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# Overview of the Integration of AI Tools in Developing an English-English-Vietnamese Dictionary of Health-Related Terminology: Insights from a Pilot Student Survey

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**Abstract**

This article presents an innovative approach to addressing the challenges faced by first-year medical students in acquiring and understanding English medical terminology. Recognizing the limitations of traditional and inconsistent online dictionary resources, the Department of Foreign Languages, the Faculty of Fundamental Sciences (FFS) at the University of Medicine and Pharmacy at Ho Chi Minh City (UMP) has developed an AI-powered English-English-Vietnamese medical terminology dictionary. Integrated into the FFS website and powered by ChatGPT and Natural Language Processing (NLP) technologies, this tool provides simplified, contextually accurate definitions tailored to the needs of health science learners. Drawing from authoritative sources and continuously refined through AI, the dictionary supports vocabulary development, academic reading, and international research readiness.

Insights from a pilot survey conducted with 235 first-year medical students revealed high demand for a reliable, accessible, and student-friendly medical dictionary. The survey findings highlighted frequent usage of English medical terms, common difficulties in understanding complex definitions, and strong support for an online dictionary with integrated features such as pronunciation, simplified explanations, and mobile accessibility. These results informed the design and implementation of the tool, emphasizing a learner-centered approach and technological integration in medical education. The study underscores the potential of AI to enhance terminology acquisition, promote standardized language use, and modernize digital learning resources in health education.

**Keywords**: AI in education, medical terminology, English for health sciences, ChatGPT, NLP, online medical dictionary, UMP.

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## 1. INTRODUCTION

In today's educational world, mastering specialized English is a crucial skill for students in health sciences. English is the primary language for medical research, textbooks, and international academic discussions, making it vital for medical students to become proficient in the language. However, first-year students at the Faculty of Fundamental Sciences (FFS) at the University of Medicine and Pharmacy in Ho Chi Minh City (UMP) often face significant challenges when trying to understand and use complex medical terminology. The lack of easily accessible, reliable, and well-organized learning resources adds to these challenges, affecting both their academic performance and future careers.

Traditional medical dictionaries, though comprehensive, can be difficult to use, especially in digital formats. Many online resources, while plentiful, often fall short in terms of accuracy, context, and consistency with current academic standards. As a result, students frequently struggle to find clear and reliable definitions for health-related terms, which creates gaps in their knowledge and understanding.

To address these issues, this study introduces an innovative solution: an AI-powered English-English-Vietnamese medical terminology dictionary. This tool, developed using ChatGPT technology, is integrated into the Department of Foreign Languages' webpage within the FFS website. Unlike traditional dictionaries, this tool uses Artificial Intelligence (AI) and Natural Language Processing (NLP) to provide simplified yet precise definitions, designed specifically for medical students. The dictionary draws on authoritative medical sources,

such as Dorland's and Stedman's Medical Dictionaries, and is continually updated with AI-assisted term selection and refinement, ensuring accuracy and relevance.

This article outlines the results of a pilot survey conducted with 235 first-year medical students at UMP. The survey provided valuable insights into the students' experiences with English medical terminology, highlighting the challenges they face and their expectations for a useful learning tool. By improving how students learn and apply medical terminology, this AI-driven project aims to enhance self-directed learning, teaching efficiency, and consistency in language use. Ultimately, it represents a forward-thinking approach to integrating AI into medical education, helping to bridge the gap between complex medical language and student accessibility, and creating a more effective and engaging learning environment in the health sciences.

## 2. LITERATURE REVIEW

### 2.1. The Importance of English Proficiency in Health Sciences

English has become the lingua franca of medicine and healthcare globally, making proficiency in the language a critical skill for medical students and professionals. English is not only essential for accessing academic literature but also plays a pivotal role in international collaboration, conferences, and staying updated with medical advancements (Swales, 2017). Medical students with limited English proficiency often struggle with understanding complex medical texts and terminologies, which can hinder their academic performance and decrease their confidence in clinical practice (Smith & Brown, 2019). English proficiency is particularly important for reading scientific articles, as most medical research is published in English (Adams & Smith, 2021). Furthermore, the use of medical dictionaries is integral to understanding medical terminology; however, many existing dictionaries are outdated, fragmented, or inaccessible, which exacerbates the learning challenges faced by non-native English speakers (Nguyen & Hoang, 2020).

### 2.2. Challenges in Learning Medical Terminology

Medical terminology presents several challenges, particularly due to its Latin and Greek roots, complex structure, and context-dependent meanings. First-year medical students, in particular, face difficulties in mastering the medical lexicon, often leading to confusion and frustration (Johnson & Lee, 2018). Traditional medical dictionaries, though comprehensive, often provide dense definitions that are not tailored to the needs of non-native English speakers (Kong & Tan, 2020). As a result, many students turn to online resources such as Google Translate or Wikipedia for assistance, though these sources may contain inaccuracies or lack the necessary context for correct understanding (Liu & Chan, 2021). This highlights the need for more accessible and contextually relevant resources to facilitate the learning of medical terminology.

