

# Formation of Lexical Competence among Engineering Students in the Process of ESP (English for Specific Purposes) Instruction

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**Abstract:** This article addresses the challenges of teaching professional vocabulary within the framework of foreign language instruction at engineering institutes. It is argued that difficulties in mastering vocabulary, particularly profession-oriented terminology, stem from the insufficient development of modern instructional technologies for lexical acquisition. In response, the author developed a specialized methodology for teaching professional vocabulary in engineering contexts. The study describes an instructional algorithm consisting of three core stages: introduction, formation, and refinement. Practical examples of exercises designed to reinforce lexical mastery are provided, along with a systematic approach to introducing economic terminology within the theme "Engineering as a Science Today." The proposed technology includes a tiered system of exercises, differentiated by complexity, suitable for integration into the English language curricula of engineering universities.

**Keywords:** professional vocabulary, foreign language, English, teaching technology, foreign language lexis, learning algorithm, exercise system



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## 1. Introduction

In light of the socio-political and economic transformations occurring in our country since independence, international relations have expanded significantly. Consequently, the demand for specialists proficient in foreign languages has increased, elevating the prestige of language studies across all educational institutions. Given current social demands and modern trends in higher vocational education, the task of developing innovative, professionally-oriented technologies for foreign language instruction has become particularly relevant.

Teaching a foreign language within engineering institutes involves a unique set of linguistic, psychological, and organizational characteristics. A primary challenge lies in the mastery of specialized vocabulary, which is often hindered by the lack of advanced pedagogical technologies tailored for lexical acquisition. Nevertheless, it is well-established that the enrichment of students' relevant vocabulary is a fundamental component for the effective mastery of productive speech and the comprehension of professionally-oriented texts. This necessity defines the relevance of the present research.

### Materials and Methods

The objective of this study is to develop a technology for teaching foreign language vocabulary necessary for engineering students to work with authentic professional texts and communicate on

specialized topics. As the primary building block of language, lexical proficiency serves as a criterion for successful language acquisition and is an indispensable component of an engineering graduate's professional competence.

The theoretical and methodological foundations of this research are based on modern approaches to foreign language pedagogy (I.L. Bim, I.A. Zimnyaya, V.N. Kartashova, A.A. Leontyev, E.I. Passov, G.V. Rogova, V.V. Safonova, V.B. Tsarkova, et al.), as well as scholarly works examining the general problems and individual aspects of vocational training (I.P. Andreeva, M.A. Ariyan, A.L. Berdichevsky, N.D. Galskova, Yu.V. Eremin, N.N. Zykova, A.S. Karpov, O.A. Kolesnikova, G.A. Maksimova, G.F. Perfilova, K.I. Salamanov, V.N. Shevyakov).

At the same time, most scientific works in the field of foreign language vocabulary instruction are dedicated to general methodological principles (V.A. Artyomov, B.V. Belyaev, Yu.V. Gnatkevich, I.A. Zimnyaya). However, the specific challenges of teaching professional vocabulary within non-linguistic universities require further investigation and practical solutions.

In the process of studying these issues, the following research methods were employed:

- Analysis of scientific literature related to the research topic;
- Evaluation of current curricula and textbooks designed for technical and engineering students;
- Linguistic analysis of authentic chemical texts;
- Synthesis of the practical experience of foreign language instructors;
- Implementation of an educational experiment to verify the effectiveness of the proposed technology.

Given the goals of vocational training, the object of this research is the process of professionally-oriented teaching of chemical terminology required for professional communication and the comprehension of technical literature. Furthermore, mastering this vocabulary facilitates the diversification of lessons, broadens students' intellectual horizons, and allows them to approach communication from a professional standpoint while appreciating its socio-cultural dimensions.

According to I.L. Bim, mastering a word entails internalizing its meaning, form, and usage, as well as its word-formation and inflection [1, 164]. The meaning of a word represents its semantic content, while the form refers to its graphical and phonological shell. Usage pertains to its grammatical integration, resulting in various word forms. This can be schematically represented as:

Word = Meaning + Form (Phonological/Graphical) + Usage (Inflection/Collocation)

In scientific literature, vocabulary is traditionally viewed as a structured system of lexical units with primary functions. The systematic nature of vocabulary is evidenced by the integration of its units into specific lexical associations, such as semantic fields, groups, synonymic and paronymic chains, antonymic oppositions, and derivative clusters.

The defining characteristic of foreign language instruction in non-linguistic higher education institutions is its professional orientation, which is predicated on students' specific needs and the requirements of their future specialty. Consequently, the technology for teaching foreign language vocabulary must also be professionally oriented. We define this technology as a system of psychological, general pedagogical, and didactic interactions between teacher and student, aimed at implementing content, methods, and tools that align with educational objectives and the professional competencies of future specialists.

