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**Vocabulary Knowledge Dimensions in ESP
Textbooks: The case of “Professional English in
Use: Medicine” (2007) and “Medical
Terminology: An Illustrated Guide” (2021)**

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Dedication

This work is dedicated to all those who would be interested in reading my dissertation.

Abstract

This study aims at identifying the dimensions of vocabulary knowledge within two medical English textbooks entitled “Professional English in Use: Medicine” (2007) and “Medical Terminology: An Illustrated Guide” (2021). It seeks to find out whether vocabulary tasks within the two textbooks follow Nation’s (2013) word knowledge taxonomy of vocabulary dimensions. The latter classifies vocabulary knowledge into three aspects which are form, meaning and use. In addition, it uses Hussin, Nimehchisalem and Kalajahi (2015) checklist of vocabulary evaluation to determine the differences in distribution, contextualisation and newness of vocabulary within the two textbooks. After applying quantitative analysis, data obtained from the analysis of vocabulary tasks have been presented in tables and diagrams. Similarly, qualitative content analysis (QCA) has been applied to analyse the textbooks by contrasting the principles of Hussin, et al (2015) checklist of vocabulary evaluation against “Professional English in Use: Medicine” (2007) and “Medical Terminology: An Illustrated Guide” (2021). Results of the study have demonstrated that the three dimensions of vocabulary knowledge are involved in both “Professional English in Use: Medicine” (2007) and “Medical Terminology: An Illustrated Guide” (2021), where the dimensions of meaning and use are more highlighted compared to the dimension of form. Results have also revealed that the way vocabulary items are distributed differs from “Professional English in Use: Medicine” (2007) to “Medical Terminology: An Illustrated Guide” (2021), in that the latter reflects an almost equal distribution of vocabulary items and includes almost all the principles of vocabulary contextualisation and newness taken from Hussin, et al (2015) checklist of vocabulary evaluation.

Key words: *EMP, Nation’ (2013) aspects of vocabulary knowledge, textbook analysis.*

List of Abbreviations

BA: Bachelor of Arts

EGP: English for General Purposes

EMP: English for Medical Purposes

ESP: English for Specific Purposes

MTIG: Medical Terminology: An Illustrated Guide (2007)

PEUM: Professional English in Use: Medicine (2021)

QCA: Qualitative Content Analysis

List of Diagrams

- Diagram 01:** Comparison between “body structure”, a unit of MTIG (2021) and “Parts of the body 1 + Parts of the body 2”, two units of PEUM (2007).....36
- Diagram 02:** Comparison between “Symptoms and signs”, a unit of PEUM (2007) and “Disease and treatment”, a unit of MTIG (2021).....37
- Diagram 03:** Comparison between “Integumentary system”, a unit of MTIG (2021) and its equivalents in PEUM (2007) namely “The skin 1+ The skin 2”.....37
- Diagram 04:** Comparison between “Nervous system and mental health”, a unit of MTIG (2021) with its equivalents in PEUM (2021) namely “Mental illness+ The nervous system 1+ The nervous system 2”38
- Diagram 05:** Comparison between unit “The eye”, a unit of PEUM (2007) with its equivalent in MTIG (2021) namely “Special senses: eye and ear”.....38
- Diagram 06:** Comparison between “Cardiovascular and lymphatic system”, a unit of MTIG (2021) with its equivalents in PEUM (2007) namely “The heart and circulation 1+ The heart and circulation 2”.....39
- Diagram 07:** Comparison between equivalent units of PEUM (2007) and MTIG (2021) entitled “The endocrine system”39
- Diagram 08:** Comparison between unit “Blood”, a unit of PEUM (2007) and “Blood and immunity”, a unit of MTIG (2021)40
- Diagram 09:** Comparison between a unit of PEUM (2007) and its equivalent in MTIG (2021) entitled “Respiratory system”40
- Diagram10:** Comparison between two units of PEUM (2007) and (MTIG) (2021) entitled “Urinary system”41
- Diagram 11:** Comparison between “Pregnancy and childbirth”, a unit of PEUM (2007) and “Female reproductive system: pregnancy and birth”, a unit of MTIG (2021).....41

List of tables

Table 01: Units of study in PEUM (2007) and their equivalents in MTIG (2021).....	29
Table 02: Nation's (2013) word knowledge taxonomy.....	31
Table 03: Hussin, et al (2015) checklist of vocabulary evaluation.....	32
Table 04: Distribution of tasks per unit in PEUM (2007).....	35
Table 05: Distribution of tasks per unit in MTIG (2021).....	36
Table 06: Vocabulary dimensions in PEUM (2007) and MTIG (2021).....	42
Table 07: Analysis of vocabulary items in PEUM (2007) using Hussin, et al (2015) checklist	43
Table 08: Analysis of vocabulary items in MTIG (2021) using Hussin, et al (2015) checklist.....	44

List of images

Image 01: PEUM's (2007) front cover	26
Image 02: PEUM's (2007) back cover.....	26
Image 03: MTIG's (2021) front cover	27
Image 04: MTIG's (2021) back cover.....	27

Table of contents

Acknowledgments.....	I
Dedications.....	II
Abstract.....	III
List of Abbreviations.....	IV
List of Diagrams.....	V
List of Tables.....	VI
List of images.....	VII
General Introduction	3
Statement of the Problem	4
Aims and Significance of the Study	6
Research Questions and Hypotheses.....	6
Research Tools and Methodology	7
Structure of the Dissertation.....	8
Chapter One: Review of the Literature	9
Introduction	10
1. English for Specific Purposes (ESP).....	10
1.1. English for Medical Purposes (EMP).....	12
2. Vocabulary	12
2.1. The Importance of Vocabulary in Foreign Language Learning	13
2.2. Nation’s (2013) Word Knowledge Taxonomy	13
2.3. ESP Vocabulary	14
2.4. Innovation and Change in Vocabulary	15
2.5. Vocabulary Evaluation Checklist (2015)	16
3. Textbooks.....	17
3.1. EGP Textbook vs ESP Textbook	18
3.2. Textbook Analysis vs Textbook Evaluation.....	19
4. Innovation in Teaching Materials	21

4.1. Importance of Innovation in Teaching Materials	22
Conclusion	22
Chapter Two: Research Design	24
Introduction	25
1. Corpus and Context of the Study	25
1.1. Professional English in Use: Medicine (2007).....	26
1.2. Medical Terminology: An Illustrated Guide (2021).....	27
2. Procedures of Data Collection	28
3. Procedures of Data Analysis.....	30
Conclusion	32
Chapter Three: Presentation of the Findings	33
Introduction:	34
1. The Number of Tasks in PEUM (2007).....	34
2. The Number of Tasks in MTIG (2021).....	35
3. Dimensions of Word Knowledge in PEUM (2007) and MTIG (2021)	36
4. Qualitative analysis of the two Textbooks using Hussin, et al (2015) checklist of vocabulary analysis	43
Conclusion:	45
Chapter Four: Discussion of the Findings	46
Introduction	47
1. Discussion of the outcomes obtained from applying Nation’s (2013) taxonomy of word knowledge on PEUM (2007) and MTIG (2021).....	47
a. The Dimension of Form	47
b. The Dimension of Meaning:.....	49
c. The Dimension of Use.....	51
2. Discussion of the Results Obtained from Applying Hussin, et al (2015) Checklist of Vocabulary Evaluation on PEUM (2007) and MTIG (2021)	52
2.1. Vocabulary Distribution	53
2.2. Vocabulary Contextualisation	54
2.3. Vocabulary Newness.....	55
Conclusion	57
General Conclusion	58
Bibliography	62
Appendices	69

General Introduction

Statement of the Problem

The use of instructional materials is of paramount importance in English language teaching and learning. In the context of English for Specific Purposes (henceforth ESP), the significance of such materials is particularly highlighted as most ESP courses are designed based on non-determined sources selected according to teaching and learning contexts. In most cases, ESP teachers consult commercially published textbooks to teach English vocabulary peculiar to a defined discipline. Essentially, textbooks are defined as educational guides with comprehensive content pertaining to a specified subject matter. They hold a significant importance as they provide core materials and help in designing the assessment system for learners.

In many countries, including Algeria, ESP is designed to students of high educational levels specialised in particular disciplines as well as to students of general English studies. In this context, medical English, among other sub-branches of ESP, is taught to students of BA level in general English language. As the medical branch is subject of constant innovation and change, analysis of medical English textbooks seems significant considering their importance in designing ESP courses and their influence on learners' vocabulary development.

During recent years, many researchers explored various dimensions of ESP studies focusing mainly on issues of textbook evaluation and course design. At the national level, and given the increase in the functions of English in Algeria, many local researchers have shed light on ESP teaching situations in different universities. Most of their works vary between investigating learners' needs and motivation to exploring models of course design and teaching difficulties. The study conducted at the level of Abou Bekr Belaid University in Tlemcen during the period (2009-2011) by Mebitil explores the main issues encountered by ESP teachers as well as the strategies they adopt to overcome such obstacles. Under the title

“An Exploration of the Main Difficulties, Challenges and Requirements of the ESP Teaching Situation in Algeria: the Case of ESP Teachers at Abou Bekr Belkaid University, Tlemcen”, her research has revealed numerous issues teachers face due to their lack of specialised knowledge in ESP and the absence of pre-service teacher training programs. More recently, the study of Bounoua and Nebri conducted in 2020 and entitled “An Exploration of Business English Teaching in the Department of Commerce at Mouloud Mammeri University of Tizi Ouzou” identifies ESP students’ needs and difficulties in learning as well as teachers’ model of course design. Results of their work has revealed the absence of a defined model for ESP courses leading teachers to elaborate a personal one based on students’ needs.

At the international level, multiple investigations have been conducted where researchers focused on evaluating ESP textbooks pertaining to various defined disciplines. One of these research was conducted by Suhirman in 2018 in Indonesia. The work is entitled “ESP Textbook Evaluation: English for Islamic Learning for College Students” where the researcher has evaluated the appropriateness of the textbook tasks to learners’ needs. More recently, the year 2021 witnessed an investigation by Atigh and Kazemi at the department of English language and Literature in both Tabriz and Zanjan Universities in Iran. Under the title “The Evaluation of ESP Textbooks Based on Students’ Perspectives”, their research has focused on the attitudes and opinions of students of psychology and biology concerning their ESP course books. The findings have revealed positive attitudes of the majority of participants, and limited negative comments suggesting changes in the textbooks.

