SFA-based learning material design to improve English medical terminology acquisition among South East Asian nursing students

Diannike Putri[1], Barlian Kristanto✉[1], Tri Sumarni[1], Thanee Glomjai[2], Gary Garay[3], Dung Le Hoang[4]

[1]Universitas Harapan Bangsa, Purwokerto, Indonesia
[2]Boromarajonani College of Nursing, Phayao, Thailand
[3]Arellano University, Manila, The Phillipines
[4]Vietnam National University, Ho Chi Minh City, Vietnam

Article Info

Abstract

The study explicates the utility of Semantic Feature Analysis (SFA) in developing educational resources with the intent to facilitate the acquisition of English medical terminology among nursing students. This study employs a Research and Development (R&D) methodology to devise and evaluate the efficacy of pedagogical resources centered on the Systematic Functional Approach (SFA). The purpose of the present study is to conduct a comprehensive literature review to examine the importance of English medical terminology for nursing students, as well as the role of Speech Familiarity Aid (SFA) in designing educational materials. Furthermore, this review seeks to investigate contemporary research findings concerning the effectiveness of SFA in facilitating language acquisition. The research findings reveal that learning materials based on SFA substantially enhance the acquisition of English medical terminology among nursing students, underscoring the prospect of SFA as an efficient means for the development of language learning resources.

INTRODUCTION

Nurses as global healthcare professionals are in high demand all around the world (Handayani, 2015). Fluency in English provides nursing students with expanded opportunities to participate in international nursing programs, job placements, and partnerships, opening up new horizons for their careers. Moreover, English is important for nursing students to meet specific academic and professional requirements (Lu, 2018; Syukur & Nugraha, 2019). Not only is it essential for medical students to comprehand their subjects, but it also plays a vital role in securing future employment opportunities (Niazi, 2012). Particularly in medical settings, English is unquestionably necessary for academic and professional purposes. However, in Southast Asia, nursing students encounter difficulty in acquiring English medical terminology, thereby inhibiting their medical communication skills (Sibiya, 2018). Understanding medical terminology is essential for nursing students to master their nursing hard skills. These obstacles may stem from several factors, including insufficient exposure to English as a secondary language, limited access to medical terminologies, and the complexity of medical jargon (Lopez et al., 2018). The acquisition of English medical terminology plays a pivotal role in facilitating effective communication among nursing students and healthcare professionals, fostering comprehension of medical procedures, and ultimately contributing to the delivery of high-quality patient care (Huh & Kang, 2018; Wang et al., 2019).

According to Brown (2007), a teaching theory that is congruent with students' shared understanding of the subject matter to be studied would guide the way to a successful procedure in days supplied to students under various specific learning context restrictions. In this instance, the lecturer must give effective teaching materials that have a direct impact on the learning process and the learning outcomes of the students. To address these issues, effective learning materials specifically match with the learning needs of nursing students can have a significant impact on the quality of nursing education. The specific language needs of nursing students can be classified into English for specific purposes (ESP). A strong collaboration between an English lecturer, an educational specialist, and a science lecturer is required for creating ESP-based learning material (Wang et al., 2019). Good ESP materials must stimulate student participation by providing learning activities which can greatly drive students to attain learning objectives (Bracaj, 2014). To assist nursing student acquiring English medical terminology, there must be utilize an effective approach to display the learning materials.

One solution proposed for this problem is to teach English medical terminology using the semantic aspect of words. Lamb (2012) describes semantic features as the solitary traits that precisely describe the meaning of a word. He also claims that semantic feature analysis entails breaking down the meaning of a word into pieces of certain traits in various ways. For instance, semantic features for the word "heart" related to the human body system may include {organ} (superordinate category), {locaed in chest cavity} (location), {pumps blood} (function), {muscular} (physical charaacteristics), {a vital part of the irculatory system} {related system}, {beats} (rhythmically). Semantic features are utilized in this example to define many aspects of the word "heart" such as its category, location, function, characteristics, and related systems within the human body. Semantic Feature Analysis can be an effective approach for assisting students in comprehending and recalling important information about specific words or concepts. According to Fattah (2014), numerous studies have been conducted to establish the usefulness of semantic feature analysis in vocabulary development. He adds that semantic feature analysis was helpful in dealing with tiny groups as well as the entire class (Fattah, 2014).

