FORMATION AND RETENTION OF PROFESSIONAL ENGLISH VOCABULARY AMONG TECHNICAL UNIVERSITY STUDENTS

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The article examines the formation and retention of professional English vocabulary among technical university students majoring in Food Products of Animal Origin. The study involved 26 second-year undergraduate students from full-time and evening programmes. Initial diagnostic testing revealed three patterns: difficulties with independent retention and recall, reliance on dictionary support, and relatively independent contextual use. On this basis, a six-stage instructional model is proposed: professional context, vocabulary comprehension, retrieval, professional collocations, productive use, and spaced review. The model integrates syllabus-based terminology with professionally oriented tasks and provides a framework for subsequent assessment of recognition, recall, and productive vocabulary use.

Keywords: *professional English vocabulary, vocabulary retention, technical university, retrieval practice, professional collocations, productive use, spaced review, food technology, ESP.*

TEXNIKA OLIY TA’LIM MUASSASASI TALABALARIDA KASBIY INGLIZ TILI LEKSIKASINI SHAKLLANTIRISH VA MUSTAHKAMLASH

Maqolada “Hayvonot mahsulotlaridan oziq-ovqat mahsulotlari” yo‘nalishida tahsil olayotgan texnika oliy ta’lim muassasasi talabalarida kasbiy ingliz tili leksikasini shakllantirish va mustahkamlash masalasi yoritilgan. Tadqiqotda kunduzgi va kechki ta’lim shaklidagi 26 nafar ikkinchi bosqich bakalavriat talabasi qatnashdi. Dastlabki diagnostika mustaqil eslab qolish va qayta tiklashdagi qiyinchiliklar, lug‘atga tayanish hamda leksikani kontekstda nisbatan mustaqil qo‘llash holatlarini aniqladi. Shu asosda kasbiy kontekst, leksikani tushunish, xotiradan qayta tiklash, kasbiy birikmalar, produktiv qo‘llash va intervalli takrorlashdan iborat olti bosqichli model taklif etildi. Model o‘quv dasturidagi terminologiyani kasbiy topshiriqlar bilan birlashtiradi.

Kalit so‘zlar: *kasbiy ingliz tili leksikasi, leksikani eslab qolish, texnika oliy ta’lim muassasasi, xotiradan qayta tiklash, kasbiy birikmalar, produktiv qo‘llash, intervalli takrorlash, oziq-ovqat texnaologiyasi, ESP.*

ФОРМИРОВАНИЕ И ЗАКРЕПЛЕНИЕ ПРОФЕССИОНАЛЬНОЙ АНГЛОЯЗЫЧНОЙ ЛЕКСИКИ У СТУДЕНТОВ ТЕХНИЧЕСКОГО ВУЗА

В статье рассматривается формирование и закрепление профессиональной англоязычной лексики у студентов технического вуза направления «Продукты питания животного происхождения». В исследовании участвовали 26 студентов второго курса бакалавриата очной и вечерней форм обучения. Первичная диагностика выявила три характерные модели: трудности самостоятельного запоминания и воспроизведения терминов, опору на словарь и относительно самостоятельное контекстуальное употребление лексики. На этой основе предложена шестиступенчатая модель: профессиональный контекст, понимание лексики, извлечение из памяти, профессиональные словосочетания, продуктивное употребление и интервальное повторение. Модель объединяет терминологию рабочей программы с профессионально ориентированными заданиями и предусматривает последующую оценку узнавания, воспроизведения и продуктивного использования лексики.

Ключевые слова: *профессиональная английская лексика, закрепление лексики, технический вуз, извлечение из памяти, профессиональные словосочетания, продуктивное употребление, интервальное повторение, пищевая технология, ESP.*

Introduction. The growing role of English in science, technology and professional communication requires technical university students to develop not only general language competence but also a functional command of discipline-specific vocabulary. In English for Specific Purposes (ESP), lexical knowledge is

closely connected with students’ ability to understand professional texts, describe technological processes, interpret product information and communicate within their future field. Vocabulary learning, however, is more complex than memorizing translations. A review by Rice and Tokowicz emphasizes that effective second-language vocabulary learning involves the development of stable form and meaning representations and that repetition becomes more useful when combined with retrieval and meaningful processing [1].

