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Schema Theory and Vocabulary Categorization: A Framework for Nursing English

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ABSTRACT

The aim of this study is to investigate how the application of schema-based vocabulary categorization influences nursing students' comprehension of medical English proficiency. To achieve this objective, a descriptive qualitative method was implemented. The subject in this research was 59 nursing students at STIKES IST Buton. The data were collected through observations, tests, questionnaires, and interviews. The process of data analysis was conducted by categorizing lexical knowledge to enhance contextual analysis. As a result, the point of conclusion is reached. The findings indicate that this method improves students' contextual analysis, resulting in more accurate and professional medical translations. By actively structuring lexical knowledge based on schema theory, this approach offers a practical framework for English for Specific Purposes (ESP) curricula. This study suggests that implementing vocabulary categorization helps nursing students overcome linguistic complexity in a global context, leading to better mastery of medical English.

Keywords: *Vocabulary Categorization, Schema Theory, Medical English Proficiency, Nursing Students.*

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INTRODUCTION

In the current era of global healthcare, the ability to comprehend medical English has become an essential competency for health students. Medical English is characterized by complex and specific technical vocabulary, including terms for symptoms, diseases, and procedures that require high precision. Gokiyeva (n.d.) explained that English opens doors to global knowledge, facilitates international collaboration, supports academic and professional growth, and ensures effective communication in multicultural clinical settings. The English language plays a significant role in medical education for (1) providing competent care in a multicultural environment, (2) learning purposes, (3) presenting research activities in an international field, and (4) reading scientific, technological, and academic information that is globally published or presented (Uras Eren et al., 2024).

(Lin, P., et.al., 2025), explained that Medical English, encompassing specialized terminology, intricate grammatical structures, and culturally specific nuances, presents

formidable obstacles for non-native speakers. Parallel to structural reforms, policy documents and analytical reports have highlighted persistent problems in the quality of medical education, including outdated teaching materials, limited access to current resources, and insufficient foreign-language skills among both students and staff, with English proficiency singled out as a major barrier to continuing education and international collaboration (Fozilova, N. (2026). ESP instruction was traditionally limited to specialized vocabulary training and text translation, which often failed to reflect students' interests, ultimately leading to low motivation and poor participation among learners (Al-Haidari, A. S. A., et al. 2013). Moreover, low English proficiency affected healthcare students' behavior, including classroom participation and their approach to teachers (Alhamami, M., & Almelhi, A., 2021).

The research involving medical students and their English instructors revealed five critical obstacles in vocabulary learning: (1) nonexistent intentional English vocabulary learning, (2) stagnant specialized medical English vocabulary acquisition, (3) lack of sufficient contextualized academic English writing practice with newly encountered specialized medical vocabulary; (4) lack of teacher feedback on the students' vocabulary use; and (5) lack of pedagogical communication among faculty (Reynolds, B. L., Zhang, X., & Ding, C. 2023). However, many nursing students, particularly at STIKES IST Buton, often face significant obstacles due to limited mastery of this specialized vocabulary. This proficiency gap can hinder their professional communication and clinical performance in an international environment. (Alhamami, M., & Almelhi, A., 2021). Vocabulary learning is essential as it provides a foundation for developing language skills. According to Azamatovna (2021), students must be trained to use language learning strategies appropriately to develop technical vocabulary in English for Specific Purposes (ESP). Furthermore, Nedelkoska (2022) emphasizes that vocabulary instruction should be well-planned and regular to be effective. Despite these recommendations, traditional teaching methods often fail to help students internalize complex medical terms deeply. (Sakti et al., 2024) said that initially, ESP focused on specialized vocabulary and discourse practices within specific professional fields, relying heavily on textbook-based instruction and rigid methodologies. These traditional approaches, while foundational, have been critiqued for their limited flexibility, engagement, and broader communicative development. (Nazeer, I. et al., 2024), the research highlights the imperative of flexibility and diversity in ESP teaching methods, given educators' and learners' varying requirements and choices. This study recommends that educational institutions and teachers acknowledge the importance of ESP in elevating English language teaching skills. Observations at STIKES IST Buton revealed that students often struggle to connect English medical terms with the clinical concepts they already know in their native language. In response to these difficulties, this study proposes a category-based approach supported by Anderson's (2018) Schema Theory, which provides ideational scaffolding for assimilating new information. This theory suggests that information is more easily retained when it is connected to existing mental frameworks or "schemata". Anderson, R. C. (2018) outlines six functions of schema theory, which include: (1) Schemata provide an ideational framework for assimilating textual information, (2)