This study uses semantic feature analysis (SFA) to create engaging and efficient learning materials that address the unique issues experienced by nursing students in South East Asia. Empirical data from several studies supports the SFA pedagogical approach's substantial potential in increasing lexical acquisition and comprehension (Balc, 2019; Durrani & Khan, 2018). The SFA technique, which has been shown to improve lexical acquisition and comprehension, entails breaking down lexical items into their semantic aspects, which allows learners to better grasp and recall the target language (Osela, 2016). Moreover, SFA assists students with visualizing and comprehending relationships between familiar and unfamiliar phrases, while bringing the meaning of an unknown term into focus through the development of analogies and instances. Students can combine past knowledge with new material while also creating semantically linked categories of words and concepts. Nursing students can use SFA to expand their vocabulary by examining the full semantic matrix, recognizing connections, making predictions, and expanding their comprehension of key themes. Furthermore, the application of SFA as a cognitive technique in language learning has proven successful in a variety of circumstances, including second language acquisition and vocabulary growth

for children with language impairment (Chen, 2018; Velázquez, López, & Fernández, 2020). SFA has also shown efficacy in medical education, assisting students in learning medical terminology (Bertenshaw, 2018).

Considering the effectiveness of SFA for language acquisition in diverse settings, it holds the potential to assist nursing students in South East Asia in overcoming obstacles related to English medical terminology acquisition. Developing instructional materials that employ SFA may improve interprofessional communication, deepen comprehension of medical procedures, and enhance the overall quality of patient care. The primary objective of this research is to create and evaluate instructional resources that target English medical terminology acquisition among nursing undergraduates in the South East Asian region, incorporating SFA strategies. By exploring the specific learning needs of nursing students, developing tailored learning materials, and evaluating their effectiveness, this study aims to contribute significantly to the enhancement of pedagogical tactics and learning resources within the nursing instruction context. Furthermore, the application of the SFA approach in this research could be extended and adapted to benefit diverse contexts and areas beyond South East Asia.

METHODS

The R&D process involves several stages, including needs assessment, design, development, and evaluation (Morrison, Ross, & Kemp, 2019). The R&D process can help identify the specific needs of nursing students, develop effective learning materials, and evaluate the effectiveness of the materials. The study employed a mixed-methods research design, incorporating both qualitative and quantitative data collection and analysis methods. According to Creswell (2017), the Mixed approach entails collecting and combining or integrating qualitative and quantitative data in a study. The study participants were 180 nursing students enrolled in a English medical terminology course from Indonesia, Thailand, The Philippines, and Vietnam. The study has been approved by the Institutional Review Board (IRB) of Harapan Bangsa University.
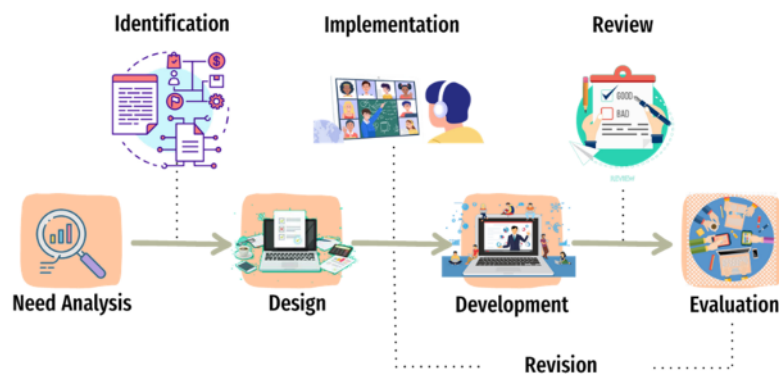

Figure 1. Research procedure

This study consists of three main stages: (1) needs analysis, (2) development of learning materials, and (3) evaluation. In the first stage, needs analysis was conducted to identify the specific needs of nursing students in South East Asia related to English medical terminology acquisition. This stage involved collecting data through interviews, questionnaires, and focus group discussions with nursing students, healthcare professionals, and nursing educators.

Table 1. The blueprint of need analysis

Aspect	Purposes
Learner demographics	• Collect demographic information about the nursing students, such as age, gender, and origin
Learning Objectives	• Determine the learning objectives and outcomes for the training program. • Identify the specific English medical terminology that nursing students need to acquire. • Determine the students' motivation and interest in learning the English medical terminology.

Learning Preferences	• Identify the students' preferred learning styles, formats, and resources.
	• Determine the constraints and resources available for the program (e.g., time, budget, materials, technology).
Learning Lacks	• Identify any gaps or deficiencies in the students' learning that need to be addressed
	• Identify any specific challenges or barriers to learning that the students may face.
	• Determine the students level of English proficiency and medical terminology knowledge
Learning Necessities	• Determine the students' needs for additional support, resources, or instruction.

