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Model in ESP: Enhancing Pharmacy Students' Mastery of Medical Terminology Through Pre-Class Digital Resources and In-Class Application

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Abstract

This research gauges the efficacy of the flipped classroom model in helping students of pharmacy achieve mastery of medical terminology within an English for Specific Purposes (ESP) program at the National Institute of Technology (NIT). The research applied a mixed-methods quasi-experimental design, with 60 students divided into experimental (flipped classroom) and control (customary classes) groups. The experiment of the groups involved participated in interactive in-class activities (e.g., role-playing patient consultations) and pre-class digital resources (e.g., video lectures), while the control group joined standard lectures. Pre- and post-tests measured terminology application and retention, while focus groups and surveys examined student perceptions. The results revealed notable gains in the experimental group, with post-test scores expanding by 35.6% compared to 9.2% in the control group. Gains were particularly visible in practical activities, such as illuminating medical terms to patients, displaying the flipped model's strength in bridging theory and practice. High engagement was observed in the qualitative data, particularly with pre-class resources (85% found videos cooperative), and confidence was increased in clinical communication (78%). Challenges included uneven group participation (15%) and technical issues (25%). The paper found the flipped classroom's potential to boost ESP pedagogy through application-focused learning and fostering active engagement. It additionally stresses the need for faculty training and localized resources to focus on infrastructural barriers. These outcomes point out practical understandings for developing pharmacy education, particularly in resource-constrained settings, and stress the consequences of effective communication in healthcare settings.

Keywords:

Flipped classroom,
ESP,
Pharmacy students,
medical terminologies



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1. Introduction

An essential aspect of professional competency in pharmacy education is the comprehension of medical language, which facilitates multidisciplinary cooperation, research, and effective patient care communication. Programs like the National Institute of Technology (NIT)'s English for Specific Purposes (ESP) curriculum are designed to provide students with the specialised language skills they require to understand intricate medical terminology derived from Greek and Latin. However, old-style education approaches, which depend on rote memorisation and lectures, sometimes fail to promote the practical use of terminology in authentic settings (Abdullah, 2013). Students can temporarily commit concepts to memory, but they may apply them with assurance in clinical settings, which can lead to errors and misunderstandings (Yao et al., 2023). The distinction stresses the need for pioneering teaching tactics that connect professional practice with academic consideration.

One potential remedy is the flipped classroom concept for this dilemma. Inverting conventional learning frameworks, it allocates pre-class digital resources (such as interactive quizzes and video lectures) for the acquisition of basic information, application-oriented activities like role-plays, case studies, freeing up classroom time for active, and prescription analysis (Akçayır & Akçayır, 2018). This method aligns with active learning theories, which stress the greater prominence of critical thinking and contextualization over passive consumption. The methodology unswervingly tackles the gap between occupational expectations and classroom learning for students of pharmacy by emphasising the use of terminology in simulated healthcare contexts, such as assessing medical reports or clarifying medication interactions to patients.

The flipped classroom's usage in teaching medical terminology in ESP programs for pharmacy students is still not well understood, despite its promise, remarkably in resource-constrained, multilingual settings like Kurdistan. Medical education research nowadays often overlooks the linguistic accuracy required in the pharmacy department in favour of a more general focus on clinical skills (Mohammad et al., 2015). This paper seeks to fill the gap by assessing the effects of a customised flipped classroom model on NIT pharmacy students' application and retention of medical terminology.

Among the main study questions are: Does the flipped model enhance long-term retention of terminology? What do students think about the combination of interactive in-class activities and digital pre-work?

Based on Bloom's updated taxonomy, the research distinguishes between higher-order cognitive skills (application) and lower-order skills (memorisation). While in-class exercises mimic real-world duties, such as converting jargon into patient-friendly English or clarifying unclear prescriptions, pre-class materials focus on fundamental comprehension through carefully chosen videos on word construction (e.g., prefixes like "anti-" or suffixes like "-emia"). The cognitive challenges of pharmacy practice, where theoretical information must be applied quickly under duress, are reflected in this framework.

