

A Review of English for Medical Purposes Teaching: Significance, Challenges, and the Future

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Abstract: This paper explores the current state, challenges, and practical approaches in English for Medical Purposes (EMP) teaching. EMP plays a vital role in the field of medicine, enabling medical students and professionals to effectively communicate and disseminate knowledge across cultural and linguistic boundaries. EMP education has developed a lot, although it still faces challenges such as rapidly updated medical knowledge, complex medical terminology, and lack of interdisciplinary communication. Effective EMP education requires a curriculum grounded in needs analysis, task-based language teaching, and the integration of advanced technologies. Teachers need interdisciplinary expertise and continuous professional development to meet these demands. Looking ahead, future EMP instruction should prioritize personalized learning, enhanced teacher training, and the expansion of teaching resources. The adoption of cutting-edge technologies, such as artificial intelligence (AI) and virtual reality (VR), is anticipated to further transform EMP education, equipping medical professionals to thrive in increasingly interconnected healthcare systems.

Keywords: Medical English Teaching and Learning; English for Medical Purpose (EMP); EMP Teaching, Curriculum Design; The Development of EMP

1. Introduction

1.1 Background

In the context of globalization, English for Medical Purposes (EMP) has become one of the most important skills for both medical students and medical practitioners. The importance of EMP is not only reflected in its use as a communication tool, but also as a key

to the acquisition and dissemination of medical knowledge. This trend is exemplified in the study of Milosavljević and Bakić [1], who emphasized the cohesive role of foreign languages in the dissemination of medical knowledge and its impact on the integration between traditional and web-based learning. Their study shows that non-native English-speaking medical students who are not well educated in a foreign language will not be able to fully utilize the benefits of web-based learning resources and scientific research. Foreign language education not only affects students' academic achievement, but also affects their socio-economic status and interpersonal relationships in relation to their future careers.

The design and implementation of EMP teaching is one of the keys to improve students' EMP competencies, and effective implementation of EMP teaching ensures students' communication ability, work efficiency, and professional competencies in the worldwide medical field, which are essential for their success in an increasingly globalized world.

1.2 Purpose and Significance of EMP

With the acceleration of globalization, English has become a common language for international communication in many fields and its importance is self-evident. English is increasingly used in the medical field. 80% of Scopus-indexed journals are published in English, and many international conferences and national journals also use English as an official language. Therefore, for today's medical students, mastery of EMP is an important cornerstone of their career development. However, Lodhi et al. found in their survey that there is a gap between the actual competences acquired by medical students and their expectation of proficiency in English, and most of the participants agreed

that there is a need for specialized English classes for medical students [2]. Pavel also pointed out in his study that the teaching design needs to be adapted to the specific academic and professional needs of the students, and that, amongst students in Romania, the English language proficiency varies significantly, which poses a challenge for ESP (English for Special Purposes) teaching [3]. It is clear that EMP has developed unevenly in different countries and regions, and that EMP teaching is still facing many problems, and there is still a long way to go for its development.

EMP teaching is different from usual English teaching in some extents. The learning content of medical English is more specialized and targeted, which puts special requirements on teaching design and methods. This paper reviews the current situation, challenges and practical experiences of EMP teaching, aiming at a comprehensive understanding of the current situation of EMP teaching while helping curriculum designers and teachers to fully understand the development of EMP, and providing theoretical basis and practical suggestions to scientifically promote the further development of EMP teaching.

2. The Importance of EMP

2.1 English for Medical Purpose (EMP)

The core objective of EMP, an important branch of ESP, is to meet the specific needs of medical practitioners in the academic and career fields. Doctors and researchers now frequently participate in international conferences, collaborate on research projects, publish medical literatures, and interact with patients and peers from different cultures, all of which require a high level of communication skills. Therefore, EMP plays a crucial role in the medical field.

As a specialized language, EMP goes beyond the bridge of medical knowledge imparting, and focuses more on the application of language skills in practical medical situations. This includes key skills such as the correct use of medical terminology, the writing of medical records and scientific papers, and doctor-patient communication, etc. This means that the curriculums need to be closely related to medical practice, including the latest medical advances, dialogue in common medical

scenarios, and reading and writing skills in professional literature. In this way, EMP not only helps learners to acquire the necessary language skills, but also enables them to better understand and assimilate medical knowledge, so that they can be more competent in practical work. This is of great significance for improving the quality of medical services, promoting international medical cooperation and enhancing medical research.