### 2.3. AI-Powered Language Learning and NLP in Medical Education

Recent advancements in Artificial Intelligence (AI) and Natural Language Processing (NLP) have revolutionized language learning, offering new opportunities for medical education. NLP-driven systems can process vast amounts of text, identify key concepts, and generate simplified definitions suited to different proficiency levels (Manning et al., 2019). AI-powered chatbots, such as ChatGPT and Gemini, have demonstrated promise in educational contexts by providing automated feedback, supporting language acquisition, and summarizing complex content (Brown & Thompson, 2022). Several studies suggest that AI-enhanced educational tools can significantly improve vocabulary retention, reading comprehension, and overall learning outcomes, while reducing cognitive overload for students (Li & Wang, 2021). Additionally, the integration of expert validation with AI-generated definitions helps bridge the gap between automated language processing and high-quality academic content (Nguyen et al., 2020).

### 2.4. Existing Medical Dictionaries and Their Limitations

While well-known medical dictionaries like Dorland's and Stedman's provide authoritative definitions, they are often available only in print or through subscription-based digital formats, making them less accessible to students in developing countries (Johnson, 2020). Moreover, these traditional dictionaries do not adapt to the proficiency level of individual users, which can limit their effectiveness for non-native English-speaking medical students (Peterson & Allen, 2021). These limitations underscore the need for an AI-integrated medical dictionary that is continuously updated, user-friendly, and tailored to the specific learning needs of students, especially those in regions with limited access to traditional resources.

 

### 2.5. Rationale for an AI-Powered English-English-Vietnamese Medical Dictionary

An AI-powered English-English-Vietnamese medical dictionary represents an innovative solution to address the challenges faced by Vietnamese medical students. This dictionary would integrate AI chatbots, NLP technology, and expert-reviewed content to provide a user-friendly platform that offers simplified and contextually relevant explanations of medical terms (Huang & Zhang, 2021). Unlike traditional resources, this dictionary would be accessible online, enabling real-time updates and continuous content refinement (Nguyen & Hoang, 2020). This initiative supports self-directed learning, reduces reliance on unreliable resources, and enhances the accessibility of accurate, up-to-date information (Le & Pham, 2022). Moreover, the AI-powered tool would be scalable, offering a sustainable and effective approach to improving English proficiency among medical students at the University of Medicine and Pharmacy (UMP-HCMC). Such innovations align with recent research advocating for the integration of AI-driven educational tools in academic settings to improve language learning and standardize medical terminology (Kong & Tan, 2020; Li & Wang, 2021).

### 2. 6. Challenges in Accessing and Using Medical English Terminology in Health Sciences Education at UMP

Before the launch of the "Development of an English-English Medical Terminology Dictionary" initiative, both students and faculty at the Faculty of Fundamental Sciences (FFS), University of Medicine and Pharmacy at Ho Chi Minh City (UMP-HCMC), faced numerous difficulties related to the effective use and understanding of English-language medical terminology. These challenges spanned multiple dimensions, significantly impacting the quality of teaching, learning, and research.

A major obstacle was the **fragmentation and inconsistency of learning resources**. Students were often forced to consult various materials—ranging from general English dictionaries and printed textbooks to online sources—that frequently provided conflicting or contextually irrelevant definitions. Specialized dictionaries like Dorland's or Stedman's, though reliable, were either financially inaccessible or difficult to obtain locally, creating a barrier to consistent and standardized learning.

Compounding the issue was the **difficulty in comprehending specialized vocabulary**, especially among first-year students with limited exposure to academic English. The complexity and technical nature of medical terms, often presented with lengthy and dense definitions, posed significant barriers to understanding core content in scientific texts and lectures.

Another critical challenge was the **inefficiency in information retrieval**. Without a centralized and user-friendly platform, both students and faculty spent excessive time searching for definitions across multiple sources. The absence of a quick and accurate lookup tool hindered the pace of academic work and clinical preparation, reducing time available for deeper engagement with content.

Furthermore, the **inconsistent use of terminology across academic materials**—such as lectures, assignments, and instructional documents—added to the confusion. This lack of standardization led students to rely on informal or unverified sources, which weakened academic rigor and created obstacles in applying medical terminology in both written and spoken contexts.

The **underutilization of educational technology** also limited the potential of digital platforms within the faculty. Despite having a functional website, there were no integrated tools to support academic engagement with medical English terminology. This gap in technology adoption stood in contrast to broader trends in higher education and missed opportunities to leverage AI and digital tools to enhance learning outcomes.

As a result, there was **limited engagement with global knowledge resources**. Students struggled to interpret English-language clinical guidelines, academic articles, and research documents—key elements in modern medical education. This not only reduced their exposure to international standards but also constrained their ability to develop English communication skills necessary for academic and professional collaboration abroad.

Ultimately, these combined factors had a direct **negative impact on teaching and learning quality** within the faculty. Students faced inefficiencies in acquiring foundational medical vocabulary, while educators encountered obstacles in delivering clear, consistent instruction. The overall result was a knowledge gap that limited academic performance and weakened the global readiness of UMP's future medical professionals.