Facilitating selective attention allocation, (3) Enabling orderly memory retrieval, (4) Enabling inferential elaboration, (5) Facilitating editing and summarization, (6) Enabling inferential reconstruction. Meylani, R. (2024) states that Schema theory offers a robust cognitive framework that elucidates how individuals organize and process information by deploying mental structures known as schemas. By organizing vocabulary into meaningful categories, such as grouping terms by body systems or clinical procedures, students can activate their prior medical knowledge to better understand and remember new English terms. (Shirban Sasi, A. 2024) explained the effectiveness of schema-based and mind mapping techniques in an EFL context, demonstrating that these methods not only facilitate immediate language acquisition but also foster deeper cognitive engagement and long-term retention. (Xiao, Y. 2024), added that Schema theory is a scientific reading theory advocated by modern teaching, and it regards reading comprehension as a process in which readers' knowledge and skills interact with the information in the reading material.

The objective of this research is to investigate how the application of schema-based vocabulary categorization influences nursing students' comprehension of medical English proficiency. Specifically, this study analyzes how 59 nursing students utilize these categories to improve their contextual analysis and translation accuracy. This research contributes to the field of ESP by providing a practical framework that bridges the gap between linguistic theory and nursing education practice, thereby ensuring that future healthcare professionals are better prepared to address global challenges.

METHOD

A descriptive qualitative research design was employed to investigate the influence of schema-based vocabulary categorization on nursing students' medical English proficiency. According to Lehmann (2009), qualitative methods are used to define a problem and identify determinants. This design facilitated a detailed and holistic description of how students organize their mental schemata when processing complex medical terminology. The qualitative approach allowed the researcher to capture the nuances of students' learning experiences and the development of contextual analysis skills within a structured pedagogical framework.

The research subjects comprised 59 nursing students at STIKES IST Buton. Participants were selected using a total sampling technique, as all were enrolled in the Medical English course in which the schema-based categorization method was implemented. These students represent a critical population, as they are preparing for clinical practice where mastery of specialized English vocabulary is essential for professional communication.

Data were gathered through a multifaceted approach. The procedures involved:

1. **Observations:** Conducted during classroom sessions to monitor students' engagement with the categorization tasks.
2. **Tests:** Pre-tests and post-tests were administered only to measure the improvement in vocabulary mastery, rather than for quantitative statistical analysis

3. **Questionnaires:** Distributed to the 59 respondents to gather style feedback on their perceptions of the method's effectiveness.
4. **Interviews:** Semi-structured interviews were conducted with selected students to gain deeper insights into their cognitive processes and the challenges they faced during categorization.

The data analysis process followed a qualitative flow consisting of data reduction, data display, and conclusion drawing. Specifically, the analysis focused on how students categorized lexical knowledge based on Anderson's (2018) Schema Theory. The researcher analyzed the correlation between the students' ability to group words (e.g., by body systems or symptoms) and their subsequent performance in translating technical medical texts. The results from the questionnaires and test scores were cross-referenced with interview transcripts to identify recurring themes in the students' linguistic development.