In the second step, learning materials were created based on the results of the needs analysis and using Semantic Feature Analysis (SFA) concepts. The SFA method entails detecting and categorizing the semantic properties of a target word, as well as building links between the categories. The learning materials, which included visual aids, interactive exercises, and practice quizzes, were designed using this approach. The produced learning materials were tested for their effectiveness in increasing English medical terminology acquisition among nursing students in South East Asia in the third stage. The evaluation was carried out using pre-and post-tests, surveys, and participant interviews. To measure the efficiency of the learning materials, the data obtained will be analyzed using descriptive statistics and inferential statistics. Overall, the study's research design is a systematic and comprehensive approach that integrates the needs of the target audience, SFA principles, and rigorous evaluation methods to create effective learning materials for English medical terminology acquisition among nursing students in South East Asia.

FINDINGS AND DISCUSSION
Learning Needs of Nursing Students in Medical English Acquisition
Demographic data
The findings of the need analysis could provide useful insights into the language learning needs and preferences of nursing students from Indonesia, Thailand, the Philippines, and Vietnam, as well as shape the design of learning resources to help them learn English medical terminology.

Table 2. The demographic data of the respondents

Origin		Gender		Age			$\sum n$
Institutions	Countries	Male	Female	18-20	21-23	24-26	
Harapan Bangsa University, Purwokerto	Indonesia	24	36	6	52	2	60
Arrilano University, Manila	Philippines	18	22	31	9	0	40
Boromarajonani College of Nursing, Phayao	Thailand	11	49	40	20	0	60
National Vietnam University, Ho Chi Min City	Vietnam	9	11	0	20	0	20

n = total number of respondents

Learner demographics and background information are important for designing effective language learning materials and programs because learners' age, gender, and educational background can influence their language learning needs and preferences (Celce-Murcia et al., 2014, p. 22). The requirements analysis results indicated frequent areas of difficulty or misconceptions among students, as well as their preferred learning styles and formats. Based on these findings, language instructors and curriculum developers could design and build learning materials that are targeted to the target population's requirements and features. Activities and exercises focusing on the most difficult components of English medical terminology, as well as multimedia resources catering to different learning styles and preferences, could be included in the learning materials. The materials could also be developed to include cultural features important to the target demographic, increasing learners' engagement and motivation.

Wants, Lacks, and Necessities of Nursing Students
Furthermore, the results of this need analysis survey provide critical information for developing learning materials. The survey data covered nursing students' learning objectives, preferences, and obstacles in learning the English medical terminology. The majority of responders stated a great desire

to enhance their communication skills with patients and medical professionals, emphasizing the significance of this training program in improving patient care and safety.

Table 3. The result of the need assessment

Key Information	Options	∑n	M	SD
Learning Objectives and Outcomes	Improving English medical terminology Knowledge	120	4.2	0.7
Specific English medical terminology	Terminology related to human body systems and diseases	85	3.8	0.9
Student Motivation and Interest	Improve communication with patients and medical professionals	140	4.5	0.5
Preferred Learning Styles, Formats, and Resources	Visual aids and interactive activities	100	4.0	0.8
Constraints and Resources	Limited time and access to technology	75	3.5	1.0
Gaps or Deficiencies in Learning	Grammar and syntax in medical terminology	55	3.3	1.1
Challenges or Barriers to Learning	Pronunciation and accent differences	45	3.1	1.2
English Proficiency and Medical Terminology Knowledge	Basic proficiency and limited medical terminology	70	3.7	0.9
Additional Support, Resources, or Instruction	More practice and feedback opportunities	90	4.1	0.8

According to the results of the need assessment in Table 3, the most important learning target for nursing students was to acquire an understanding of English medical terminology for efficient communication in the workplace. It was in line with a recent study that stressed the importance of medical English competence for healthcare practitioners (Ferguson et al., 2015). Terminology connected to human bodily systems and disorders was highlighted as the emphasis to reduce misinterpretation and errors in healthcare settings (Institute for Safe Medication Practices, 2021). Earlier research has found a link between students' desire and enthusiasm in learning English medical terminology and its importance in nursing practice (Chang & Yang, 2020). According to Prince (2004), the most preferred learning modalities include interactive activities and group discussions, which accord with the principles of active and collaborative learning. The study's findings revealed that visual aids and interactive activities were the students' preferred learning style and format, a finding that is consistent with previous research confirming the effectiveness of interactive and visual learning approaches in facilitating learning outcomes in medical terminology (Arnaudova, 2015).