The study has important ramifications for ESP teaching. Pharmacists need to be able to communicate across linguistic and cultural barriers in the age of globalised healthcare. ESP programs across the world, especially in under resourced areas, might be modelled after a flipped paradigm that improves terminology mastery. The results might help teachers incorporate blended learning resources that strike a balance between teaching and technology. To encourage such developments, policymakers must also understand the urgency of investing in digital infrastructure.

This paper first describes the difficulties in teaching medical terminology, then examines the theoretical and empirical underpinnings of the flipped classroom, summarising the study's

methodology and findings before offering helpful suggestions for incorporating flipped learning into pharmacy ESP curricula. This study intends to equip aspiring chemists with the linguistic confidence required to guarantee secure, efficient healthcare communication by examining the relationship between language instruction and professional practice.

2. Literature Review

2.1. Theoretical Foundations of the Flipped Classroom Model

Understanding the flipped classroom requires examining key learning theories that highlight active engagement, collaborative construction of knowledge, and targeted language acquisition in specialized fields. Active learning theory, which involves knowledge through participation, reflection, and application rather than passive listening, forms the foundation of the flipped classroom concept (Tabrizi & Rideout, 2017). The context for comprehending this change is provided by Bloom's updated taxonomy. Flipped classrooms emphasise higher-order cognitive abilities (applying, analysing) during in-class activities, whereas traditional lectures frequently concentrate on lower-order cognitive skills (e.g., memorising, understanding) (Siva Kumar, 2023). Teachers may devote more classroom time to problem-solving and contextualised practice—two skills essential for understanding complicated subjects like medical terminology—by shifting fundamental information to pre-class digital tools.

Moreover, the flipped classroom is grounded in constructivist learning theory, which posits that students acquire knowledge through practical experiences and social interaction (Saleem & Kausar, 2021). This approach is supported by the flipped classroom, which turns classrooms into cooperative settings where students use previously acquired vocabulary to solve actual problems. For pharmacy students, this may entail analysing case studies or acting out patient consultations—activities that indicate the mental demands of their profession.

In addition, the model aligns with principles of language acquisition in English for Specific Purposes (ESP) contexts, where the emphasis is on functional language skills tailored to professional settings (Marcu, 2020). For pharmacy students, ESP training requires immersion in domain-specific communication contexts and lexicons, as opposed to standard English. The flipped paradigm combines self-paced learning with practical training to meet the demand for repeated, context-rich exposure, which has been shown to be favorable for medical terminology acquisition (Tekin et al., 2020).

2.2 Active Learning Strategies in ESP Pedagogy

Effective ESP instruction in flipped classrooms relies on active learning strategies that combine meaningful tasks, technology, and collaboration to enhance both language acquisition and professional competence. These strategies ensure students not only learn terminology but also apply it in context-rich, real-world situations.

Task-based language teaching (TBLT) plays a central role in ESP learning by engaging students in tasks with clear objectives, such as reading prescriptions or writing patient advisories. Studies show that task-based methods boost technical vocabulary memory by placing words in relevant situations (Fasih, 2023). The flipped classroom operationalises TBLT by establishing terminology, pre-class materials, and carrying out tasks that require its use during in-class sessions.

In addition, technology-enhanced language learning is a key component of flipped models, which rely on digital resources such as video lectures, interactive exercises, and quizzes. Multimedia tools

develop self-directed learning and engagement, according to research steered in ESP environments (Adinda & Mohib, 2020). For example, in his study, students of medical anatomy who applied anatomy films performed 15% better on terminology examinations compared to their textbook-reliant colleagues (Anand et al., 2021). Effectiveness, however, is dependent on the quality of resources and accessibility, which is vital in settings with limited resources, such as Kurdistan.

Moreover, peer interaction and collaborative learning constitute another essential strategy within flipped classrooms. Peer collaboration is a common feature of in-class flipped activities, and it expands language memory by permitting students to navigate feedback and meaning (Zarrinabadi & Ebrahimi, 2019). A study of nursing students of nursing discovered that collaborative glossaries boosted medical vocabulary retention by 30% compared to studying alone (Lee et al., 2018). These results reflect the flipped model's focus on group projects, especially in classes with many languages, where peer support helps students who do not speak the same language.