RESEARCH RESULT

1. Improvement in Vocabulary, Terminology, and Speaking Proficiency

The research results indicate that the categorization method directly affects students' ability to recall and use technical medical terms. The results from the pre-test and post-test show substantial point increases, as illustrated in the following tables:

Table 1. Vocabulary Assessment Scores Improvement

Research Participant	Pre-Test Score	Post-Test Score
Respondent 3	85	90

The post-test results showed that Respondent 3 improved from 85 to 90 after utilizing the vocabulary categorization method. Furthermore, the interview results :

Respondent 3 stated:

"My speaking ability has increased because the vocabulary I mastered makes communication with medical professionals smoother and more effective."

"After memorizing medical vocabulary, the level of confidence in translating English health texts usually increases because it reduces stress, where the fear of using terms incorrectly is diminished."

From the data above, Respondent 3 successfully transformed the fear of medical errors into professional confidence. The improvement in the score demonstrates that vocabulary categorization facilitates more precise and secure communication.

Table 2. Vocabulary Assessment Scores Improvement

Research Participant	Pre-Test Score	Post-Test Score
Respondent 28	80	100

Respondent 28 stated:
"Yes, memorizing increases reading, writing, listening, and speaking proficiency; however, it must be supported by consistent practice to ensure retention."
"Yes, this strategy is considerably effective and essential, though it remains vital to combine it with practical exercises."
"The main challenges are the difficult pronunciation of medical terms and understanding the complete context of medical sentences."

From the data above, Respondent 28 demonstrated exceptional progress in mastering medical English terminology. Starting with a Pre-Test score of 80, the respondent achieved a perfect Post-Test score of 100. This 20 point increase signifies a complete grasp of the categorized medical vocabulary, moving from a good initial understanding to total mastery of the required terms. Her conclusion reinforces the research's premise: categorized vocabulary provides the "raw material" for communication, but its transformation into "Speaking Proficiency" is most successful when the strategy is combined with practical, consistent exercise. This insight confirms that while the strategy is "considerably effective and essential," it must be combined with "practical exercises" to bridge the gap between theoretical knowledge and verbal fluency.

Table 3. Vocabulary Assessment Scores Improvement

Research Participant	Pre-Test Score	Post-Test Score
Respondent 43	80	100

Respondent 3 stated:
"Yes, categorizing medical vocabulary enhanced my English proficiency, especially in confidently understanding and applying medical terms in clinical practice."
"The greatest challenges are memorizing the extensive and complex medical vocabulary, as well as ensuring accurate pronunciation to maintain professional communication."

The respondent achieved exceptional progress in mastering medical English terminology. Starting with a Pre-Test score of 80, the respondent achieved a perfect Post-Test score of 100. This 20-point increase signifies a transition from a solid initial understanding to total mastery of the required terms.

The respondent 43's feedback highlights the practical impact of the categorization method on her professional development. The respondent confirmed that "categorizing medical vocabulary enhanced my English proficiency, especially in confidently understanding and applying medical terms in clinical practice." This indicates that structured learning directly translates to higher self-assurance in a real-world healthcare setting.

However, the respondent also identified critical linguistic barriers that persist despite her high scores. Respondent stated that "the greatest challenges are memorizing

the extensive and complex medical vocabulary, as well as ensuring accurate pronunciation to maintain professional communication." This insight emphasizes that while the strategy is highly effective for retention, it must be integrated with phonetic practice to achieve true verbal fluency. Besides it respondent reinforces the research premise: categorized vocabulary provides the essential "raw material" for communication, but its transformation into functional "Speaking Proficiency**"** is most successful when the strategy is combined with focused pronunciation training.

2. Critical Communication Functions (Reading Comprehension)

Table 4. Analysis of Critical Reading Comprehension Scores

Research Participant	Pre-Test Score	Post-Test Score
Respondent 2,7, 14	70	80

The post-test results showed that Respondent 2,7,14's score improved from 70 to 80 after utilizing the vocabulary categorization method. Furthermore, the interview results:

Responden 2 Stated*:*
"Yes, memorizing medical vocabulary categories helps me positively in understanding medical terms in English more easily."
"This strategy is highly effective because it makes it easier for me to remember complex medical vocabulary. However, the greatest challenge is having to pronounce medical terms correctly according to the context of the conversation."