Although ESP textbook analysis forms part of a lively, significant and well-established research area, it seems to receive little and insufficient interest in the Algerian context. It is worth mentioning that many local researchers have analysed general English language textbooks; however, little attention seems to be given to ESP textbook analysis. None of the prior mentioned studies focused on identifying dimensions of word knowledge involved in

vocabulary activities within ESP textbooks. In addition, the issue of innovating ESP educational materials has not been well explored. Thus, the main goal of the present study is to explore dimensions of vocabulary knowledge within two medical English textbooks. These are “Professional English in Use: Medicine” (2007) (henceforth PEUM), a medical English textbook currently used to design ESP courses to students of BA level at the department of English at Mouloud Mammeri University of Tizi Ouzou, and a more recently published textbook entitled “Medical Terminology: An Illustrated Guide” (2021) (henceforth MTIG).

Aims and Significance of the Study

The present study seeks to understand the distribution of vocabulary items and word knowledge dimensions across PEUM (2007) and MTIG (2021). The dissertation has two objectives: the first objective is to identify the dimensions of vocabulary knowledge stressed in both PEUM (2007) and MTIG (2021). The second objective is to reveal a possible difference in the distribution, contextualisation and newness of vocabulary items, as well as in the distribution of vocabulary knowledge dimensions in the two textbooks.

The significance of such study is highlighted in its contribution to enlarge the existing stock of knowledge in ESP context and textbook analysis. Despite the various studies that explored the domain of ESP, little interest seems to be given to the analysis of ESP teaching materials. In addition, the large portion of studies analysing ESP instructional materials has been conducted at the international level. Accordingly, this research may be seen as an attempt to add an understanding to the local situation of ESP textbooks and to achieve new insights in the field.

Research Questions and Hypotheses

The present investigation attempts to uncover the dimensions of vocabulary knowledge included in medical English textbooks namely PEUM (2007), a currently used textbook at the

Department of English at Mouloud Mammeri University of Tizi Ouzou and a more recently published one entitled MTIG (2021). To achieve this general aim, it addresses the following questions:

Q1: What are the dimensions of vocabulary knowledge developed in PEUM (2007) and MTIG (2021)?

Q2: Is there a difference in the distribution, contextualisation and newness of vocabulary items, as well as in the distribution of vocabulary knowledge dimensions in the two textbooks?

In an attempt to answer the above mentioned questions, the following hypotheses are formulated:

H1: The semantic and the syntactic dimensions of vocabulary knowledge are more highlighted in the two textbooks.

H2: Dimensions of form and use are more included in vocabulary activities within MTIG (2021) compared to PEUM (2007). Additionally, principles of distribution and newness are more presented in MTIG (2021) in comparison with PEUM (2007).

Research Tools and Methodology

The present investigation adopts a Mixed Methods approach. It combines both quantitative and qualitative methods for data collection and analysis. Research data are obtained by applying convenience sampling to both textbooks. Later, they are analysed using Nation's (2013) taxonomy of vocabulary knowledge dimensions as well as Hussin, et al (2015) checklist of vocabulary evaluation.

The outcomes are obtained by means of qualitative content analysis (QCA) applied to qualitative data and by making use of the rule of three for the quantitative ones.

Structure of the Dissertation

The structure of the present dissertation follows the traditional simple model. It starts with a general introduction followed by four chapters and ends with a general conclusion.

The general introduction presents a background of the topic to be investigated, statement of the problem, aims and significance of the study, research questions and hypotheses, research techniques and methodology as well as the structure of the present dissertation. The first chapter, entitled “Review of the literature”, provides an extensive review of the published literature related to the topic. It defines the key issues underlying the research project and introduces the theoretical framework of the study. The second chapter, labelled “Research design”, highlights the instruments as well as the procedures of data collection and analysis. The third chapter, entitled “Presentation of the findings”, indicates the outcomes of the investigation and presents the results in both qualitative and quantitative forms. The fourth and last chapter, labelled “Discussion of the findings”, includes a careful examination of the main research results in the lights of the theoretical framework in an attempt to confirm or disconfirm the hypotheses by answering the research questions. Finally, a general conclusion summarises and consolidates the present research and provides recommendations for further research.

Chapter One: Review of the Literature

Introduction

This chapter is theoretical and is concerned with reviewing the published literature related to ESP textbook analysis and evaluation. It first reviews the main concepts related to ESP and English for Medical Purposes (EMP). It, then, covers the notion of second and foreign language vocabulary stressing ESP vocabulary. Additionally, this chapter provides an overview of textbook analysis and evaluation highlighting the importance of innovation in teaching materials. It also provides an explanation of the theoretical framework used in the current study.

1. English for Specific Purposes (ESP)

English for Specific Purposes (ESP) holds a significant position in English language Teaching (ELT). It has become one of the major approaches of ELT since the 1960s notably with the dominance of English in both economic and technological sectors after the second half of the past century. Nowadays, learning English is no longer restricted to students of English language rather extends to other disciplines.

Many authors have attempted to provide definitions of ESP including Partridge & Starfield (2013, p.2) who maintain that ESP is “the teaching and learning of English as a second or foreign language where the goal of the learners is to use English in a particular domain”. In other words, ESP deals with teaching a particular type of language peculiar to a specific situation and field of learning. This holds the idea that ESP is goal-directed, and learning content is the outcome of research exploring learners’ needs.

Moreover, Anthony (2018) defines ESP as follows,

English for specific purposes (ESP) is an approach to language teaching that targets the current and/or future academic or occupational needs of learners, focuses on the necessary language, genres, and skills to address these needs, and assists learners in meeting these needs through the use of general and/or discipline-specific teaching materials and methods. (2018, p.10)

This definition highlights the focuses of ESP in relation to learners' needs that are shaped by both learning and workplace settings. Put differently, ESP teaches a particular type of language that fulfils the demands of a defined situation. This involves adopting courses designed for a specified discipline. In this context, Dudley Evans & St. John (1988) maintain that ESP is generally designed for adult learners rather than beginners. This is due to the demand of background knowledge when teaching both ESP vocabulary and grammatical language skills. In addition, Anthony (2018) explains that in some ESP teaching situations, materials and methods used may be identical to those of general English language teaching situations. In this context, Hutchinson & Waters (1987) highlight that materials and methods of teaching ESP are based only on the learners' reasons for learning. Consequently, the context of learning ESP and the way English is used in a defined situation influence the methods and materials to be consulted.

Before designing any ESP course content, Cheng (2011) urges to better understand learners' needs and expectations in ESP classes as these are translated into learning objectives. In addition, he maintains that information regarding the teacher, learner and institutional factors impacting ESP teaching and learning needs to be taken into consideration.

It is to be noted that all the previously mentioned definitions agree on the idea that ESP teaching and learning is shaped by learners' needs. They affirm that ESP is an approach where content and teaching materials are determined by the way English is used by learners in a specific context. Moreover, ESP is divided into several types among which English for Medical Purposes is to be highlighted.

1.1. English for Medical Purposes (EMP)

English in medicine became increasingly popular since the second half of the 20th century (Pavel, 2014). If one departs from the idea that ESP teaching and learning combines knowledge of both English and a defined subject matter, one may define English for Medical Purposes (henceforth EMP) as the acquisition of medical English terminology. However, it is to be noted that ESP goes beyond simple vocabulary acquisition. Ferguson (2013, p.243) defines EMP as a “pedagogic and research enterprise focusing on improving the English language skills of non-Anglophone health professionals.” In other words, he affirms that EMP is a dynamic area of research aiming at improving English language skills of experts specialised in medical domains. In EMP classes, teachers generally depend on learners’ background knowledge of the medical field and rely on the existence of medical dictionaries to assist learners in grasping the right meaning and pronunciation of medical terms. In addition, Ferguson (2013) maintains that EMP course content derives from authentic texts, or from commercially published textbooks, or as a result of combining both sources.

As learning EMP is mainly about acquiring medical terminology, it is important to clarify the concept of vocabulary in learning the English language for both general and specific purposes.

2. Vocabulary

The role of vocabulary in learning a foreign language has been increasingly recognised since the mid-seventieth. Indeed, learning a foreign language implies having knowledge of both grammatical rules and vocabulary. A simple conception of the latter has been provided by Read (2000, p.16) who points out that vocabulary is often regarded as “an inventory of individual words”. This applies to both words acquired by learners and the entire terminology of a foreign language. More specifically, Linse (2005, p.121) defines vocabulary as “the

collection of words that an individual knows”. Put differently, it is the sum of words known by an individual, excluding the entire linguistic stock of a given language.

2.1. The Importance of Vocabulary in Foreign Language Learning

Vocabulary acquisition holds a significant position in learning a foreign language (Laufer, 1997; Read, 2000; Nation, 2001). In this context, Schmitt (2000) asserts that having knowledge of a foreign language lexis is prominent to build an individual’s communicative competence.

In addition, efficiency in communication is related to both vocabulary breadth and depth. These two dimensions are found to be essential to define vocabulary knowledge (Paribakht & Wesche, 1996; Qian, 1999). Breadth of vocabulary acquisition refers to the size of lexis one needs to master in order to have a minimal level of communicative competence. While trying to determine the number of vocabulary words that are needed to use a foreign language, Nation (2001) points out that studies exploring native speakers’ vocabulary growth do not seem to take into account different types of vocabulary and regard all words to be of equal importance. However, the importance of acquiring high-frequency words for non-native learners cannot be avoided. On the other hand, depth of vocabulary knowledge refers to how well an individual knows a word in the foreign language. This involves knowledge of certain dimensions of lexis mainly pronunciation, frequency and meaning (Qian, 1999). In this context, Nation (2013) associates word knowledge to three dimensions that are form, meaning and use.

2.2. Nation’s (2013) Word Knowledge Taxonomy

Nation (2013) defines word knowledge as “having a clear idea of the understanding meaning of a word that runs through its related uses, and also involves being aware of the range of particular uses it has, that is, what it can refer to” (p.134).