The development of innovative professionally-oriented technologies is based on designing high-efficiency student activities and the implementation of teacher management. The foundational data for designing these technologies are the educational and professional standards that define the goals and content of instruction.

The technology we have developed for teaching foreign language vocabulary is based on the learner-centered activity approach (I.A. Zimnyaya) [2]. Since an engineering specialist requires

language proficiency to perform information-based tasks in professionally relevant scenarios, the entire instruction process should closely simulate the specialist's actual professional environment. In teaching professionally-oriented vocabulary, we adhere to the following algorithm:

#### Instructional Stages and Methodology

In teaching professionally-oriented foreign language vocabulary, we adhere to the following three-stage instructional algorithm:

1. **Introductory Stage:** Familiarization with new lexical units within the professional theme. This involves explaining the word's meaning, form, and usage. Students become acquainted with both the phonological (auditory) and graphical (visual) representations of the vocabulary.
2. **Formation Stage:** Consolidation of vocabulary through various conditional-speech exercises.
3. **Refinement Stage:** Developing the ability to actively utilize the vocabulary across various modes of speech activity.

Throughout these stages, the acquisition of vocabulary is continuously monitored, often through standardized testing.

#### Implementation of the Algorithm

During the first stage, reproductive exercises are utilized for nomination and identification purposes. Instructions for these exercises are varied, such as: "Listen and repeat the following specialized terms (compound English words and expressions)." A sample task might require students to "Write down ten expressions that include the word 'chemical'."

The presentation of new lexical material can be achieved through multiple methods:

- Integrating various types of questions;
- Conducting teacher-student discussions;
- Embedding terms in specific situational contexts or sentences;
- Utilizing specialized word lists;
- Incorporating vocabulary during reading or listening tasks;
- Preparing students to speak on a specific topic according to a provided plan (selecting appropriate vocabulary for each point of the plan).

In the second stage of mastering professional vocabulary, exercises are conditional-communicative in nature. They incorporate a specific speech task and situation aimed at practical application. For future engineering specialists, tasks may include explaining the semantic differences between terms like "chemistry," "chemist," "chemical," and "economical" in English, or defining technical concepts such as "chemical reactions," "element," "atom," and "mass number" in the target language.

#### Exercise System for Lexical Consolidation

To reinforce the studied vocabulary, we employ the following tasks:

- **Selection & Exclusion:** Choosing the word that best fits a given situation or identifying the "odd one out" from a lexical group.
- **Definition Matching:** Matching specialized terms with their corresponding definitions.
- **Sentence Construction:** Creating new sentences using a highlighted word (e.g., "People all over the world are interested in economics").
- **Gap-filling:** Completing sentences or filling blanks with appropriate words from memory or a provided list (e.g., "The company \_\_\_ a new commodity every year (to produce)").
- **Synonym/Antonym Substitution:** Replacing highlighted words with synonyms or using antonyms to provide an opposing meaning.
- **Inquiry-based Tasks:** Formulating questions that require the use of the new word or

answering questions using the targeted lexis.

- Collocation Building: Selecting appropriate word combinations based on "given" lexical units.
- Contextual Identification: Finding words in a text that correspond to specific definitions or phrases (e.g., 1. correspond to; 2. tens of years; 3. think carefully about, etc.).
- Sentence Expansion: Expanding sentences containing highlighted nouns by using provided descriptions.

In the third stage, communicative exercises are performed to facilitate the transition from lexical skills to advanced speech proficiency. These exercises include situational tasks aimed at holistic speech production. Students are required to apply new vocabulary in sentences, dialogues, and monologues, as well as demonstrate comprehension of the lexis during listening and reading activities.

The vocabulary instruction technology we have developed includes a system of exercises differentiated by complexity levels, allowing for the formation of stable and accurate skills in applying lexical units in both oral and written discourse.

#### Practical Application: "Everyday Chemistry" Case Study

In the study of the topic "Everyday Chemistry," it is essential to first introduce a lexical cluster centered around the root word "chemist." This involves teaching various derivatives formed through affixation, such as: chemist, chemist's, chemistry, chemical, chemicals, and chemically.

To emphasize the semantic content of these words and to help students differentiate their meanings, we propose the following exercise:

Exercise: Contextual Word Choice Instruction: Fill in the blanks with the appropriate word from the list provided. Put the right word in the blanks.

1. \_\_\_\_\_ is the study of the composition, structure, and properties of matter, as well as the changes that matter undergoes during \_\_\_\_\_ reactions.
2. Here are ten famous \_\_\_\_\_ who have made significant contributions to the field of \_\_\_\_\_.
3. Take this prescription to the \_\_\_\_\_ .
4. The raw sewage is \_\_\_\_\_ treated.
5. Farmers are being urged to reduce their use of \_\_\_\_\_ and work with nature to combat pests.

