implemented based on STEM activities. The diversity of the classrooms and the new context of teaching have been receiving research attention. Still, no one has attempted to combine them to delve into the students' responses cognitively, linguistically, and communicatively. The education foundation has piloted and introduced the concept of a Bilingual Learning Community at all its schools in mainland China. The study will assess the benefits of using a bilingual teaching model in acquiring bilingual language skills and enhancing cognitive academic language proficiency. The advantages of a dual language development programme in developing bilingual language skills in this bilingual learning community will be discussed and analysed. The challenges of implementing this teaching and learning pedagogy in a bilingual learning community will also be evaluated, and solutions will be suggested for any challenges. Due to the shift in nationality and language of students at the school, impactful action must be taken to teach the required academic language and assist teachers in developing strategies and appropriate programmes that prepare students with the help of the current technology available (Daniel & Cowan, 2012). The targeted use of various techniques and project based learning will be assessed to determine whether adopting these strategies will enable students to effectively progress in Chinese and English in multiple disciplines through bilingual learning. With this in mind, the level of knowledge available amongst the teachers and students and the required training will also need to be determined to introduce this support into the learning community effectively.

Literacy Through Project-based Learning

Project-based learning (PBL) has proved to be an effective way to learn content and skills across all curriculum areas. When learning literacy through project-based learning, students learn how to read, write, and speak effectively and apply their knowledge to real-world scenarios and problems (Miller, 2021). This experiential learning makes learning more

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meaningful to the student. Notwithstanding the cross-curricula content covered in the PBL, students learn new subject matter better and master the content more fully (Halvorsen et al., 2012). When students learn content through project-based learning, they remember the subject matter for longer, have a deeper understanding, and exhibit higher-order thinking skills when solving these authentic problems. They can effectively apply the newly learned knowledge within their milieu. Project-based learning helps students acquire a language more effectively and encourages them to be aware of how they learn through metacognition. Project-based learning integrates the development of social and cognitive skills and results in the holistic development of the students. It takes learning beyond the classroom and encourages students to embark on a lifelong learning journey. The current co-teaching model at the school will be extended to include bilingualism in English and Chinese within this new Bilingual Learning Community by integrating all disciplines through project-based learning. This bilingual learning community allows students to develop language skills in both English and Chinese and appreciate the delivery of knowledge and skills through these languages. In this new bilingual learning community, the idea is to elevate the level of both Chinese and English and develop the use of academic skills in both these languages. In the bilingual learning community, using project-based learning as the driver, students will apply their language skills to learn other subjects and disciplines using both target languages at the school. The school currently uses the bilingual co-teaching model in the Primary school in a learning community context. The learning community will be extended to include bilingualism in English and Chinese and provide support for speakers of other languages through translanguaging. The aim is to promote learning activities centred on problem-solving while maximising the student's linguistic and cultural resources. In addition, the bilingual learning community environment will seek to develop English and Chinese language proficiency and intercultural understanding. The study will also investigate whether the project-based learning programme activities contribute to developing intercultural communication strategies and skills. Language and culture are closely linked, and the study will also investigate whether understanding culture leads to better language development. Language is a way we communicate and plays a significant part in expressing cultural identity, values, and norms. Students and teachers must fully understand the cultural context in which the language is used to enhance communication among different cultures. Intercultural communication is vitally important as the lack thereof can lead to unnecessary misunderstandings, hindering progress in the classroom and beyond. Nunan and Choi (2010) highlight the personal experiences related to language learning and the connections between language and culture.