 

## 3. PROCESS OF DICTIONARY DEVELOPMENT

### 3.1. Terminology Collection

The foundation of the dictionary was established through the meticulous collection of medical terms from a broad range of authoritative sources. These included internationally acclaimed medical dictionaries such as *Dorland's Medical Dictionary* and *Stedman's Medical Dictionary*, alongside up-to-date scientific publications and core medical English textbooks at UMP. The objective was to ensure comprehensive coverage of essential medical vocabulary, particularly those commonly encountered in academic and clinical settings. In parallel, the development team cross-referenced terms used frequently in the Faculty of Fundamental Sciences' official teaching curriculum. By aligning the collected terminology with classroom instruction, the dictionary was designed to reflect both theoretical and practical needs of students and faculty alike.

### 3.2. Defining Terms

After compiling the relevant terminology, the next phase focused on constructing definitions that were both linguistically accessible and academically accurate. Each term was defined in clear, straightforward English, with an emphasis on simplicity and clarity to match the language proficiency level of undergraduate students—particularly first-year learners. These definitions were developed with consideration of academic context and discipline-specific usage. To ensure the accuracy and appropriateness of each entry, definitions were validated by consulting globally recognized sources and, when necessary, reviewed by medical professionals for technical correctness. This rigorous approach helped ensure that the dictionary would serve as a reliable and pedagogically sound reference tool.

### 3.3. Technology Application

A key innovation of this project was the integration of artificial intelligence through the OpenAI ChatGPT platform. The AI played a crucial role in streamlining the writing process, refining content, and optimizing definitions for clarity and consistency. Developers utilized ChatGPT not only for initial drafting but also for performing iterative reviews of the entries, saving time and enhancing precision. Beyond content creation, terms were systematically organized into categories according to academic disciplines, such as basic medical sciences, pharmacy, and other specialized fields. This structured approach enabled users to navigate the dictionary more efficiently, promoting better understanding and retention.

### 3.4. Interface Design and Online Integration

To ensure ease of access and practical use, the dictionary was embedded into the Department of Foreign Languages' page of the Faculty of Fundamental Sciences' website. A modern, user-centered design was adopted to make the interface intuitive, visually clean, and responsive across various devices. Functionality was prioritized by including a robust search feature and categorization by medical topics, enabling users to locate terms quickly. This online integration was critical in bridging the gap between traditional academic resources and digital learning environments, supporting both in-class and self-directed study.

### 3.5. Updates and Maintenance

Sustainability and content relevance were addressed through a dual update system. Regular updates are scheduled periodically to expand the dictionary with new terminology, definitions, and contextual information in response to changes in curriculum and developments in the medical field. Alongside this, a real-time update mechanism was implemented, allowing administrators to make immediate adjustments when errors are detected or when feedback is received from students and faculty. This flexible update system ensures that the dictionary remains accurate, dynamic, and aligned with user needs, while also encouraging user participation in its continuous improvement.

### 3.6. Requirements for Use

Accessibility was a primary consideration in the design of the dictionary's usage model. Users can access the dictionary from any location using a desktop computer or smartphone, provided there is an internet connection. For mobile users, it is recommended to install the ChatGPT mobile application for easier access and smoother navigation. Desktop users can access the dictionary simply by logging into the ChatGPT website with their personal account credentials. Once logged in, users can search for the resource titled *Medical Dictionary UMP* by navigating to the "Explore GPTs" section and entering the dictionary name in the search bar. Upon locating the dictionary, users gain full access to all features, including term search, categorized listings, and AI-assisted explanations—making it a powerful tool for academic enrichment and professional development in the health sciences.

 

