ISSN: 2181-3906 2026

International scientific journal
«MODERN SCIENCE AND RESEARCH»
VOLUME 5 / ISSUE 9 / UIF:8.2 / MODERNSCIENCE.UZ

TEACHING 6TH-GRADE NATURAL SCIENCE THROUGH A BILINGUAL APPROACH AND CLIL

Mannobkhonova Mukaddamkhon Uktamkhon qizi
Doctoral Researcher, Gulistan State University.
e-mail: *mmannobxonova94@gmail.com*
https://doi.org/10.5281/zenodo.22676711

Abstract. *This article examines the methodological possibilities of organizing 6th-grade Natural Science lessons based on a bilingual approach and Content and Language Integrated Learning (CLIL). Particular attention is paid to the use of English not as an end in itself, but as a means of understanding and expressing scientific concepts in the process of learning Natural Science content. The study proposes a methodological approach aimed at integrating subject content, scientific terminology, practical activities, and communicative tasks. It also considers the possibilities of taking students' age and language proficiency into account, using visual support, creating problem-based situations, and integrating experiments and observations with bilingual terminology. Such an approach enables students not only to acquire natural science knowledge but also to develop their ability to explain, justify, and apply this knowledge in practical situations.*

Keywords: *Natural Science, bilingual education, CLIL, scientific literacy, scientific terminology, communicative activity, practical task, 6th grade.*

Introduction

In modern school education, teaching Natural Science should not be limited to the acquisition of theoretical information. Students need to understand natural phenomena, observe them, identify their causes, compare information, and justify their conclusions. From this perspective, the development of scientific literacy requires not only appropriate subject content but also the organization of students' active cognitive engagement. The use of a foreign language in this process provides an additional methodological opportunity. In particular, many scientific terms used in Natural Science have become part of international scientific communication in English. However, teaching Natural Science entirely in English is not always appropriate in general education schools. Therefore, one possible solution is to help students understand the subject content in a language familiar to them while gradually connecting key scientific terms with their English equivalents. The CLIL approach provides a methodological basis for this purpose because it is aimed at the integrated acquisition of content and language. D. Marsh describes CLIL as an approach involving a dual focus on subject content and a foreign language. The 4C model developed by D. Coyle emphasizes the interrelationship of content, communication, cognition, and culture. Based on these considerations, the purpose of this article is to identify the methodological possibilities of using a bilingual approach and CLIL technology in 6th-grade Natural Science lessons and to substantiate their role in the development of students' scientific literacy.

Materials and Methods. The content of the 6th-grade Natural Science curriculum was used as the methodological basis of the study.

The topics were examined from the perspective of activities that enable students to observe natural phenomena, conduct experiments, analyze information, and draw conclusions.

In organizing bilingual activities, Uzbek was retained as the main language for understanding the subject content, while English was used as a means of learning scientific terminology and simple communicative expressions. For example, in the topic "Respiratory System," terms such as *breathing, oxygen, carbon dioxide, inhale,* and *exhale* were integrated with students' understanding of the breathing process.

Several interrelated areas were considered when designing bilingual activities. These included learning terminology in context, developing bilingualism gradually, using communicative tasks, providing visual support, applying scaffolding, organizing problem-based and research-oriented activities, considering students' age and language proficiency, and connecting theoretical knowledge with practical experience. When developing tasks, particular attention was paid to the sequence of "acquiring knowledge – applying it – analyzing – providing evidence – drawing conclusions." The amount of linguistic support was adjusted according to students' level of preparedness. At the initial stage, pictures, diagrams, key words, and sentence frames were used, whereas subsequent activities provided greater opportunities for students to explain phenomena and draw conclusions independently.

Results. The analysis showed that incorporating a bilingual approach into Natural Science lessons should not be mechanical; rather, it should be directly connected with subject-related activities. A scientific term becomes more meaningful when it is not treated as an isolated vocabulary item but is used during observation, experimentation, comparison, or explanation. For example, in the topic "Chemical Reactions," students are not initially asked to memorize the terms *chemical reaction, reactant,* and *product*. Instead, they first observe changes in an experiment or real-life situation. After identifying such signs as a change in colour, the release of gas, or the formation of a new substance, the relevant English terms are introduced. As a result, the terminology becomes associated with an actual scientific phenomenon.

