PROBLEMS OF EQUIVALENCE AND CONTEXTUAL UNDERSTANDING IN TEACHING TECHNICAL TERMINOLOGY

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Abstract. *The rapid development of science and technology has significantly increased the importance of technical terminology in professional communication. For students studying technical and engineering disciplines in a foreign language, mastering specialized vocabulary is one of the most challenging aspects of language learning. A major difficulty arises from the problems of equivalence and contextual understanding of technical terms across languages. This article examines the linguistic and pedagogical challenges related to teaching technical terminology, focusing on semantic equivalence, contextual interpretation, and methodological approaches that can improve comprehension and usage. The study highlights that effective acquisition of technical terminology requires not only lexical knowledge but also conceptual understanding within professional contexts.*

Keywords: *technical terminology, equivalence, contextual meaning, professional vocabulary, language teaching, lexical competence.*

Introduction

In modern higher education, especially in technical and engineering fields, students are increasingly required to study professional subjects in a foreign language, most commonly English. Technical terminology forms the core of scientific communication, enabling specialists to exchange knowledge accurately and efficiently. However, the teaching and learning of technical terminology often present significant difficulties for both teachers and students.

One of the main challenges is the problem of **equivalence**, which arises when a technical term in one language does not have a direct or exact counterpart in another language. Another important challenge is **contextual understanding**, since many technical terms acquire their precise meanings only within specific professional contexts. These issues become particularly significant in multilingual educational environments where students must simultaneously develop linguistic competence and professional knowledge. Therefore, understanding the problems related to equivalence and contextual interpretation of technical terms is essential for improving teaching methodologies in technical language education.

Theoretical Background. Technical terminology represents a specialized layer of vocabulary used in professional and scientific communication. Unlike general vocabulary, technical terms are characterized by precision, system-based organization, and conceptual specificity. Lexical competence in the field of technical terminology includes several interconnected components:

- ✓ **Form** – phonological and orthographic representation of a term
- ✓ **Meaning** – conceptual and denotative content
- ✓ **Usage** – grammatical, collocational, and stylistic characteristics
- ✓ **Pragmatic function** – appropriateness within professional discourse

Technical terms are closely linked to scientific concepts and disciplinary knowledge. Therefore, learning them involves not only memorizing words but also understanding the underlying concepts and their relationships within a given field.

One of the most complex issues in teaching technical terminology in foreign language education is the **lack of direct equivalence between languages.** Technical vocabulary is closely connected with scientific concepts and professional practices, which may develop differently across linguistic and cultural environments. As a result, many terms cannot always be translated directly from one language into another without some degree of semantic modification or explanation.

In linguistics and translation studies, the concept of **equivalence** refers to the degree to which a lexical unit in one language corresponds in meaning, function, and usage to a unit in another language. In the context of technical terminology, equivalence is particularly important because professional communication requires accuracy and conceptual clarity. When equivalence between languages is incomplete or absent, learners may experience difficulties in understanding and using technical terms correctly.

Linguistic equivalence in technical terminology can generally be classified into **three main types: full equivalence, partial equivalence, and non-equivalence.** Each of these types presents different pedagogical implications for teaching specialized vocabulary. Full equivalence occurs when a technical term in one language has a **direct and exact semantic counterpart** in another language. In such cases, the conceptual meaning, scope, and usage of the term are preserved across languages. This type of equivalence is common in internationally standardized scientific fields, where terminology is often borrowed from the same linguistic sources, such as Latin or Greek, or adopted through international scientific communication.

Examples include:

- ✓ *algorithm* — **algoritm**
- ✓ *database* — **ma’lumotlar bazasi**

In these cases, the conceptual structure of the term remains consistent across languages. The meanings are stable, and the terms function similarly within professional discourse. Consequently, the teaching of such terminology is relatively straightforward. Teachers can introduce the term along with its direct translation and provide contextual examples to reinforce understanding.

However, even with full equivalence, it is important for students to encounter terms within authentic professional contexts, since correct usage also depends on collocations, grammatical patterns, and disciplinary conventions. Partial equivalence occurs when two terms share **similar general meanings but differ in their semantic scope, usage, or contextual application**. In these cases, the terms may correspond conceptually at a broad level, but their meanings may vary depending on the specific technical domain.

A typical example is the term:

- ✓ *system* — **tizim**

At first glance, these terms appear to be direct equivalents. However, in technical contexts the meaning of *system* may vary significantly depending on the field in which it is used. For instance:

- ✓ *computer system*
- ✓ *operating system*
- ✓ *information system*

- ✓ *control system*

While the Uzbek equivalent *tizim* can be used in many of these contexts, the precise interpretation of the term often depends on the surrounding technical discourse. As a result, students may incorrectly assume that a term has a single fixed meaning, which can lead to misunderstanding or inaccurate translation [3, 464].

From a pedagogical perspective, partial equivalence requires teachers to emphasize **contextual learning**. Students should analyze how terms function in different technical environments and understand how their meanings shift depending on the professional domain. Non-equivalence. Non-equivalence arises when a concept exists in one language but **does not have a direct lexical equivalent in another language**. This situation is particularly common in rapidly developing technological fields, where new concepts and innovations appear faster than terminology can be standardized across languages.