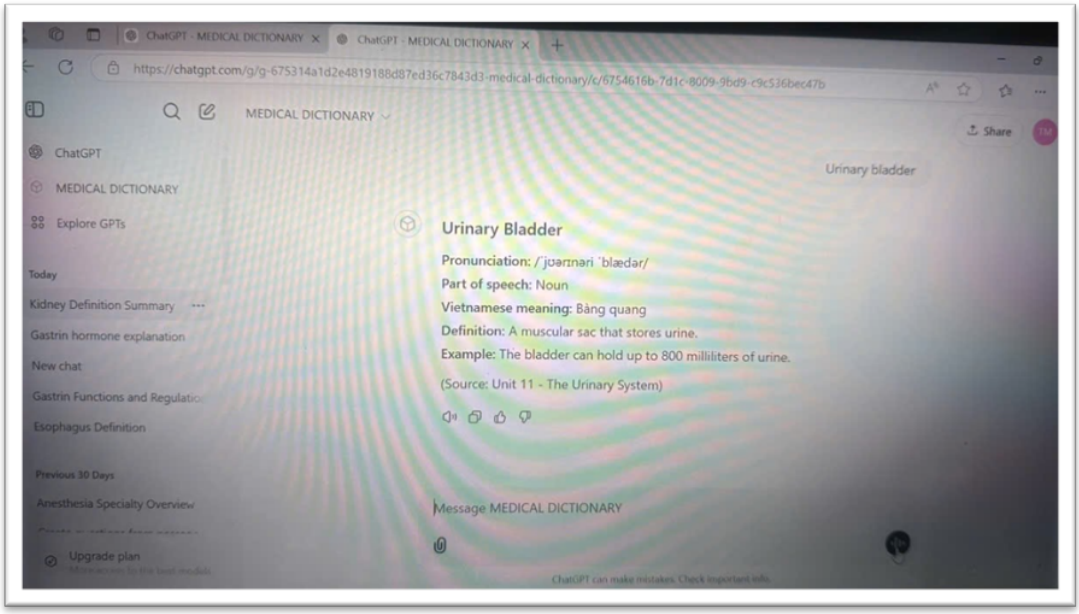


***Figure 1.*** *Medical terminology lookup with a clear academic-standard structure for presenting the term "urinary bladder"*

## 4. ONLINE MEDICAL DICTIONARY: PILOT STUDENT SURVEY

The insights gained from this survey serve as a foundational step in designing, piloting, and refining this online medical dictionary. They also contribute to broader efforts to enhance the quality of English language education at UMP through learner-centered innovation and the strategic integration of digital tools.

### 4.1. Survey Objective

The primary objective of the survey was to investigate the habits, challenges, and needs of first-year medical students at UMP regarding the use of English medical terminology. The results were used to inform the pilot implementation of the online English-English-Vietnamese medical dictionary integrated into the Faculty of Fundamental Sciences' website.

### 4.2. Survey Instrument Development

To investigate students' experiences and expectations regarding online medical dictionaries, a structured questionnaire was carefully designed. It included ten questions combining multiple-choice and Likert-scale formats to capture both quantitative trends and subjective perspectives. Key areas of focus encompassed how often and why students look up medical terms, the nature and extent of the challenges they face, and their views on the relevance and practicality of such digital tools. Additionally, the survey examined students' preferences for specific content features and accessibility options, as well as their predictions about how these resources might influence their academic success and preparedness for research. The questionnaire was administered via Microsoft Forms, enabling streamlined digital distribution, anonymous participation, and prompt data analysis.

### 4.3. Participants

The target population consisted of **first-year students enrolled in the Medical English course** offered by the Department of Medicine. A total of **235 students** participated in the survey, representing the full cohort for the academic term. Participation was entirely voluntary, and student responses were anonymous. The purpose of the survey was clearly explained at the beginning of the form, and consent was implied through survey submission.

### 4.4. Survey Administration

The final version of the survey was disseminated via a secure Microsoft Forms link shared through the university's Learning Management System (LMS) and class email groups. The survey remained open for one week to allow adequate time for completion. All responses were automatically collected and stored through Microsoft Forms. The data were exported to Microsoft Excel for quantitative analysis. Descriptive statistics,

including frequency counts and percentages, were calculated to summarize the responses. These figures were then used to identify key trends and common student needs.

### 4.5. Survey Results

The results of the pilot student survey provide valuable insights into students' needs and perceptions regarding an online English medical dictionary.

| Survey Questions | Survey Results |
|---|---|
| 1. How often do you need to look up English medical terms? | Rarely: 3.40%<br>Never: 0.85%<br>Occasionally: 44.26%<br>Frequently: 51.49% |
| 2. What is your main purpose when looking up English medical terms? | To support learning Medical English: 30.21%<br>To support research in English: 5.96%<br>To enhance vocabulary: 4.26%<br>All of the above: 59.59% |
| 3. Do you often encounter difficulties when looking up English medical terms? | Never: 2.98%<br>Sometimes: 55.74%<br>Rarely: 12.34%<br>Often: 28.94% |
| 4. To what extent do you find it difficult to look up English medical terms? | Moderate: 50.21%<br>Easy: 5.96%<br>Difficult: 40.85%<br>Very difficult: 2.98% |
| 5. What difficulties do you usually face when looking up English medical terms? | No reliable source: 14.04%<br>Hard-to-understand definitions: 14.89%<br>Incomplete information: 8.94%<br>All of the above: 59.17%<br>Other: 2.98% |
| 6. How necessary do you think an online English medical dictionary is for looking up terminology? | Necessary: 22.98%<br>Very necessary: 77.02% |
| 7. Do you agree that providing an online English medical dictionary on the website of the Faculty of Basic Sciences at UMP will promote learning and research in the field? | Agree: 30.64%<br>Strongly agree: 67.23%<br>Not sure: 2.13% |
| 8. What features would you like the online dictionary to include? | IPA pronunciation: 0.85%<br>Part of speech: 1.25%<br>Clear definitions: 0.85%<br>English - Vietnamese meanings: 1.28%<br>Word forms: 0.43%<br>Images: 1.25% |

 

| | |
|---|---|
| | Examples: 1.28%<br>All of the above: 96.09% |
| 9. Which device would you most frequently use to access this online dictionary? | Smartphone: 54.89%<br>Tablet: 15.32%<br>Desktop/Laptop: 29.79% |
| 10. In your opinion, to what extent will this online dictionary support your learning, research, and professional activities? | Moderately: 2.55%<br>Useful: 31.91%<br>Very useful: 65.53% |

***Table 1.*** *Survey questions and results*

A significant majority of respondents (51.49%) reported frequently looking up English medical terms, and **44.26% using them occasionally.** Only a small minority reported rarely or never needing to look up such terms.