Bilingual Learning Communities, CALP and Collaboration

The BLC will also seek to enhance collaboration between teachers of the two languages, develop linguistic and cultural experiences and include on and off-campus facilities and resources to create opportunities for individualised and collaborative work. Language can influence people and how they perceive the world in which they live and can affect various people's perceptions of the world around them (Pavani & Bavelier, 2012). They maintain that it is vital to understand the language used to communicate to enhance intercultural communication. Achieving a high level of English and Chinese academic proficiency refers to

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what we know as cognitive academic language proficiency (CALP). This proficiency helps students engage in literary texts in disciplines other than language and includes subjects such as mathematics, science, music, and arts and social sciences. Cummins (1979) distinguishes between the language used for basic interpersonal communicative skills (BICS) and language used in academic contexts, namely cognitive academic language proficiency. CALP refers to the functional meanings of the language and the way the language is used in context. CALP skills develop in a setting where children learn through context and can gain a deeper understanding of the content as well as the interdisciplinary connections. Hence, by using authentic learning experiences through project-based learning units and including STEM, children can use language in a known context and apply language and culture in practical ways. The aim of the Bilingual Learning Community using PBL as a driver is to provide this opportunity for the students to use language in context through experiential learning including real world problem solving. Sugarman (2018) mentions that bilingual language educational programmes aim for students to develop a high level of oral and written expertise in English and Chinese as additional languages, academic content knowledge, and cross-cultural proficiency. Through the bilingual learning community, the focus is to prepare the students to have a high level of English and Chinese and provide them with the skills to be global citizens in a changing and interconnected world.

Background and Statement of the Problem

Developing the capacity to communicate effectively and value many cultural perspectives is becoming progressively more important. Bilingualism has been widely recognised as a vital advantage for individuals, particularly students. All over the globe, the demographic makeup of student populations is transforming; children are using many languages, and teachers are seeking methods to enhance students' understanding. Students acquire learning abilities, engage in interactions, and connect with others in a manner that resembles real-life situations. Intercultural communication is promoted in classrooms with bilingual/multilingual pupils and is also considered a vital component in facilitating the teaching and learning processes. In light of the change in students' nationality and language at the school, it is necessary to implement effective measures to teach the essential academic vocabulary. This includes supporting teachers in developing strategies and suitable programmes that equip students with available technology (Daniel & Cowan, 2012). The effectiveness of incorporating targeted approaches and Project Based Learning pedagogical approaches in bilingual education will be evaluated to discover if these tactics facilitate students' growth in Chinese and English across several subjects. Considering this, it is necessary to assess the existing level of knowledge among teachers and students and the required training to implement this support in the learning community effectively.

LITERATURE REVIEW

The Purpose of the Literature Review

The purpose of this literature review is to investigate the research conducted on whether Project-Based Learning within a Bilingual Learning Community is beneficial to the

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development of bilingual language abilities, particularly cognitive academic language proficiency and intercultural understanding. This literature review aims to identify the essential characteristics that contribute to the impact of Project-Based Learning within bilingual learning and its effect on developing the skills and understandings indicated earlier. This will be accomplished by integrating the findings from various research papers. It takes a comprehensive look at the research that has already been conducted and the appropriate theoretical frameworks that shed light on the different constructs that contribute to the effectiveness of project-based learning in reaching the desired results. Within the scope of this review, the concepts and theories that underpin bilingual and bi-cultural communities, bilingualism, and project-based learning are investigated. Examining the literature about these fundamental ideas follows the previous three highlighted areas, with separate introductions and conclusions for each component. To present a comprehensive view of how Project-Based Learning (PBL) in a bilingual learning community might help language development and intercultural competence, this literature review aims to highlight the connections between these particular concepts.

Theoretical Framework

This research paper will investigate the development of bilingual language skills in English and Chinese and the acquisition of intercultural communication strategies within a bilingual learning community at an international school in China through a project-based learning pedagogical approach. This study's centre lies in bilingual learning communities where two languages meet, merge, and exist to enrich language learning and foster cognitive academic language proficiency in both languages. Howard et al. (2018) identify dual language education's three goals as bilingualism, biliteracy, and sociocultural competence. The interdependent connection between these languages creates a stimulating environment where students can navigate linguistic boundaries and develop deeper intercultural communication, awareness and understanding. Sugarman (2018) states that dual language education programmes aim to create high proficiency levels in the target languages, the academic content knowledge studied, and intercultural competence and understanding. This bilingual approach linked to a Project-Based Learning pedagogical methodology at the researchers educational milieu will help develop language and intercultural understanding in this safe and stimulating educational environment.