2.3 Challenges in Teaching Medical Terminology

Teaching medical terminology to pharmacy students poses unique challenges, stemming from linguistic complexity, traditional pedagogical gaps, and difficulties in applying terms in real-world clinical contexts. Addressing these challenges requires approaches that connect vocabulary learning to practical, professional use.

The learning curve for medical terminology is high due to its reliance on Latin/Greek roots, prefixes, and suffixes. Students sometimes struggle to grasp contextual subtleties and term construction norms (e.g., "cardiomegaly" = "heart" + "enlargement") (Chabner, 2022). Conventional approaches make this worse by separating concepts from real-world applications, which results in a disjointed understanding. Additionally, traditional or conventional pedagogies, although lecture-based approaches are common in many pharmacy programs, tend to promote surface-level memorization rather than deep comprehension. Within six months, 70% of rote-memorized phrases are forgotten by pupils, according to a meta-analysis (Hudes et al., 2019). According to Freeman et al. (2022), active learning techniques like simulations, on the other hand, increase long-term retention by 40–50%. A further challenge is the contextual disconnect students often experience. Students often struggle to relate clinical circumstances to relevant terminology. For example, being aware of "hypertension" does not guarantee that you can communicate it to a patient (Johnson et al., 2021). This is addressed by the flipped model, which links learning to professional practice by incorporating terminology into case-based exercises.

2.4 Empirical Evidence on Flipped Classrooms in Healthcare Education

Empirical studies on flipped classrooms in healthcare and ESP education demonstrate notable improvements in clinical skills, language acquisition, and professional communication, yet their application to medical terminology in pharmacy programs remains limited. Exploring these contexts highlights both the potential of the flipped model and the need to address gaps in multilingual, resource-constrained, and underrepresented settings.

Flipped classrooms have demonstrated notable success in medical and nursing education, particularly in enhancing clinical skills. Clinical abilities in medical education have been enhanced via flipped classes (Akçayır & Akçayır, 2018). According to a 2021 study, students in flipped cohorts had a 23% higher diagnostic accuracy than their counterparts in lecture-based cohorts (Ding et al., 2019). According to Li et al. (2020), nursing students enrolled in flipped programs also demonstrated improved patient communication skills.

In the context of ESP, flipped models have been shown to improve performance in fields such as legal English (Yuchen, 2020) and technical writing in engineering (Martínez-Sáez, 2019). Evidence for medical terminology learning is limited, though one study revealed that pharmacy students who engaged with flipped modules increased prescription accuracy by 18% (Joshi & Klausner, 2022), highlighting both the potential of the approach and the scarcity of research in this specific area.

Despite the benefits, several barriers to implementation exist. Among the difficulties are disparities in student autonomy, opposition to educational reform, and unequal access to digital resources. Pre-class engagement may be hindered by poor internet access in low-resource environments (Freeman et al., 2022), underscoring the need for flexible approaches such as offline video distribution.

Although flipped classrooms have demonstrated potential in healthcare and ESP education, there remains limited knowledge regarding their application to medical terminology instruction in pharmacy programs. Furthermore, multilingual classrooms and resource-limited contexts, particularly in underrepresented regions like Kurdistan, are largely unexplored. By examining a flipped classroom model tailored to the specific needs of the National Institute of Technology, this study addresses these gaps and offers insights for scalable, context-sensitive ESP pedagogies.

3. Methodology and Data Collection

The impact of a flipped classroom format in improving pharmacy students' comprehension of medical terminology at the National Institute of Technology was assessed using a mixed-methods quasi-experimental methodology. Sixty-fourth semester students were divided into two groups: thirty experimental students were exposed to the flipped classroom method, and thirty control students received standard lectures. Pre-test results guaranteed baseline equivalency in terminology knowledge, and participants were assigned non-randomly using convenience sampling.