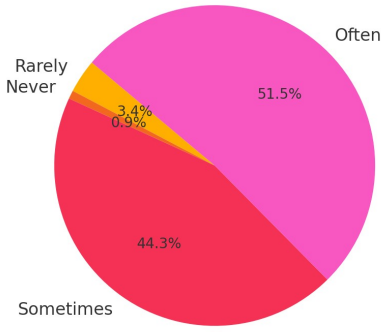


***Figure 2****. Frequency of looking up English medical terms*

When asked about the **primary purpose** of consulting medical terminology, a majority of **59.59%** selected all three proposed reasons: supporting learning, research, and vocabulary building. Additionally, **30.21%** cited Medical English learning alone, while a smaller portion pointed to research purposes **(5.96%)** and vocabulary enrichment **(4.26%),** emphasizing the multifaceted role medical terms play in their academic journey.

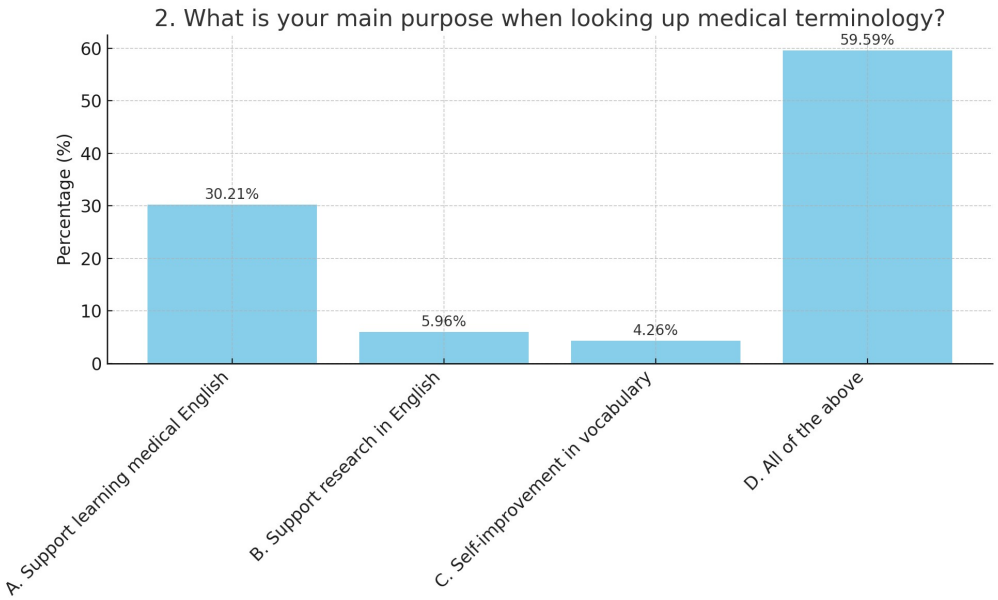


***Figure 3.*** **Purposes** *of consulting medical terminology*

 

Despite frequent use, **students still face considerable challenges**. Over **28.94% reported frequently encountering difficulties** in understanding English medical terms, and another **55.74% experienced occasional difficulties**. In terms of perceived difficulty level, **40.85% rated the process as difficult**, and **2.98% as very difficult**, while only **5.96% found it easy**, suggesting the necessity for more learner-friendly resources.

The **most common challenges** included the lack of a trustworthy dictionary **(14.04%)**, overly complex definitions **(14.89%)**, and insufficient information (**8.94%**). Notably, nearly **60% of students identified all three issues,** indicating the current resources fail to meet their needs effectively. These results highlight a critical gap that an integrated, reliable, and accessible online dictionary could fill.

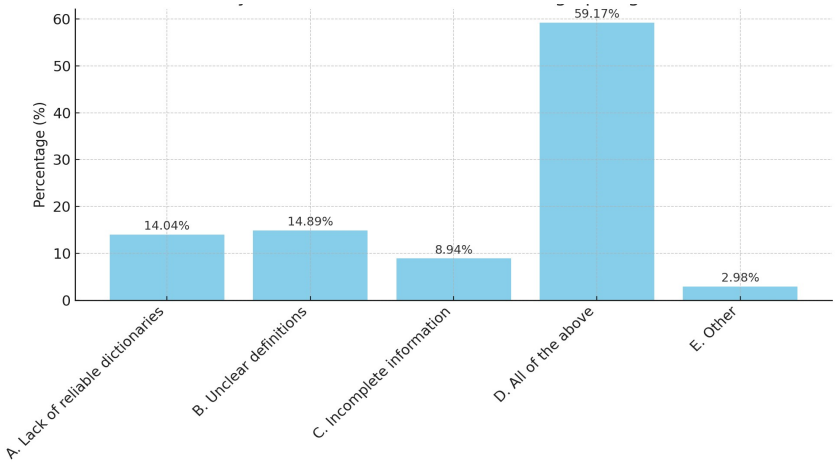


***Figure 4.*** **Challenges** *of consulting medical terminology*

The necessity of such a resource was strongly affirmed by the students: **77.02% considered it "very necessary"**, and **22.98% deemed it "necessary"**.