Bilingual Learning Community

A bilingual environment creates a unique learning space where students can navigate linguistic challenges while cultivating an awareness of diverse cultural perspectives. Within this environment, the pedagogical approach plays an important role in shaping the course of language acquisition and intercultural development. Developing bilingual language proficiency and intercultural understanding is critical within this dynamic and constantly evolving environment. This theoretical framework will establish the foundation for the study and obtain information from various educational philosophies and appropriate frameworks that highlight the concepts of dual language development, bilingualism, intercultural understanding, and project-based learning. The investigation will be enhanced and directed to various

Publication of the European Centre for Research Training and Development-UK theoretical frameworks, contributing to a deeper and richer understanding of these involved constructs. These theoretical concepts and frameworks will be critically analysed to assess the suitability and relevance of these frameworks to the study. Each of these three areas needs to be thoroughly investigated and evaluated. Subsequently, the following theories and frameworks will be studied: Bilingualism (Bialystok et al., 2005), second language acquisition (Brown and Larson-Hall (2012), Intercultural Communication theory (Lustig & Koester, 2009) and project-based learning frameworks (PBL).

Bilingualism and Second Language Acquisition

Bilingualism, the ability to use two languages efficiently, is no longer the exception but the standard in many parts of the world as countries become increasingly interconnected and interdependent. With the increase in economic and other forms of migration, almost every region worldwide is affected by the increased need for dual language skills. This paper will explore bilingualism in an international school in China and investigate its impact on acquiring a second language, specifically, the development of cognitive academic language proficiency in English and Mandarin. Here, the benefits of bilingualism will be analysed, as well as the implications for education in schools in China. By looking at the relationship between bilingualism and second language acquisition, this paper shows how learners can use the power of bilingualism to enhance language acquisition. Bilingualism can take various forms, including simultaneous bilingualism, where both languages are acquired from birth; sequential bilingualism, which occurs when the second language is learned after the first; and balanced bilingualism, where the learner has equal proficiency in both languages. This last form of bilingualism will be the focus of the study, as well as the benefits it brings to academic understanding and performance. The international school studied subscribes to developing CALP skills in English and Mandarin, intending to develop academic language proficiency in these main languages.

Bilingualism and its role in SLA

Bilingualism has implications for cognitive development, and studies have shown that bilingual students often outdo their monolingual peers in terms of controlled thinking, concentration, and problem-solving skills. This bilingual advantage has resulted in lots of research into the cognitive processes fundamental to this trend. The linguistic methods affected by bilingualism include alternating between languages in conversation, known as code-switching; language attrition, when there is a gradual loss of proficiency in one of the languages; and cross-linguistic influence involving the transfer of linguistic features from one language to another. Code-switching and code-mixing focus on language behaviours and may not address other aspects, such as intercultural communication strategies. Bilingual students often understand the structure of both languages, which can influence second language acquisition. The social and cultural setting in which bilingualism takes place affects the use of language as well as the acquisition of language. Factors such as society's attitude towards bilingualism, the established language policies, and identity help shape bilingual people's linguistic development and educational experience. The bilingual learning community of the international school

Publication of the European Centre for Research Training and Development-UK studied is designed to support all of the above requirements and includes translanguaging to include learners of a third language. Translanguaging recognises linguistic and cultural diversity, and sees social, cultural, and multimodal resources as essential resources for an inclusive classroom (Dovchin and Lee, 2019). The Natural Order Hypothesis postulates that individuals develop language rules in a predictable order, with some rules tending to come early and others later (Krashen, 1985). Bilingualism can greatly influence second language acquisition, with the age of acquisition being an essential factor, especially if the individual is exposed to the second language earlier. The quality and amount of language input from teachers and peers in the design of the educational setting will also have a significant impact on second language acquisition. Using teaching strategies to include all these essential factors mentioned is key within the researcher's educational background.