A second important result concerns the gradual organization of bilingual learning. Students are not required to explain the entire topic in English. First, they develop an understanding of the natural science content; the key terms are then introduced in English. At the next stage, these terms are used in simple sentences. In this way, increasing linguistic complexity does not interfere with students' understanding of the subject content. Problem-based and practical tasks also produced important methodological results. For example, in a situation where a bulb does not light in an electrical circuit, students use the terms *battery, wire, switch, bulb,* and *circuit* to identify possible causes of the problem. In this case, language activity is not separated from the Natural Science content. The use of visual materials also facilitates students' learning activities. Pictures, diagrams, tables, and models do not provide ready-made answers; instead, they serve as support for observation and comparison. Such materials are particularly useful for understanding the meaning of new English scientific terms.

Another important finding is related to scaffolding. The support provided to students can be gradually reduced. At first, key words, pictures, and sentence frames are provided.

Later, some of these supports are removed, and students are expected to provide explanations independently. This approach prevents students from becoming dependent on ready-made language patterns.

Discussion. The results indicate that the main issue in applying CLIL to Natural Science is not increasing the amount of English used in the lesson. The essential point is to make language serve students' scientific learning activities. This view is consistent with D. Marsh's understanding of the dual-focused nature of CLIL.

From the perspective of D. Coyle's 4C model, students in a Natural Science lesson acquire subject content, communicate about it, and engage in scientific thinking at the same time. For example, after observing a natural phenomenon, students compare the results, identify possible causes, and express their ideas using scientific terminology.

Thus, communicative activity is not an additional exercise separated from subject content but becomes part of the learning process itself. At the same time, students' age and language proficiency need to be considered in bilingual education. Excessive linguistic demands may make it difficult for students to understand Natural Science content. Therefore, it is appropriate to combine content support in Uzbek, key scientific terms in English, and tasks that gradually increase in complexity.

The proposed approach also changes the role of the teacher. The teacher is not merely a provider of information but acts as an organizer who connects subject content, language resources, and students' learning activities.

Students, in turn, become active participants who construct knowledge through observation, experimentation, analysis, and communication rather than simply receiving ready-made information. Such organization of learning activities makes it possible to develop several components of scientific literacy simultaneously.

Students not only know scientific concepts but also apply them, provide evidence, explain phenomena, and draw conclusions. English terminology serves as an additional means of expressing these activities.

Conclusion. Organizing 6th-grade Natural Science lessons through a bilingual approach and CLIL does not mean artificially combining subject content with a foreign language. Rather, it creates opportunities to use scientific knowledge and language resources within a unified learning activity. Natural Science content remains the priority, while English serves as a means of understanding scientific terminology and expressing scientific ideas. In an effectively organized lesson, students observe, conduct experiments, ask questions, compare information, reason on the basis of evidence, and express their conclusions using key elements from both languages. The teacher, in turn, organizes and guides these activities and provides linguistic support when necessary.

Therefore, the bilingual approach and CLIL can be regarded as a methodological opportunity in Natural Science education that not only expands students' terminological knowledge but also creates conditions for applying knowledge in practical situations and expressing scientific ideas.

References:

1. Marsh, D. *Content and Language Integrated Learning (CLIL): A Development Trajectory: Doctoral Dissertation*. Córdoba: University of Córdoba, 2012.
2. Coyle, D. Content and Language Integrated Learning: Towards a Connected Research Agenda for CLIL Pedagogies // *International Journal of Bilingual Education and Bilingualism*. 2007. Vol. 10. No. 5. P. 543–562.
3. Meyer, O. Introducing the CLIL-Pyramid: Key Strategies and Principles for CLIL Planning and Teaching // *Basic Issues in EFL Teaching* / ed. by S. Eisenmann, T. Summer. Heidelberg: Winter, 2011. P. 295–313.
4. Mehisto, P., Marsh, D., Frigols, M. J. *Uncovering CLIL: Content and Language Integrated Learning in Bilingual and Multilingual Education*. Oxford: Macmillan Education, 2008.
5. Dalton-Puffer, C. *Discourse in Content and Language Integrated Learning (CLIL) Classrooms*. Amsterdam; Philadelphia: John Benjamins Publishing Company, 2007.
6. Kelly, K., Topolski, S. *Science*. Oxford: Oxford University Press, 2019.