Thus, the EMP, as a key component of the ESP, is positioned to provide medical professionals with the necessary language skills and communication strategies to adapt to an increasingly internationalized academic environment and to achieve greater success in their careers.

2.2 The Uniqueness of EMP

At the core of the EMP curriculum is the integration of language skills and medical expertise to meet the specific needs of medical students for English language communication skills in both academic and career settings.

The uniqueness of EMP is firstly reflected in its teaching content. Compared to general English, EMP focuses more on specialized terminology, language expression and communication skills in medical contexts. As Milosavljević et al. point out in their study, EMP teaching should focus on developing students' ability to be able to actively use English after graduation through context-based curriculums [4]. This means that EMP programs should not only teach language knowledge, but also incorporate medical expertise to enable students to communicate effectively in actual context.

The role of the teacher is also particularly important when implementing EMP lessons. Teachers need to be flexible, open to new methods and approaches, and able to adapt to changing educational needs. Teachers must not only impart language knowledge, but also guide students to develop higher-order cognitive skills such as critical thinking, problem solving, and decision making. This requires teachers to act as organizers and facilitators in the teaching and learning process, creating conditions and opportunities that are conducive to learning and helping students acquire the knowledge and skills they need to achieve their professional and academic goals [5].

2.3 The Key Skills in EMP Learning

According to Kayaoğlu's study, medical students view English as an integral part of their future careers, which emphasizes the importance of English in the medical field [6]. Moreover, reading, speaking and listening are generally recognized as the most critical language skills in the learning process of EMP. Specifically, first of all, reading skills are considered very important in the medical field. A large amount of worldwide medical literature, research articles, case reports, and references are written in English. Therefore, it is essential for medical students to have the ability to read and comprehend specialized English-language materials. As stated by Zrníková and Bujalková, medical students need to develop academic skills by reading scientific articles, which includes not only comprehending the content of the article, but also identifying the structure of the article, the key information, and the use of academic vocabulary [7]. Heming and Nandagopal stated in their study that students in EMP learning have significant difficulties with medical terminology, and these difficulties may hinder their comprehension of medical texts [8].

Second, speaking skills, or communication skills, are equally crucial for medical students [9]. They need to be able to communicate effectively with patients, colleagues, and international peers. In addition, everyday conversational English, such as telephone communication, greetings and invitations, are also oral skills that medical students should acquire. These skills will not only help them to exchange knowledge at international conferences and seminars, but are also an integral part of everyday medical practice.

As for listening skills, medical students need to be able to understand conversations with patients, medical lectures, and oral presentations in scenarios with different accents, speeds of speech, and background noises, all of which place certain demands on students' English listening skills.

In summary, reading, speaking and listening are key skills in EMP learning that are not only critical to medical students' performance in the academic environment, but also integral to their future careers. Therefore, EMP teaching should emphasize the development of these skills and enhance students' language

proficiency through practical and medical profession related activities.

3. The Challenges in EMP Teaching and Learning

Currently, progress has been made in the teaching of EMP, especially in the areas of curriculum design, teaching methods and assessment mechanisms. However, the field still faces many challenges, such as the diversity of students' language abilities, the complexity of specialized terminology, and the need for cross-cultural communication [10]. This section will analyze the current challenges facing in EMP from the perspectives of students and teachers.

3.1 The Challenge Students Face

The difficulties students face when studying EMP are multidimensional, covering linguistic, cultural, technical and psychological aspects.

Vocabulary and terminology learning barriers are among the most notable problems. Heming and Nandagopal point out that EMP contains a large number of complex terminologies that not only relate to a wide range of medical fields, but also have specific contexts of use and precise meanings. This double burden of vocabulary learning, memorization and correct application, is particularly daunting for non-native English speakers. In addition, EMP vocabulary often has Latin or Greek etymologies, such as "pathogenesis" or "hematology," which further adds to students' learning difficulties. This vocabulary barrier directly affects students' understanding of the textbooks and scientific literatures, and limits their performance in academic communication, especially in international medical conferences and multinational teamwork, where they may appear less confident or articulate due to a lack of vocabulary.