This definition observes that knowing a word involves being aware of its meaning in various situations and contexts of use. Additionally, Nation (2013) classifies vocabulary knowledge into three aspects:

a. Form: involves spoken, written and parts of the word. This equals being aware of its orthographical form and spelling as well as its derivational inflections.

b. Meaning: covers form and meaning, concept and referents as well as associations. In other words, knowing the meaning of a word involves being aware of its common associations as well as being able to recall it when presented with equal ideas.

c. Use: involves the grammatical functions, collocations and constraints on use such as the register and the word frequency. This implies knowing the different aspects of using a word and having the ability to recognise it when encountered in various contexts.

2.3. ESP Vocabulary

While analysing various types of vocabulary commonly encountered in texts, many researchers highlight a specified type of vocabulary belonging to a defined jargon. This category of lexis is referred to as technical vocabulary or specialised vocabulary. In this regard, Nation (2001) claims that technical words “contain a variety of types which range from words that do not usually occur in other subject areas... to those that are formally like high-frequency words but which have specialised meanings” (p.18)

Similarly, Dudley Evans & St John (1998) divide ESP vocabulary into words that are specific to a defined field of study and general English words that gain a new meaning while deployed in a specific discipline.

ESP vocabulary acquisition demands more time and effort than learning regular English vocabulary (Xhaferi, 2010). Lewis (1993) points out the existence of frequent collocations in ESP vocabulary increasing the importance of being aware of the fact that most ESP words go together. This generally causes EFL learners to translate non equivalent words literally from their native language to English, resulting in errors. This may explain the focus of most researchers in the field on investigating ESP vocabulary learning strategies. The use of lexical approach and associative learning strategies has generally been agreed to be efficient in ESP learning and teaching contexts (Morgan & Rinvolutri, 2004; Xhaferi, 2010). In EMP settings, Jezo (2014) maintains that,

medical students need to learn what specialist words mean, how they are used and how they are pronounced.... showing how words combine together and behave both semantically and grammatically, and indicating which words should be used in a particular context is an important part of syllabi of all ESP courses (p. 73).

In fact, learning all dimensions of medical terminology develops language skills required in both academic and professional settings. Therefore, it is important for learners to be familiar with the meaning, form and the way medical terms are to be used in a given situation.

2.4. Innovation and Change in Vocabulary

In its general sense, innovation refers to the change governed by newness and novelty. For Rogers (1983, p.11), innovation in learning is “an idea, practice, or object that is perceived as new by an individual, group, or organization”. This definition is related to the process of innovating teaching and learning strategies, methods and materials in order to provide something new and more effective. Similarly, innovation applies to vocabulary and language content. Indeed, the English language has developed from old English era (450-1150) to modern English era (1500-present). This has affected the way English vocabulary terms changed in spelling and pronunciation and the way some vocabulary items were added while others are no longer in use.

The process of change and evolution does not seem to be restricted to general English vocabulary. However, unlike change in general English words that is mostly marked by borrowing from other languages, change in ESP vocabulary is mostly the result of innovation in the specific subject matter rather than the English language itself. Some technical vocabulary may no longer be in use simply because the concept it is used to refer to is no longer up-to-date in its respective discipline. Additionally, some medical terms are considered outdated and are replaced by more recent terminology. In this regard, words such as “Ablepsy” or “Apoplexy” are replaced by “blindness” and “stroke” respectively (Torrey, 2021). Similarly, new words are added to name new discoveries in the medical field, including the term “covid-19”, recently added to medical terminology to refer to a respiratory disease caused by the SARS-CoV-2 virus (World Health Organisation, 2022). Necessarily, it is to be concluded that some changes in ESP vocabulary may seem more frequent than in general English vocabulary due to the constant innovation in scientific fields rather than in literal branches. As a result, and since teaching EMP relies heavily on textbooks, it is important to analyse these to ensure a full exploitation of the current demands of education.

2.5. Vocabulary Evaluation Checklist (2015)

Checklists for evaluating textbooks are commonly used by researchers to judge their suitability or appropriateness. Most checklists include more generalised categories of textbooks adopting a holistic evaluation. However, such checklists may not seem appropriate for more specific analysis. The checklist of vocabulary representation in textbooks that is used in the current study has been designed by Hussin, et al (2015), researchers at the University of Malaysia. They designed the checklist through the analysis of various vocabulary checklists and published it in *International Journal of Language Education and Applied Linguistics (IJLEAL)* in 2015. It is originally meant for vocabulary evaluation, however, it is used for analysis in the current study as the aim of this research is to analyse EMP textbooks.

The checklist comprises eleven (11) elements that address vocabulary **distribution**, **contextualization** and **newness**. Unlike most checklists, it includes the feature of analysing new vocabulary in textbooks, which makes it relevant to the current study.

These elements refer to the classification and arrangement of vocabulary items all along the textbooks. The importance of distribution and contextualization is linked to memorisation of lexis by learners. Indeed, Sànchez & Sanchez (2009) maintain that memory is strengthened “(i) through rehearsed or repetitive practice and activation, (ii) when attention is drawn to specific data, (iii) when new data are associated in some way to already consolidated information” (p. 864). In other words, constant exposition to vocabulary and the inclusion of such terms in context-dependent situations allow learners to memorise better and increase their chances of remembering words for later use.

Similarly, newness in vocabulary is associated with the inclusion of recent terminology. However, in this checklist, this principle refers to the inclusion of terminology not appeared earlier in the textbooks either within each new unit or within the indexes. As a matter of fact, one’s exposition to new terms allows learners to exploit the current knowledge pertaining to the demands of education.

3. Textbooks

It is generally agreed that textbooks are one of the most prominent instructional materials to be consulted by both teachers and learners. In this context, Khine (2013, p.3) asserts that “textbooks are primarily teaching aids, sources from which students obtain knowledge”. This definition views textbooks as instructional materials used to develop and promote teaching and learning processes. Moreover, Cunningsworth (1995) claims that:

Coursebooks are best seen as a resource in achieving aims and objectives that have already been set in terms of learners' needs. They should not determine the aims themselves or become the aims. We are primarily concerned with teaching the language and not the textbook (1995, p.7)

This definition explains the importance of using textbooks for the purpose of achieving instructional aims determined by learners' needs. Indeed, instead of determining educational content to be taught, textbooks assist the process of teaching and learning a foreign language. However, they do vary from an educational context to the other. Textbooks designed to be used in general English language settings differ from those designed for ESP contexts.

3.1. EGP Textbook vs ESP Textbook

In this context, Cunningsworth (1995) notifies that despite the difference between general English textbooks and ESP textbooks, language skills developed by both materials are generally the same. He maintains that,

ESP materials have sometimes been in advance of general coursebooks, as they have been developed specifically for students who were perceived to have specific needs which could not be met fully by general material. These needs were originally seen mainly in terms of subject content (1995, p.132)

Based on the statement above, it is to be concluded that what characterises ESP materials is their instructional content and teaching objectives. Indeed, the objective of ESP is to meet learners' needs that may not be arrived at by using general English textbooks. That is, the difference between EGP textbooks and ESP textbooks lies in the content and learners' needs. While general English textbooks focus on the bases of English notably the grammar and rhetoric, ESP textbooks mostly emphasise on English vocabulary pertaining to a defined discipline.

Science textbooks according to Devetak & Vogrinc (2013) should be designed in alliance with learners' level. They report that "the use of appropriate language with minimal foreign words, clear explanations and short sentence is important" (2013, p.9). This is mainly due to

the complexity of technical terms and their difficulty to understand; a problem that has been reported by many researchers notably Hamad (2014) and Andriani (2014).

Ferguson (2013) asserts that most ESP courses derive from the exploitation of commercially published textbooks and other authentic sources in a defined subject matter. Nowadays, a large range of these sources are consulted to develop ESP teaching and learning. This urges teachers and users of these materials to analyse and evaluate them before using them in any context.

3.2. Textbook Analysis vs Textbook Evaluation

The processes of analysis and evaluation are conducted by material designers and teachers to ensure the appropriateness of teaching materials to a target situation and audience. Textbook analysis started in the 1980s in the form of **illustrative commentaries** focusing on social viewpoints rather than language analysis itself. This approach developed by the 1990s into **theory-driven analyses** that fall within macro-sociological and macro-linguistic perspectives, where researchers try to reveal the hidden ideology implied behind the use of particular linguistic categories adopting a pragmatic point of view. Later, a **data-driven analysis** has dominated research where the concern is to merely describe ‘what is there’ instead of adopting a theoretical framework (Littlejohn, 2013). Despite the various approaches to textbook analysis, a wide consensus among authors defines analysis as “an objective description that attempts to discover components of a textbook” Zhang (2017, p.81). In other words, researchers describe and report what is in the textbook without evaluating it. Littlejohn (2013, p.264) defines material analysis as “examining materials ‘as they are’, to arrive at a description of those materials, most usually from the vintage point of a framework of analysis”. This implies contrasting the structure and content of a textbook with an established framework. Various frameworks have been used by scholars to analyse different aspects of

textbooks. For science textbooks, Devetak & Vogrinc (2013) assert that a holistic analysis should emphasise both textual and pictorial elements.

The process of textbook analysis can be conducted on its own, but can also precede the process of textbook evaluation. The latter is, in its general sense, “a means analysis intended to serve the learning process” (Rea-Dickins & Germanie, 1993, p.5). In other words, specialists measure the usefulness of a given instructional material by determining its appropriateness according to a defined learners’ category. In a more narrowed conception, the process of materials evaluation is defined by Tomlinson (2011, p.3) as “attempts to measure the value of materials... attempts to predict whether or not the materials will work”. Put differently, this refers to the examination of textbooks for the sake of measuring their potential value in a given context of use. Sheldon (1998) highlights the usefulness of such a process in gaining good insights of the textbook and choosing among a wide range of other teaching materials according to learners’ objectives, needs and interests. Similarly, it allows educators to determine the strengths and weaknesses of a textbook and to grasp an understanding of how it would be better to use it. (Sheldon, 1998; Cunningsworth, 1995).

