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Some Problems and Solutions of Teaching and Learning Medical Terminology

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Abstract
Teaching English for Specific Purposes (ESP) courses can be a challenging task for English language teachers, whether they are teaching as a second or foreign language. One of the major difficulties faced by teachers and students of medicine is the teaching and learning of medical terminology. Medical terms, often derived from foreign languages such as Greek and Latin, can be complex and difficult to understand for students. The teachers face the challenge of conveying the meaning behind these terms, and students may feel intimidated by their length and complexity, making them difficult to pronounce, spell, and comprehend.This research paper delves into the difficulties faced by medical students in understanding medical terminology. It proposes several strategies to help students, such as breaking down terms into their component parts, removing prefixes and suffixes, and memorizing eponyms. The paper also suggests various teaching methods that could be effective in teaching medical terminology, including breaking down terms into smaller pieces, using the flipped classroom model, repetition, teaching L2 with the use of L1, and other collective methods.Ultimately, the goal of this research is to provide guidance and support to both teachers and students in the teaching and learning of medical terminology. By understanding the challenges and finding ways to overcome them, teachers and students can work together to ensure that medical students have a strong grasp of medical terminology, which is essential for success in their field.
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1. Introduction

English language has been growing in nearly all fields of expertise. In particular, proficiency in English has become a necessary requirement in the fields of information technology and medicine. There is a substantial increase in the number of English-language scientific publications related to medicine and 80% of the journals indexed in the international Scopus database are published in English. English is also the official language used in the majority of international conferences. Additionally, more Vietnamese medical specialists are collaborating with professional teams and medical institutions from English-speaking countries, and medical internships have become more accessible to medical students, which further emphasizes the importance of communication skills in English and a strong understanding of medical terminology.

Having a strong grasp of medical terminology is a critical competence for physicians as it ensures clear and reliable communication in everyday clinical practice. Proper use of medical terminology, such as in medical records and shift handovers, is crucial for patient safety and efficient workflow. Medical terminology also plays a crucial role in discussions with patients regarding their diagnosis, therapy, and prognosis. With increasing health literacy, patients are becoming more knowledgeable about medical terminology and its usage, making it even more important for physicians to have a solid understanding of it.

The language used by healthcare professionals in medical records and communication is known as medical language. Doctors and nurses must be proficient in reading and writing medical terminology in a second language in order to complete hospital admission notes, diagnoses, and orders. This research paper aims to address the challenge of teaching medical terminology and to find ways to help medical students learn it more effectively. The paper investigates the difficulties faced by medical students in understanding medical terms and offers strategies, techniques, and approaches to help them comprehend the complex terminology.

The researcher is motivated to explore the learning of medical terminology to support both teachers and students in this crucial aspect of their education and professional practice.

2. Literature review

ESP

English for Specific Purposes (ESP) takes into account both absolute and variable characteristics. The absolute characteristics of ESP include a focus on addressing the specific needs of students, a utilization of language that is specific to the discipline being taught, and a focus on language features such as punctuation, lexis, register, and skills such as speaking and classification. The variable characteristics of ESP include the specific disciplines

it may be associated with, the use of teaching methods that may differ from those used in teaching General English, the fact that it is typically intended for adult students who are at an intermediate or advanced level of proficiency, and the assumption of some prior knowledge of the language.

English is used in three different forms: as a first language (L1), as a second language (SL), and as a foreign language (FL). For learners of English as an SL and FL, the language is taught in two different forms: English for General Purposes (EGP) and English for Specific Purposes (ESP). EGP provides learners with a broad range of language that can be used for various purposes without a specific focus on any particular group of learners, while ESP focuses on language that is designed to meet the specific needs of a particular group, such as medical professionals, technicians, airline employees, agricultural learners, waiters, and tourism professionals.

English for Specific Purposes (ESP) has become a prominent part of English language education in recent years, particularly in the fields of science and technology. This approach to language learning focuses on teaching English for specific, practical uses, tailored to the needs of a particular group of learners. Medical English is a subset of ESP, which is specifically designed to meet the requirements of the medical profession, including familiarity with medical terminology that is accepted internationally. Regardless of the learner's native language, understanding and being able to use the standard medical lexicon is considered crucial for success in the field of medicine.