Moreover, the complexity of grammar and text structure is also an obstacle to students. Academic texts in medicine usually adopt passive voice, complex sentence structure and long and difficult sentences, which requires students to have higher language parsing ability, or else they may have deviations in understanding. In addition, the large number of acronyms such as MRI, ECG, and the contextualized use of terms in medicine academic texts require students to spend extra time decoding their meanings.

Last but not least, the psychological challenges should not be ignored, as the high level of difficulty of EMP studies, the rigor of academic requirements, and the pressure from examinations often create psychological burdens for students. Anxiety and reduced self-efficacy may have a negative impact on students' learning outcomes. Especially when students are confronted with complex terminology or the need to express themselves academically in English in classroom, meetings, or any other occasions, this anxiety may be further amplified, hindering their normal performance.

3.2 The Challenges Teachers Face

As for the perspective of teachers, teaching EMP requires teachers to have interdisciplinary knowledge of linguistics and medicine, which poses a significant challenge for many teachers. Vahdany and Gerivani note that teachers' lack of knowledge of specialized terminology may directly contribute to inaccurate teaching content [11]. For example, if a teacher does not have a deep understanding of "pharmacokinetics" or "epidemiology," he or she may not be able to effectively guide students through these concepts. Such gaps in knowledge not only affect the quality of instruction, but may also undermine students' trust in the teacher and the course design.

In addition, teachers are under pressure to update their knowledge and teaching resources. The rapid development of medical field and the constant emergence of new technologies, treatments, and researches require EMP teachers to continue learning to keep up with the frontiers of medicine. For example, with the emergence of the COVID-19, relevant medical vocabulary has entered the teaching content in a short period of time, which puts higher demands on teachers' adaptability. The need for diversity in teaching methods is also a notable challenge. As students' abilities and needs vary widely, teachers need to design teaching strategies flexibly, while taking into account students' language skills and professional backgrounds.

3.3 Obstacles in Curriculum Design and Implementation

In terms of curriculum design, the lack of curriculum design based on needs analysis is a major issue. Javid noted that EMP teaching

needs to be oriented to the actual needs of students, but many curriculum designs lack systematic needs surveys [12]. This mismatch not only reduces students' satisfaction with the course, but may also lead to weakened teaching effectiveness.

The selection and integration of instruction resources is also a challenge in course design, and Dilafruz notes that despite the growing abundance of instruction resources available for EMP today, a mismatch between the resources and the needs of the students still exists [13]. For example, some textbooks may be too theoretical and lack practical contents, while other resources may not have sufficient language support which is difficult for low-level students to keep up. Teachers need to screen and adapt the resources, which is time-consuming and requires a high level of professionalism.

In addition, curriculum implementation is hampered by a lack of interdisciplinary collaboration. EMP instruction often requires language teachers to work with medical faculty, but such collaboration has not been realized in many schools due to communication barriers between disciplines or resource allocation issues. Language teachers may have difficulty in obtaining support from medical specialists, resulting in insufficiently specialized and relevant course content

To summarize, the challenges are systemic, covering multiple levels of students, teachers, and curriculum design and implementation. Effective responses to these challenges require educators to explore innovative teaching methods and resource integration strategies from the perspective of students' needs, combined with teaching practice and theoretical research. At the same time, policy makers need to provide greater support in the allocation of teaching resources, teacher training and curriculum optimization to enhance the overall quality of EMP teaching.

4. Practical Experience in EMP Teaching

EMP teaching practice is known for its strong purpose and application, and the following teaching strategies and methods are summarized based on practical experience.

4.1 Curriculum Design Based on Needs Analysis

Needs analysis is a fundamental part of ESP

teaching, which aims to identify learners' specific language needs in order to develop targeted courses. In the context of EMP, this analysis usually combines quantitative and qualitative methods through questionnaires, interviews, and classroom observations to identify students' language needs in their actual studies and future careers. For example, in academic scenarios, medical students need to be able to read specialized literature, write academic papers, and participate in international conferences, while in clinical practice, more emphasis is placed on communication skills with patients, such as diagnosing through interrogation, explaining their condition, and expressing treatment recommendations. Research has shown that medical students and practitioners generally consider listening and speaking skills to be the most important language skills in their careers, especially when required to communicate with international patients or peers.

