

Some Measures to Improve the Effectiveness of Bilingual Mathematics - English Teaching In Primary Schools in Vietnam



Anh Chu Ngoc¹, Hien Hoang Thi Thu², Thi Le An³, Trang Than Thi Thu⁴

^{1,2,3,4}Thai Nguyen University of Education, Faculty of Primary Education, Vietnam

ABSTRACT: In the context of strong globalisation and international integration, nurturing language proficiency in foreign languages is an essential requirement for countries to enhance their status and open up opportunities for extensive cooperation and exchange. To contribute to improving the quality of primary education in the trend of international integration, our research proposes a bilingual teaching process for Mathematics in English at primary schools and suggests three measures to enhance the effectiveness of bilingual Mathematics education in Vietnam, focusing on developing students' competencies.

KEYWORDS: Bilingual, Mathematics – English, Primary School, Vietnam, CLIL.

I. INTRODUCTION

English language instruction in Mathematics marks a significant shift in education. It signifies not only a new teaching approach but also paves the way for the widespread implementation of this method to meet the 2018 General Education Program and enhance students' comprehensive cognitive and language proficiency. The model of content and language-integrated learning (CLIL) is the golden key to helping children develop comprehensive thinking and confidently communicate in English like a native speaker. Through learning the content of mathematical knowledge with diverse topics, children discover, capture and have the opportunity to listen, speak, read and write in a second language - English to mathematically thinking.

According to Marsh (2002) and Dalton-Puffer (2007) suggest that CLIL is an educational context or environment where language is not the main objective but rather used as a tool to convey the content of a subject. Coyle, Hood, and Marsh (2020) define CLIL as a dual-focused instructional approach where language is not only a tool but also the content taught simultaneously. This means students learn not only the subject matter but also the target language through "using language to learn, and learning to use language." Additionally, it emphasizes the close integration of subject learning and language skill development.

Therefore, integrating content and language in teaching Mathematics in English can be understood as an instructional approach where language (English) is both a tool and content of instruction. However, language is not the main focus; rather, through learning the content of the subject (Mathematics), students have the opportunity to develop language skills (English). According to Mehisto and Cs (2008), this approach has several key characteristics:

- More focal points in learning: CLIL emphasizes the development of language by integrating it into the subject matter. Language is not just a tool but an integral part of knowledge. This can be achieved by combining language teaching with subjects and integrating different disciplines. Extracurricular themes or learning projects can be used to promote the connection between language and knowledge. Encouraging students to reflect on the learning process is also considered important.

- Safe and diverse learning environment: In CLIL classrooms, language and knowledge interact naturally and continuously. Learning activities and vocabulary are used in regular learning environments, creating conditions for students to feel confident to experiment with language and knowledge. Mistakes are not seen as failures but as part of the learning process. This environment also encourages the use of language in real-life situations and enhances students' language awareness.

- Authenticity and flexibility: Authenticity and flexibility are the focus of CLIL. Students are encouraged to seek language support when needed. This approach is flexibly adjusted to reflect the students' needs and interests. The connection between learning and real-life is frequently made, and materials from various media sources are used to enrich the learning content.

- Active Learning and Collaboration: Students are at the center of the learning process. Teachers serve not only as guides but also as supporters, encouraging students to engage in presenting and communicating in class. Students contribute to creating collective learning outcomes and self-monitor their learning process. Peer collaboration is encouraged, providing opportunities for students to learn from each other.

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- **Scaffolded Instruction:** Teachers design lessons based on students' existing knowledge, skills, attitudes, interests, and experiences. Information is condensed for easy understanding by students and caters to various learning methods. This technique fosters creativity, critical thinking, and presents students with increasingly complex tasks.
- **Collaboration between CLIL and Subject Teachers:** CLIL teachers and subject teachers collaborate in planning courses, lessons, and topics. Collaboration also involves support from parents, the local community, authorities, and schools to enhance understanding of CLIL approaches and effective student support.

II. RESULTS

A. *Designing lessons plan on Numbers and Operations content for 3rd grade in English following the student-centered, interactive approach.*

Step 1: Identify the required learning outcomes for Mathematics and English lessons.

This step involves determining the lessons and assessments to be taught in Mathematics as well as the necessary knowledge and skills to be developed corresponding to the selected topic. In English lessons, it is important to specify the assessment content and language skills that students can acquire and apply after completing the lesson; simultaneously, create a list of "vocabulary and sentence structures or grammar needed" for use during communication activities.

Step 2: Identify cultural, social, and community issues related to the selected lesson. These issues are used to broaden the content of the lesson and connect it with reality to develop essential knowledge and skills for students and help them engage with real-life issues.

Step 3: Set up activities to meet the required standards for Mathematics and English of the selected topic, and develop common core competencies and language for students. Additionally, assess students' cognitive thinking levels during the activities.

Step 4: Identify and prepare necessary teaching materials, including devices and educational resources used to organize teaching activities to meet the lesson requirements.