Medical Terminology

Every profession has its own unique language, often referred to as jargon, that allows for efficient communication between members of the same field. In the medical and health sciences industry, medical terminology is a specialized language used by learners, specialists, and experts. It is widely recognized as one of the most difficult languages among all the specialized languages in different fields. Medical language contains complicated, long terms which are difficult to spell, remember, and even understand, such as "amonasehydrocharideoymphaeoid," "encephalomyeoneuropathy," and "dermatomucosomyositis." Medical writing heavily relies on a specialized vocabulary, where many words cannot be translated or defined. They also note that medical writing is often so challenging to comprehend that it requires approaching it from multiple angles to understand the ideas behind complex terms and long words.

Medical language, apart from its specialized vocabulary, is characterized by its unique grammatical patterns. For instance, the plural form of many medical nouns is formed in a different way compared to ordinary English. Instead of adding "-s" or "-es" to the end of the word, the plural form is often achieved by changing the vowels or the last part of the word. For example, words like "alveolus/alveoli," "atrium/atria," "stimulus/stimuli," "bronchus/bronchi," "bacterium/bacteria," "vertebra/vertebrae," "phenomenon/phenona," "protozoon/protozoa," and "fungus/fungi."

According to Gylys and Wedding (1983), medical terminology is a specialized language used to achieve efficient and precise communication in the healthcare field. It has two distinct features, with most medical words consisting of roots and affixes, except for one-syllable words. The roots determine the meaning of the word, while the prefixes and suffixes change the part of speech or alter the meaning of the word. Teachers often use this specific word formation to help students, but recognizing the word parts used to build medical terms remains a significant challenge for learners.

Additionally, using word parts to guess the meaning of a medical term can lead to incorrect conclusions, as Schmitt (2000) warned. It is crucial for students to be cautious and check the surrounding context to see if their guess makes sense. Haynes and Baker (1993) also found that students sometimes made incorrect guesses about the meaning of an unknown word and persist with that erroneous meaning in other contexts, even when the surrounding context clearly indicates otherwise.

The use of specialized language is common in various professional fields and helps to streamline communication among members of the same discipline. In the healthcare industry, medical terminology is a unique and specific language used to communicate effectively and precisely. This language can be challenging for even the most fluent English speakers, as it contains a significant amount of borrowings from Greek and Latin languages.

One of the defining features of medical terminology is its reliance on combining forms from Greek and Latin, which makes up the majority of medical words. For students, understanding the word building of medical terms can be helpful, but it still poses a significant challenge. The open nature of medical vocabulary, which contains a large number of low-frequency words and newly created terms, also presents a difficulty. It's more efficient to teach students vocabulary learning strategies to help them infer word meanings rather than trying to teach every word encountered.

Additionally, the use of abbreviations in medical terminology can be difficult and not easily traceable from English. Despite being familiar with common colloquial phrases for describing medical conditions and anatomy, students often struggle with the specialized language used in medical terminology. Proficiency in this language is an essential part of medical studies and a fundamental challenge for students in the field.

Word parts

Medical terminology has its roots in Latin and Greek, which were widely used as the primary languages of academics during the development of modern medicine. This facilitated clear and efficient communication between physicians from different parts of the world. Despite Latin being a "dead" language today, its usage in academic and scientific fields has not diminished. For students who are new to the study of medical terminology, encountering Latin for the first time can be overwhelming.

However, students can take comfort in the fact that some basic root words are common across the medical field. By learning the meaning and form of the most frequently used word components and stems, students can break down the meaning of new terms, even if they've never encountered them before. These components and stems often retain their meaning regardless of their position within different terms.

Medical terminology can be divided into two main parts: root words and affixation. A compound term is made up of a stem word, a suffix, and potentially a prefix. By understanding the root and affixation, students can become proficient in decoding medical terms and effectively communicating within the medical field.