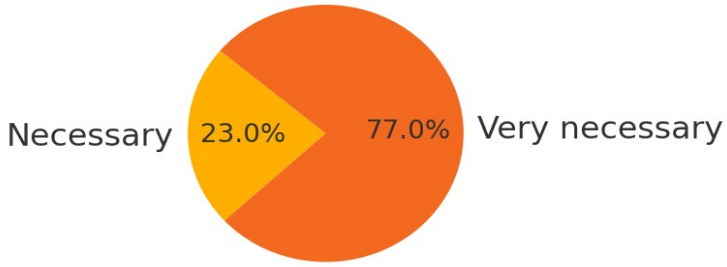


***Figure 5.*** *Necessity of the online English medical dictionary*

When asked if hosting this dictionary on the FBS website would support their studies and research, **67.23% completely agreed**, and **30.64% agreed**, reflecting strong overall support for its implementation.

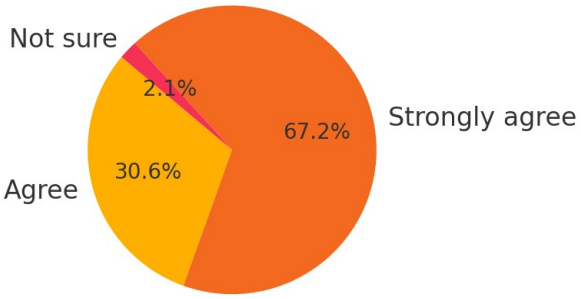


***Figure 6.*** *Student agreement on the impact of the online English medical dictionary for learning and research*

 

Regarding the **expected features** of the dictionary, **an overwhelming 96.09% of students expressed a desire for comprehensive content**, including pronunciation (IPA), part of speech, simplified English definitions, Vietnamese equivalents, related word forms, illustrations, and example sentences. This suggests learners prefer a multi-functional, context-rich tool that supports both comprehension and application.

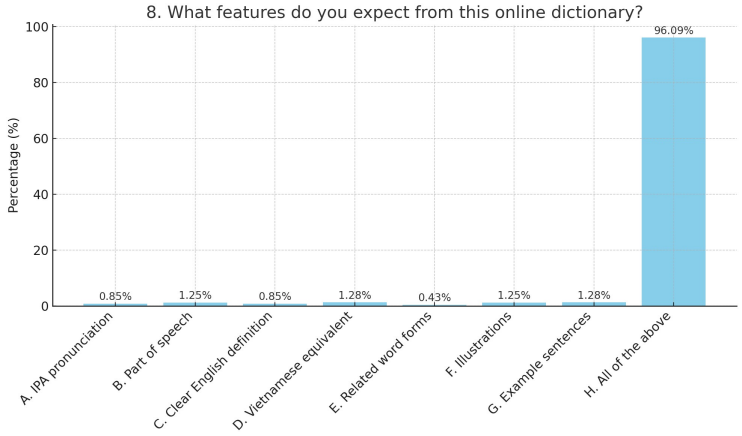


***Figure 7.*** *Expected features of the online medical dictionary*

In terms of **device accessibility, smartphones were the most preferred platform (54.89%),** followed by laptops/desktops (29.79%) and tablets (15.32%). This underlines the importance of mobile compatibility for the dictionary, as students are likely to access it on the go.

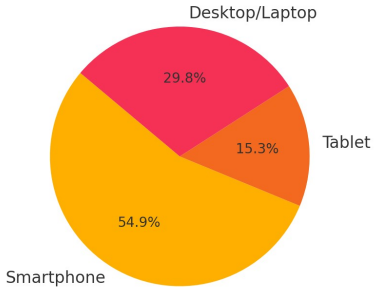


***Figure 8.*** *Preferred devices for accessing the online medical dictionary*

Finally, students saw the dictionary as a **highly beneficial educational tool,** with **65.53% describing it as "very useful"** and **31.91% as "useful"** for learning, research, and future professional practice. Only **2.55%** believed its impact would be minimal.

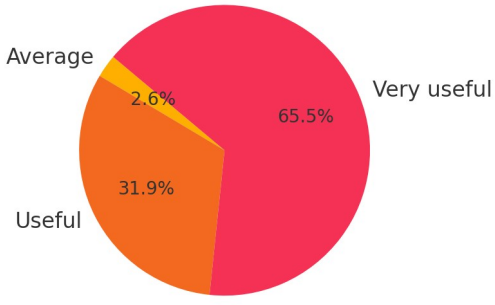


***Figure 9.*** *Usefulness of the online medical dictionary for learning and professional practice*

### 4.6. Survey Findings

The survey findings directly informed the pilot implementation of an online English medical dictionary hosted on the FBS website. Features such as simplified English definitions, illustrative examples, and compatibility with mobile devices were prioritized based on student responses. The tool is expected to enhance terminology acquisition, support learning and research, and promote standardization of medical English usage among UMP students and faculty.