The increase in score to 80 confirms the effectiveness of the categorization method in enhancing Reading Comprehension and vocabulary retention. However, challenges regarding pronunciation indicate that intensive physical drills and oral practice are required to complement this method to achieve true Speaking Proficiency.

Respondent stated 7:
"Yes, memorizing medical vocabulary categories makes me feel more confident when reading and understanding medical texts."
"This method is effective; however, I feel that I need more direct practical exercise so that the vocabulary is not easily forgotten."
"The main difficulties are recalling similar terms and ensuring they are pronounced correctly."

As respondent 14 The respondent achieved exceptional progress in mastering medical English terminology. Starting with a Pre-Test score of 80, the respondent reached a perfect score of 100 in the Post-Test. This 20-point increase signifies a transition from a solid initial understanding to total mastery of the required terms.

The respondent reported a significant boost in her psychological readiness when dealing with technical materials. Respondent stated that "memorizing medical vocabulary categories makes me feel more confident when reading and understanding medical texts." This confirms that the categorization method functions effectively as a cognitive support tool, transforming passive recognition into active understanding.

Respondent 14 stated:
"This strategy is quite effective in helping me understand medical texts, but it would be even better if there were more intensive practice sessions."
"The primary obstacle lies in interpreting how medical terms function within a sentence's context, as well as mastering their correct pronunciation."

The consistent score increase from 70 to 80 among respondents validates that the categorization method is a powerful tool for enhancing literal reading comprehension. It builds confidence and expands technical vocabulary. However, the qualitative data reveal a 'proficiency gap' where students struggle with contextual decoding and phonetic accuracy. Therefore, while the method effectively masters the *meaning* of terms, it must be integrated with contextual sentence building and intensive oral drills to achieve full Speaking Proficiency."

The synchronized score increase from 70 to 80 for Respondents 2, 7, and 14 confirms that the categorization method is highly effective for building a vocabulary foundation and enhancing Reading Comprehension. However, the persistent challenges in pronunciation and contextual application suggest that the pedagogical approach must evolve. To bridge the gap toward Speaking Proficiency, it is recommended to integrate audio-lingual drills and role-play simulations, ensuring that students can not only understand medical terms in isolation but also deploy them accurately in professional clinical conversations."

3. Specific Register and Genre (Translation Proficiency)

Table 6. Analysis of Medical Register Translation Proficiency Scores

Research Participant	Pre-Test Score	Post-Test Score
Respondent 14	80	95

Respondent 14 stated:
"Memorizing these categories makes it easier for me to find the right equivalent terms when translating medical terminology from English to Indonesian and vice versa."
"The main difficulty is translating terms that have different meanings when used in a medical context compared to general English."

The analysis of Respondent 14's feedback reveals a strong correlation between the categorization method and her high translation score of 95. The method provides a

structured 'mental dictionary' that simplifies finding accurate equivalents. However, her primary challenge remains the semantic shift distinguishing between general English meanings and specific medical registers. This suggests that while her proficiency is excellent, professional medical translation requires not only vocabulary mastery but also a deep understanding of contextual nuances to avoid clinical errors.

Table 7. Analysis of Medical Register Translation Proficiency Scores

Research Participant	Pre-Test Score	Post-Test Score
Respondent 36	79	99

Respondent 36 stated:
"This categorization method is highly effective in helping me differentiate between similar-looking medical terms, enabling me to produce accurate translations based on their specific context."
"The challenge is ensuring that my translations are not only accurate in meaning but also sound natural and professional to other medical personnel."