Over the course of the six-week intervention, the experimental group participated in pre-class digital materials such as self-assessment tests published on Moodle and 15-minute video lectures (such as "Decoding Medical Prefixes/Suffixes"). Interactive exercises, including role-playing patient consultations and examining prescription errors, were the main emphasis of in-class activities. In contrast, the control group participated in instructor-led lectures on the same subjects and completed fill-in-the-blank drills and other textbook activities. In order to obtain reliability and validity, tests were made by expert validation and a pilot study. Two pharmacists and three ESP specialists reviewed content relevance, yielding a Content Validity Index (CVI) of 0.91. Pilot testing ($n=15$) showed strong internal consistency for MCQs ($\alpha=0.82$). The scenarios of short answers were scored by two raters ($\kappa=0.78$), with disagreements resolved via consensus.

Pre- and post-tests that included multiple-choice questions (MCQs) to gauge terminology retention and short-answer scenarios to gauge practical application (e.g., translating "myocardial infarction" into layman's words) were used to gather quantitative data. Scores on weekly quizzes measured students' interest in the pre-class materials. Likert-scale questionnaires and semi-structured focus groups were used to collect qualitative data from the experimental group regarding their perceptions of flipped learning (e.g., difficulties with digital resources or peer collaboration).

Both statistical and thematic methods were used in the data analysis. SPSS software was used to process the quantitative results. Independent t-tests were used to determine differences between the experimental and control groups, and paired t-tests were used to compare pre/post-test changes within groups. Cohen's was used to calculate effect sizes, measuring the influence of the

intervention. NVivo was used to thematically analyze qualitative data from focus group transcripts and open-ended survey responses, finding recurrent themes like "increased confidence in clinical communication" or "technology accessibility barriers."

The design's strengths are in its careful baseline comparisons and dual emphasis on both quantifiable results and contextual insights. The brief intervention time and possible selection bias brought on by non-random sampling, however, are drawbacks that could mask long-term retention effects. This methodology offers a strong foundation for evaluating how well the flipped classroom bridges pharmacy students' theoretical knowledge and professional practice by combining quantitative rigor with qualitative depth.

4. Results and Discussion

Weekly quiz completion rates averaged 92% in the experimental group, with scores correlating strongly with post-test performance ($r = 0.71$, $p < 0.01$). Students who scored in the top quartile on quizzes also achieved the highest post-test applied task scores ($M = 89/100$).

Table 1. Pre- and Post-Test Performance Comparison

Metric	Experimental Group	Control Group
Pre-Test Mean (SD)	62.4 (8.1)	63.1 (7.9)
Post-Test Mean (SD)	84.6 (6.3)	68.9 (7.2)
Applied Task Improvement	+33%	+9%
MCQ Improvement	+18%	+4%

Qualitative Results

Perceptions of Flipped Learning

Thematic analysis of surveys and focus groups revealed three key themes:

1. Engagement with Digital Resources:

-85% of students found pre-class videos "helpful" or "very helpful" for understanding term formation (e.g., "*The videos broke down complex terms into simple parts*").

-However, 25% reported occasional technical issues (e.g., slow internet) affecting access.

2. Confidence in Clinical Communication:

-78% felt more confident using terminology in role-plays after in-class activities (e.g., "*Practicing patient consultations made me less nervous about explaining terms*").

3. Collaborative Learning Benefits:

-82% valued peer feedback during group tasks (e.g., “*Working in teams helped me learn from others’ mistakes*”).

Challenges Identified

- Time Management: 40% struggled to balance pre-class work with other coursework.
- Uneven Participation: A minority (15%) felt that group tasks were dominated by outspoken peers.

Table 2. Student Perceptions of Flipped Learning

Theme	Positive Feedback (%)	Challenges/Concerns (%)	Example Quotes
Engagement with Digital Resources	85% found videos helpful	25% reported technical issues	“The videos broke down complex terms into simple parts.”
Confidence in Clinical Communication	78% felt more confident	N/A	“Practicing patient consultations made me less nervous about explaining terms.”
Collaborative Learning Benefits	82% valued peer feedback	15% felt uneven participation	“Working in teams helped me learn from others’ mistakes.”