The pilot survey findings also reveal a clear and compelling demand for an accessible, student-centered English medical dictionary among first-year medical students at UMP. A large majority of respondents reported frequent or occasional use of English medical terms, primarily to support learning, research, and vocabulary development. However, significant challenges persist: many students encounter complex definitions, unreliable sources, and incomplete information, which hinder effective comprehension and application of medical terminology.

Nearly all students affirmed the necessity of a digital dictionary, with strong support for its integration into the Faculty of Fundamental Sciences (FFS) website. They emphasized the importance of features such as simplified definitions, Vietnamese meanings, illustrative examples, pronunciation guides, and mobile accessibility. Most students preferred to access the tool via smartphones, highlighting the need for a responsive, mobile-friendly interface.

Students also expressed confidence in the educational value of the resource, with 97% viewing it as useful or very useful for their academic and professional development. These findings directly informed the design and implementation of the pilot online dictionary, ensuring alignment with learners' needs and expectations. Overall, the survey highlights both the feasibility and urgency of deploying a comprehensive medical dictionary to enhance English language proficiency and academic success in medical education at UMP.

In summary, the pilot survey underscores the urgent need for a comprehensive, user-friendly, and accessible online medical dictionary. The positive reception and strong demand among first-year medical students affirm both the relevance and timeliness of this innovative educational initiative.

## 5. INNOVATION AND EFFECTIVENESS OF THIS ONLINE SPECIALIZED MEDICAL DICTIONARY AT UMP

### 5.1. Innovation of this online specialized medical dictionary at UMP

This initiative marks the first effort by the Department of Foreign Languages, Faculty of Basic Sciences (FFS) at the University of Medicine and Pharmacy in Ho Chi Minh City (UMP) to develop an English-English-Vietnamese medical dictionary specifically tailored to the health sciences. Integrated directly into the faculty's official website, the dictionary is designed to serve students, faculty members, and the broader academic community. Unlike traditional medical dictionaries that exist as printed materials or separate online platforms, this resource is embedded within the digital infrastructure of FBS, allowing users to access it anytime, anywhere.

A key innovation of the project is the integration of artificial intelligence (AI) tools—such as ChatGPT and Google's Gemini—to support content creation and optimization. These advanced AI technologies, particularly in natural language processing (NLP), help ensure that the definitions are academically accurate, up-to-date, and easily understood. AI contributes to the selection of terminology, simplification of complex medical language, and regular updates that keep the dictionary dynamic and relevant.

The dictionary adopts a learner-centered approach by translating complex medical terms into simplified language, making it more accessible for first-year students who often struggle with specialized vocabulary. Supplementary features such as illustrative examples, visual aids, and real-world applications further enhance understanding and usability.

Beyond accessibility and clarity, this initiative also aims to standardize medical terminology across the university, ensuring consistency in teaching, learning, and research. At the same time, the dictionary is localized to fit the Vietnamese educational context, thereby bridging global medical knowledge with local relevance.

This project reflects a broader commitment to digital transformation in education. Hosted on modern academic platforms like the FFS'website, the dictionary aligns with the university's strategy of integrating academic tools into its digital learning environment. Its flexible structure allows for continual expansion—enabling new terms from related disciplines such as nursing, pharmacy, and clinical research to be added as needed.

By embracing innovation, this initiative promotes the use of modern educational technologies among both students and faculty, and strengthens UMP's position as a pioneer in medical education. The project not only

 

addresses current academic needs but also sets a forward-looking model for other departments to emulate. Its novelty lies not only in the creation of an online English-English dictionary for the health sector, but also in the strategic application of AI, learner-centered design, and institutional relevance—making it a sustainable and high-impact solution within UMP's educational ecosystem.

5.2. Effectiveness of the online medical dictionary in enhancing learning, teaching, and research at FBS – UMP

The integration of an online English-English-Vietnamese medical dictionary into the Faculty of Fundamental Sciences (FFS) website has significantly improved the quality of teaching, learning, and research. For students, the dictionary offers quick and reliable access to specialized terminology, enabling them to better comprehend international materials, scientific literature, and medical textbooks. This convenience not only saves time but also strengthens students' academic English skills, preparing them for global study and research environments.

Faculty members also benefit from this tool as an effective teaching aid. It helps standardize terminology in course content, facilitates the creation of high-quality teaching materials, and improves overall work efficiency by reducing time spent verifying terms or preparing definitions. As a shared reference, the dictionary enhances consistency in the use of medical terms across lectures, study materials, and research outputs, fostering a more cohesive academic environment.

The use of artificial intelligence (AI), particularly NLP-powered tools like ChatGPT and Gemini, ensures that dictionary content is accurate, systematically organized, and regularly updated. This modern technological integration supports the development of a dynamic, user-friendly platform that students and faculty can access seamlessly via the Department of Foreign Languages' page on Faculty of Fundamental Sciences' website—without the need for installations or registrations.