Curriculum design based on needs analysis should prioritize the development of these core skills, and the course content should be closely aligned with the actual needs of the medical specialty field. This means that the course content should focus on the actual needs of the students, which should be thoroughly analyzed and utilized in the course design [14]. For example, activities such as real case discussions, doctor-patient situational dialogues and academic presentations can be set up to help students connect language learning with medical practice effectively.

4.2 Application of Task-Based Language Teaching

Task-Based Language Teaching (TBLT) is a student-centered teaching model that emphasizes language learning through completing practical tasks. In EMP teaching, TBLT can provide students with the opportunity to simulate real medical scenarios so that they can not only master language skills, but also improve their professional knowledge and practical skills.

In specific, teachers can design a variety of tasks, such as case analysis and discussion, patient inquiry simulation, writing and presentation of academic papers. This not only strengthens students' language ability, but also cultivates their teamwork ability. In addition, the reality and relevance of the tasks can

enhance students' interest and participation, thus realizing more efficient language acquisition. In this way, TBLT can help students realize both language and professional skills in authentic contexts.

4.3 Technology-Assisted Teaching

With the rapid development of educational technology, the use of technology in EMP teaching has become increasingly widespread. Diverse technological tools have not only enriched the form of teaching, but also provided more flexible and efficient learning strategies.

4.3.1 Video subtitle can enhance listening comprehension

Video resources are important tools in EMP teaching, especially authentic corpus such as medical lectures, surgery videos and patient interviews. However, the complexity and intensive nature of terminology can make it more difficult for students to comprehend. Džuganová's study showed that videos with subtitles can significantly improve students' comprehension of content [15]. Subtitles not only help students recognize unfamiliar words and terms, but also provide them with additional semantic support, especially when confronted with unfamiliar accents or rapid speech rates.

4.3.2 The potential of mobile devices in language learning

Mobile Learning has become an important direction in EMP teaching and learning. Faraj mentions that EMP teaching has become highly dependent on technology with the proliferation of digital teaching resources and online learning platforms [16]. Mobile learning offers many benefits such as convenience, flexibility, and collaborative work [17]. Wallinheimo and Pitkänen stated that mobile devices such as tablets and phones can support interactive and personalized learning in addition to flexible learning time and space [18]. The immediacy and convenience of mobile devices provides students with a more active learning experience, which enhances learning outcomes.

What's more, virtual reality (VR) and augmented reality (AR) technologies are gradually being introduced into EMP teaching to further enhance students' immersion and practical skills through simulated surgical scenarios and doctor-patient communication.

In summary, the practical experience of EMP teaching provides valuable guidance for optimizing teaching effectiveness. Through the comprehensive use of needs analysis, TBLT, technology assistance and academic skills development, as well as making corresponding countermeasures in teaching method and design, teachers can better satisfy students' actual needs, improve their language proficiency and professionalism, and lay a solid foundation for their academic and professional development.

5 EMP Teaching Strategies and Prospects

By optimizing teaching strategies and resource allocation, the teaching effect can be significantly improved. The following are suggestions for improving teaching strategies and analysis of future development trends.

5.1 Individualized Instruction Design

Individualized teaching programs aim to maximize the effectiveness of teaching by adapting course content and teaching methods to the specific needs and backgrounds of the learners. Alqurashi's study showed that Saudi Arabian medical students and professionals participating in medical programs in Australian hospitals and universities demonstrated a high reliance on English language skills, particularly in terms of fluency, comprehension, accuracy and language structure [19]. Accordingly, we can design targeted curriculum based on these needs.

Secondly, stratified teaching is also an approach that can be considered. Differences in language proficiency and professional backgrounds among students call for group teaching or individual tutoring, or structural reorganization of existing courses to provide basic training for students with lower language proficiency, while setting more challenging tasks for students with higher levels of proficiency. In addition, teachers should assess students' progress through regular feedback to drive instructional improvement, and dynamically adjust the content to ensure that the goals of the curriculum are aligned with the developmental needs of the students.

