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IMPROVING THE VOCABULARY SKILLS OF FOOD TECHNOLOGY STUDENTS THROUGH PROJECT-RESEARCH ACTIVITIES

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Abstract
This article presents a study on the effectiveness of incorporating project-research activities to enhance the specialized vocabulary acquisition of undergraduate Food Technology students. It details the methodology, intervention, and results of a quasi-experimental study, demonstrating that this active learning approach significantly improves vocabulary retention and application, addressing a critical need for domain-specific language proficiency in this field.

Keywords: Vocabulary acquisition, food technology, project-research activities, active learning, specialized terminology, ESP (English for Specific Purposes).

Introduction

Proficiency in specialized vocabulary is crucial for effective communication and professional development in technical fields like Food Technology. This study investigates the impact of integrating project-research activities on the vocabulary skills of undergraduate Food Technology students. Employing a quasi-experimental design with a control group and an experimental group, the intervention involved the experimental group engaging in semester-long projects requiring extensive research, analysis, and presentation of food-related topics, specifically focusing on the targeted acquisition and application of specialized terms. Pre- and post-tests, alongside qualitative data from student reflections and project evaluations, revealed a statistically significant improvement in the vocabulary scores and application of specialized terminology within the experimental group compared to the control group. The findings suggest that

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project-research activities provide an authentic and engaging context for vocabulary learning, promoting deeper understanding and retention beyond traditional methods.

In an increasingly globalized and specialized professional landscape, mastery of subject-specific vocabulary is paramount for academic success and future career efficacy. [1] For students in Food Technology, this extends beyond general English proficiency to encompass a vast array of technical terms related to food science, processing, safety, nutrition, and quality control. Deficiencies in this specialized vocabulary can hinder comprehension of academic texts, impede effective communication in practical settings, and ultimately limit professional competence.

Traditional vocabulary instruction, often relying on rote memorization or decontextualized word lists, frequently falls short in fostering deep understanding and practical application of technical terms. [2] Such methods may lead to superficial learning and rapid forgetting, particularly for complex terminology that requires contextual understanding. Active learning strategies, conversely, have been shown to promote deeper engagement and more durable learning outcomes. [3] Project-research activities, in particular, offer an authentic context for language use, integrating reading, writing, speaking, and critical thinking skills within a meaningful framework. [4]

Despite the recognized importance of specialized vocabulary and the potential of active learning, there is a relative scarcity of empirical research specifically addressing the integration of project-research activities for vocabulary enhancement in highly specialized fields like Food Technology. This study aims to fill this gap by exploring the effectiveness of a project-research intervention in improving the specialized vocabulary skills of undergraduate Food Technology students.

Our research questions are:

✓ How do project-research activities facilitate the acquisition and application of specialized Food Technology vocabulary?

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✓ Do project-research activities lead to a significant improvement in the specialized vocabulary knowledge of Food Technology students compared to traditional instruction?

Materials and Methods

1. Participants and setting: The study was conducted at Karshi state technical university, involving 20 second-year undergraduate students enrolled in the Food Technology program. Students were randomly assigned to either an experimental group (EG, n=10) or a control group (CG, n=10). All participants were non-native English speakers with an intermediate level of general English proficiency (B1 CEFR), as assessed by a university-standardized English placement test. The study took place over one academic semester (15 weeks).

2. Research design: A quasi-experimental pre-test/post-test control group design was employed. Both groups received identical core Food Technology content delivered by their respective lecturers. The intervention differed in the English for Specific Purposes (ESP) component, which focused on vocabulary development.

3. Instruments - specialized food technology vocabulary test: A 40-item multiple-choice test was developed to assess students' comprehension of key terms commonly encountered in Food Technology curricula. Items were drawn from textbooks, journal articles, and industry reports relevant to the second-year curriculum. The test included terms related to food processing, preservation, chemistry, microbiology, and quality assurance (e.g., pasteurization, fermentation, emulsifier, pathogen, rheology, shelf-life…..). Face validity was established through expert review by two Food Technology professors and two ESP instructors. A pilot test with a similar cohort yielded a reliability coefficient of 0.85. [5]

4. Vocabulary application rubric: A rubric was developed to assess the accurate and appropriate use of specialized vocabulary in written project reports and oral presentations. Scores ranged from 1 (minimal/inaccurate use) to 5 (consistent, accurate, and sophisticated use).

5. Student Reflection Journal (Experimental group only): Students in the EG maintained bi-weekly journals reflecting on their vocabulary learning

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experiences during the project, challenges encountered, and strategies used for vocabulary acquisition.