Littlejohn (2013) points out to the similarities between analysis and evaluation maintaining that “the distinction here, however, is that what is prioritized first is an analysis of the materials and it is only after that is done that the outcome of the analysis is discussed” (p.265). Despite being able to stand on its own, material analysis is believed to precede evaluation as one can only evaluate an aspect of the material after describing it. In addition, unlike material analysis, material evaluation often matches the material with a defined context investigating its appropriateness or degree of suitability (Littlejohn, 2013; Zhang, 2017). In other words, textbook evaluation is often linked with a variable, and attempts to measure the effect of a textbook on a given situation of use.

Evaluations tend to be more focused and more specific than analyses. In this context, Macalister & Nation (2020) point out that “in reality, most evaluations are more narrowly focused” (p.143). This is mainly due to time and effort demands that restrict the scope of evaluation for researchers. Therefore, most studies tend to focus on limited areas of evaluation as it is often more effective and more practical to arrive at answers to research questions.

Studies in this context have mainly explored the concern of developing and evaluating textbooks according to learners’ needs. In ESP context, where course design is determined by the outcome of research identifying diverse learners’ needs, evaluating textbooks is more noteworthy (Hyland, 2005).

4. Innovation in Teaching Materials

Tomlinson (2013, p.203) defines innovation as “something new which aims to be an improvement on what already exists”. That is, the main reason for improving teaching materials is development and progress. This phenomenon is constant in language teaching and learning contexts. Hyland & Wong (2013, p.1) assert that change in teaching materials is essentially “driven by professional dissatisfaction with the status quo in local contexts or increasingly, by the imperatives of quality audits and external course assessments, questions concerning the design”. Put differently, innovation is directed to the goal of improving learning as a result of imperfections noted within the materials or within the teaching curriculum. This results in the selection of more appropriate corpora and course books to design teaching and learning content. Tomlinson (2013) clarifies that change does not necessarily need to be holistic rather “there are some topic innovations in current commercially published coursebooks” (p.205). This is mainly due to publication norms and regulations not allowing a complete reformulation of textbooks. However, in a more narrowed

context, teachers can only adopt new course books when change is necessary (Macalister & Nation, 2020).

4.1. Importance of Innovation in Teaching Materials

Due to the constant change in teaching and learning contexts, the importance of innovation in the use of teaching materials cannot be avoided. Hyland & Wong (2013) explain that,

Change seems to be a constant in our professional lives as teachers. There is almost a continuous progression of modifications to our current situation, sometimes improving matters and sometimes not, sometimes having beneficial effects, and at other times worsening things (p.1)

The statement above associates innovation in teaching materials to teaching and learning contexts marked by daily change. The latter may be due to development of learners' needs or to the desire to encourage diversity in the use of instructional sources to improve the state of learning.

Applying novel models of teaching and making use of more recent instructional materials allows learners to exploit the benefits of development in education. The same way as using computers and internet, the use of more innovative teaching material facilities the acquisition of language and allows teachers to keep in track with current requirements of education.

Conclusion

To conclude, the present chapter has revealed the most relevant aspects related to the current study. It has first provided an overview of English for Specific Purposes (ESP) including English for Medical Purposes (EMP). It has, then, tackled major concepts related to both general English vocabulary and ESP vocabulary. In addition, it has attempted to explain the concepts of textbook evaluation and analysis, highlighting the importance of innovation in teaching materials. Later, it has introduced Nation's (2013) word knowledge taxonomy

including a presentation of the checklist of vocabulary evaluation (2015) designed by Hussin, et al (2015).

Chapter Two: Research Design

Introduction

The aim of this methodological chapter is to describe the corpus selected for the study and to clarify the procedures of data collection and data analysis. In this regard, it consists of three sections. The first section describes the two textbooks under study, namely PEUM (2007) and MTIG (2021). The second section explains the steps followed for collecting data by making use of a sampling technique. The third section uncovers the procedures of data analysis, namely quantitative analysis and qualitative content analysis (QCA).

1. Corpus and Context of the Study

The study is concerned with revealing dimensions of vocabulary knowledge included within two medical English textbooks that are PEUM (2007) and MTIG (2021). In addition, it aims at gaining a deeper understanding of the way vocabulary items are distributed all along the two textbooks. Necessarily, the corpus of the current study consists of both PEUM (2007) and MTIG (2021). While the former is currently used to design medical English courses to students of BA level in the department of English at Mouloud Mammeri University of Tizi Ouzou, the latter is a recently published medical English textbook accessible to both teachers and students in both electronic and printed forms.

1.1. Professional English in Use: Medicine (2007)

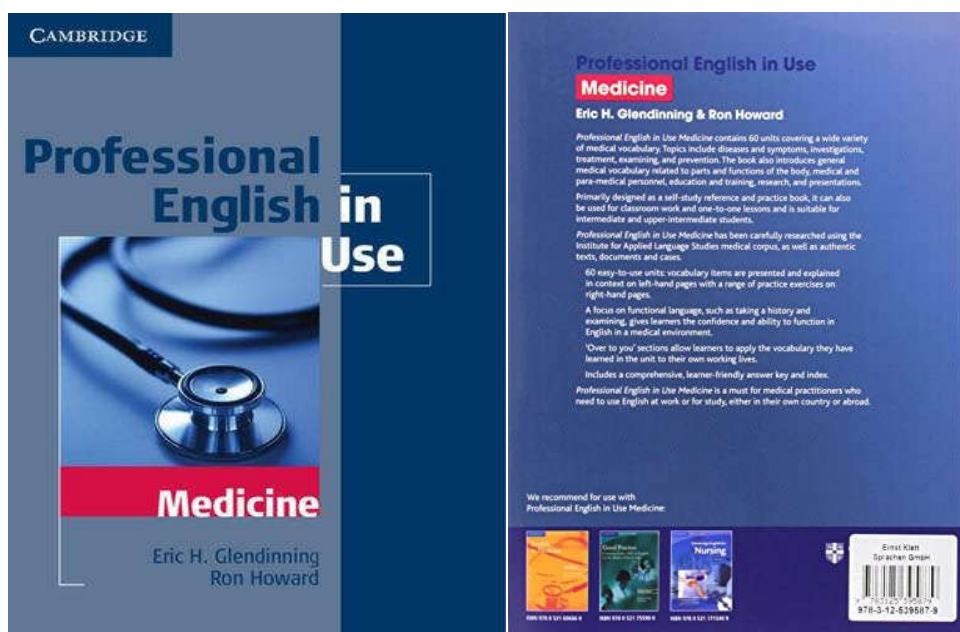


Image 1: PEUM's (2007) front cover

Image 2: PEUM's (2007) back cover

PEUM (2007) is a medical English textbook designed by Glendinning & Howard and published by Cambridge University Press in 2007. This pedagogical document is currently used in the Department of English at Mouloud Mammeri University of Tizi Ouzou to design ESP courses to students of BA level.

The front cover of PEUM (2007) highlights both visual and linguistic component. A picture of a sphygmomanometer occupies the centre of the blue background of the front cover. The title of the book is depicted in bold font along with the edition and the names of the two authors and the publishing house. The book comprises 167 pages where the content of the book is provided on pages 5, 6 and 7.

Similar to the front cover, the back cover includes general information about the textbook contrasted against a dark blue background. The information is essentially a restatement of the title, names of authors and the publishing house, in addition to a brief description of the content of the textbook.

PEUM (2007) comprises fourteen (14) chapters divided into sixty (60) units of study. Each unit is divided into small inclusive titles including a number of activities varied from one unit to the other. Each of these units addresses a specified topic aiming at enlarging learners' medical English knowledge.

1.2. Medical Terminology: An Illustrated Guide (2021)

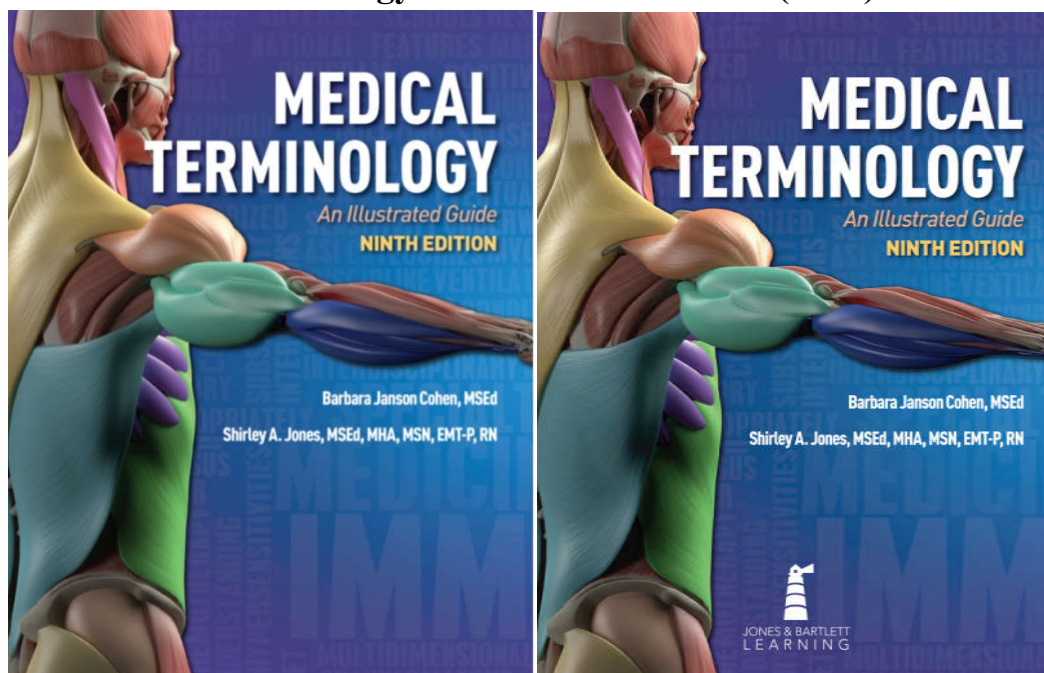


Image 3: MTIG's (2021) front cover

Image 4: MTIG's (2021) back cover

MTIG (2021) is a medical English textbook designed by Cohen & Jones and published by Jones & Barlett Learning in 2021. The current version of the textbook is the ninth edition after it was originally published in 1993.