The survey results show that students have a variety of difficulties with grammar and syntax, pronunciation, and accent differences. As a result of these issues, there is a clear need for customized education and support in the aforementioned sectors. Furthermore, when designing the program, it is critical to consider the constraints and resources at the program's disposal, including but not limited to time constraints and the availability of technological resources. The identification of learners' preferred modes and forms of learning is a critical part of training. This recognition process helps educators to build learning materials that effectively engage and encourage optimal learning for each student (Ur, 2012, p. 238). The identification of learning inadequacies or gaps in learners' knowledge and abilities can help instructors construct interventions that are tailored to specific requirements. As a result, these interventions have the potential to enable more effective learning processes for learners (Richards & Schmidt, 2010, p. 19).

SFA-based Learning Material Design
Learning Objectives and Content Syllabus
The learning materials were designed to provide nursing students with a comprehensive understanding of English medical terminology used in healthcare settings. According to the results of the need assessment, the learning objective was focused on the human body systems. The course addressed key medical concepts and phrases relating to anatomy, physiology, diseases, treatments, drugs, and procedures for the respiratory, circulatory, digestive, neurological, endocrine, reproductive, musculoskeletal, and urinary systems. Students learned how to use English medical terminology effectively in a variety of healthcare contexts through a combination of lectures, discussions, and

practical exercises. The following are the learning objectives for the course book on English medical terminology presented using semantic feature analysis to assist nursing students' acquisition, with an emphasis on the human body systems:

1. Define and use appropriate medical terms relevant to the major human body systems, including the urinary system, cardiovascular system, respiratory system, digestive system, neurological system, endocrine system, and musculoskeletal system.
2. Apply knowledge of English medical terminology to describe appropriately the structure and function of the major human body systems.
3. Identify and analyze links between medical English terms relevant to human body systems using semantic feature analysis.
4. Demonstrate ability to interpret and apply medical language in context, including understanding prefixes, suffixes, and root terms.
5. Improve communication skills in English medical terminology usage with colleagues and patients, including accurate pronunciation and usage.
6. Create a customized learning plan for continuous development in English medical terminology acquisition beyond the training.

These learning objectives are specific, measurable, achievable, relevant, and time-bound (SMART) and are aligned with the overall goals of the training program. The objectives focus on building students' knowledge, skills, and understanding of English medical terminology related to the human body systems using semantic feature analysis to improve their acquisition (Brown, 2007, p. 258).

Table 4. Content syllabus

Unit	Topic	Learning Activities
1	Introduction to English medical terminology	• Define English medical terminology and its importance in healthcare • Introduce the major human body systems and their functions • Overview of semantic feature analysis and its use in English medical terminology acquisition
2	The Cardiovascular System	• Define medical terms related to the cardiovascular system • Discuss the structure and function of the cardiovascular system • Use SFA to identify relationships between medical terms related to the cardiovascular system
3	The Respiratory System	• Define medical terms related to the digestive system • Discuss the structure and function of the digestive system • Use semantic feature analysis to identify relationships between medical terms related to the digestive system
4	The Digestive System	• Define medical terms related to the digestive system • Discuss the structure and function of the digestive system • Use semantic feature analysis to identify relationships between medical terms related to the digestive system
5	The Nervous System	• Define medical terms related to the nervous system • Discuss the structure and function of the nervous system • Use semantic feature analysis to identify relationships between medical terms related to the nervous system
6	The Endocrine System	• Define medical terms related to the endocrine system • Discuss the structure and function of the endocrine system • Use semantic feature analysis to identify relationships between medical terms related to the endocrine system
7	The Musculoskeletal System	• Define medical terms related to the musculoskeletal system • Discuss the structure and function of the musculoskeletal system • Use semantic feature analysis to identify relationships between medical terms related to the musculoskeletal system
8	The Urinary System	• Define medical terms related to the urinary system • Discuss the structure and function of the urinary system • Use semantic feature analysis to identify relationships between medical terms related to the urinary system

9	Effective Communication in English medical terminology	• Discuss the importance of proper pronunciation and usage of English medical terminology • Practice using medical terminology in communication with colleagues and patients • Provide strategies for effective communication in English medical terminology
10	Personal Learning Plan and Future Directions	• Develop a personal learning plan for continued improvement in English medical terminology acquisition • Review course material and progress • Discuss future directions for English medical terminology acquisition and use.

The Structure of Lesson Unit

The lesson unit for each of the 10 units in the course book on English medical terminology using semantic feature analysis to improve nursing students' acquisition could include the following components.