Benefits of Bilingualism

Bilingualism provides a variety of cognitive, linguistic and socio-cultural benefits. The cognitive benefits include enhancing problem-solving and developing higher-order thinking skills, analyses of language structures called metalinguistic awareness and the ability to adapt to new situations and challenges. Bilingual individuals often demonstrate extended vocabulary and richer grammatical use in both target languages. Within the socio-cultural context, bilingualism enhances intercultural understanding and competence. This aspect enables the bilingual individual to understand diversity and culture better. The cognitive and socio-cultural benefits of bilingual individuals have been instrumental in developing bilingual educational education. Bilingual programmes are a fast-growing trend in the People's Republic of China, notably in independent schools.

Bilingualism is a complex and dynamic concept with far-reaching implications for second language acquisition. The theories of bilingualism comprise the Linguistic Interdependence Hypothesis, which postulates that knowledge of two languages can positively influence language development and cognitive abilities. The Threshold Hypothesis asserts that bilingual proficiency provides mental benefits when a certain level of proficiency is attained in both languages. Understanding the cognitive, linguistic, and socio-cultural features at the forefront of bilingualism will assist educators and other academic leaders in understanding and using this powerful tool to increase the language learners' experience. This phenomenon's correct understanding and use will enrich societies, individual expertise, and linguistic skills.

Intercultural Communication and Understanding

Intercultural communication and understanding are another component of this study and the subsequent development of this area in an International school in China. Meaningful and successful intercultural interactions are central to international education (Deardorff, 2008). She continues and postulates that the framework for intercultural competence entails the development of critical attitudes, knowledge, and skills. The perspectives include respect, openness, curiosity, and discovery. Intercultural communication competence is communicating effectively and correctly with people from different cultures. Intercultural communication competence (ICC) dramatically affects cross-cultural interactions and the environment

Publication of the European Centre for Research Training and Development-UK (Sharma et al., 2012). Individuals with higher ICC show greater empathy and respect for individuals from other cultures, are less judgmental, and use their knowledge and experience to predict outcomes in many situations (Lustig & Koester, 2009). Furthermore, the required knowledge has cultural self-awareness, deep cultural understanding, and culture-specific expertise that provides for understanding others' worldviews. The skills required include higher-order thinking skills such as observation, listening, analysing, interpreting and relating. The theoretical framework for intercultural competence draws on several areas, including theories such as Cultural Intelligence (CQ), Cultural Adaptation Theory, and Intercultural Sensitivity Theory. These theories emphasise the importance of developing cultural awareness, empathy, and communication skills to traverse diverse and challenging cultural contexts successfully.

Intercultural Communication in an Educational Context

In an international educational context, intercultural communication is of utmost importance due to the increase in globalisation and the resulting bilingual learning communities where learners from diverse linguistic and cultural backgrounds work together daily (Papadopoulos, 2020; Papadopoulos, 2021; Papadopoulos & Shin, 2021; Papadopoulos, 2022). To develop these essential skills, educators and researchers must have a solid theoretical foundation to guide the research, teaching strategies and interventions. This paper will introduce the theoretical frameworks informing this paper on intercultural communication in a bilingual learning community setting in an international school in mainland China. The paper will explore how these bilingual learners develop the skills to navigate cultural and linguistic diversity and how they can develop these competencies to enhance their learning experiences through a Project-based learning pedagogical approach. This paper will draw on established theories and concepts in the intercultural communication field.

Intercultural Competence

Intercultural competence is a theoretical framework for understanding how people engage with learners from various cultural backgrounds. Bennet's Developmental Model of Intercultural Sensitivity suggests that individuals develop through stages of increasing intercultural competence. The framework provides for understanding intercultural communication's cognitive, affective, and behavioural elements and offers a developmental pathway for learners to follow. Stier (2019) emphasises this and maintains that people's culture can be understood by their actions, namely their behavioural patterns and the way they act, which are their functional patterns. Bean (2006) suggests that intercultural competence is closely linked to awareness, knowledge, skills, and the processes that help individuals to function effectively in culturally diverse situations when dealing with individuals from other cultures. Ladson-Billings (1994), through the framework of culturally responsive Pedagogy, emphasised the importance of recognising the students' cultural backgrounds and integrating this into the learning process. Educators can use this framework in bilingual learning communities to create an inclusive and culturally sensitive learning environment, fostering intercultural communication and understanding. Deardorff (2006) outlines in her Intercultural Competence

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Development model the skills and attributes needed for learners to navigate intercultural interactions successfully. This framework can help evaluate the impact of intercultural communication strategies on building intercultural competence.