Terminology	Prefix	Root	Suffix
1. **Anhydrous** without water	**an-** without or no	**hydr** water	**-ous** adjective ending
2. **Radiographer** a person who takes pictures using radiation		**radi/o** radiation or radioactivity	**-er** job or professional titles
		graph a picture or recording	
3. **Hypogastric** located below the stomach	**Hypo-** below	**gastr** stomach	**-ic** adjective ending

Table 1. *Examples of word parts*

Root

Root is the foundation of a word, it serves as the central point around which other parts of the word are built. In the English language, most words only have one root, for example, the root of the word "incurable" is "cure." However, for students of medicine, the issue of poly-root words presents a challenge. This refers to words that have more than one root. For instance, the word "otorhinolaryngology" has three roots, "oto-" which refers to the ear, "-rhino-" for the nose, and "-laryngo-" for the larynx. Hence, it is vital for medical students to differentiate between the roots of a word and its other parts, the affixations.

Once the students are able to distinguish the different elements of a word, they will be able to grasp the intended meaning of the entire term more easily. Some common categories of root words that you could focus on include medical items, diseases, equipment, disorders, medical procedures, and anatomy.

Affixation

Affixations are additions to the form of a word that are either added at the beginning or at the end. These additions are further divided into two categories: prefixes and suffixes.

Prefix

The prefix is a borrowed term from Latin, comprised of two parts, "pre-" meaning "before," and "-fix" meaning "fasten." The combination of these two parts signifies the part of a word that is added or fastened at the beginning of the word. For example, in the word "polyneuritis," the first part "poly-" is a prefix, and it is added to "neuritis" to mean "many."

Suffix

The word "suffix" is comprised of two parts, "suf-" meaning "after, behind, or beneath," and "-fix" meaning "fasten." This refers to a part of a word that is added to the end of the lexeme. For instance, in the word "polyneuritis," the prefix "poly-" means many, the root "neur-" refers to nerves, and the suffix "-itis" means inflammation. The combination of these elements creates a medical term that describes a condition in which there is inflammation of many nerves.

It's important to note that prefixes and suffixes can modify the meaning of the root word. They can add, change, or even create antonyms. For example, the words "useful" and "useless" both have the root "use-," but the suffixes "-ful" and "-less" give the words opposite meanings.

There is also a third category of word parts known as "infixes." An infix consists of "in-" meaning "inside or in the middle" and "-fix" meaning "fasten." Infixes refer to changes that occur in the middle of a word, such as the change from "man" to "men" or from "woman" to "women." This type of modification typically involves a change in the vowels within the word.

While prefixes and suffixes are more commonly encountered and discussed in grammar references, infixes

are less frequently addressed. Nevertheless, understanding the different parts of words and how they interact with one another is crucial for gaining a deeper understanding of language.

Derivation

In medical field, the utilization of prefixes and suffixes play a significant role in the creation of numerous medical terms through the process of word formation called derivation. Khan (1986) notes that a vast majority of the scientific terms utilized in medical courses are derivatives and compounds, with a recurring use of several elements.

Medical English language uses the term pre-derivatives for prefixes and post-derivatives for suffixes. In the upcoming discussions, the aim is to clearly distinguish between the two forms and illustrate how each one contributes to the formation of a large number of medical terms derived from a single root word.

Pre-derivatives

In linguistics, pre-derivatives refer to words that are formed by adding a prefix to the root of a word. This process of adding a prefix to the source of a word is known as pre-derivation. This process of creating new words is not limited to medical English or English for Specific Purposes (ESP) alone, it is also prevalent in the everyday English language or English for General Purposes (EGP). A good example of pre-derivatives can be seen in the words derived from the root "cide" which means "killing". All of these words are formed by adding a prefix to the root word "cide".

a) Suicide = sui- = of oneself –cide "killing" the two means killing of oneself .
b) Matricide / parricide = matri- or parri- = mother means killing the mother by her son or daughter
c) Patricide = patri- = father " killing the father by his son or daughter " .
d) Sororicide = sorori- = sister " killing the sister by her brother or sister ".
e) Fratricide = fratri- = brother " killing the brother by his brother or sister ".
f) Uxoricide = Uxori – wife " killing the wife by her husband " .
g) Infanticide = killing an infant .
h) Pesticide / insecticide = killing insects .
i) Herbicide = Herbi- = plant " killing unwanted plant ".
(Baalabki, 1997 : 841-2)

Another root, JECT, can give rise to several derivatives, which will be explained below.