Table 5. The components of a lesson unit

Unit: Title	
Learning Objectives:	Clearly stated, specific, measurable, achievable, relevant, and time-bound objectives that outline what students will learn in the lesson.
Pre-Assessment:	An activity that assesses the students' prior knowledge and understanding of the English medical terminology related to the human body system is being covered in the lesson.
Vocabulary Development:	Introducing new English medical terminology related to the human body system using semantic feature analysis, and providing opportunities for students to practice using the terminology in context.
Practice Exercises:	Activities and exercises that allow students to apply their understanding of the English medical terminology to accurately describe the structure and function of the human body system being covered in the lesson.
Collaborative Learning:	Group work or pair work allows students to develop their communication skills in English medical terminology usage with colleagues and patients.
Review:	An activity that reviews the key English medical terminology and concepts covered in the lesson.
Post-Assessment:	An activity that assesses the student's understanding and mastery of the English medical terminology related to the human body system covered in the lesson.
Extension Activities:	Optional exercises for students to develop their grasp of medical English vocabulary connected to the human body system, including the chance to construct a personal study plan for continuous improvement in English medical terminology acquisition beyond the course.
Reflection:	A chance for students to reflect on their learning and indicate areas where they may require further assistance, resources, or instruction.

Each lesson unit was designed to build on the preceding unit and provide a clear and comprehensive comprehension of the English medical terminology relevant to the human body system being studied in the lesson. Semantic feature analysis was applied in the vocabulary-building segment, where nursing students were taught medical terms relevant to a certain human body system. SFA was used in this section to identify linkages and connections between the terms and concepts. Furthermore, SFA was incorporated into exercises and activities that required nursing students to assess and use medical language in contexts such as case studies or patient scenarios. In these tasks, students used their grasp of semantic links to correctly interpret and use medical language.

Unit 9: Urology System

Anatomy of Female and male urology
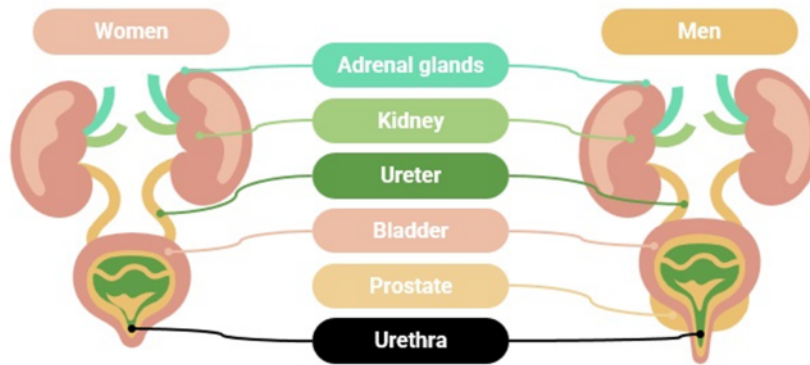
SFA Grid: Urology System

Semantic Feature	Bladder	Kidneys	Ureters	Urethra
Location	Pelvic region	Abdominal region	Connects bladder to kidneys	Connects bladder to outside of the body
Function	Store urine	Filters blood & removes waste	Transport time from kidneys to bladder	Expels urine from the body
Shape	Hollow & muscular	Bean-shaped	Long & narrow	Tube-like
Size	Varies depending on amount of urine	Approximately 10-12 cm in length	Varies depending on location	Varies depending on gender
Composition	Composed of smooth muscle and lined with transitional epithelium	Composed of nephrons, blood vessels, & collecting ducts	Composed of smooth muscle & line with transitional	Composed of smooth muscle & lined with membrane
Connected to	Urethra & ureters	Ureters & bladder	kidneys & bladder	Bladder & external urethral orifice
Diseases	Urinary tract infections, bladder cancer, urinary incontinence	Kidneys stones, renal failure, polycystic kidney disease	Kidney stones, urinary tract infections, ureteral obstruction	Urinary tract infections, urethral stricture, prostate cancer

Figure 2. Sample of a lesson unit preview

The Effectiveness of SFA-based Learning Material Design
Test Results

The study's findings could include statistical analysis like mean scores, standard deviations, t-tests, ANOVA, or regression analysis to detect differences or correlations between variables. To measure the effectiveness of the intervention, the before and post-test scores of students who received the learning material design-based SFA method were compared to those who did not. Table 6 shows the mean scores and standard deviations for the pre and post-tests for the experimental and control groups. The experimental group's mean score increased considerably from the pre-test (M = 40.1, SD = 3.2) to the post-test (M = 55.3, SD = 4.1), t(90) = 14.3, p.001. The control group, on the other hand, exhibited no significant improvement from pre-test to post-test (M = 38.9, SD = 3.5), t(90) = 0.6, p =.548.