Efficacy of the Flipped Classroom Model

The substantial improvements seen in post-test scores among the experimental group ($d = 1.82$) are consistent with previous research indicating that flipped classrooms have a positive impact on advanced cognitive abilities (Ding et al., 2019). The success of the model is likely attributable to its alignment with Bloom's taxonomy: pre-class materials focus on building fundamental knowledge (remembering/understanding), while in-class exercises emphasize practical application and analysis. For instance, participating in simulated patient consultations necessitated students to apply clinical reasoning and integrate terminology, a duty usually excluded from conventional lecture formats.

The major difference in the scores of the tasks between the two approaches (+33% compared to +9%) highlights the effectiveness of the flipped model in tying theoretical knowledge to practical application. This is consistent with research in nursing education, where the use of simulations has been shown to add to patient communication skills (Lee et al., 2018; Li et al., 2020). Though the diminished increase in recall-based multiple-choice question results for the control group (+4%) reveals that old-fashioned methods are still valuable for memorization, but may not be effective in developing a deeper level of proficiency.

Role of Technology and Collaboration

The significant relationship between participation in quizzes and performance on post-tests ($r = 0.71$) draw attention to the significance of self-directed instruction in flipped classroom approaches. Students who steadily interacted with pre-class resources proved increased readiness for in-class activities, thereby optimizing the efficiency of collaborative tasks. This study by Adinda and Mohib

(2020) suggests that digital reserves contribute to autonomy within English for Specific Purposes (ESP) settings.

The qualitative feedback data stressed the value of peer collaboration, especially in multilingual settings. Participating in group projects, such as prescription analysis, enabled students to discuss meaning and resolve uncertainties—an essential aspect of language learning (Zarrinabadi & Ebrahimi, 2019). Nonetheless, problems like unequal involvement align with the findings of Lee and colleagues (Lee et al., 2018), suggesting that implementing structured roles (e.g., appointing group leaders) could help address this issue.

Contextual Challenges and Adaptations

Though the inverted model displays potential, its implementation ran against the usual difficulties in environments with limited resources. Those polled cited technical issues, therefore stressing infrastructural limitations in places like Kurdistan, where internet stability varies. Future iterations might offer offline resources (like downloaded films or related content) or combine in-person and virtual sessions to alleviate this difficulty.

Time management challenges (40%) show the weight of structured assistance. For example, teachers could provide time-management tools or set aside class time for preliminary planning.

Table 3. Effect Sizes Compared to Prior Studies

Study	Intervention	Effect Size (Cohen's d)
Current Study	Flipped Classroom	1.82
Khan et al. (2022)	Pharmacy ESP Modules	1.45
Gupta & Sharma (2020)	Medical Video Lectures	1.10
Smith et al. (2019)	Traditional Lectures	0.30

Implications for ESP Pedagogy

The results of this research have significant implications for determining and implementing English for Specific Purposes (ESP) programs, particularly in the field of pharmacy education. At first, the focus of curriculum design ought to change to emphasize active, practical learning rather than traditional lectures. Flipped classroom tactics help to support this change by shifting fundamental knowledge acquisition to pre-class online materials (e.g., video-recorded lectures) and using class time for hands-on activities like simulating patient consultations, analyzing prescriptions, and engaging in role-playing exercises. Apart from expanding students' understanding of medical terminology, these exercises equip them with the tools they need to navigate communication challenges in the workplace as pharmacists. Moreover, to get beyond infrastructure and language barriers, resourcefulness development should focus on creating multilingual, locally relevant digital content. For instance, students can increase their native language skills while progressively advancing their English language proficiency by accessing exams and video lectures in both English and Kurdish. Ultimately, guaranteeing suitable faculty training is vital to empower professors in

properly guiding group in-class activities. They can take advantage of free or low-cost tools such as Google Forms, Moodle, and Kahoot. The main focus of training courses should be improving student involvement, controlling group dynamics, and smoothly introducing technology into the classroom. These techniques help English for Specific Purposes (ESP) instruction to develop into a more interesting, student-centered, contextually appropriate educational tool.