These theoretical frameworks will guide the study of Intercultural competency in a Bilingual Learning Community. Incorporating these theories on intercultural communication, language acquisition, and culture in education will help the reader understand how communication strategies and intercultural competence impact language learning and cultural competence in bilingual settings. These frameworks will serve as the foundation for data collection, analysis, and the development of practical recommendations for educators and policymakers in bilingual education contexts.

Research Design

Purpose of the Study, Research Aims, and Objectives

This mixed-method study investigates whether a project-based learning programme will contribute to developing primary education students' dual language skills in an international school in China within a bilingual learning community. The study will measure the impact of the PBL pedagogical approach on language acquisition, specifically the cultivation of Cognitive Academic Language Proficiency in the target languages. Development of desired cultural competencies, specifically the ability to navigate cultural differences, understand diverse contexts and engage in cross-cultural understandings and communications, will be evaluated. This study will also try to isolate specific instructional strategies that assist in acquiring language skills and developing intercultural communication and understanding. The investigation will also determine the impact of authentic, experiential, and significant projects on meaningfully acquiring these skills. Using a mixed methods approach containing quantitative and qualitative data, the perceptions and attitudes of teachers and students regarding their views on the programme's effectiveness will be measured. This will be achieved by using questionnaires, surveys, and pre and post-tests to measure language development and observations of students in the learning community. Through the conducting and implementation of this study, the researcher will endeavour to answer the following research questions:

Q1 How does implementing a project-based learning programme based on STEM activities contribute to developing primary education students' dual language skills in the International School in China?

Q2 How does implementing a project-based learning programme based on STEM activities contribute to developing *intercultural communication strategies* for primary education students in the International School in China?

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Research Aims and Objectives

Aims:

To explore the impact of using a dual language development programme through project-based learning to enhance English and Chinese proficiency in a bilingual learning community and students' intercultural skills within an international school.

Objectives:

1. To enhance dual language development through Project-based learning and develop English and Chinese language skills and intercultural communication in a Bilingual Learning Community environment.
2. To assess students' language proficiency in pre- and post-project-based learning programmes.
3. To identify the intercultural communication strategies students and teachers use during the project-based learning programme.
4. To analyse the data collected to establish the effectiveness of the project-based learning programme in enhancing dual language skills and intercultural communication strategies.
5. To provide proposals for future project-based learning programmes in Bilingual Learning Community environments.

Research Questions and Research Hypotheses

Research Questions

RQ1 How does implementing a project-based learning programme based on STEM activities contribute to developing primary education students' dual language skills in the International School in China?

RQ2 How does implementing a project-based learning programme based on STEM activities contribute to developing *intercultural communication strategies* for primary education students in the International School in China?

Hypotheses

H1 A positive relationship exists between implementing a project-based learning programme based on STEM activities and developing primary education students' English and Chinese language skills.

H2 There is a positive relationship between implementing a project-based learning programme based on STEM activities and developing intercultural communication strategies in primary education students.