Inject projectionist	Injection projective	Injector projectivity	
Object projectively	Objection projectional	Projection	Projector

Post-derivatives

The word "post" means "after" and the term "post-derivative" refers to a lexeme formed by adding a suffix to the root or base. There are numerous words in the medical vocabulary that belong to the category of post-derivatives. If we examine the word "cardi-" which refers to the heart, the human body's most vital organ, we can find a substantial number of post-derivatives such as:

Cardia	cardiac	cardialgia
Cardiopathy	cardiotherapy	cardiotomy
Cardiovascular	cardiovalvular	cardiomegalay
Cardiomyopathy	cardiocele	cardiodynia
Cardioplegia	cardiography	carditis
Cardiometer	cardiogram	cardiorrhexis
Cardiopneumatic	cardiosclerosis	cardioid

It is important to note that all the previously mentioned medical terms stem from a single base word, "cardi", but they can belong to different grammatical categories, such as verbs, adjectives, and various forms of nouns, including nouns of process and nouns of medical conditions. Additionally, the list encompasses different meanings, including synonyms and antonyms, and so learners of medicine are regularly exposed to these derivatives in both professional and academic settings. It is therefore crucial for these learners to become familiar with the formation of terms descended from specific roots. This learning approach can be applied to numerous areas of study, including different subjects within the medical field. For example, when examining terms related to the nervous system, we can observe the following list.

Neur-, neuro-	Neurad	Neuradynamia	Neuragmia
Neural	Neuralgie	Neuralgiform	Neuramebimeter
Neuranagenesis	Neurangiosis	Neurapophysis	Neurapraxia
Neurarchy	Neurasthenia	Neurastheniac	Neurasthenic
Neurataxia	Neuratrophia	Neuratrophic	Neuraxial
Neuraxis	Neuraxitis	Neuraxon	Neure

Neurulation Neururgic
(Hitti and Al-Khatib, 2006:282-5)

Linker Vowel

It is important to note that when forming medical terms, a vowel letter is often used to separate two roots or connect a root to a suffix. Typically, this vowel is the letter "o," but there are certain rules and exceptions to consider. The use of the vowel "o" serves two purposes. Firstly, it helps learners distinguish between the elements of a term, making it easier to understand its meaning. Secondly, it assists foreign students of English in pronouncing complicated medical terms that have been derived from languages like Greek and Latin.

When a word root is combined with another root or a suffix, the vowel "o" acts as a linker between the two constituents. For example, in the term "cardiovascular," the "o" links the two roots, cardi- and -vascular, and in "neurology," it connects the root neur- and the suffix -logy. If a medical term consists of multiple roots, the linker vowel "o" is used, even if the next root begins with a different vowel. For instance, in "gastroenterostomy," the "o" links the two roots.

In some cases, when the suffix starts with a different vowel or a consonant, the letter "o" is required. For example, in "cardiology," the "o" acts as a linker between the root and the suffix. However, if the suffix begins with the same vowel as the final vowel of the root, one of them must be dropped. For example, the term is "carditis" instead of "cardiitis" or "cardioitis."

It is crucial to understand these guidelines when forming medical terms. By doing so, learners can effectively distinguish between the elements of a term and accurately pronounce medical vocabulary.

Removing Affixation

Another helpful strategy for English language learners, whether they are studying English as a general purpose language (EGP) or for a specific purpose like medical English (ESP), is the process of deaffixation. By removing the prefixes and suffixes from a word, students can understand the general meaning or core idea of the term. For instance, if we take the word "supernaturalization," we can simplify it in the following manner:

a) Removing a prefix "super-" remaining naturalization .
b) Removing the noun suffix "-tion " remaining verb naturalise .
c) Removing the verb suffix " –ise " remaining adjective natural .
d) Removing the adjective suffix" –al " remaining the base or the root "nature ".

Then, the student can deduce that the word "supernaturalization" pertains to the subject of "nature."