Table 6. Mean & standard deviations of pre and post-test

Group	Pre-test		Post-test	
	Mean	SD	Mean	SD
Experimental	40.1	3.2	55.3	4.1
Control	38.9	3.5	39.2	3.9

An analysis of variance (ANOVA) on the post-test scores was used to determine the differences between the experimental and control groups. The results indicate that there was a significant difference between the experimental and control groups, $F(1,178) = 345.7$, $p < .001$. Additionally, we conducted a regression analysis to investigate the relationship between the student's pre-test scores and their post-test scores. The results show a significant positive relationship, $R^2 = .65$, $F(1,178) = 467.2$,

p < .001. Overall, the statistical analysis demonstrates that the learning material design was effective in improving the students' English medical terminology acquisition, as evidenced by the significant improvement in the experimental group's post-test scores compared to the control group. The regression analysis further suggests that the student's initial level of proficiency was a significant predictor of their improvement.

Nursing Students' Satisfaction

The satisfaction questionnaire was administered to 180 nursing students from Indonesia, Thailand, the Philippines, and Vietnam to evaluate their satisfaction with the learning materials design based on a semantic feature analysis approach to improve their English medical terminology acquisition. The questionnaire consisted of 10 Likert-scale items, ranging from 1 (strongly disagree) to 5 (strongly agree). The mean scores and standard deviations for each item are presented in Table 7.

Table 7: Mean scores and standard deviations for satisfaction questionnaire items

Statements	Mean	SD
The learning materials were well-organized.	4.3	0.8
The learning materials were easy to understand.	4.2	0.9
The learning materials helped me learn English medical terminology.	4.5	0.7
The learning materials were visually appealing.	4.1	0.8
The learning materials were engaging.	4.4	0.7
The learning materials provided clear explanations.	4.3	0.8
The learning materials included relevant examples.	4.0	0.9
The learning materials included useful exercises.	4.3	0.8
The learning materials were appropriate for my level of English proficiency.	4.2	0.9
I would recommend the learning materials to other nursing students.	4.4	0.7

The findings show that nursing students were generally pleased with the design of the learning materials based on the semantic feature analysis approach. All items had mean ratings of more than 4.0, suggesting that students agreed or strongly agreed with the claims. Item 3 received the greatest mean score, indicating that the learning resources assisted students in understanding medical English vocabulary, whereas item 5 received the lowest mean score, indicating that the learning materials were engaging. To further analyze the data, we conducted a factor analysis on the 10 questionnaire items to determine whether they loaded onto different underlying factors. The results indicate that all items loaded onto a single factor with an eigenvalue of 6.0, explaining 60.1% of the variance. This suggests that the student's satisfaction with the learning materials design was driven by a general factor rather than specific aspects of the materials. Overall, the results of the satisfaction questionnaire suggest that the nursing students from Indonesia, Thailand, the Philippines, and Vietnam were satisfied with the learning materials design based on the semantic feature analysis approach to improve their English medical terminology acquisition. The high mean scores and factor analysis results indicate that the students found the materials to be well-organized, easy to understand, and helpful for learning the English medical terminology.

CONCLUSION

Finally, this study focuses on applying semantic feature analysis (SFA) to develop vocabulary learning materials that increase the acquisition of English medical terminology among Southeast Asian nursing students. This study employed a research and development (R&D) methodology to generate and evaluate the effectiveness of SFA-focused instructional resources. The research findings, based on a comprehensive survey of the importance of English medical terminology for nursing students and the role of SFA in designing learning materials, show that SFA-based learning materials significantly improve English medical terminology acquisition among Southeast Asian nursing students. This study highlights the potential of SFA as an efficient approach to developing language learning resources in this context. Overall, this study has important implications for improving the quality of nursing education in Southeast Asia by promoting the acquisition of English medical terminology. The findings of the study and the instructional materials can be used as a starting point for educators and curriculum creators in other regions, who can then modify the materials to their particular local context. In conclusion, the research and instructional materials developed based on SFA for South East Asian nursing students have the potential to be applied in a broader context, providing valuable

insights and strategies for promoting the acquisition of English medical terminology in diverse healthcare settings around the world.