The front cover of the textbook highlights a coloured anatomical drawing of a human body. Next to it is the title of the textbook depicted in bold font along with the edition, names of the authors, and the publishing house. MTIG (2021) contains 670 pages where the content of the book is provided on pages *v*, *vi*, *vii*, *viii* and *ix*.

Similarly, the back cover of the textbook features the same information as the front cover. However, it adds the symbol and name of the publishing house.

When it comes to its content, MTIG (2021) comprises two major parts divided into sixteen (16) units. The number of sequences within each unit varies according to the content. Similar to PEUM (2007), each unit within MTIG (2021) ends with a number of activities and tasks that are answered at the end of the textbook.

2. Procedures of Data Collection

The general aim of the present study is to identify and compare the way vocabulary knowledge dimensions are distributed in units of both PEUM (2007) and MTIG (2021). Since comparison involves evaluating a similar feature within two contexts, the present study compares similar units of the two textbooks to uncover the difference in the distribution of vocabulary knowledge in the activities of such units. Indeed, a research sample has been selected relying on convenience sampling as it would seem inaccurate to compare units or chapters discussing different themes in order to reveal an already existing difference distinguishing them from one another.

In this context, Etikan et al (2015) defines convenience sampling as “a type of non probability or non-random sampling where members of the target population that meet certain practical criteria... are included for the purpose of the study” (p.2). This definition explains the major point that distinguishes convenience sampling from other types of sampling. This involves selecting members or categories of a research population that possess the desired criteria requested for the study or that are judged “convenient” for the research.

The sample obtained for the study consists of 16 units selected from PEUM (2007) and 11 units taken from MTIG (2021). As some units in PEUM (2007) share the same theme, they

have been grouped together in order to draw a fair comparison between the two textbooks. As a result, each group of units discussing the same topic in PEUM (2007) has been compared to its equivalent in MTIG (2021) as in the following table.

PEUM (2007)	MTIG (2021)
Parts of the body 1	Body structure
Parts of the body 2	
Symptoms and signs	Disease and treatment
The skin 1	Integumentary system
The skin 2	
Mental illness	Nervous system and mental health
The nervous system 1	
The nervous system 2	
The eye	Special senses: eye and ear
The heart and circulation 1	Cardiovascular and lymphatic system
The heart and circulation 2	
The endocrine system	The endocrine system
Blood	Blood and immunity
Respiratory system	Respiratory system
Urinary system	Urinary system
Urinary system	
Pregnancy and childbirth	Female reproductive system: pregnancy and birth

Table 01: Units of study in PEUM (2007) and their equivalents in MTIG (2021)

Activities within each unit of the two textbooks have been subject to the analysis. Each of these activities is meant to develop one or more dimensions of learners' vocabulary knowledge. Examples taken from "Parts of the body 1" and "Body structure" are cited below.

2.4. Complete the table with words from the box. The first one has been done for you.

abdomen	elbow	loin	wrist	thigh
knee	chest	arm	leg	finger

Trunk	Upper limb	Lower limb
abdomen		

PEUM (2007) p: 13

As mentioned earlier, Nation (2013) regards knowing a word as a combination of three aspects of knowledge, notably the form, the meaning and the use as depicted in the table below.

Form	Spoken Written Word part
Meaning	Form and meaning Concept and referents Associations
Use	Grammatical functions Collocations Constraints on use (register, frequency...)

Table 02: Nation's (2013) word knowledge taxonomy

As mentioned in the previous chapter, and based on table 02, there are three dimensions of vocabulary knowledge. The first dimension, that is the **form**, refers to the orthography and morphology of a word. That is, it involves being familiar with the spelling of a word and its original and inflectional forms derived by means of prefixes and suffixes. The second dimension of word knowledge is the **meaning**. It involves being familiar with the various meanings a word can get, as well as its associations as its referents. The last dimension of word knowledge is the **use**. It refers to one's ability to use a word in a context. This covers the grammatical functions of words, as well as their collocations.

In the present study, dimensions of vocabulary knowledge have been identified in tasks of both PEUM (2007) and MTIG (2021). Percentages of word knowledge aspects namely **form**, **meaning** and **use** have been calculated by using the rule of three that is one of the descriptive statistical methods.

Additionally, the two textbooks have been analysed according to Hussin, et al (2015) checklist for evaluating the presentation of vocabulary in EFL and ESP textbooks. This checklist has been selected as it fits the requirement of the current investigation. It covers

eleven (11) principles that stress vocabulary **distribution**, **contextualization** and **newness** as depicted in the following table.

1. The load (number of new words in each lesson) is appropriate to the linguistic level of students.
2. There is a balance of simple and complex words.
3. Good distribution of vocabulary load across the whole book.
4. New words are repeated across the book for delayed recall.
5. New words are contextualized.
6. Visuals have been used effectively to present the new vocabulary.
7. The topical nature of vocabulary exercises is often meaningful to the students.
8. New lexical items appear in each unit.
9. There is a specific method to teach new vocabulary.
10. The sentence and examples that define new vocabulary use words that are known by learners.
11. There is an index of new vocabulary at the end of the textbook.

Table 03: Hussin, et al (2015) checklist of vocabulary evaluation

Vocabulary tasks in PEUM (2007) and MTIG (2021) have been analysed based on a quantitative method. Moreover, principles of the checklist have been contrasted with both textbooks using qualitative content analysis. As a consequence, the present investigation adopts a mixed methods research for data analysis.

Conclusion

This chapter has highlighted the research design of the study explaining the way the investigation has been conducted. It has first described the corpus of the present research, namely the two textbooks PEUM (2007) and MTIG (2021). Additionally, it has clarified the procedures of selecting data from the corpus by using convenience sampling. It has, then, explained the steps followed to analyse the data by making use of both quantitative analysis and qualitative content analysis (QCA). Moreover, this section has reviewed Nation' (2013) taxonomy of vocabulary knowledge and Hussin, et al (2015) checklist of vocabulary evaluation.

Chapter Three: Presentation of the Findings

Introduction:

This chapter is descriptive and presents the outcomes of data analysis arrived at by means of quantitative analysis and qualitative content analysis (QCA). It first covers the distribution of vocabulary tasks per unit in both PEUM (2007) and MTIG (2021). It also demonstrates the finding obtained by applying Nation's (2013) taxonomy of vocabulary dimensions on vocabulary tasks within both textbooks. Additionally, it presents the outcomes of qualitative content analysis (QCA). These are arrived at by contrasting the three categories of vocabulary **distribution, contextualisation** and **newness** in Hussin, et al (2015) checklist against PEUM (2007) and MTIG (2021). The results in this chapter are presented in the form of tables, and bar diagrams. This section ends with a comparison between the two textbooks.

1. The Number of Tasks in PEUM (2007)

So as to uncover dimensions of word knowledge in vocabulary activities of PEUM (2007), it is essential to identify the number of tasks in each unit of the textbook. This allows calculating the percentage of representation of each dimension of word knowledge. Results are represented in the next table.

Parts	Units	N° of vocabulary tasks
Basics	1. Parts of the body 1	4
	2. Parts of the body 2	3
Systems, diseases and symptoms	3. Blood	4
	4. The endocrine system	4
	5. The eye	3
	6. The heart and circulation 1	4
	7. The heart and circulation 2	3
	8. Mental illness	4
	9. The nervous system 1	3
	10. The nervous system 2	4
	11. Pregnancy and childbirth	3
	12. Respiratory system	3
	13. The skin 1	4
	14. The skin 2	4
	15. Urinary system	4
	16. Symptoms and signs	4

Table 04: Distribution of tasks per unit in PEUM (2007)

Table 04 indicates the number of vocabulary tasks per unit in PEUM (2007). The number varies from 3 to 4 vocabulary tasks indicating a minimal change from a unit to the other.

2. The Number of Tasks in MTIG (2021)

Similar to PEUM (2007), identifying the number of tasks per unit allows calculating the percentage of each dimension of vocabulary knowledge in the textbook. Units in MTIG (2021) end with a number of exercises, review activities and case study tasks. The number of vocabulary tasks per unit is depicted in the table below.

Parts	Units	N° of Vocabulary tasks
Introduction to medical terminology	1. Body structure	24
	2. Disease and treatment	25
Body systems	3. Integumentary system	17
	4. Nervous system and mental health	26
	5. Special senses: Ear and eye	23
	6. Endocrine system	19
	7. Cardiovascular and lymphatic system	21
	8. Blood and immunity	20
	9. Respiratory system	20
	10. Urinary system	24
	11. Female reproductive system: Pregnancy and birth	24

Table 05: number of tasks per unit in MTIG (2021)

3. Dimensions of Word Knowledge in PEUM (2007) and MTIG (2021)

In order to identify dimensions of vocabulary knowledge included in PEUM (2007) and MTIG (2021), Nation's (2013) word knowledge taxonomy has been applied to vocabulary tasks of both textbooks. Later, units of PEUM (2007) that introduce similar themes have been grouped together and compared to their equivalents in MTIG (2021) (see chapter 2). Results are represented in the following diagrams:

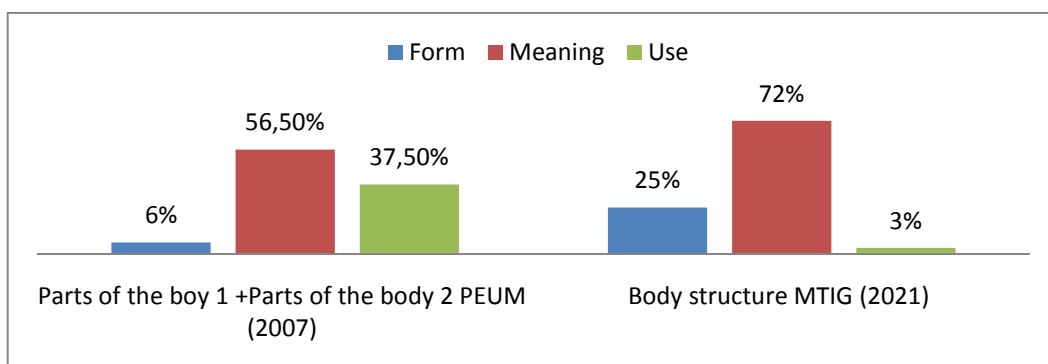


Diagram 01: Comparison between “body structure”, a unit of MTIG (2021) and “Parts of the body 1 + Parts of the body 2”, two units of PEUM (2007)

Diagram 01 demonstrates the difference in the distribution of vocabulary dimensions in the units of both textbooks. Both aspects of meaning and form are highlighted more in

“body structure” compared to “parts of the body 1+ parts of the body 2”. However, the dimension of use is more developed in “parts of the body 1+ parts of the body 2”.