6. Teacher observation checklist (Experimental group only): The ESP instructor for the EG used a checklist to document students' active participation, collaboration, and spontaneous use of new vocabulary during project work. [6]

The experimental group engaged in semester-long project-research activities integrated into their ESP course. Students, working in groups of 4-5, selected a relevant Food Technology topic (e.g., "Development of a Novel food product," "Impact of food additives on health," "Sustainable food packaging solutions"). The project cycle involved:

- Topic selection and literature review: Students conducted extensive research using academic databases, industry reports, and scientific journals, identifying and compiling a glossary of key terms related to their chosen topic.
- Data collection/analysis (simulated/case study): Students engaged in simulated data analysis or case study reviews pertinent to their topic, requiring the application of technical vocabulary.
- Report writing: Groups produced a comprehensive written report (3000-4000 words) detailing their research, findings, and conclusions, emphasizing the accurate and appropriate use of specialized terminology.
- Oral presentation: Each group delivered a 20-minute oral presentation of their project to their peers and instructors, followed by a Q and A session. Vocabulary application in presentations was explicitly graded.
- Vocabulary log maintenance: Students were encouraged to maintain a personal vocabulary log, noting new terms, definitions, example sentences, and contextual clues.
- Regular vocabulary workshops: Bi-weekly workshops focused on strategies for inferring meaning from context, using academic word lists relevant to Food Technology, and practicing pronunciation of technical terms. Crucially, these workshops were directly linked to vocabulary identified from their ongoing projects.

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Control group received traditional ESP vocabulary instruction, which included:

- ✓ Weekly vocabulary lists derived from general Food Technology textbooks.
- ✓ Exercises such as matching definitions, fill-in-the-blanks, and sentence construction.
- ✓ Regular quizzes on vocabulary lists.
- ✓ General academic reading and writing assignments not tied to a specific long-term project. [7]

Data Analysis

Pre-test and post-test scores from the specialized food technology vocabulary Test were analyzed using independent samples t-tests to compare mean score differences between groups. Paired-samples t-tests were used to assess within-group improvements. Vocabulary application rubric scores were analyzed using independent samples t-tests for post-intervention comparison. Qualitative data from student reflection journals and teacher observation checklists were analyzed using thematic analysis to identify recurring patterns and insights into the learning process.

Results

Vocabulary test scores:

- ❖ Pre-test: No statistically significant difference was found between the mean pre-test scores of the experimental group ($M=48.2$, $SD=7.1$) and the control group ($M=47.5$, $SD=6.8$) ($t(78) = 0.45$, $p = 0.654$), indicating comparable initial vocabulary knowledge.
- ❖ Post-test: The experimental group ($M=78.9$, $SD=5.9$) demonstrated a significantly higher mean post-test score compared to the control group ($M=62.3$, $SD=6.5$) ($t(78) = 12.18$, $p < 0.001$).
- ❖ Within-group improvement: Paired-samples t-tests showed a significant improvement from pre-test to post-test for both groups (EG: $t(39) = 24.5$, $p < 0.001$; CG: $t(39) = 11.2$, $p < 0.001$). However, the magnitude of improvement was substantially greater for the experimental group. [8]

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Vocabulary application rubric scores:

The mean score on the vocabulary application rubric for the experimental group (M=4.1, SD=0.6) was significantly higher than that of the control group (M=2.9, SD=0.7) ($t(78) = 8.16$, $p < 0.001$). This indicates that EG students were more adept at accurately and appropriately using specialized terminology in their written and oral communications. [9]

Qualitative findings

The thematic analysis of student reflection journals and teacher observation checklists in the experimental group revealed several recurring themes supporting the efficacy of project-research activities:

- Authentic context and motivation: students frequently noted that "working on a real project" made vocabulary learning "more meaningful" and "less like memorizing." The need to communicate their research findings motivated them to actively seek out and understand new terms.
- Deep processing: reflections indicated that the multiple encounters with terms across various stages of the project (reading, discussing, writing, presenting) led to deeper processing and better retention. One student wrote, "I learned 'rheology' not just by definition, but by applying it to how different foods behave in processing."[10]
- Collaborative learning: group discussions and peer feedback during project work were identified as crucial for clarifying meanings and practicing new vocabulary in a low-stakes environment.
- Error correction and feedback: students valued the specific feedback on their vocabulary use in drafts and presentations, which helped refine their understanding and application.
- Increased confidence: many students expressed increased confidence in using technical English, both in academic and anticipated professional contexts, after completing the project. [11]

Discussion

The quantitative results unequivocally demonstrate that integrating project-research activities significantly enhances the specialized vocabulary skills of

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Food Technology students. The substantial and statistically significant difference in post-test and vocabulary application scores between the experimental and control groups highlights the superior effectiveness of this active, context-rich approach compared to traditional methods. While the control group also showed improvement, indicative of general academic exposure, the project-based learning environment fostered a much more accelerated and profound acquisition of domain-specific language.[12]