5. Limitations

There are certain constraints to take into account, even though this research provides insightful information. First, non-random sampling, sometimes referred to as convenience sampling, may introduce selection bias because participants were not randomized to experimental and control groups. The absence of randomization may restrict the generalizability of the results, even in cases when pre-test data confirm baseline comparability between groups. Besides, while generalizability is constrained, the detailed contextual data support transferability to comparable ESP settings. Second, it is challenging to assess the long-term retention of medical terminology due to the intervention's brief duration (six weeks). Even while there were noticeable gains right away after the test, it is unclear if these improvements will last for long. Besides, the study was conducted only at the NIT, which may restrict the generalizability of the findings to other universities characterized by varying resources, demographics, or cultural environments. For instance, institutions or universities with more sophisticated technological facilities or less linguistic diversity could yield diverse outcomes. The mentioned limitation lays emphasis on the need for thorough interpretation of the conclusions and highlights the significance of replicating the research in diverse settings.

6. Future Research Directions

This work enables future research on improving and exploring the flipped classroom model in ESP settings. To decide whether the flipped classroom advances persistent knowledge, longitudinal research could inspect how long-term (e.g., 6–12 months) medical terminology retention appears. These kinds of research could also track students throughout their work lives to judge how their training has influenced real-world circumstances. Research that examines distinct linguistic and cultural contexts (for example, contrasting cohorts of Arabic speakers with those of Kurdish speakers) may shed light on how well the flipped classroom model works in a range of educational circumstances and different settings. The efficacy of the flipped classroom in monolingual versus multilingual classrooms, as well as in resource-constrained environments compared to resource-rich ones, might be investigated by scholars. Third, imminent studies may assess the viability of AI-powered customization in preparatory learning reserves. Adaptive quizzes, for instance, might tailor the content to fit the requirements of each student, promising that they gain targeted support in areas where they resist. AI-based chatbots may potentially provide immediate feedback when performing preparatory tasks, thereby strengthening self-regulated learning. Researchers in the future can expand our understanding of how flipped classrooms can be modified to accommodate the unique conditions of ESP learners in pharmacy and beyond by addressing these research gaps.

7. Conclusion

This paper shows how the flipped classroom model effectively boosts pharmacy students' proficiency in medical terminology, specifically in practical communication exercises. The flipped approach dealt with numerous shortcomings in conventional ESP teaching techniques by combining self-paced digital learning with engaging group activities throughout lessons. Comparison made through the control group, which received instruction through traditional lectures, students in the experimental group, who watched and analysed video lectures before class and participated in role-

playing activities like patient consultations and prescription analysis, performed significantly better on post-tests. Particularly noteworthy were the significant gains in applied tasks, where students demonstrated improved skills in explaining and applying medical terms in real-world situations. These results underscore the advantages of transitioning from traditional lectures to student-centred, application-oriented instruction, which supports active learning theories and earlier research.

The research does, however, highlight challenges that must be overcome to fully realize the flipped model's promise. Significant technological issues were mentioned by many pharmacy students, particularly in settings with limited resources like the NIT. These issues included inconsistent internet connectivity and poor time management. Moreover, a small number of students expressed worry about unequal participation in group activities, even though the flipped classroom encouraged confidence and teamwork among the majority of the participants in class. These issues underscore the necessity of flexible approaches, which provide assistance with time management skills, offline resources, and clear, fair participation. Instructors can design more effective and inclusive flipped learning environments by overcoming these obstacles and creating a supportive learning environment.

Looking forward, this paper sets a foundation for future implementation and exploration of ESP teaching methods. Researchers over time could investigate the lasting acquisition of specialised vocabulary, while comparative analyses across various educational settings and linguistics might shed light on the efficacy of the flipped classroom approach. Supplementary revolutions that could enhance the model's impact and accessibility include digital resources in different languages and AI-powered customisation of pre-class resources (such as adaptive quizzes). The study highlights the need to promote collaboration, technology, and stress real-world application in ESP programs for educationalists. Academic institutions can better prepare students in the pharmacy department to manage the linguistic requirements of global healthcare by implementing these guidelines, which will eventually improve the efficacy and safety of patient treatment, affecting everybody's life.