Eponyms

Medical terms can be categorized into two main categories, descriptive lexemes and eponyms. Descriptive lexemes are focused on describing various aspects such as shape, color, size, and function. On the other hand, eponyms are terms that are named in honor of the individuals who first discovered or described a particular aspect in the field of medicine. This can include anatomical structures, diseases, medical instruments or procedures, and even the source of a drug or a disease.

For instance, the Ishihara test, which is used to determine a person's color vision, is named after its inventor. Vaccine, on the other hand, is derived from the Latin word "vacca," which means cow, to indicate the source of the disease transmitted to humans from cattle. Ephedrine, a drug used in the treatment of asthma, is named after the ephedra plant from which it was extracted. Similarly, the name of the drug morphine came from the French word "Morphens," which refers to the ancient Roman god of sleep. Nicotine was named after a French diplomat, Jean Nicot, who first brought tobacco into France.

Addison's disease is named after a physician who first diagnosed the condition that is characterized by low blood pressure, anemia, muscle weakness, gastric problems, and skin pigmentation due to underfunctioning of the adrenal glands. Meniere's disease, which affects the inner ear and is characterized by vertigo, and Parkinson's disease, which is a result of loss of muscular control, are also named after the individuals who first identified them.

Here is more examples of eponyms:

Medical Eponym	Description	Named After	Bio
Alzheimer	chronic neurodegenerative disease; most common form of dementia	Alois Alzheimer, 1864-1915	Bavarian psychiatrist
Apgar	summarizes the health of the newborn (appearance, pulse, grimace, activity, respiration)	Virginia Apgar 1901-1974	Virginia Apgar 1901-1974
Baker	accumulation of joint fluid (synovial fluid) behind the knee	William Morrant Baker, 1839-1896	English physician and surgeon
Barrett	abnormal change in the lining of the esophagus, may lead to esophageal adenocarcinoma	Norman Rupert Barrett, 1903-1979	Australian born thoracic surgeon
Bell	palsy dysfunction of cranial nerve VII, causing facial paralysis	Charles Bell, 1774-1842	Scottish surgeon, anatomist, and neurologist
Crohn	inflammatory bowel disease; cobblestone ulceration	Burrill Crohn, 1884-1983	American gastroenterologist
Ebola	weakness, hemorrhagic fever, aches, diarrhea, vomiting and stomach pain	Ebola river in Zaire	where this virus was first discovered
Graves	overproduction of thyroid hormones; exophthalmic goiter	Robert Graves1796-1853	Irish physician
Hodgkin	cancer of the lymphatic tissue	Thomas Hodgkin 1797-1865	London Physician
Parkinson	degenerative disease affecting movement, including speech	James Parkinson 1755-1824	English apothecary surgeon
Raynaud	vasospasms (decrease blood supply to affected regions)	Maurice Raynaud, 1834-1881	French physician
Tourette	neuropsychiatric disorder; childhood onset	Georges Albert Édouard Brutus Gilles de la Tourette, 1857-1904	French physician
West Nile virus	virus transmitted by mosquitos: mild to severe symptoms	Uganda (eastern Africa), 1937	
Wilms	malignant kidney tumor containing developing (germ) cells	Max Wilms, 1867-1918	German pathologist and surgeon

Table 2. *Examples of eponyms*

In conclusion, medical terms can be divided into descriptive and eponymous categories, both of which serve to educate medical students and professionals on the different aspects of the field. The eponyms help to honor those who have made significant contributions to the field and make it easier to remember the different conditions, instruments, and procedures.

3. Some approaches to learn medical terminology effectively

According to Ellis (1994), the effectiveness of using learning strategies may depend on the type of task that the strategies are being used for. To be most effective, learners must be able to use the right strategies in the right situations. To help students develop this ability, teachers can teach them different learning strategies and show them how to apply these strategies to meet their needs in various learning tasks. However, it is only through repeated practice that students will become proficient in using these strategies.

