НАУЧНЫЙ ЖУРНАЛ
НАУКА И МИРОВОЗЗРЕНИЕ

УДК- 37.018

CONTENT AND LANGUAGE INTEGRATED LEARNING (CLIL) METHOD FOR ENGINEERING AND TECHNOLOGY UNIVERSITY STUDENTS

Tangrykulyeva Aylar Kemalovna
Instructor of Oguz han Engineering and Technology University of Turkmenistan
Ashgabat, Turkmenistan

Owezova Maysa Saparmuhammedovna
Student of Oguz han Engineering and Technology University of Turkmenistan
Ashgabat, Turkmenistan

Abstract

This paper explores the application of the Content and Language Integrated Learning (CLIL) method in engineering and technology higher education contexts. CLIL, which integrates content instruction with language learning, is increasingly recognized as an effective pedagogical approach to prepare students for globalized academic and professional environments. For engineering and technology students, where technical English is a key skill, CLIL offers a strategic framework that enhances both content mastery and language proficiency. This paper examines the theoretical foundations of CLIL, its benefits and challenges in engineering education, and practical strategies for implementation. The study concludes that CLIL can significantly improve language competence without compromising technical knowledge, fostering international competence among engineering graduates.

Keywords: CLIL, engineering education, bilingual education, ESP, higher education, language learning, content instruction, technology students.

Introduction

In an increasingly globalized world, engineers and technologists must not only master their technical disciplines but also communicate effectively in English, the lingua franca of science and technology. Traditional English as a Foreign Language (EFL) classes often fall short in preparing students for the linguistic demands of their fields. Content and Language Integrated Learning (CLIL), a dual-focused educational approach, offers a promising solution. By simultaneously teaching subject matter and language, CLIL helps students to develop academic language competence in real-world contexts.

Originally developed in European educational systems, CLIL has expanded globally and is gaining traction in higher education, particularly in engineering and technology institutions.

This paper analyzes how CLIL can be used effectively to enhance both technical understanding and English proficiency among university students in engineering and technology programs.

CLIL: Concept and Theoretical Background

Content and Language Integrated Learning is defined as an approach where "subjects are taught and studied in a second language" (Coyle, Hood, & Marsh, 2010). The objective is twofold: content learning and language acquisition. CLIL draws on both language acquisition theories and constructivist learning principles, emphasizing active engagement, scaffolding, and contextualized instruction.

CLIL incorporates four key elements known as the "4Cs Framework": Content, Communication, Cognition, and Culture. These elements ensure that learning is holistic, promoting not only linguistic and cognitive development but also intercultural competence. In engineering education, this translates into learning scientific concepts and developing technical vocabulary, while also engaging in problem-solving and collaboration in English.

CLIL in Engineering and Technology Education

1. Rationale for CLIL in Engineering

Engineering students often need to read and write technical documents, follow academic lectures, and participate in international conferences—all in English. CLIL addresses these needs by embedding language learning within disciplinary content, making the process more relevant and effective. Studies show that CLIL can enhance academic vocabulary, reading comprehension, and oral communication, all critical skills for engineering students (Dalton-Puffer, 2007).

2. Implementation Models

There are several models of CLIL implementation in higher education:

Parallel Teaching: Language and content are taught in separate but coordinated classes.

Team Teaching: Language and content teachers collaborate in the same classroom.

Integrated Courses: A single instructor delivers both content and language

instruction, often requiring training in both domains.

Engineering faculties can choose the most suitable model depending on resources, staff qualifications, and institutional goals.

3. Teaching Strategies

Effective CLIL instruction for engineering students involves:

Scaffolded Language Support: Use of glossaries, visuals, and sentence frames to aid comprehension.

Task-Based Learning: Projects and problem-solving tasks that mimic real engineering scenarios.

Language-Focused Feedback: Integrating grammar and vocabulary correction into content instruction.

Multimodal Resources: Use of simulations, diagrams, and videos to support content understanding and language input.

4. Assessment in CLIL Contexts

Assessment in CLIL must balance content mastery and language development. Rubrics should reflect both aspects, and multiple forms of evaluation—written reports, presentations, portfolios—are encouraged to capture diverse student abilities. Language assessment should be formative and supportive rather than punitive.

Challenges and Solutions

Despite its benefits, CLIL also presents several challenges:

Teacher Preparedness: Many content teachers lack training in language pedagogy, while language teachers may lack subject knowledge. Cross-disciplinary collaboration and professional development are essential.

Curriculum Design: Integrating language objectives into content syllabi requires careful planning and institutional support.

Student Resistance: Students with low English proficiency may initially feel overwhelmed. Providing gradual exposure and support mechanisms can help mitigate this.

Best practices suggest the importance of institutional commitment, ongoing teacher training, and a phased implementation strategy to ensure CLIL success.

Case Studies and Evidence

Research in various engineering faculties worldwide shows positive outcomes from CLIL adoption. For instance, a study in a Spanish technical university reported improved reading comprehension and increased student motivation in CLIL-based mechanical engineering courses (Aguilar & Rodríguez, 2012). Similar results have been seen in Southeast Asia, where English-medium instruction combined with CLIL methodologies boosted both technical and communicative competence (Yang, 2015).

These findings suggest that CLIL not only benefits language learning but also promotes deeper engagement with disciplinary content.

Conclusion

CLIL represents a powerful pedagogical innovation for engineering and technology education. By aligning language learning with content instruction, it provides a context-rich environment that enhances both technical and linguistic competencies. While implementation requires planning, collaboration, and training, the benefits for students—especially in terms of employability, academic performance, and international readiness—are significant. As global demand for bilingual engineers rises, CLIL stands out as an essential methodology for the future of engineering education.

References

1. Aguilar, M., & Rodríguez, R. (2012). Lecturer and student perceptions on CLIL at a Spanish university. International Journal of Bilingual Education and Bilingualism, 15(2), 183–197.
2. Coyle, D., Hood, P., & Marsh, D. (2010). CLIL: Content and Language Integrated Learning. Cambridge University Press.
3. Dalton-Puffer, C. (2007). Discourse in Content and Language Integrated Learning (CLIL) Classrooms. John Benjamins Publishing.
4. Yang, W. (2015). Content and Language Integrated Learning next in Asia: Evidence of CLIL in the Taiwanese context. International Journal of Bilingual Education and Bilingualism, 18(4), 361–382.