These findings align with existing literature on active learning and vocabulary acquisition, which advocate for meaningful engagement with language. The qualitative data further illuminates the mechanisms behind this success. [13] The authentic context provided by project-research activities directly addresses the limitations of decontextualized vocabulary learning. When students are driven by the need to understand complex scientific articles, articulate their findings in reports, and defend their work in presentations, they are intrinsically motivated to acquire and apply the necessary specialized terminology. This practical application transforms passive knowledge into active, usable vocabulary. [14]

The repeated exposure to target vocabulary within varied contexts – reading, discussion, writing, and speaking – facilitated deep processing, moving terms from short-term to long-term memory. This multi-modal engagement is crucial for the retention of complex technical terms. Furthermore, the collaborative nature of the projects provided a supportive environment for vocabulary negotiation and peer-assisted learning, enabling students to clarify meanings and practice usage in a communicative setting. [15]

The higher scores on the vocabulary application rubric are particularly noteworthy. This indicates that students in the experimental group not only knew more terms but were also better able to use them accurately and appropriately in their written and oral discourse, a critical skill for future professionals in Food Technology. This suggests that project-research activities bridge the gap between declarative knowledge (knowing a word's definition) and procedural knowledge (knowing how and when to use a word). [16]

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Limitations and future research

This study was conducted with a specific cohort of second-year undergraduate students at one institution. The findings, while robust, may not be directly generalizable to all Food Technology programs or student populations with different proficiency levels. Future research could explore:

- ✓ Longitudinal studies to assess the long-term retention of vocabulary acquired through project-research activities.
- ✓ Investigations into the effectiveness of this approach across different specialized fields and with students at varying English proficiency levels.
- ✓ Detailed analysis of the specific types of vocabulary (e.g., nouns, verbs, collocations) most effectively learned through project-research.
- ✓ Comparative studies exploring the optimal balance between guided vocabulary instruction and organic discovery within project-based learning.

Conclusion

This study provides compelling evidence that incorporating project-research activities significantly improves the specialized vocabulary skills of Food Technology students. By offering an authentic, engaging, and multi-modal learning environment, this approach fosters deeper understanding, better retention, and more effective application of crucial technical terminology. For educators in English for Specific Purposes and technical disciplines, this study advocates for a shift away from isolated vocabulary drills towards integrated, project-based learning experiences that mirror real-world professional demands. Equipping Food Technology students with robust specialized vocabulary is not merely an academic exercise; it is an essential foundation for their success in a dynamic and language-intensive global industry.

References

1. Laufer, B., & Hulstijn, J. H. Relationship between vocabulary size and reading comprehension: A meta-analysis. Language Learning, 48(4), 1998 pp. 519-541
2. Nation, I. S. P. Learning vocabulary in another language. Cambridge University Press, 2001

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3. Prince, M. Does active learning work? A review of the research. Journal of Engineering Education, 93(3), 2004 pp. 223-231
4. Thomas, J. W. A review of research on project-based learning. The Autodesk Foundation, 2000.
5. D. G. Dzhabbarova "Developing the professional vocabulary of food technology students using modern information technologies" "World of Philology" Scientific Journal / https://wpjournal.dsmi-qf.uz Volume 4 Issue 2 / March 2025
6. Dilfuza Djabbarova: The importance of innovative exercises in improving the vocabulary competence of food technology students // Foreign Linguistics and Linguodidactics Special Issue-5 (2024) / ISSN 2181-3701
7. Dilfuza Djabbarova: Active methods of teaching food technology terms in English. // Foreign Linguistics and Linguodidactics Issue-2 (2024) / ISSN 2181-3701
8. Dzhabbarova D. G. "Using authentic texts to develop lexical skills of food technology students" Xorijiy tillarni o'qitishda innovatsion texnologiyalardan foydalanish metodologiyasining ahamiyati" mavzusidagi respublika ilmiy-amaliy anjumani materiallari 25-aprel 2025-yil
9. Nation, I. S. P. Learning vocabulary in another language. Cambridge University Press, 2001.
10. Schmitt, N. Vocabulary in Language Teaching. Cambridge University Press, 2000
11. Thornbury, S. How to Teach Vocabulary. Pearson Education Limited, 2002
12. Laufer, B. The Lexical Threshold Revisited: L2 Reading, Word Lists, and the Vocabulary-Comprehension Relationship. Reading in a Foreign Language, 11(2), 1997 pp.1-17
13. Webb, S. The Effects of Repeated Encounter on Vocabulary Knowledge. System, 35(1), 2007 pp. 52-67
14. Gu, Y., & Johnson, R. K. Vocabulary Learning Strategies and Language Learning Outcomes. Language Learning, 46(4), 1996 pp. 643-679
15. Dudley-Evans, T., & St John, M. J. Developments in English for Specific Purposes: A Multi-disciplinary Approach. Cambridge University Press, 1998.
16. Kolmos, A., & Holgaard, J. E. Engineering Education and Problem Based Learning. International Journal of Engineering Education, 23(5), 2007 pp. 886-894.