In the field of medicine, the vocabulary is constantly expanding, making it difficult to teach all the words. Hence, teaching students strategies for inferring word meanings is more practical than trying to teach every single word. As suggested by Nation (1994), teaching medical students these strategies is especially important when it comes to dealing with low-frequency words. This is because, as Schmitt also notes, teaching high-frequency words may not be as challenging as learning low-frequency words, which will require more in-depth strategies to determine their meanings.

Learning the extensive medical vocabulary, which includes Greek and Latin, is a challenging task. A shortcut to the necessary information is necessary, and therefore, fundamental knowledge of vocabulary

acquisition and linguistic procedures for word formation and analysis must be acquired and effectively utilized. (Khan, 1986).

There are various methods that can be employed in the education of medical vocabulary, some of which are crucial and beneficial.

Use of Flipped Classroom Model as a pre-class teaching activity

The flipped classroom model is widely used in health science education as a means of promoting effective learning. In 2015, Gilboy et al. conducted a study to determine the effectiveness of the flipped classroom model in undergraduate nutrition classes. In this study, the students were given access to instructional videos, textbooks, and supplemental reading materials before class, and jigsaw activities were used as an active learning strategy during class. The results of the study revealed that the majority of students preferred watching the videos before class, and participating in classroom activities. Additionally, students reported that the flipped model was beneficial as it allowed them to study at their own pace and apply their knowledge in class.

The flipped classroom model has been utilized effectively in the field of health sciences, specifically in the obstetrics and gynecology department as demonstrated by a study conducted by Morgan et al. (2015). The study involved using the flipped classroom approach in teaching four gynecologic oncology topics. The before-class activities consisted of students watching videos online, while in-class activities involved participating in discussions of cases through an online platform. The results of the study showed high participation and satisfaction rates, with 80% of students watching the videos and 94% participating in the discussions. Furthermore, students had an average satisfaction rate of 3.31 out of 4.

In another study, Koo et al. (2016) applied the flipped classroom model in a pharmacotherapy course for undergraduate pharmacy students. Before attending class, students were required to watch online videos and answer self-assessment questions related to foundational concepts. During the face-to-face class sessions, students studied patient cases and participated in small group discussions and elaborations within larger study groups. The results showed that students experienced increased academic success and satisfaction levels. In particular, students appreciated the flexibility of watching the videos when time permitted and the ability to apply their knowledge in the case discussions.

A systematic review conducted by Chen, Lui, and Martinelli (2017) analyzed the results of 82 studies related to the use of the flipped classroom model in medical education. They found that students were generally positive about the use of this model, citing its numerous benefits such as the availability of online materials, self-paced learning opportunities, and interactive in-class activities that increased motivation and engagement. The flipped classroom model was also found to provide greater task value, increased enjoyment, and decreased boredom in comparison to traditional instructional models.

In the flipped classroom model, students have access to course content through various technologies, which allows for more time to be devoted to interaction and higher-order thinking during in-class sessions. The instructor serves as a guide, while students take on an active role in assimilating information and creating new ideas. Multimedia tools are used to cater to different learning styles, allowing students to learn at their own pace and in their own time. This approach offers students the flexibility to learn at a pace that suits them best and allows them to focus on their strengths and areas that require improvement. (Bennett et al., 2013).

Use of Visual Learning Techniques

To effectively remember medical terms, visual learning strategies can be used. One such strategy is to associate each term with a specific image, which will serve as a reminder to help recall the term. The brain has a remarkable ability to store information in the form of images, so assigning a visual to each medical term makes the learning process more engaging and easier for the brain to recall the information.

One way to utilize visual learning is through flashcards. This traditional learning strategy has been proven to be effective in helping medical students memorize important concepts and terminologies. Flashcards leverage the brain's ability to absorb information through visual cues, thereby helping to train the brain for better memory retention. There are a variety of options for using flashcards, including purchasing pre-made medical terminology flashcards or using online flashcard resources.

This method is especially useful for students with a visual learning style as it can help them learn and retain medical terminologies that will be useful in their future careers. Flashcards are considered a simple but effective way to memorize words.

Fracturing medical terms

Analyzing affixes and roots is an effective way for learners to understand word structures in medical terminology. For instance, to understand the term "gastritis," meaning inflammation of the stomach, learners must analyze it into "gastr" (root for stomach) and "-itis" (suffix for inflammation). Research by Fang (1985) suggests that this approach to analyzing affixes and roots leads to better learning and retention of medical terms.