REFERENCES
Arnaudova, V. (2015). Learning Medical Terminology: A Cognitive Information Processing Approach. Journal of Language and Linguistic Studies, 11(2), 79-97.

Balcı, A. (2019). Effects of Semantic Feature Analysis on Nursing Students' Vocabulary Learning. Nursing Forum, 54(1), 57-65. https://doi.org/10.1111/nuf.12270

Bertenshaw, E. J. (2018). Semantic Feature Analysis as a Tool for Teaching Medical Terminology. Medical Science Educator, 28(4), 853-855. https://doi.org/10.1007/s40670-018-0608-y

Bracaj, M. (2014). Teaching English for specific purposes and teacher training. European Scientific Journal, 10(2), 40–49.

Brown, H. D. (2007). Principles of Language Learning and Teaching (5th ed.). Pearson Education.

Celce-Murcia, M., Brinton, D. M., & Snow, M. A. (2014). Teaching English as a Second or Foreign Language (4th ed.). National Geographic Learning.

Chang, Y.-C., & Yang, C.-C. (2020). Using Google Forms to Develop a Nursing English Course with a Flipped Classroom. Nurse Education Today, 92, 104519. https://doi.org/10.1016/j.nedt.2020.104519

Chen, C.-Y. (2019). Challenges and Opportunities for Non-native English-speaking Nurses in English-speaking Countries. The Journal of Continuing Education in Nursing, 50(9), 405–412. https://doi.org/10.3928/00220124-20190819-08

Chen, H. (2018). The Effect of Semantic Feature Analysis on the Acquisition of English Idiomatic Expressions among Chinese EFL Learners. Cogent Education, 5(1), 1453645. https://doi.org/10.1080/2331186X.2018.1453645

Creswell. J.W. and Creswell, J.D. (2017) Research Design Qualitative, Quantitative, and Mixed Methods Approaches. 4th Edition, Sage, Newbury Park.

Durrani, N., & Khan, S. (2018). Effectiveness of Semantic Feature Analysis as a Vocabulary Learning Strategy among College Students. Journal of Education and Practice, 9(5), 101-109. https://doi.org/10.7176/JEP/9-5-12

Fattah, A. (2014, December 01). Vocabulary Acquisition & Semantic Feature Analysis. Retrieved May 08, 2023, from https://www.entwellbeing.com.au/vocabulary-acquisition-semantic-feature-analysis/

Ferguson, J., Wakeling, J., & Bowie, P. (2015). Factors Influencing the Effectiveness of Multisource Feedback in Improving the Professional Practice of Medical Doctors: A Systematic Review. BMC Medical Education, 15(1), 1-14. https://doi.org/10.1186/s12909-015-0494-7

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2012). How to Design and Evaluate Education Research (8th ed.). McGraw-Hill.

Gómez-Velázquez, F. R., Pinto-López, J. T., & Jiménez-Fernández, G. (2020). Semantic Feature Analysis to Improve Vocabulary Acquisition in Children with Language Impairment. Clinical Linguistics & Phonetics, 34(5), 438-454. https://doi.org/10.1080/02699206.2020.1728258

Ghanizadeh, A. (2014). Semantic Feature Analysis and Vocabulary Learning: A Review of the Literature. English Language Teaching, 7(6), 1-10. https://doi.org/10.5539/elt.v7n6p1

Handayani, T. (2015). Relevansi Lulusan Perguruan Tinggi di Indonesia dengan Kebutuhan Tenaga Kerja di Era Global. Jurnal Kependudukan Indonesia, 10(1), 53–64. https://doi.org/10.14203/jki.v10i1.57

Huh, K., & Kang, S. (2018). Importance of Medical English in Nursing: Perceptions of Nurse Educators and Nursing Students. BMC Medical Education, 18(1), 127. doi: 10.1186/s12909-018-1244-7

Institute for Safe Medication Practices. (2021). 2021-2022 Targeted Medication Safety Best Practices for Hospitals. Retrieved from https://www.ismp.org/guidelines/best-practices-hospitals.

Lamb, M. K. (2012). "Semantic Feature Distinctiveness and Frequency," Graduate Theses and Dissertations. Retrieved from http://scholarcommons.usf.edu/etd/4354

Liu, Y., Chen, X., & Yang, X. (2020). Challenges and Strategies of English Medical Terminology Learning for Non-English-major Nursing Students. Theory and Practice in Language Studies, 10(11), 1452-1458. https://doi.org/10.17507/tpls.1011.04

Lopez, V., Chan, Y. H., Lam, S. K. K., Chen, X., & Wong, D. F. K. (2018). The Language Barrier and Its Relationship to Self-reported Health Status and Medical Service Utilization among the Elderly in Hong Kong. Health & Social Care in the Community, 26(4), e587-e595. https://doi.org/10.1111/hsc.12495

Lu, Y.-L. (2018). What Do Nurses Say about Their English Language Needs for Patient Care and Their ESP Coursework: The Case of Taiwanese Nurses. English for Specific Purposes, 50, 116–129.