In such cases, translators and educators often rely on several strategies, including:

- ✓ descriptive translation
- ✓ borrowing the original term
- ✓ explanatory definitions

An illustrative example is the term:

- ✓ *debugging* — **dasturdagi xatolarni aniqlash va tuzatish jarayoni**

In this case, the English term refers to a specific process in software development. However, the Uzbek language may require a descriptive explanation to convey the full meaning of the concept. As technology evolves, some of these descriptive expressions may eventually become standardized terms [5, 138].

Non-equivalence is particularly common in fields such as:

- ➢ information technology
- ➢ artificial intelligence
- ➢ cybersecurity
- ➢ data science

For learners, this situation can create additional challenges because they must understand not only the linguistic form of a term but also the underlying technical concept. Therefore, effective instruction should focus on **conceptual explanations, contextual examples, and interdisciplinary integration with subject knowledge.** Understanding different types of linguistic equivalence is essential for designing effective strategies for teaching technical terminology. When full equivalence exists, teachers can rely on direct translation combined with contextual examples. In cases of partial equivalence, greater attention should be paid to contextual analysis and disciplinary variation. When non-equivalence occurs, explanatory teaching methods and conceptual clarification become necessary.

Thus, successful mastery of technical terminology depends on more than vocabulary memorization. It requires the development of **conceptual understanding, contextual awareness, and the ability to interpret specialized terms within professional discourse.** By addressing the challenges of equivalence in a systematic way, educators can significantly improve students' ability to use technical vocabulary accurately in academic and professional communication [1, 369]. The effective teaching of technical terminology requires carefully designed pedagogical approaches that address both **linguistic and conceptual difficulties** faced by learners. Since technical terms are closely connected with professional knowledge and disciplinary discourse, their acquisition cannot rely solely on memorization or direct translation. Instead, instructional

strategies should support the development of conceptual understanding, contextual awareness, and practical application of terminology in professional communication. To overcome the challenges related to equivalence and contextual interpretation, several effective teaching strategies can be applied.

Context-based learning is one of the most effective approaches for teaching technical terminology. In this approach, terms are introduced within **authentic professional contexts,** allowing students to observe how they function in real discourse. Authentic materials such as technical manuals, research articles, professional reports, and case studies provide meaningful examples of terminology usage. Through contextual exposure, students are able to understand not only the literal meaning of a term but also **its functional role in professional communication.** This approach helps learners recognize collocations, syntactic patterns, and discourse conventions associated with technical vocabulary. Furthermore, context-based learning encourages deeper cognitive processing, which leads to more durable vocabulary retention.

Concept-oriented instruction emphasizes the importance of understanding the **scientific or technical concept behind a term,** rather than focusing exclusively on its translation equivalent. In technical fields, terminology is closely tied to specialized knowledge structures, and students must comprehend these conceptual frameworks in order to use terms accurately [3, 463]. Teachers should therefore provide explanations, examples, and demonstrations that clarify the underlying concepts associated with each term. Concept maps, definitions, and problem-solving tasks can be used to illustrate the relationships between terms and their corresponding scientific principles. By focusing on conceptual understanding, students develop the ability to apply terminology appropriately in different professional situations.

Comparative terminology analysis involves examining technical terms across different languages in order to identify similarities and differences in their meaning, structure, and usage. This strategy is particularly useful in multilingual educational contexts, where students must navigate between their native language and a foreign language of instruction. Through comparative analysis, students gain insight into issues such as **full equivalence, partial equivalence, and non-equivalence** between languages. This awareness helps learners avoid literal translation errors and encourages them to consider the broader conceptual and contextual dimensions of terminology. Additionally, comparative analysis strengthens students' metalinguistic awareness and improves their ability to interpret specialized vocabulary accurately.

Technical concepts are often abstract and complex, making them difficult to understand through verbal explanation alone. The use of **visual and digital learning resources** can significantly enhance students' comprehension of technical terminology. Diagrams, charts, infographics, simulations, and multimedia presentations provide visual representations of processes, structures, and systems. Digital technologies also enable interactive learning environments where students can explore technical concepts dynamically. For example, simulations and virtual laboratories allow learners to observe how systems function in real time, while educational videos and animations illustrate processes that may otherwise be difficult to conceptualize. By integrating visual and digital tools into terminology instruction, teachers can facilitate deeper understanding and improve knowledge retention.

Communicative practice is essential for transforming passive knowledge of terminology into **active professional competence**. Students should be encouraged to use technical vocabulary in meaningful communicative situations that reflect real professional contexts. Such activities may include group discussions, technical presentations, collaborative projects, and problem-solving

tasks. Through communicative practice, learners develop the ability to apply terminology accurately in both spoken and written discourse. This process also strengthens their confidence in using specialized language and prepares them for participation in professional environments where clear and precise communication is essential.

Conclusion. The teaching of technical terminology in foreign language education involves complex linguistic and pedagogical challenges. Problems of equivalence arise when terms do not have direct counterparts across languages, while contextual understanding is necessary to interpret the precise meaning of specialized vocabulary. The findings suggest that successful terminology acquisition requires more than simple translation or memorization. Instead, it demands conceptual comprehension, contextual exposure, and active application within professional communication. By adopting context-based and concept-oriented teaching approaches, educators can help students develop deeper lexical competence and prepare them for effective participation in international scientific and technical discourse.

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