This issue is particularly relevant for students majoring in Food Products of Animal Origin. Their English syllabus includes topics such as Food and Products, Types of Products, Packaging, Marking, Storage of Goods, Proteins, Fats and Carbohydrates, Vitamins and Water, Mineral Salts, Food Technologist, Quality and Safety of Animal-Origin Food Products, and Animal-Origin Food Processing Technologies. These topics require students to understand and use professional lexical units such as packaging, storage conditions, food processing, animal-origin products, food quality, food safety, quality control, protein content, nutritional value and contamination.

Discipline-specific vocabulary may present difficulties even when students have already encountered the relevant concepts in their specialist subjects. Kohnke, Zou and Zhang examined discipline-specific vocabulary retention among 159 higher-education L2 learners from four disciplines and demonstrated the importance of systematic work with vocabulary connected to students’ academic fields [2]. A broader meta-analysis by Yousefi and Biria also reported a positive overall effect of intentional L2 vocabulary instruction, while showing that instructional outcomes can vary according to context and learner characteristics [3].

For technical university students, the central pedagogical problem is therefore not simply whether a professional term has been presented in class, but whether the learner can recognize it, retrieve it without external support and use it appropriately in a professional context. Retrieval practice is relevant to this distinction. Candry, Decloedt and Eyckmans compared retrieval practice with repeated word writing and a control condition among 179 EFL learners. Their findings showed stronger form-recall outcomes for retrieval practice, including on delayed assessment [4].

Retention is also affected by how encounters with vocabulary are distributed over time. Nakata and Elgort compared massed and spaced contextual vocabulary learning and found an advantage for spaced learning on measures of explicit vocabulary knowledge such as meaning recall and meaning-form matching, although the same advantage was not observed for tacit semantic knowledge [5]. This distinction suggests that spaced review should be used purposefully rather than treated as a universal solution for every aspect of lexical knowledge.

Another important aspect is lexical retrievability. Lindstromberg and Eyckmans note that retrieval of lexical forms is a prerequisite for language production and show that accessible representations of multiword items matter for subsequent recall [6]. In ESP settings, this is particularly important because professional communication often relies on multiword units and collocations rather than isolated words. Students need to move from knowing quality to using food quality and quality control, from protein to protein content, and from storage to storage conditions.

Research on technical vocabulary also shows that specialized terms may require focused pedagogical attention. Lu, Boers and Coxhead found that learners of technical vocabulary in a specialized field experienced difficulties in understanding particular terms, although the sources of difficulty varied between learner groups [7]. These findings reinforce the need to diagnose students’ actual vocabulary performance before selecting instructional procedures.

The aim of the present study is to develop and describe a professionally oriented system for the formation and retention of English vocabulary among second-year technical university students majoring in Food Products of Animal Origin. The scientific novelty of the study lies in adapting an integrated sequence of contextual presentation, active retrieval, professional collocation work, productive use and spaced review to the vocabulary contained in the students’ existing course syllabus. The study focuses on the progression from recognition to recall and productive contextual use.

Research object and methods. The object of the research was the process of professionally oriented English language instruction for technical university students. The subject of the research was the formation and retention of professional English vocabulary through contextualized presentation, retrieval practice, collocational activities, productive vocabulary use and spaced review.

The study involved 26 second-year undergraduate students majoring in Food Products of Animal Origin, including students enrolled in full-time and evening study programmes. The research was conducted within regular English classes. The lexical material was selected from the students’ working syllabus so that the study would remain directly connected with their academic specialization.

For the instructional work, twenty target lexical units were identified: packaging, marking, storage, storage conditions, food processing, animal-origin products, food quality, food safety, quality control, food

technologist, raw material, protein, protein content, fats, carbohydrates, vitamins, mineral salts, nutritional value, contamination and healthy eating. The list contained both individual terms and multiword units. This made it possible to address not only recognition of isolated words but also the use of vocabulary in profession-related combinations.