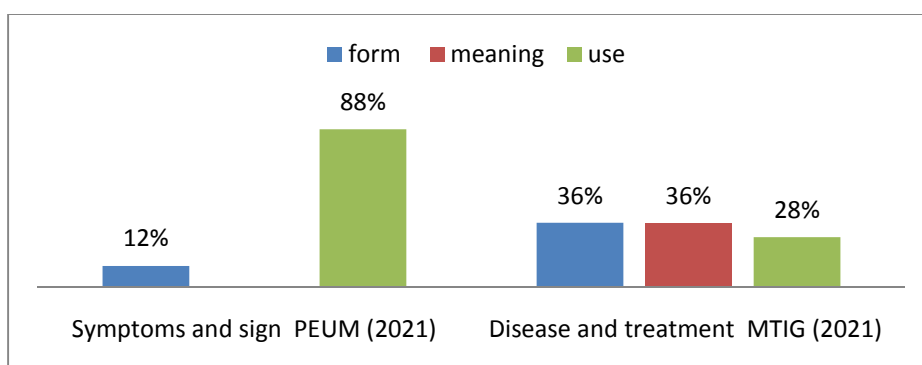


Diagram 02: Comparison between “Symptoms and signs”, a unit of PEUM (2007) and “Disease and treatment”, a unit of MTIG (2021).

Diagram 02 compares the distribution of vocabulary dimensions within units of both textbooks. The aspect of use is more included in “symptoms and signs” compared to “disease and treatment”. However, the latter includes higher percentages of both aspects of meaning and form.

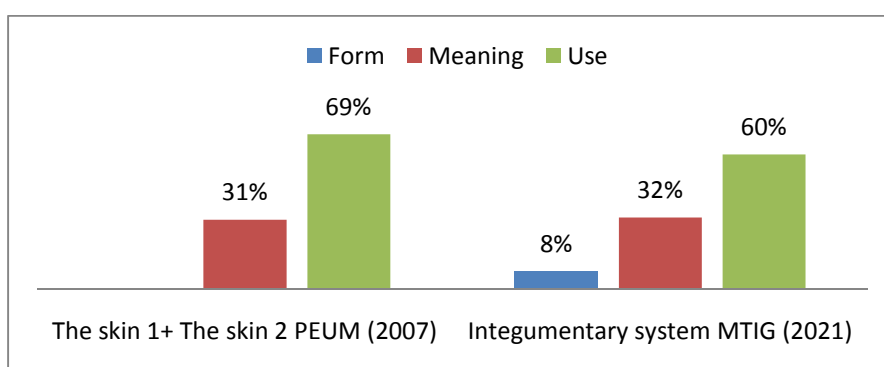


Diagram 03: Comparison between “Integumentary system”, a unit of MTIG (2021) and its equivalents in PEUM (2007) namely “The skin 1+ The skin 2”

Diagram 03 compares the distribution of vocabulary in equivalent units of both textbooks. It shows that the aspects of meaning and from are more included in tasks of

“Integumentary system” compared with “The skin 1+ The skin 2”. These; however, feature more percentage of the dimension of use.

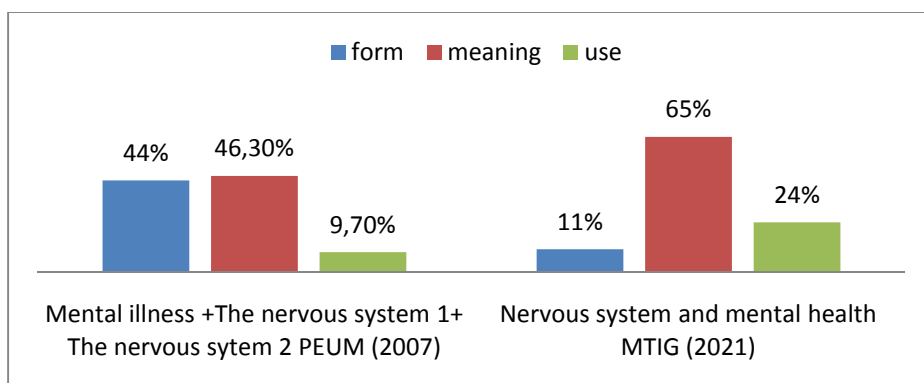


Diagram 04: Comparison between “Nervous system and mental health”, a unit of MTIG (2021) with its equivalents in PEUM (2021) namely “Mental illness+ The nervous system 1+ The nervous system 2”

Diagram 04 compares the distribution of vocabulary dimensions in three units of PEUM (2007) and their equivalent in MTIG (2021). The diagram shows that both aspects of meaning and use are more included in “Nervous system and mental health”, while the aspect of form is more featured in “Mental illness+ The nervous system 1+ The nervous system 2”

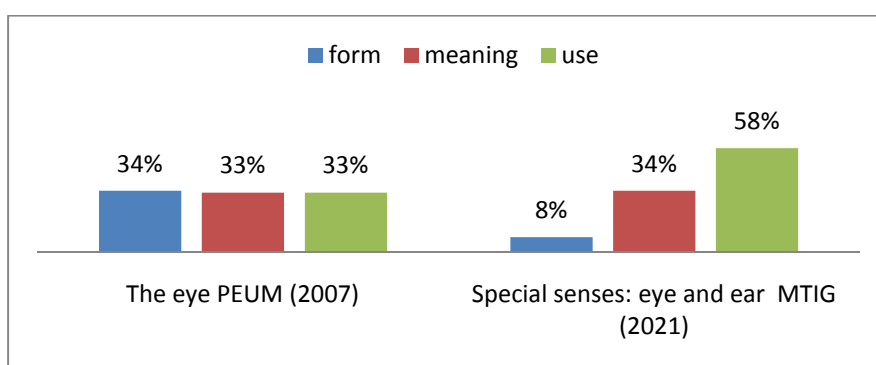


Diagram 05: Comparison between unit “The eye”, a unit of PEUM (2007) with its equivalent in MTIG (2021) namely “Special senses: eye and ear”

Diagram 05 compares the distribution of vocabulary dimensions in “The eye” and “Special sense: eye and ear”, units of PEUM (2007) and MTIG (2021) respectively. While the aspects of meaning and use are more highlighted in “Special senses: eye and ear”, the aspect of form is more featured in “The eye”.

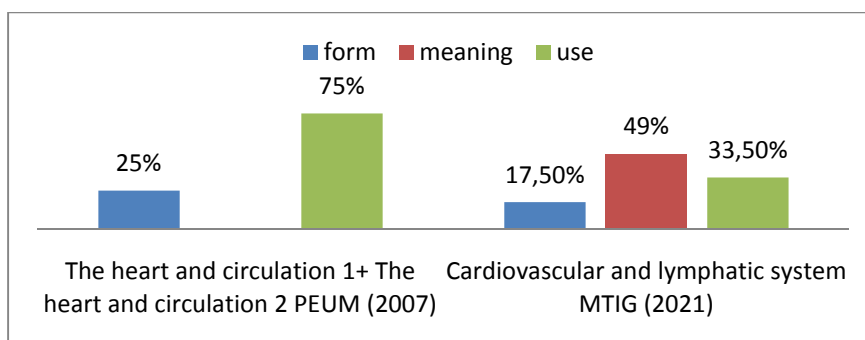


Diagram 06: Comparison between “Cardiovascular and lymphatic system”, a unit of MTIG (2021) with its equivalents in PEUM (2007) namely “The heart and circulation 1+ The heart and circulation 2”

Diagram 06 compares the distribution of vocabulary dimensions in “Cardiovascular and lymphatic system”, a unit of MTIG (2021) with its equivalents in PEUM (2007) that are “The heart and circulation 1+ The heart and circulation 2”. These include more percentages of both dimensions of use and form compared with “Cardiovascular and lymphatic system”. The latter, on the other hand, includes more percentages of the dimension of meaning

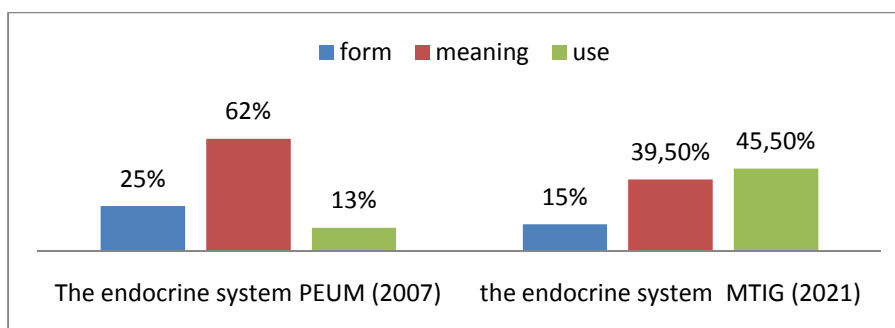


Diagram 07: Comparison between equivalent units of PEUM (2007) and MTIG (2021) entitled “The endocrine system”

Diagram 07 compares the distribution of vocabulary dimensions in “The endocrine system”, a unit of both textbooks. It shows that the dimensions of meaning and form are more included in tasks of PEUM (2007), while the dimension of use is more featured in MTIG (2021)