To improve the learning and teaching of medical terminology, new techniques must be created and previous ones must be evaluated. Breaking down each term into smaller, meaningful units is one of the most effective strategies in learning medical terminology.

Breaking down is usually associated with negative consequences like the destruction of a building or a piece of furniture, or the weakening of the body's defense mechanisms. However, breaking down medical terms into smaller, meaningful parts can help learners understand the underlying concepts. By analyzing the root, suffix, and prefix of each term, learners can gain a better understanding of what each part of the word represents.

As an ESP learner in the field of medicine and health sciences, you will come across a multitude of long and complex scientific terms. Initially, it may seem like a daunting task to learn to pronounce, spell, and memorize these intricate terms and their meanings. However, with the right techniques, you can easily master the art of understanding these confusing forms.

One of the most effective strategies is to break down the term into smaller, meaningful components. By understanding the meaning of each element separately and then combining them, you can gain a comprehensive understanding of the whole term. This method is particularly useful because you will encounter these same elements repeatedly in many different medical terms throughout your studies.

For example, you can break down the term "neurodegeneration" into "neuro," meaning "related to the nerves," and "degeneration," meaning "a process of deterioration." By combining these meanings, you can understand the term to refer to "the process of deterioration related to the nerves." This strategy can be applied to many different medical terms to help you understand and memorize them effectively.

Below are some other examples of how to implement the breaking down method:

The skeletal system

achondroplasia decreased growth of cartilage in the growth plate of long bones resulting in dwarfism	**chondroblastoma** decreased growth of cartilage in the growth plate of long bones resulting in dwarfism	**spondylosyndesis** decreased growth of cartilage in the growth plate of long bones resulting in dwarfism
a. a- lack of b. chondr/o cartilage c. -plasia formation, molding	a. chondr/o cartilage b. blast immature, productive cell c. -oma tumor	a. spondyl/o vertebra b. syn- together c. -desis fusion, binding

Table 3. *Examples of how to break down the terms related to the skeletal system*

Once students have a good foundation of knowledge in medical terminology, they can begin to analyze words and learn to separate them into their component parts. This process is called "fracturing." It can be a highly effective strategy for understanding complex medical terms, provided students know how to correctly apply it.

The key to successfully fracturing a word is to identify the right place to fracture it. Dividing a word in the wrong place can result in meaningless fragments, or even completely change the meaning of a word. Even small changes, such as a different vowel, can have significant consequences. For example, the vowel "a" can be a prefix meaning "without" as in "atopic," which can be broken down into "a-" (without) and "topic" (from the Greek topos, meaning "place"). This allows for a better understanding of the term "without place."

However, in the stem "arthro-" (meaning "joint"), if the "a-" is fractured, it becomes "-rthro," which has no meaning. Instead of being the Greek noun for "joint," the word has been divided into two meaningless fragments. Understanding which parts of a term can be fractured and which cannot is crucial in using this strategy effectively. Some terms cannot be broken down as they are named after people, plants or animals, in which case memorization is the preferred method of learning.

It is not realistic for medical students to commit every single medical term to memory due to the vastness of the field. However, having a strong understanding of key word components and the ability to break down complex medical terms into smaller, more manageable pieces allows for a better comprehension of medical terminology without the need for constant dictionary checks or memorization of countless unique terms.

The Diagnostic Approach

The diagnostic approach has proven to be an effective method in addressing specific communicative difficulties within a subject-specific English for Specific Purposes (ESP) program, such as medical English. This approach focuses on teaching students in accordance with the problems that are identified through the diagnostic process. It is suggested that this approach can be used in medical classrooms to foster meaningful problem-solving. They emphasize the importance of having access to vocabulary items relevant to a particular topic in order to maintain the flow of communication.