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مؤدیلی پۆلی پیچەوانە لە زمانی ئینگلیزی بۆ مەبەستی تاییبەتدا: بره‌وپێدانی شارەزایی خوێندکارانی دەرمانسازی لە زاراوەی پزیشکی له رێگەی سەرچاوه دیجیتالییه‌کانی پیش پۆل و به‌کارهێنانی ناو پۆلدا

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پوخته

ئهم توێژینه‌وه‌یه‌ کاریه‌ری مؤدیلی پۆلی پیچەوانە له یارمه‌تیدانی خوێندکار بۆ شارەزایی دەرمانسازی له زاراوه‌ی پزیشکی له چوارچێوه‌ی پرۆگرامی ئینگلیزی بۆ مەبەستی تاییبەت (ESP) له په‌یمانگای ناشنال بۆ ته‌کنه‌لۆجیا (NIT) ده‌پێوێت. توێژینه‌وه‌که شینوازی تیکه‌لاوی نیمچه‌ تاقیکاری به‌کارهێناوه، که 60 خوێندکار دابه‌شکراون بۆ گروپی تاقیکاری (پۆلی پیچەوانه) و گروپی کۆنترۆلکراو (پۆلی نه‌ریتی). تاقیکردنه‌وه‌ی ئه‌و گروپانه‌ی که به‌شداربوون له‌گه‌ڵ به‌شداریکردن له چالاکییه‌ کارلیککاره‌کانی ناو پۆل (بۆ نمونه، رابوێژکاری رۆلگێرانی نه‌خۆش) و سەرچاوه‌ دیجیتالییه‌کانی پیش پۆل (بۆ نمونه، وانه‌ فیدیوییه‌کان)، له کاتیکدا گروپی کۆنترۆلکراو به‌ وانه‌ ستاندارده‌کان به‌شداریان کرد. پیش و دوا تاقیکردنه‌وه‌کان به‌کارهێنان و مانه‌وه‌ی زاراوه‌ی پێوانه‌ ده‌کرد، و گروپه‌ فۆکسه‌ و رابرسییه‌کان سه‌یری تێروانینه‌کانی خوێندکارانیان ده‌کرد. ده‌ره‌نجامه‌کان ده‌ستکه‌وتی به‌رچاویان له گروپی تاقیکاریدا ده‌رخست، که نمره‌کانی دوا تاقیکردنه‌وه‌که به‌ رێژه‌ی 35.6% فراوانبوون به‌ به‌راورد به‌ 9.2% له گروپی کۆنترۆلکراو. ده‌ستکه‌وته‌کان به‌ تاییبەتی له چالاکییه‌ پراکتیکیه‌کاندا دیار بوون، وه‌ک روونترکردنه‌وه‌ی زاراوه‌ پزیشکیه‌کان بۆ نه‌خۆشه‌کان، نیشاندانی هیزی مؤدیلی پیچەوانه‌ له دروستکردنی پرد له‌نیوان تێوری و پراکتیکدا. به‌شداریکردنی به‌رز له داتا چۆنایه‌تییه‌کان له‌گه‌ڵ سەرچاوه‌کانی پیش پۆلدا دۆزراوه‌ته‌وه‌ به‌ رێژه‌ی (85% فیدیوکانیان به‌ یاریده‌ده‌ر زانیوه‌) و متمانه‌یان له په‌یوه‌ندی کلینیکدا به‌رزتربووه‌ به‌ رێژه‌ی (78%). ئالنگارییه‌کان بریتی بوون له به‌شداریکردنی نایه‌کسانی گروپی به‌ رێژه‌ی (15%) و پرسه‌ ته‌کنیکیه‌کان (25%). توێژینه‌وه‌که توانای پۆلی پیچەوانه‌ی دۆزیه‌وه‌ بۆ به‌رزکردنه‌وه‌ی شینوازی وانه‌وته‌وه‌ی ESP له رێگه‌ی فیربوون و په‌روه‌رده‌کردنی چالاکه‌وه‌ که سه‌رنجی له‌سه‌ر به‌کارهێنانه‌. سه‌ره‌رای ئه‌وه‌ش، جه‌خت له‌سه‌ر پێوێستی راهێنانی به‌ش و سەرچاوه‌ ناوخواه‌یه‌کان ده‌کاته‌وه‌ بۆ ئه‌وه‌ی گرنگی به‌ به‌ربه‌سته‌ ژیرخانییه‌کان بدریت. ئهم ده‌ره‌نجامه‌ ئاماژه‌ به‌ تیگه‌یشتنه‌ پراکتیکیه‌کان ده‌کات بۆ په‌ره‌پێدانی په‌روه‌رده‌ی ده‌رمانسازی، به‌ تاییبەتی له شوێنه‌ سنوورداره‌کانی سەرچاوه‌، و جه‌خت له‌سه‌ر ده‌ره‌نجامی په‌یوه‌ندی کاریه‌گر له شوێنه‌کانی چاوه‌دێری ته‌ندروستییدا ده‌کاته‌وه‌.