The research combined theoretical and empirical methods. The theoretical component included analysis of studies on L2 vocabulary learning, discipline-specific terminology, retrieval practice, lexical retrievability and spaced learning [1–7]. The empirical component included diagnostic testing, classroom observation and analysis of students’ performance during vocabulary tasks.

At the initial diagnostic stage, students completed profession-related vocabulary activities connected with the selected syllabus topics. Particular attention was paid to whether students could remember English terms independently, whether they relied on a dictionary to complete tasks, and whether they could use newly introduced vocabulary appropriately in context. The diagnostic stage was therefore used to identify patterns of lexical performance rather than to assign medical or cognitive labels to individual learners.

On the basis of the diagnostic findings, a 30-point assessment framework was also developed for subsequent monitoring of vocabulary development. It distinguishes three dimensions of lexical knowledge: recognition, recall and productive use. Recognition tasks measure the ability to identify a professional lexical item and its meaning; recall tasks require retrieval of the English term without seeing the target word; productive tasks require meaningful use of professional vocabulary in a food-technology context.

Table 1. Assessment framework for professional vocabulary knowledge

Assessment component	Description	Maximum score
Recognition	Recognition of a professional lexical item and identification of its meaning	10
Recall	Independent retrieval of the appropriate English lexical item	10
Productive use	Appropriate use of professional vocabulary in a meaningful professional context	10
Total		**30**

The instructional procedure developed after the diagnostic stage followed the sequence: Professional Context → Vocabulary Comprehension → Retrieval → Professional Collocations → Productive Use → Spaced Review. The model was designed to reduce excessive dependence on translation and dictionary consultation while progressively increasing the need for independent lexical retrieval.

Results and analysis. Initial diagnostic testing revealed substantial differences in the students’ ability to retain and use professional English vocabulary. Of the 26 participants, 12 students experienced noticeable difficulty retaining and independently recalling newly introduced professional terms. Ten students were generally able to cope with vocabulary tasks when they could use a dictionary, but their independent retrieval remained limited when this support was removed. The remaining four students demonstrated a comparatively stable ability to remember new lexical items and use them appropriately in context.

The distribution was converted into percentages for descriptive analysis. Twelve students represented 46.2% of the sample, ten students 38.5%, and four students 15.4%. These figures describe the observed performance of this particular group and should not be generalized beyond the educational context of the study.

Table 2. Initial diagnostic results of professional vocabulary performance (n = 26)

Observed vocabulary performance	Number of students	Percentage
Difficulty retaining and independently recalling professional terms	12	46.2%
Performance mainly with dictionary support	10	38.5%
Relatively independent retention and contextual use	4	15.4%
Total	**26**	**100%**

Taken together, 22 of the 26 students (84.6%) required some form of support when working with newly introduced professional vocabulary. This result does not mean that these students had no knowledge of the target words. Rather, the classroom evidence indicated a gap between supported recognition and independent access to lexical forms. This distinction corresponds to research emphasizing that knowledge of

meaning or form-meaning associations does not automatically guarantee easy lexical retrieval during language production [6].

The first group, consisting of 12 students, required the greatest attention to retrieval. Repeated exposure alone was unlikely to address the observed difficulty if students continued to process the terms only receptively. For this reason, the instructional model introduced definition-to-word recall, completion of profession-related statements, delayed reappearance of previously studied terms and short prompts requiring students to reconstruct the lexical item from memory. This decision is consistent with evidence that retrieval practice can strengthen subsequent L2 form recall [4].

The second group, comprising 10 students, demonstrated a different pattern. Dictionary use enabled these learners to complete many tasks, suggesting that external lexical support compensated for incomplete independent retrieval. The pedagogical aim for this group was therefore not to prohibit dictionary use entirely, but to reduce it gradually. Dictionaries could be used during initial comprehension, while later stages required students to complete retrieval and production tasks without immediate lexical reference.