Tools

The study will be conducted in the Year Five classrooms where project-based learning and stem-type activities are implemented. The research will use a mixed methods approach and incorporate both qualitative and quantitative data collection and analysis methods to give a balanced approach to the study. The qualitative component of the study will utilise interviews with various teachers involved in the Bilingual Learning community. Also, it will include responses from the specific students in the classes regarding their understanding of intercultural communication. Questionnaires gathered information about the teacher's and student's knowledge of the concepts. Observations and comprehensive notes will be utilised, and these methods should encourage natural interactions with students so they can be observed under normal circumstances. The quantitative phase of the study will employ pre-and post-tests and measure the student's language proficiency, specifically focusing on developing cognitive academic language proficiency skills over a specified time. These tests also measured the student's intercultural learning and cultural competencies. The data collected will be analysed using statistical methods. These statistical methods determined the effectiveness of Project-based Learning as a pedagogy to promote bilingual language acquisition and develop intercultural understanding and communication. Convenience sampling will be used as the participants are selected for inclusion in the sample because they are the easiest for the researcher to access as they are already attending the school and are involved in the Bilingual Learning community. No students of the researcher will be employed in this study.

Participants

The population comprises primary education students at an international school in mainland China, part of an educational foundation. The sample is a mixed group of girls and boys around ten years old with a mix of English, Chinese and other languages. The teachers at the International School where each class has a Western and Chinese teacher, push-in support from EAL teachers, and learning support as needed. Certain subjects such as Mathematics, the Chinese Study Course and Science and Social Science are co-taught while specialist language teachers teach the two main languages. The nature of the study is investigative and experimental. It aims to investigate the effectiveness of using a project-based learning pedagogy within a bilingual learning community in developing dual language skills, intercultural learning, and intercultural communication skills.

Expected findings

This study is expected to demonstrate a rise in bilingual language ability and enhanced intercultural communication skills within the bilingual learning community using project-based learning as the driver. The qualitative study will gather insights into the teachers' and students' comprehension of intercultural communication through interviews and surveys. The study seeks to clarify the effectiveness of project-based learning in promoting intercultural understanding and examine if language competency, particularly in academic language abilities, is enhanced by project-based learning. The anticipated outcome is improving students' bilingual language academic proficiency in Chinese and English due to implementing the project-based learning methodology. Project-based learning, with its opportunities for

Publication of the European Centre for Research Training and Development-UK collaboration, is expected to bolster intercultural communication and foster a more profound understanding between cultures. The study will create a thorough framework encompassing descriptors about advancing bilingual language abilities and intercultural communication competence and will be open to input from future researchers. The practical outcomes of the studies would offer advantages to educators and leaders in the field of education, both in China and internationally.

CONCLUSION

In conclusion, this research design outlines a comprehensive mixed-method study aimed at investigating the impact of a project-based learning (PBL) program based on STEM activities on the dual language skills and intercultural communication strategies of primary education students in an international school in China. The study's purpose is to explore the effectiveness of a dual language development program within a bilingual learning community, with a focus on English and Chinese proficiency, as well as intercultural skills.

The research aims and objectives are clearly defined, emphasising the enhancement of dual language development through PBL, the assessment of language proficiency before and after the program, the identification of intercultural communication strategies, and the analysis of data to establish the effectiveness of the PBL program. Additionally, the study aims to provide practical proposals for future project-based learning programs in bilingual learning community environments.

The research questions and hypotheses provide a clear framework for investigation, addressing the contributions of a PBL program to language skills and intercultural communication strategies. The expected findings anticipate a positive impact on bilingual language ability and enhanced intercultural communication skills within the bilingual learning community.

The tools selected for data collection, including interviews, surveys, questionnaires, observations, and pre-and post-tests, present a well-rounded approach to capturing both qualitative and quantitative aspects of the study. The participants, comprising primary education students in an international school in China, are carefully described, and the study's investigative and experimental nature is highlighted.

Anticipated outcomes include a deeper understanding of the effectiveness of PBL in promoting intercultural understanding and improving language competency, particularly in academic language abilities. The study's findings are expected to contribute to the development of a comprehensive framework for advancing bilingual language abilities and intercultural communication competence.

In summary, this research design lays the foundation for a rigorous investigation into the impact of a PBL program on dual language skills and intercultural communication, with the potential to inform educational practices not only in China but also internationally. The

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outcomes of this study hold promise for educators and leaders seeking to enhance language
development and intercultural communication in bilingual learning communities.

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