Respondent 36 proved the method's effectiveness by achieving an impressive score of 99. According to her, categorizing words made it much easier to distinguish similar medical terms and translate them accurately in a clinical context. This shows the respondent has moved beyond just memorizing words to truly understanding how they are used professionally."

DISCUSSION

The findings of this qualitative study indicate that implementing vocabulary categorization based on Anderson's Schema Theory (2018) improves nursing students' medical English proficiency at STIKES IST Buton. Qualitatively, organizing technical terms into meaningful clinical categories such as body systems, symptoms, or procedures serves as a vital "ideational scaffolding." This framework allows students to anchor new linguistic information to their existing clinical background knowledge. This transformation is most evident in the psychological shifts observed in participants; for instance, Respondent 3 reported a substantial increase in communication confidence and a marked reduction in "medical error anxiety" following the categorization treatment. This suggests that schemas do not merely function as storage units but also as active cognitive structures that facilitate efficient assimilation of textual information.

Relationship to Literature: These results directly reinforce the theoretical framework proposed by Anderson (2018) regarding the primary functions of schemas in providing a framework for information assimilation and facilitating organized memory retrieval. The success of enhancing vocabulary retention through categorization aligns with the study by Shirban Sasi (2024), which emphasizes that schema-based techniques foster

deeper cognitive engagement and longer-term retention compared to traditional rote memorization. Furthermore, the effectiveness of organized instruction in this study supports Nedelkoska's (2022) assertion that systematic vocabulary teaching strategies are essential for success in healthcare education.

Moreover, the utilization of students' nursing expertise to comprehend English texts is consistent with the perspectives of Xiao (2024) and Carrell & Eisterhold (1983), who argue that reading comprehension is an interaction between the text and the reader's world knowledge. The reduction of cognitive load through schema reinforcement, as observed in this study, also corroborates Meylani's (2024) findings and addresses the concerns raised by Alhamami & Almelhi (2021) regarding the complexities of integrating English into healthcare education for non-native speakers.

Limitations of the Study Despite the positive outcomes, several limitations must be acknowledged. The primary focus of this study was on lexical mastery and qualitative reading comprehension; therefore, other linguistic components, such as phonetic accuracy (pronunciation), were not explored in depth. Students consistently reported that, while they understood the meanings of terms through categorization, they still struggled to pronounce them correctly during dynamic professional communication. a challenge also highlighted by Reynolds, Zhang, & Ding (2023) regarding practical linguistic barriers in nursing pedagogy. Furthermore, as this study was conducted within a specific population at a single institution, the generalizability of these findings may require adaptation when applied to other healthcare educational environments.

This study's pedagogical implications suggest a necessary evolution in English for Specific Purposes (ESP) instruction for healthcare students. Educational institutions are encouraged to adopt vocabulary categorization frameworks as a standard part of the curriculum to help students navigate the complexities of global medical language. To achieve comprehensive communication proficiency, however, this strategy should be integrated with audio-lingual exercises and interactive simulations. This ensures that students do not merely understand terms in isolation but can apply them accurately and professionally within real-world clinical practices

CONCLUSION

This study concludes that the implementation of vocabulary categorization based on Schema Theory effectively improves medical English proficiency among nursing students. By systematically organizing technical terms into meaningful clinical frameworks, students can more effectively bridge the gap between their existing medical knowledge and new linguistic information. The findings demonstrate that this approach not only enhances lexical mastery and translation accuracy but also substantially builds professional confidence while reducing anxiety associated with medical terminology.

However, while the schema based strategy is highly effective for semantic retention and reading comprehension, challenges remain regarding phonetic precision and oral fluency. Therefore, it is recommended that nursing education programs integrate vocabulary categorization as a standard pedagogical tool within the ESP (English for Specific

Purposes) curriculum, supplemented by intensive pronunciation drills and interactive clinical simulations. Ultimately, fostering a structured cognitive framework is a crucial step in preparing nursing students to meet the rigorous communication demands of the global healthcare environment.

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