Use of Repetition

The strategies of written repetition and verbal repetition were found to be the most popular among both high-

level and low-level language learners. This is in line with research by Schmitt (1997) which showed that repetition of words in written or verbal form was widely used in Japan. This can be attributed to the learning style emphasized in the Asian educational system, where students are often required to memorize vocabulary and grammar through repetition. Chinese learners tend to be more focused on modeling and repetition as a means of mastering language skills, while in Japan, repetition is a common learning technique. These practices can be linked to cultural beliefs such as the Confucian tradition of respect for authority. This also explains the strong preference for bilingual dictionaries, as students would turn to these resources rather than their teachers when facing questions or difficulties.

Using L1 in Teaching L2

Swan (1985) suggests that despite the importance of the native language in the process of learning a foreign language, it is often not utilized in language teaching, particularly in teaching specialized English vocabulary (ESP). He questions why the mother tongue is not given more attention and consideration in the theories and methods of communicative language teaching.

Chapman (1958), an early advocate for the use of the learner's first language (L1) in language education, believes that there is no single teaching method that surpasses all others. Instead, he asserts that common sense dictates that the use of the mother tongue has a place among the various teaching methods. He argues that each method has its own unique strengths and weaknesses, and the most effective approach will depend on the specific circumstances and goals of the language learners and teachers. By considering the role of the mother tongue, he suggests that teachers should be flexible and open-minded in their approach, and use a variety of methods that work best for their students. In this way, they can maximize the benefits of each method, and provide their students with a rich and well-rounded language learning experience.

The learners of medical science face numerous challenges in terms of understanding long and complex scientific terms that are derived from foreign languages like Greek and Latin. These terms go through three different languages before finally reaching the target language, Vietnamese. As a result, students need to be exposed to their native language but only in a limited and controlled manner in specific settings. This can be achieved through communicative methodology and selective use of the learners' first language.

Atkinson (1993) emphasized the importance of using the first language (L1) at appropriate times and in the right ways. He noted that finding the perfect balance for using L1 is not simple, but when used correctly, it can be a valuable resource. Othman and Abdullah (2011) highlighted four reasons why Arab teachers of English use L1 in their classrooms. These include: classroom management, eliciting responses from students, explaining vocabulary and grammar, and error correction.

In conclusion, the use of L1 can be beneficial for medical learners in terms of improving their understanding of complex medical terms. However, it should be used in a controlled manner and at appropriate times to avoid hindering their progress in the target language.

Collective Methods

The use of prior approaches is not the only option for teaching and learning medical terminology. Medical ESP practitioners can incorporate a combination of methods that best fit the specific topic's requirements and content from textbook references. Some commonly used methods for teaching medical vocabulary are listed below:

Maclean (1975) offers an alternative approach to the study of vocabulary in medical texts. She suggests organizing the subject matter based on body compartments, organs, and systems, and then selecting essential terms to create vocabulary lists classified into grammatical categories such as verbs, adjectives, and prepositions commonly used in connection with them. Maclean's idea provides a useful direction for compiling vocabulary lists.

Brasnett (1976) highlights the unique aspects of scientific English used in medical texts and concentrates on both vocabulary and structure. He offers lists of commonly used terms associated with research in different settings such as laboratories, hospitals, and general practice. Parkinson (1976) believes that case histories are a valuable educational tool and uses them to list important medical terms in various departments including chest, psychiatry, gynecology, and pediatrics.

4. Conclusion

The task of teaching medical terminology is often difficult due to the diversity of students and the large amount of material that needs to be covered in a limited amount of time. This can present a significant challenge for instructors. For many medical students, the process of learning medical terms can be particularly difficult, with some students having difficulty remembering the definitions of complex terms and others finding the process of using a medical dictionary tedious. Regardless of their current level of study, all medical students must master medical terminology in order to succeed in their field and understand the language used in their profession.

According to research conducted by Schmitt (1997), learning medical terminologies can be made easier

with the right approach. By utilizing a range of learning strategies, finding the best resources, and incorporating effective memorization techniques, one can make the process of learning medical terms both interesting and manageable. The results of Schmitt's study suggest that as individuals grow and mature, they naturally gravitate towards different strategies at different stages in their lives. Thus, it is beneficial to provide learners with a range of strategies and allow them to choose which ones work best for them.

5. References

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