Step 5: Design a comprehensive lesson plan based on the specified requirements, teaching materials, and previously identified activities.

Step 6: Develop an assessment table based on the 4Cs framework of CLIL (Communication, Culture, Cognition, and Content). Then, review the lesson plan and make necessary adjustments.

Step 7: Implement the teaching plan as designed. After teaching, teachers reflect and make adjustments if needed.

Step 8: Evaluation and feedback

Evaluate students' learning progress and the development of core competencies and language skills; provide feedback on both mathematical knowledge and language usage. This process helps teachers develop lesson plans for Grade 3 Mathematics content in English using student-centered, task-based learning in a specific, clear manner to ensure effective knowledge acquisition and language development for students. During the teaching process, teachers should avoid focusing too much on speaking and instead create opportunities for students to practice English. Teachers should be creative in using teaching aids and methods to generate interest and bring a positive atmosphere to the lesson.

B. *Some bilingual teaching methods in Mathematics aimed at developing primary school students' qualities and competencies.*

Method 1: Developing and reinforcing vocabulary and sentence structures in English Mathematics for students

a) Purpose of the method

When studying Mathematics in English, students are essentially learning a new language. In language teaching and learning, vocabulary and sentence structures are crucial elements closely related to each other in forming a language system and serving as tools, conditions for developing other skills. Establishing and consolidating the vocabulary and sentence structures in English Mathematics for students is extremely important, helping them understand and use mathematical vocabulary through specific teaching and practice. Mastering the basic mathematical concepts and a solid mathematical vocabulary helps students not only understand the language but also how mathematical principles are applied. This forms the foundation for students' theoretical development. With a good vocabulary base, students can easily comprehend the content of the problem and know how to present clear, logical solutions. To support students in developing and reinforcing their vocabulary and sentence structures in English Mathematics, teachers need appropriate teaching methods to enhance students' mathematical vocabulary in English, facilitating a smoother teaching and learning process.

b) Implementation

Here are some ways teachers can help students enhance their vocabulary. Firstly, to support students in learning English math vocabulary and sentence structures, students need to be introduced to and practice basic terms such as "addition," "subtraction," "multiplication," and "division." This not only helps students memorize vocabulary but also understand how to use them in specific mathematical situations. Teachers can organize activities like matching words with images, vocabulary games, and songs to reinforce this knowledge.

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Secondly, using learning objects: Utilizing learning objects like number boards, counting sticks, or visual math applications can help students better understand mathematical concepts. Teachers can employ the CPA method (Concrete, Pictorial, Abstract) to help students comprehend and remember mathematical concepts through the use of concrete objects, pictures, and abstract symbols. This facilitates an easy transition from experiential learning to theoretical understanding.

Thirdly, creating a vocabulary board: Teachers can create a vocabulary board in the classroom with new words, illustrated images, and brief definitions; Encouraging students to maintain a math vocabulary notebook for note-taking and revision of terms; or using concept maps/mind maps for students to demonstrate vocabulary in various forms, thereby reinforcing students' understanding.

Method 2. Exploit active teaching methods and techniques suitable to teaching Mathematics in English.

a) Purpose of the method

Exploring active teaching methods and techniques in English Mathematics education is not only conducive to facilitating learning conditions but also contributes to students' comprehensive development in both mathematical and language skills.

b) Implementation

Some methods and techniques that can be applied include visual observation methods such as using images, graphs, and illustrations to explain mathematical concepts. For instance, using illustrative images in English Mathematics education at elementary schools can involve creating flashcards with images and English vocabulary to help students learn new words, utilizing illustrations in textbooks or printing images representing various situations or scenes to create stories or games, incorporating toys or real objects in the classroom to connect vocabulary with specific objects, and employing dynamic images like videos or animations to illustrate situations and stories, enhancing students' understanding and engagement.

Regular practice method: Providing opportunities for students to practice and apply mathematical concepts through exercises and practical activities. Practice helps students use mathematical language and English confidently. For example, implementing regular practice methods in teaching Mathematics in English at primary schools can be done as follows:

- Math exercises and problems in English: Use textbooks and teaching materials with math exercises and problems arranged in English.

- Math games: Create math games or activities that require students to use English to participate.

- Lectures and discussions: Organize lectures and discussions in English for students to engage and communicate about mathematical concepts and techniques.

Question and answer method: Creating communication situations where students need to use English to exchange opinions, explain, and discuss mathematical issues. This helps students develop English communication skills. For example, implementing communication situations in English in Math classes can be done as follows:

- Group discussions: Organize group discussion activities about mathematical issues using English as the main language.

- Interactive lectures: Create interactive lectures that require students to participate, contribute opinions, reason, and solve problems in English.

- Role-playing: Create role-playing situations where students have to use English to express ideas and solve mathematical problems.

Utilizing Technology: Utilize digital tools and educational software to create engaging Math activities in English. Educational apps and games can provide an interactive and fun learning environment for students.