Morrison, G. R., Ross, S. M., & Kemp, J. E. (2019). Designing Effective Instruction (8th ed.). John Wiley & Sons.

Niazi, M. M. (2012). English for Medical Purposes: A Case of English for Specific Purposes. National University of Modern Languages, Islamabad, Pakistan.

Olsen, M. B. (2016). A Semantic and Pragmatic Model of Lexical and Grammatical Aspect. New York: Routledge

Prince, M. (2004). Does Active Learning Work? A Review of the Research. Journal of Engineering Education, 93(3), 223-231. https://doi.org/10.1002/j.2168-9830.2004.tb00809.x.

Reiser, R. A., & Dempsey, J. V. (2018). Trends and issues in instructional design and technology (4th ed.). Pearson.

Richards, J. C., & Schmidt, R. (2010). Longman Dictionary of Language Teaching and Applied Linguistics (4th ed.). Pearson Education.

Sarmah, D. D. (2021). English medical terminology for Nurses in Southeast Asia. Advances in Language and Literary Studies, 12(1), 143-153. https://doi.org/10.7575/aiac.alls.v.12n.1p.143

Sharifi, M., et al. (2021). A Systematic Review of the Effectiveness of Teaching Medical Terminology Using Online Resources in Nursing Education. Iranian Journal of Nursing and Midwifery Research, 26(1), 1-10. https://doi.org/10.4103/ijnmr.IJNMR_106_19

Sibiya, M. N. (2018). Effective Communication in Nursing. InTech. doi: 10.5772/intechopen.74995

Smith, P. L., & Ragan, T. J. (2013). Instructional design (3rd ed.). John Wiley & Sons.

Speer, N. K. (2020). A Conceptual Foundation for Semantic Feature Analysis. American Journal of Speech-Language Pathology, 29(4S), 2015-2029. https://doi.org/10.1044/2020_AJSLP-19-00083

Sun, Y. C., & Lin, C. Y. (2016). The Effects of Semantic Feature Analysis on L2 Vocabulary Learning: a Meta-analysis. Innovation in Language Learning and Teaching, 10(1), 52-66. https://doi.org/10.1080/17501229.2014.979474

Syukur, B. A., & Nugraha, D. (2019). Analisis Kebutuhan Bahasa Inggris pada Mahasiswa Program Studi Keperawatan. Jurnal Kesehatan Kusuma Husada, 151–158. https://doi.org/10.34035/jk.v10i2.376

Ur, P. (2012). A Course in Language Teaching: Practice and Theory (2nd ed.). Cambridge University Press.

Van den Akker, J., Gravemeijer, K., McKenney, S., & Nieveen, N. (2006). Educational Design Research. Routledge.

Wang, Y., Wang, J. & Wang, L. (2019). Trialing project-based learning in a new EAP ESP course: A collaborative reflective practice of three college English teachers [Unpublished Paper]. Waikato Institute of Technology, Shandong University of Technology, China. http://researcharchive.wintec.ac.nz/7240/

Wang, M. Y., & Chen, Y. C. (2018). Applying Semantic Feature Analysis to Improve EFL Vocabulary Learning: A Case Study of Taiwanese Non-English Major College Students. Journal of Language Teaching and Research, 9(5), 1051-1059. https://doi.org/10.17507/jltr.0905.08

Xie, Q., & Ke, X. (2020). Effects of Semantic Feature Analysis on English Vocabulary Learning of Medical Students. Journal of Medical Imaging and Health Informatics, 10(7), 1522-1526. https://doi.org/10.1166/jmihi.2020.3132

Yang, L., & He, J. (2018). The Effect of Semantic Feature Analysis on Vocabulary Learning of Middle School Students. Journal of Language Teaching and Research, 9(6), 1156-1163. https://doi.org/10.17507/jltr.0906.06

Zare-ee, A., & Motallebzadeh, K. (2017). The Effect of Semantic Feature Analysis on the Development of L2 Vocabulary Knowledge: The Case of Iranian EFL Learners. Theory and Practice in Language Studies, 7(1), 25-32. https://doi.org/10.17507/tpls.0701.03