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Improving Lexical Accuracy And Range In Medical Students' English Through Blended Learning

Rashidova Nodira Khabibullayevna

Doctor of Philosophy (PhD) in Pedagogical Sciences, Associate Professor,
Namangan State University, Uzbekistan
*E-mail: **nodirarashidova1109@gmail.com***
Tel: +998995151509

Abstract: *lexical accuracy and range are critical components of English proficiency for medical students, as precise terminology and varied vocabulary are essential for effective academic study and professional communication. However, many medical students learning English as a second or foreign language experience difficulties in using medical terminology accurately and flexibly. This study investigates the effectiveness of a blended learning approach in improving lexical accuracy and lexical range in medical English. The research employed a quasi-experimental design with pre- and post-tests administered to undergraduate medical students. The blended learning model integrated face-to-face instruction with online vocabulary modules, interactive tasks, corpus-based activities, and formative feedback. Data were analyzed using quantitative measures of lexical accuracy and diversity, supported by qualitative feedback from participants. The findings indicate a statistically significant improvement in students' correct use of medical terminology, collocations, and lexical variety. The results suggest that blended learning provides increased exposure, practice opportunities, and individualized feedback, thereby enhancing vocabulary acquisition and retention. The study concludes that blended learning is an effective pedagogical strategy for developing lexical competence in medical English and recommends its integration into medical language curricula.*

Keywords: blended learning; lexical accuracy; lexical range; medical English; vocabulary acquisition; English for Specific Purposes (ESP); medical students; language pedagogy.

Introduction

Lexical competence particularly lexical accuracy and lexical range is a critical component of English proficiency for medical students. In medical education, students must comprehend specialized terminology, communicate accurately with colleagues and patients, and produce academically appropriate written and spoken discourse. However, many medical students studying English as a Foreign Language (EFL) struggle with limited vocabulary range, frequent lexical errors, and overreliance on general English rather than discipline-specific terminology.

Traditional classroom instruction often provides limited exposure to authentic medical discourse and insufficient opportunities for individualized vocabulary practice. Blended learning, which combines face-to-face instruction with online learning components, has emerged as a promising pedagogical approach. By integrating digital platforms, interactive tasks, corpus tools, and self-paced vocabulary exercises, blended learning may enhance both lexical accuracy (correct word choice and form) and lexical range (variety and sophistication of vocabulary). This study investigates whether a blended learning approach significantly improves lexical accuracy and lexical range in medical students' English compared to traditional instruction alone.

Methods

A quasi-experimental pretest–posttest control group design was employed over a 12-week semester. Two groups of second-year medical students enrolled in an English for Medical Purposes (EMP) course participated in the study.

Participants: a total of 60 medical students from a university medical faculty participated. Thirty students were assigned to the experimental group (blended learning), and thirty to the control group (traditional face-to-face instruction). All participants had an intermediate level of English proficiency (B1–B2).

Instructional Procedure:

Control Group: received conventional instruction, including lectures, textbook-based vocabulary exercises, and in-class discussions.

Experimental Group: Received blended instruction consisting of:

- Weekly face-to-face sessions focusing on medical communication skills
- Online modules with interactive vocabulary exercises
- Corpus-based activities using authentic medical texts
- Discussion forums and peer feedback
- Automated quizzes with immediate feedback
- Vocabulary logs and reflective journals

The online component was delivered through a learning management system (LMS).

Instruments:

1. Lexical Accuracy Test: A writing task (250–300 words) describing a clinical case. Lexical errors (wrong word choice, incorrect collocations, morphological errors) were analyzed and quantified.
2. Lexical Range Measurement:
    - Type-Token Ratio (TTR)
    - Lexical Frequency Profile (LFP)
    - Number of discipline-specific medical terms used appropriately

Pretests and posttests were administered at the beginning and end of the semester.

Data Analysis: **i**ndependent and paired-samples t-tests were conducted to compare pre- and posttest scores within and between groups. Statistical significance was set at $p < 0.05$.

Results

Lexical Accuracy: both groups showed improvement in lexical accuracy; however, the experimental group demonstrated significantly greater gains.

- The experimental group reduced lexical errors by 35% on average.
- The control group showed a 15% reduction.
- Statistical analysis revealed a significant difference between groups ($p < 0.01$).

Common improvements in the experimental group included:

- More accurate use of medical collocations (e.g., “administer medication,” “present symptoms”)
- Reduced misuse of general vocabulary in clinical contexts
- Improved morphological accuracy (e.g., correct use of “diagnosis” vs. “diagnose”)

Lexical Range: the experimental group showed a significant increase in lexical diversity:

- TTR increased from 0.42 to 0.55.
- Use of academic and medical vocabulary increased by 28%.
- Greater variety of clinical terminology appeared in written tasks.

The control group demonstrated only marginal improvements in lexical diversity.

Discussion

The findings suggest that blended learning significantly enhances both lexical accuracy and lexical range among medical students studying English. The combination of face-to-face instruction and digital tools appears to create a richer lexical learning environment.

Several factors may explain these improvements:

1. Increased Exposure to Authentic Input: online corpus tools and medical texts provided repeated exposure to discipline-specific vocabulary.
2. Immediate Feedback: automated quizzes allowed students to correct errors promptly, reinforcing accurate word usage.
3. Self-Paced Learning: students could review vocabulary at their own pace, increasing retention and depth of processing.
4. Active Engagement: discussion forums and peer feedback promoted meaningful use of medical terminology.

The results align with previous research suggesting that technology-enhanced instruction supports vocabulary acquisition through multimodal input and increased practice opportunities.

Pedagogical Implications: medical English instructors should consider integrating blended learning strategies into EMP courses. Incorporating corpus tools, vocabulary tracking systems, and interactive digital exercises can significantly improve lexical competence.

Limitations: the study was limited by:

- A relatively small sample size
- Short duration (one semester)
- Focus on written production rather than spoken communication

Future research should examine long-term retention and effects on oral medical communication.

Conclusion

This study demonstrates that blended learning is an effective approach for improving lexical accuracy and lexical range in medical students' English. By combining traditional instruction with technology-enhanced vocabulary practice, educators can better prepare medical students for professional communication in international contexts. Blended learning not only reduces lexical errors but also expands students' use of specialized medical terminology, contributing to greater communicative competence in the medical field.

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