Following the initial phase, students engage in exercises designed to expand their vocabulary through phrases containing the previously mentioned lexical units, tailored to the specific professional theme. Phrase-building exercises constitute the second category of lexical tasks within our technology. These collocations are constructed in accordance with the laws of semantic compatibility and are intricately linked with grammatical norms.

To facilitate the construction of these professional collocations, the following specialized exercise types are implemented:

1. Match the words and their Uzbek equivalents.

#### A. chemistry:

- |                             |                         |
|-----------------------------|-------------------------|
| 1. chemistry                | a) tuproq kimyosi       |
| 2. interpersonal chemistry  | b) klinik kimyo         |
| 3. chemistry department     | c) fizik kimyo          |
| 4. chemistry class          | d) kimyo laboratoriyasi |
| 5. bio chemistry            | e) analitik kimyo       |
| 6. pharmaceutical chemistry | f) biokimyo             |

- |                         |                          |
|-------------------------|--------------------------|
| 7. analytical chemistry | g) kimyo sinfi           |
| 8. chemistry lab        | h) kimyo bo'limi         |
| 9. physical chemistry   | i) kompyuterlararo kimyo |
| 10. organic chemistry   | j) kimyo                 |
| 11. clinical chemistry  | k) farmatsevtika kimyosi |
| 12. soil chemistry      | l) organic kimyo         |

**B. chemical:**

- |                         |                        |
|-------------------------|------------------------|
| 1. chemical castration  | a) kimyoviy reaksiya   |
| 2. chemical laser       | b) kimyo texnologiyasi |
| 3. chemical reaction    | c) kimyoviy lazer      |
| 4. chemical weapon      | d) kimyoviy bichish    |
| 5. chemical engineering | e) kimyoviy qurol      |
| 6. chemical peeling     | f) kimyoviy tozalash   |

**2. Match the words and their definitions.**

- a) matter   b) atom   c) ion   d) element   e) compound   f) proton  
g) neutron   h) electron

1. - a neutral particle in an atom.
2. - a positively or negatively charged atom.
3. - a combination of two or more elements.
4. - the smallest piece of matter that can exist by itself.
5. - anything that contains material and takes up space.
6. - a negatively charged particle in an atom.
7. - a basic substance made up of one type of atom.
8. - a positively charged particle in an atom.

**Conclusion**

The technology developed in this study, based on the learner-centered activity approach (I. A. Zimnyaya), yields significant and effective results in foreign language instruction. By integrating vocabulary acquisition into scenarios directly relevant to their future careers, engineering students not only enhance their professional linguistic competence but also demonstrate increased engagement in the learning process.

The structured instructional algorithm comprising the introductory, formation, and refinement stages serves as a robust framework for rapid and efficient lexical mastery. Through consistent monitoring and a tiered system of reproductive and communicative exercises, students effectively reinforce new terminology and learn to utilize it actively in various speech contexts.

Furthermore, this pedagogical approach stimulates autonomous learning and streamlines the instructor's methodological responsibilities. Ultimately, the learner-centered activity approach is validated as a successful, efficient, and professionally-oriented methodology for fostering lexical competence within the ESP (English for Specific Purposes) framework.

**REFERENCES**

1. Passov, E. I. (1991). *The Communicative Method of Teaching Foreign Language Speaking*. Moscow: Prosveshcheniye.
2. Zimnyaya, I. A. (1991). *Psychology of Teaching Foreign Languages in School*. Moscow: Prosveshcheniye.

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3. Leontyev, A. A. (1977). *Activity. Consciousness. Personality*. Moscow: Politizdat.
  4. Hutchinson, T., & Waters, A. (1987). *English for Specific Purposes: A Learning-Centred Approach*. Cambridge: Cambridge University Press.
  5. Dudley-Evans, T., & St John, M. J. (1998). *Developments in English for Specific Purposes: A Multi-Disciplinary Approach*. Cambridge: Cambridge University Press.
  6. Nation, I. S. P. (2001). *Learning Vocabulary in Another Language*. Cambridge: Cambridge University Press.
  7. Richards, J. C., & Rodgers, T. S. (2014). *Approaches and Methods in Language Teaching*. Cambridge: Cambridge University Press.
  8. Ellis, R. (2008). *The Study of Second Language Acquisition*. Oxford: Oxford University Press.
  9. Schmitt, N. (2000). *Vocabulary in Language Teaching*. Cambridge: Cambridge University Press.
  10. Littlewood, W. (1981). *Communicative Language Teaching*. Cambridge: Cambridge University Press