The four students who demonstrated relatively independent retention and contextual use required more demanding productive tasks. For these learners, vocabulary work could move beyond definitions and sentence completion towards explanations of processing procedures, comparisons of animal-origin food products, and short written or oral responses concerning quality and safety.

The professional context stage connected vocabulary with the existing syllabus. Packaging and Marking were used for lexical items associated with product protection and consumer information; Storage of Goods supported work with storage and storage conditions; Proteins, Fats and Carbohydrates, Vitamins and Water, and Mineral Salts provided contexts for nutritional vocabulary; and Quality and Safety of Animal-Origin Food Products and Animal-Origin Food Processing Technologies supported lexical units such as food safety, food quality, contamination, quality control and food processing.

At the vocabulary comprehension stage, students matched terms with definitions, identified vocabulary in short subject-related texts, classified words into thematic groups and completed contextualized sentences. These activities established initial form-meaning relationships. At the retrieval stage, dictionary support was reduced and students reconstructed target items from definitions, professional situations and incomplete statements.

The professional collocation stage extended individual terms into combinations required for meaningful ESP use. Examples included food safety requirements, quality control, animal-origin products, storage conditions, protein content, nutritional value and food processing technologies. This stage was included because professional communication is not built from isolated lexical equivalents; students need to know how terms combine in field-specific discourse.

At the productive use stage, students applied the target vocabulary in short written and oral tasks. They described product characteristics, explained basic packaging and storage requirements, discussed nutritional composition and formulated statements concerning food quality and safety. The emphasis was placed on appropriate lexical use rather than reproduction of memorized definitions.

Finally, spaced review returned previously studied vocabulary in later lessons through short recall activities, collocation tasks and profession-related questions. This component was informed by evidence that distributed encounters can support explicit vocabulary knowledge, while recognizing that spacing effects may differ according to the dimension of lexical knowledge being measured [5].

The resulting model can therefore be represented as follows: Professional Context → Vocabulary Comprehension → Retrieval → Professional Collocations → Productive Use → Spaced Review. Its practical value lies in the fact that it does not require a separate vocabulary course; it can be incorporated into the professional topics already present in the English syllabus.

The present results should be interpreted cautiously. The sample consisted of 26 students from one educational setting, and the current data primarily describe the initial diagnostic stage and the pedagogical response developed from it. No causal claim is made that the proposed model has already produced long-term retention gains. A subsequent stage should compare recognition, recall and productive use through immediate and delayed assessment. This limitation is especially important because short-term classroom performance and durable vocabulary retention are not identical.

Conclusion. The study addressed the problem of forming and retaining professional English vocabulary among technical university students majoring in Food Products of Animal Origin. Initial diagnostic work with 26 second-year undergraduate students showed that 12 students (46.2%) experienced difficulty retaining and independently recalling newly introduced professional terms, 10 students (38.5%) relied mainly on dictionary support, and only 4 students (15.4%) demonstrated relatively independent retention and contextual use.

The findings indicate a pedagogically important distinction between recognizing a professional term and being able to retrieve and use it independently. For ESP instruction, vocabulary knowledge should therefore be developed beyond translation and recognition. Students need repeated opportunities to retrieve lexical forms, combine them in professional collocations and use them in meaningful field-related communication.

On the basis of the diagnostic findings and recent L2 vocabulary research, a six-stage instructional model was developed: professional context, vocabulary comprehension, retrieval, professional collocations, productive use and spaced review. The model is directly integrated with syllabus topics such as packaging, marking, storage, nutritional composition, food processing, and quality and safety of animal-origin food products.

The practical significance of the approach lies in its compatibility with regular English classes at a technical university. It provides differentiated support for students who experience retrieval difficulties, students who rely on dictionaries, and students who are ready for more independent productive work. Further research should apply the 30-point recognition-recall-productive-use framework and include delayed assessment in order to determine the durability of vocabulary gains over time.

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