5.2 Improve Teachers' Professional Competence

Teachers' professional competence has a direct impact on the quality of EMP teaching and

students' learning outcomes. Teachers need a solid medical background knowledge and language teaching ability to flexibly cope with different teaching scenarios. This means that teachers should receive systematic EMP training, especially in medical terminology and subject background knowledge, to ensure the accuracy and professionalism of lessons.

In addition, teachers should also try to innovate teaching methods and combine emerging pedagogies to improve classroom interaction and student participation and better stimulate students' interest in learning.

More importantly, teachers should also be provided with continuous professional development opportunities, such as teaching training, upgrading of skills in language testing and assessment, and international teaching exchange programs, which can help them stay sensitive to the latest teaching trends and technologies.

5.3 Enriching Teaching Resources

The diversity and quality of teaching resources are the basis for the success of EMP teaching. In recent years, the use of corpus technology and multimodal resources in language teaching has shown remarkable results.

Liu emphasized the potential of corpora in EMP vocabulary teaching. With corpus software, students can analyze word frequency, collocations, and contexts in authentic corpora, providing a fresh perspective on EMP teaching [20]. Virtual Patient Simulation allows students to practice doctor-patient communication skills in an immersive environment, while videos with subtitles and audio resources help improve listening and speaking skills. Teaching process becomes more lively and fun by using these resources, significantly enhancing the learning experience and engagement of students.

In addition, utilizing globally available Open Educational Resources (OER), such as open courseware, online EMP textbooks, and databases of academic papers, provides students with access to a wider range of learning materials while mitigating the cost of developing instructional resources.

5.4 Prospects of EMP

EMP teaching is promising, and future research and practice will further drive the trend toward specialization and

individualization.

(1). Deeper application of intellectual technologies: The inclusion of AI and machine learning technologies will further enhance the level of personalization of EMP teaching.

(2). Interdisciplinary integration: EMP teaching will be more integrated with the fields of medical education, linguistics and educational technology to develop more scientific curriculum and teaching methods through interdisciplinary collaboration.

(3). Growing demand for languages in the context of globalization: With the accelerating trend of globalization in the medical sector, the demand for EMP skill will continue to grow. Teaching strategies will probably focus more on developing students' intercultural communicative competence and adaptability to meet the challenges of a multicultural medical environment.

In summary, by designing personalized teaching plans, enhancing teachers' professional competence, and enriching teaching resources, EMP education can become more scientific, systematic, and efficient. Looking to the future, advances in technology and the driving forces of globalization will further promote the development of this field, providing stronger support for students' academic and professional careers.

6 Conclusion

As an essential component of medical education, EMP teaching plays a significant role in enhancing students' professional English proficiency, facilitating academic communication, and improving the quality of healthcare services. With the acceleration of globalization and the deepening international collaboration in the medical field, the importance of EMP education is becoming increasingly prominent. Therefore, future teaching should place more emphasis on personalized, demand-driven course design to cater to the needs of students from diverse backgrounds and improve teaching effectiveness.

To further advance EMP teaching, exploring the supporting role of technological tools in EMP education is a promising research direction. With the rapid development of information technology, particularly the rise of mobile learning and computer-assisted

language learning (CALL), the application of technology in EMP teaching is becoming more widespread. Future research can further explore how advanced technologies, such as artificial intelligence and virtual reality, can enhance the interactivity and effectiveness of EMP education, as well as how technological tools can provide personalized learning paths and instant feedback to students.

Moreover, in-depth research into the interaction between vocabulary learning and the teaching of specialized terminology also holds promising prospects. Therefore, future studies can delve deeper into the relationship between vocabulary acquisition and the teaching of specialized terms, particularly in terms of how teaching design can help students better grasp specialized terminology and enhance their ability to apply these terms in practical medical scenarios. Additionally, research could focus on how to use corpora, online resources, and multimedia tools to enrich vocabulary teaching content, as well as how task-based teaching and project-based learning methods can promote students' deeper understanding and long-term retention of specialized terminology.

In conclusion, the research and development in the field of EMP teaching still holds vast potential. Through continuous exploration and the application of new teaching concepts, technologies, and methods, we can look forward to nurturing more medical professionals with high-level professional English skills to meet the demands of the globalized healthcare environment.

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