The online format also yields substantial savings. Students avoid the cost of expensive printed dictionaries, and faculty can redirect time from term preparation to more impactful teaching. At the institutional level, FFS benefits from reduced printing costs and the creation of a centralized, long-term academic resource.

Beyond immediate classroom benefits, the dictionary supports research activities by improving the precision and clarity of English used in papers, theses, and academic documents. It helps both students and faculty produce work that aligns with international academic standards, promoting deeper integration into global knowledge networks. Moreover, students can use the resource to enhance their English for specialized communication, better preparing them for exams, conferences, and collaboration with international partners.

This initiative also contributes to the professionalization and modernization of academic practices at FFS. It positions the faculty—and UMP more broadly—as a leader in applying technology to education, inspiring other departments to adopt similar models. The high-quality academic output not only enhances internal educational standards but also elevates the institution's reputation nationally and internationally.

Importantly, the dictionary is designed for sustainability and growth. It allows for the continual addition of new terms and can be expanded to include disciplines like pharmacy, nursing, and clinical medicine. Its adaptable model offers replicability across other faculties at UMP or even at medical universities throughout Vietnam, paving the way for a comprehensive, networked academic resource system.

In sum, the effectiveness of this online medical dictionary lies in its ability to optimize time, cost, and academic resources while simultaneously advancing the quality of education and research. It represents a sustainable, scalable, and innovative solution aligned with the evolving needs of 21st-century medical education.

## 6. CONCLUSION

The integration of AI Chatbox GPT in the development of an English-English-Vietnamese medical dictionary represents a meaningful advancement in the application of artificial intelligence to health sciences education. This initiative has demonstrated significant potential to support diverse academic and professional activities across the University of Medicine and Pharmacy at Ho Chi Minh City (UMP-HCMC).

As a pedagogical tool, the dictionary enhances the teaching of Medical English by assisting lecturers in designing lessons and explaining complex terminology, while creating more accessible pathways for students to master specialized language. It also proves highly beneficial for learners at various levels—particularly first-year students and those from non-health backgrounds—by accelerating their understanding of medical concepts and improving their capacity to engage with international academic literature.

In the realm of research and publication, this AI-powered resource supports faculty and researchers in the accurate and consistent use of medical terminology, thereby improving the quality and professionalism of

 

academic outputs. Moreover, it fosters more effective communication in professional and cross-border contexts, serving as a reliable reference tool in clinical discussions and international collaborations.

Beyond its educational and professional uses, the dictionary contributes to the digital transformation of medical education by supporting the development of online academic resources and reinforcing institutional efforts to standardize the use of English medical terminology across faculties. It also holds strong potential for practical application in healthcare settings, empowering doctors, nurses, and allied health professionals to stay updated with evolving English medical vocabulary in a globalized medical environment.

Overall, the development of this AI-enhanced medical dictionary bridges educational and clinical domains, strengthening both pedagogical practices and the professional competencies of healthcare workers. Its broad scope of application ensures sustainable contributions to the internal quality of medical education and the advancement of a globally competent medical workforce.

## 7. REFERENCES

Adams, R., & Smith, L. (2021). *The importance of English proficiency in medical education*. Journal of Medical Education, 54(3), 187-195.

Brown, J., & Thompson, M. (2022). *AI and NLP in language learning: Applications in medical education*. Medical Education Review, 33(2), 78-84.

Huang, X., & Zhang, Y. (2021). *AI-powered learning tools for medical students: Enhancing English proficiency*. Journal of Educational Technology, 45(4), 112-119.

Johnson, M., & Lee, J. (2018). *Challenges in learning medical terminology: A case study of first-year medical students*. Medical Education Journal, 29(1), 25-32.

Johnson, R. (2020). *The limitations of traditional medical dictionaries in modern education*. Medical Language & Terminology, 12(4), 210-220.

Kong, Z., & Tan, C. (2020). *Addressing the language gap in medical education with AI and NLP tools*. International Journal of Medical Education, 10(2), 45-53.

Li, X., & Wang, Y. (2021). *AI-enhanced learning materials in medical education: Benefits and challenges*. Journal of Medical Teaching, 60(5), 213-220.

Liu, H., & Chan, A. (2021). *The impact of online resources on medical terminology learning*. Journal of Health Education, 28(1), 34-42.

Manning, C., et al. (2019). *Natural language processing in education: The future of AI-powered learning*. Journal of Educational Data Mining, 5(2), 50-59.

Nguyen, B., & Hoang, T. (2020). *The need for modern, accessible medical dictionaries for non-native English speakers*. Journal of Medical Education and Training, 25(3), 92-100.

Nguyen, T., et al. (2020). *AI and expert validation in the development of medical dictionaries*. Medical Informatics Journal, 14(6), 65-73.

Peterson, R., & Allen, B. (2021). *Medical dictionaries and their effectiveness for non-native English speakers*. Journal of Language in Medical Education, 42(3), 108-115.

Smith, A., & Brown, C. (2019). *The role of English proficiency in clinical practice and academic success in medical education*. Journal of Medical Education and Practice, 12(1), 74-80.