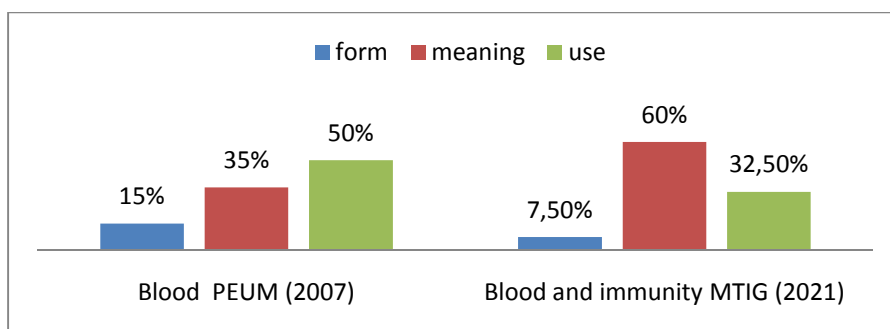


Diagram 08: Comparison between unit “Blood”, a unit of PEUM (2007) and “Blood and immunity”, a unit of MTIG (2021)

Diagram 08 compares the distribution of the three dimensions of vocabulary knowledge “Blood” and “Blood and immunity”, units of PEUM (2007) and MTIG (2021) respectively. It shows that while the dimensions of use and form are more featured in “Blood”, the dimension of meaning is more included in vocabulary tasks in “Blood and immunity”

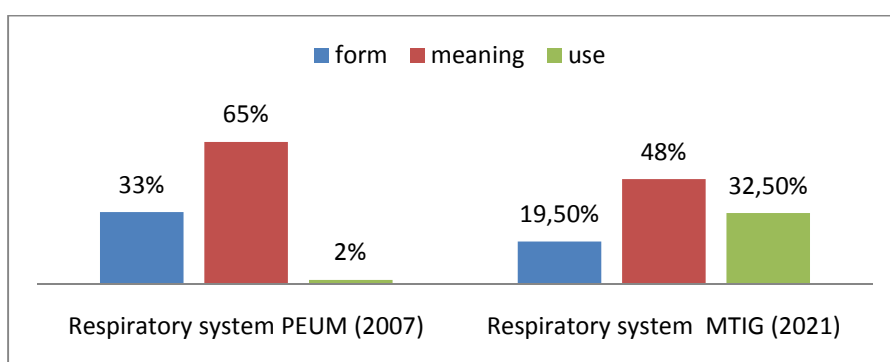


Diagram 09: Comparison between a unit of PEUM (2007) and its equivalent in MTIG (2021) entitled “Respiratory system”

Diagram 09 compares the distribution of vocabulary in “Respiratory system”, a unit of both PEUM (2007) and MTIG (2021). It shows that both dimensions of meaning and form are more included in tasks in PEUM (2007) compared with MTIG (2021). However, the latter features a higher percentage of dimension of use

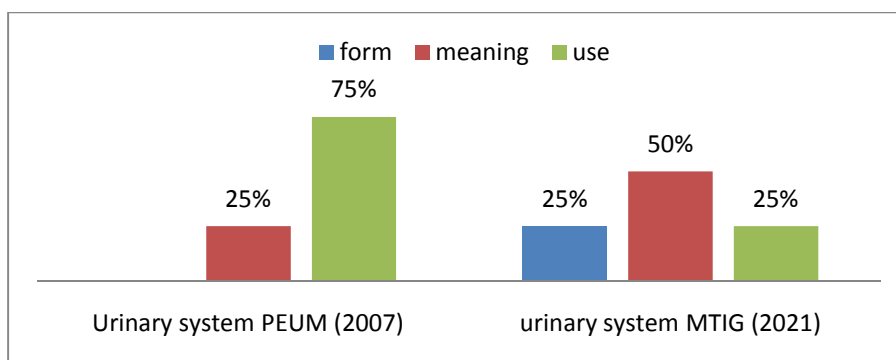


Diagram10: a comparison between two units of PEUM (2007) and (MTIG) (2021) entitled “Urinary system”

Diagram 10 compares the distribution of vocabulary dimensions between units of PEUM (2007) and MTIG (2021) entitled “Urinary system”. It demonstrates that while the dimensions of meaning and form are more included in tasks of MTIG (2021), the dimension of use is more featured in PEUM (2007).

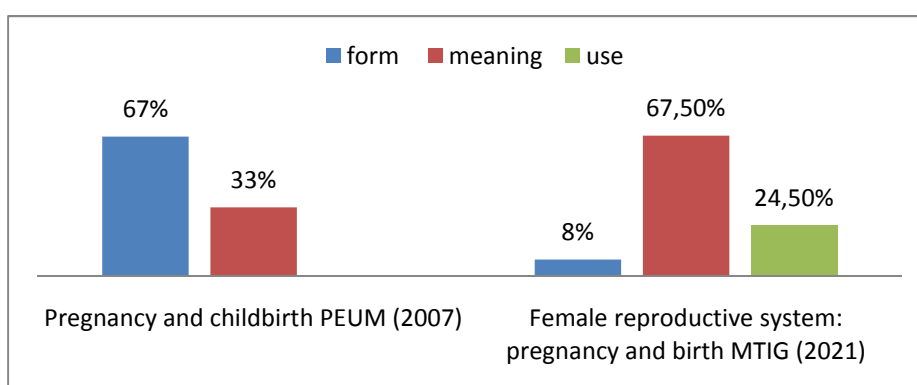


Diagram 11: Comparison between “Pregnancy and childbirth”, a unit of PEUM (2007) with “Female reproductive system: pregnancy and birth”, a unit of MTIG (2021)

Diagram 11 compares the distribution of dimensions of vocabulary knowledge in units of both textbooks. It shows that while the dimensions of meaning and use are more featured in “Female reproductive system: pregnancy and birth”, the dimension of form is more included in “Pregnancy and childbirth”

The previously mentioned outcomes of applying Nation’s (2013) taxonomy of word knowledge to vocabulary tasks of both PEUM (2007) and MTIG (2021) allow to draw a comparison between equivalent units under study of both textbooks. That is, they indicate percentages of dimensions of vocabulary knowledge stressed in single units rather than in a whole textbook. So as to obtain comparative results of both textbooks, percentages representing each aspect are combined together all along the units of both PEUM (2007) and MTIG (2021) resulting in the following

Vocabulary dimensions	Textbook	
	PEUM (2007)	MTIG (2021)
Form	16.4%	23.7%
Meaning	50.3%	35.2%
Use	33.3%	41.1%
Total	100%	100%

Table 06: Percentages of vocabulary dimensions depicted all along the units of PEUM (2007) and MTIG (2021)

The table shows the distribution of dimensions of vocabulary knowledge in the form of percentages for the two textbooks. Based on the table, the dimension of **form** is represented with 16.4% in PEUM (2007) and with 23.7% in MTIG (2021). Accordingly, the dimension of **meaning** is represented with 50.3% in PEUM (2007) and with 35.2% in MTIG (2021). Furthermore, the dimension of **use** is represented with 33.3% in PEUM (2007) and with 41.1% in MTIG (2021).

4. Qualitative analysis of the two Textbooks using Hussin, et al (2015) checklist of vocabulary analysis

The checklist designed by Hussin, et al (2015) has been applied to both PEUM (2007) and MTIG (2021). It comprises 11 principles covering vocabulary **distribution**, **contextualization** and **newness**. The checklist has been applied to both textbooks; resulting in the following:

Principle	Needs improvement	Average	good
1. The load (number of new words in each lesson) is appropriate to the linguistic level of students.			X
2. There is a balance of simple and complex words.		X	
3. Good distribution of vocabulary load across the whole book.		X	
4. New words are repeated across the book for delayed recall.	X		
5. New words are contextualized.			X
6. Visuals have been used effectively to present the new vocabulary.	X		
7. The topical nature of vocabulary exercises is often meaningful to the students.			X
8. New lexical items appear in each unit.		X	
9. There is a specific method to teach new vocabulary.			X
10. The sentence and examples that define new vocabulary use words that are known by learners.			X
11. There is an index of new vocabulary at the end of the textbook.			X

Table 07: Analysis of vocabulary in PEUM (2007) using Hussin, et al (2015) checklist.

The table shows 2/11 principles in the textbook that need improvement. In addition, 3/11 principles in the checklist are judged to be of average scale. The remaining 6/11 principles are found to be of good representation in PEUM (2007).

Principle	Needs improvement	Average	Good
1. The load (number of new words in each lesson) is appropriate to the linguistic level of students.		X	
2. There is a balance of simple and complex words.			X
3. Good distribution of vocabulary load across the whole book.		X	
4. New words are repeated across the book for delayed recall.	X		
5. New words are contextualized.			X
6. Visuals have been used effectively to present the new vocabulary.			X
7. The topical nature of vocabulary exercises is often meaningful to the students.			X
8. New lexical items appear in each unit.			X
9. There is a specific method to teach new vocabulary.			X
10. The sentence and examples that define new vocabulary use words that are known by learners.			X
11. There is an index of new vocabulary at the end of the textbook.			X

Table 08: Analysis of vocabulary in MTIG (2021) using Hussin, et al (2015) checklist

The table shows that 1/11 principle is judged to be in need for improvement. In addition, 2/11 principles are of average representation in MTIG (2021). The rest 8 principles are of good representation in the textbook.

Based on the outcomes represented in this chapter, vocabulary activities of both textbooks focus more on the inclusion of the aspects of **meaning** and **use** compared to the aspect of **form**. However, the aspect of **meaning** is highlighted more in PEUM (2007) compared with MTIG (2021). The latter; however, features more inclusion of both aspects of **form** and **use**. In addition, the distribution of the three dimensions of vocabulary knowledge is almost regular all along MTIG (2021) compared with PEUM (2007), where a significant gap is noticed between the percentages representing vocabulary knowledge dimensions.

Accordingly, vocabulary distribution, contextualisation and newness are more respected in MTIG (2021) compared with PEUM (2007). As an example, most principles in the checklist discussing vocabulary distribution are judged to be of good representation in the checklist when it comes to MTIG (2021). On the other hand, these principles are mostly considered to be in need for improvement in PEUM (2007).

To sum up, vocabulary tasks in both textbooks display a difference in the distributions of vocabulary knowledge dimensions. Similarly, they feature differences in vocabulary distribution, contextualisation and newness as well.