وشه‌ سه‌ره‌کیه‌کان: پۆلی پیچەوانه، زمانی ئینگلیزی بۆ مەبەستی تاییبەت، خوێندکارانی ده‌رمانسازی، زاراوه‌ی پزیشکی

نموذج الفصل الدراسي المقلوب في اللغة الإنجليزية لأغراض خاصة: تعزيز إتقان طلاب الصيدلة للمصطلحات الطبية من خلال الموارد الرقمية قبل الفصل الدراسي والتطبيق داخل الفصل الدراسي

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المخلص

يقبس هذا البحث فعالية نموذج الفصل الدراسي المقلوب في مساعدة طلاب الصيدلة على إتقان المصطلحات الطبية ضمن برنامج اللغة الإنجليزية للأغراض الخاصة (ESP) في المعهد الوطني للتكنولوجيا (NIT). طُبِقَ البحث أسلوبًا شبه تجريبي مختلط الأساليب، حيث قُسم 60 طالبًا إلى مجموعتين تجريبيتين (الفصل الدراسي المقلوب) و (الفصول الدراسية الاعتيادية) الخاضعة لضوابط. شاركت المجموعات المشاركة في التجربة في أنشطة تفاعلية داخل الفصل (مثل استشارات المرضى من خلال تمثيل الأدوار) وموارد رقمية قبل الفصل (مثل محاضرات الفيديو)، بينما انضمت المجموعة الخاضعة لضوابط إلى محاضرات قياسية. قاست الاختبارات السابقة واللاحقة تطبيق المصطلحات والاحتفاظ بها، بينما بحثت مجموعات التركيز والاستطلاعات في انطباعات الطلاب. كشفت النتائج عن تحسن ملحوظ في المجموعة التجريبية، حيث ارتفعت درجات الاختبار اللاحق بنسبة 35.6% مقارنة بـ 9.2% في المجموعة الخاضعة لضوابط. وبرز التحسن بشكل خاص في الأنشطة العملية، مثل شرح المصطلحات الطبية للمرضى، مما يُظهر قوة النموذج المقلوب في ربط النظرية بالتطبيق. تم رصد تفاعل عالٍ في البيانات النوعية مع موارد ما قبل الحصص الدراسية (85% وجدوا أن مقاطع الفيديو تعاونية)، وتعززت الثقة في التواصل السريري (78%). وشملت التحديات عدم تكافؤ مشاركة المجموعات (15%) والمشكلات التقنية (25%). وخلصت الورقة البحثية إلى قدرة الفصل الدراسي المقلوب على تعزيز منهجية تعليم اللغة الإنجليزية لأغراض خاصة من خلال التعلم التطبيقي وتعزيز التفاعل النشط. كما شددت على ضرورة تدريب أعضاء هيئة التدريس وتخصيص موارد محلية للتركيز على العوائق الهيكلية. وتشير هذه النتائج إلى فهم عملي لتطوير تعليم الصيدلة، لا سيما في البيئات محدودة الموارد، وتؤكد على أهمية التواصل الفعال في مؤسسات الرعاية الصحية

الكلمات المفتاحية: الفصل الدراسي المقلوب، تعليم اللغة الإنجليزية لأغراض خاصة، طلاب الصيدلة، المصطلحات الطبية