For instance, incorporating technology in teaching Math in English can be done as follows:

- Use educational software and mobile apps: Search for and use educational software and mobile apps that offer learning resources, exercises, and Math games in English.

- Utilize educational websites: Search for and use educational websites that provide videos, lectures, exercises, and study materials for Math in English.

- Use interactive whiteboards: Use interactive whiteboards to illustrate, explain, and practice Math exercises in English in the classroom.

Group Discussion Method: Encourage students to work in groups and discuss Math issues in English. This helps students learn from each other and develop the flexibility to use both languages.

Implementing collaborative methods and group discussions in teaching Math in English can be carried out as follows:

- Task assignment: Divide students into small groups and assign specific tasks to each group, such as solving a particular problem or discussing a mathematical concept.

- Organize pair or small group discussions: Conduct pair or small group discussion activities on Math exercises in English, where students can share their ideas and reasoning with each other.

- Arrange larger group discussions: Organize larger group discussions in the classroom, where groups can share their results and learn from one another.

Feedback and Positive Evaluation Method: Providing positive feedback and evaluation on students' progress in using English language in Mathematics. Feedback helps students identify and correct weaknesses, thereby enhancing their skills.

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Implementing feedback and positive evaluation measures in English Mathematics courses can be done as follows:

- Personal feedback: Providing specific individual feedback on the performance and progress of each student in solving mathematical problems and issues in English.

- Regular learning assessment: Organizing tests, exercises, and presentations to assess students' knowledge and skills in Mathematics in English and providing feedback based on the results.

- Support and guidance: Offering specific support and guidance to help students improve their skills and understanding, from solving exercises to using mathematical language in English.

Method 3. Applying educational games in the process of learning Mathematics in English

a) Objectives of the method

Learning Mathematics through games is always an ideal way to help students engage, explore new mathematical concepts, and review Math in class. Mathematical games not only bring Math closer to students in a fun and engaging way but also help students remember lessons better and apply the discovered concepts more easily in real life. Especially for elementary school students needing to develop language skills, Math games in English will be an effective method to achieve both fundamental Math knowledge and build a strong foundation in English. The aim of using bilingual games in Math education is to activate the classroom atmosphere, create excitement before learning, and help students receive content in a lively and enthusiastic manner. Through this approach, children develop logical thinking and problem-solving skills. Students learn strategic thinking through experimentation and are encouraged with rewards, helping sustain their passion for learning. Games not only make learning more enjoyable but also contribute to the development of essential skills for students.

b) Implementation

Teachers can organize games during the Warm-up or Applied Activity, or after the lesson to help students review the knowledge from the previous lesson or practice the skills just learned, fostering enthusiasm and excitement before or after class while also developing students' observation, analysis, and thinking skills. Particularly, it helps students review and practice listening, speaking, reading, and writing skills related to the vocabulary and sentence structures in English that have been explored.

- Selecting suitable materials and tools: Ensure that visual materials and tools (images, charts, videos, software, models) are relevant to the lesson content and students' level. Use reliable and high-quality visual resources to ensure accuracy and scientific quality.

- Efficiently combining language and visuals: Clearly explain terms and concepts in English, accompanied by illustrative images for better understanding. Use simple and understandable language, while providing opportunities for students to ask questions when in doubt.

- Flexibility and adjustment based on student feedback: Monitor and evaluate students' responses to adjust teaching methods accordingly. Listen to feedback from students to enhance and optimize the teaching process.

- Choosing games suitable for the learning objectives: Ensure that games selected align with the lesson objectives and subject content. Games should help students reinforce knowledge, develop skills, and apply theory into practice.

- Classroom activities should promote critical thinking, problem-solving skills, and teamwork.

- Activities or games should be designed to be easy to understand and participate in, avoiding unnecessary complexity.

- Provide clear, understandable instructions that can be adjusted according to students' level of understanding.

- Spark interest and motivation for students: Games or activities should be engaging and interesting to captivate students' attention and foster learning motivation. Utilize healthy competition and rewards to encourage active participation.

- Ensure fairness and equal participation: Ensure that all students have opportunities to participate and contribute during class. Avoid letting a particular group of students dominate or diminish the confidence of others.

- Provide assessment and feedback to help students recognize what they have learned. Discuss what students have learned, challenges faced, and solutions for improvement in the future.

- Manage time effectively: Allocate time for games reasonably to not disrupt other parts of the lesson. Ensure that methods and techniques do not consume excessive time and interrupt the overall learning process.

III. CONCLUSIONS

The CLIL method plays a crucial role in developing language skills for students while helping them grasp mathematical knowledge. By using the target language (English) in teaching Mathematics, students are encouraged to naturally and flexibly use and develop language skills.

Designing bilingual English - Vietnamese math lessons for first grade using a content and language integrated approach (CLIL) requires thorough preparation, support from textbooks and learning resources, and especially an understanding of the cognitive characteristics of primary school students. When effectively applying the CLIL method, teachers can optimize the learning process and help students develop comprehensively in both subject knowledge and language skills.

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