Conclusion:

This chapter has demonstrated the findings of the current study in the form of tables and bar diagrams. These results are the outcome of applying Nation's (2013) taxonomy of vocabulary dimensions to tasks within PEUM (2007) and MTIG (2021). In addition, the chapter has presented the results of the analysis of both textbooks using Hussin, et al (2015) checklist. The units under study have been selected using convenience sampling to ensure a fair and valid comparison between both medical English textbooks. In this section, results have been merely described with no interpretation; however, they are to be explained and discussed in the following chapter.

Chapter Four: Discussion of the Findings

Introduction

This chapter relates to the discussion of the findings obtained by applying Nation's (2013) taxonomy of vocabulary knowledge dimensions to vocabulary tasks of PEUM (2007) and MTIG (2021). In addition, it discusses the outcomes arrived at by analysing both PEUM (2007) and MTIG (2021) using Hussin, et al (2015) checklist. These findings are the result of making use of both qualitative and quantitative analysis. The chapter first discusses the numerical findings resulting from the comparison of both textbooks in terms of vocabulary knowledge dimensions. It, then, moves to discuss the results of the checklist applied to both textbooks to evaluate vocabulary distribution, contextualisation and newness.

1. Discussion of the outcomes obtained from applying Nation's (2013) taxonomy of word knowledge on PEUM (2007) and MTIG (2021)

Research results obtained by means of quantitative analysis have reported a variation in the distribution of vocabulary knowledge dimensions in the two textbooks. Findings pertaining to each aspect of word knowledge are discussed below.

a. The Dimension of Form

The inclusion of the aspect of form in vocabulary activities develops the ability to produce words in both spoken and written forms. In this regard, Nation (2013) links the aspect of form to productive knowledge as he maintains that "Productive carries the idea that we produce language forms by speaking and writing" (p.47). That is, being aware of the orthographical form of words contributes to language productivity.

As represented in the results section (see table 06), the dimension of form occupies 16.4 % of vocabulary activities in PEUM (2007) and 23.7% in MTIG (2021). Despite the slight difference between the two percentages, both are still insufficient especially compared to the number of tasks given for each unit of study. Indeed, Compared to PEUM (2007), activities in

MTIG (2021) are more detailed and more numerous where one unit of the textbook can include up to 26 vocabulary tasks. The design of activities in MTIG (2021) follows a single pattern all along the textbook starting with exercises provided at the end of each unit. These are followed by chapter review exercises designed to test knowledge of the chapter material and appear at the end of each unit. Later, a series of case studies and case study questions present medical terminology and put terminology in real-world contexts. On the other hand, the design of vocabulary activities in PEUM (2007) is different even though it does follow its own pattern. Activities in PEUM (2007) vary from 3 to 4 tasks provided at the end of each unit. Even though both textbooks include a series of vocabulary tasks, these insufficiently represent the aspect of form. This may be due to the nature of EMP textbooks. Indeed, the orthography of words is linked to basic grammatical knowledge and word morphology. These aspects are taught in general English studies rather than in ESP context. In other words, instead of developing one's ability to produce correct orthographical forms of words in speaking and writing, ESP mainly introduces learners to the semantic aspect of words and seeks to encourage their ability to remember technical terms in a respective discipline. As a matter of fact, it is expected to find a minimal inclusion of the aspect of form in both textbooks.

By taking a closer look at the representation of the dimension of form in units of both PEUM (2007) and MTIG (2021), it is to be noticed that this aspect is more developed in units discussing themes of illnesses and abnormalities in the human body and units that introduce learners to basic medical terms. This is noticed in diagrams 01, 02 and 04, where the percentage representing the dimension of form in both textbooks goes from 5% to 45%. Indeed, most diseases get their name by an addition of suffixes and/or prefixes to commonly used words in general English language. An example of these is the word "Attention Deficit Hyperactivity Disorder or ADHD", that is a behavioural disorder. The words composing this

medical term are used in general English language and are formed by the addition of suffixes to both verbs and adjectives. Similarly, units introducing common medical terms labelling parts of the body follow the same process. Words such as “abdomen” and “thorax” are simple roots able to undergo inflection. Adding the suffixes (-al) and (-ic) would allow the formation of the adjectives “abdominal” and “thoracic”. That is, introducing users to a new medical term in these units is followed by an explanation of the way the term is inflected. Consequently, activities in both textbooks develop learners’ ability to form new medical terms.

It is worth mentioning that activities in the remaining units under study do also develop learners’ ability to produce correct spoken and written forms of words. However, they mostly focus on other dimension at the expense of the aspect of form. By taking a look at diagram 03, that represents units concerned with introducing medical terminology labelling various components of the integumentary system, it is to be noticed that the dimension of form is represented with only 8% in MTIG (2021) and with a null percentage in PEUM (2007) . Most of the terminology in these units constitutes of complex medical terms formed by adding prefixes and/or suffixes to roots. A word such as “Epidermis” is formed by adding the prefix (epi-) meaning upon to the root (-derm) that is the skin. The word “epidermis” as a whole refers to the outermost layer of the skin. Due to the complexity of these medical terms, activities in these units prioritise the semantic over the orthographical aspect as acquiring the meaning of a medical term remains the priority in EMP textbooks.

b. The Dimension of Meaning:

The meaning of words is linked to vocabulary depth. The latter, as defined by Harkio & Pietilä (2016) refers to “how well ... words are known” (p. 1079). That is, it refers to one’s ability to recognise words when presented in different contexts. In the context of medical

English, learning the meaning of medical terms is prioritised as EMP evolves mainly around vocabulary acquisition.

Results depicted in the previous chapter indicate that the aspect of meaning is significantly represented in both PEUM (2007) and MTIG (2021) where it holds 50.3% and 35.2% respectively. Compared to the representation of other aspects in PEUM (2007), the aspect of meaning is heavily stressed as it holds more than the percentages of the aspects of form and use combined (see table 06). In addition, the dimension of meaning is more highlighted in PEUM (2007) compared to MTIG (2021). Activities in PEUM (2007) are designed to develop one's ability to remember newly introduced medical terminology. As an example, the textbook includes tasks of defining medical terms and of matching words to their definitions. In fact, such activities are of a mechanic nature and are designed for passive acquisition of medical terminology. In this context, Nation (2013) states that "receptive carries the idea that we receive language input from others through listening or reading and try to comprehend it... will use the terms meaning recognition and meaning recall for receptive knowledge" (p. 47).

The above statement associates the recognition of meaning of different words to passive and receptive knowledge that takes place with the presence of external stimuli. Therefore, focusing solely on developing the dimension of meaning in textbooks develops passive instead of active learning.

As observed in the results chapter, the dimension of meaning holds only 35.2% in MTIG (2021). In fact, activities in MTIG (2021) include several dimensions of vocabulary activities at once instead of developing each dimension per task. This may explain the almost equal distribution of vocabulary knowledge dimensions across the textbook in comparison with PEUM (2007), where the gap between the percentages representing each aspect is significant.

Additionally, vocabulary tasks in MTIG (2021) focus on examining relationships between words and help building semantic networks instead of encouraging the memorisation of new definitions through mechanic tasks. In this regard, active rather than passive learning is developed in MTIG (2021).

To sum up, even though both textbooks feature sufficient percentages of the dimension of meaning, the heavy focus of the latter in PEUM (2007) results in encouraging passive vocabulary acquisition and neglecting the other dimensions of word knowledge.

c. The Dimension of Use

Using vocabulary in a context refers to putting words in real life situations. In this regard, Amirian & Momeni (2012) maintain that “by learning words in context, the learner acquires not only linguistic knowledge of a word such as phonetic, syntactic and semantic rules, but also the knowledge of how to use the word properly in a context” (p.2302).

The above statement highlights the importance of presenting words in context-based situations. This allows an understanding of both meaning and orthography of words, in addition to grammatical functions and collocations. Based on the results of the previous chapter, the dimension of use is represented with a higher percentage in MTIG (2021) compared to PEUM (2007) where it holds 41.1% and 33.3% respectively. In fact, within MTIG (2021), the dimension of use is represented with the highest percentage in comparison to other dimensions of form and meaning. This encourages acquiring different dimensions of a word at the same time. As an example, diagram 03 representing units “the skin 1+the skin 2” and “integumentary system”, units of PEUM (2007) and MTIG (2021) respectively, feature a percentage of more than 60% dedicated to the aspect of use only. By taking a closer look at the nature of vocabulary tasks in these units, one would notice the presence of collocations of medical terms in these activities. Indeed, they do not only develop the meaning of words, but also clarify various grammatical functions a vocabulary item can adopt

in a comprehensive sentence. The dominance of the aspect of use is perceived as a positive point, as learners generally face difficulties in using newly acquired words in a context.

The logical order of learning a word imposes one to start from its semantic and orthographical aspect and then move to learn the correct way of using it. That is, by using an EMP textbook, one is expected to find a great focus on the aspect of use instead of the other aspects. This is the case in MTIG (2021), but the same cannot be concluded about PEUM (2007). In fact, most activities in the latter do not seem to give importance to the aspect of use. Newly introduced medical terms are contextualised in the lecture rather than in the activities.

Indeed, as explained earlier, tasks in MTIG (2021) include several dimensions of word knowledge within one single activity. In addition, they focus primarily on context-based acquisition rather than definition-based vocabulary learning. The latter is discouraged in vocabulary learning as “the learner becomes familiar with just one meaning of the word and this leads to only a shallow level of word knowledge” (Amirian & Momeni, 2012). From the analysis, it is shown that the presentation of the aspect of use is of average representation in both textbooks. In fact, however important context-based learning may be, it is not to overpower the other dimensions of meaning and form as this would neglect the morphological and semantic features of the word itself.

2. Discussion of the Results Obtained from Applying Hussin, et al (2015) Checklist of Vocabulary Evaluation on PEUM (2007) and MTIG (2021)

Principles within the checklist of vocabulary evaluation (2015) can be classified into three categories that discuss vocabulary **distribution, contextualisation** and **newness**.

2.1. Vocabulary Distribution

This refers to parameters of frequency, rehearsal and repetition of vocabulary all along units of the textbooks. In this context, Calude & Pagel (2014) maintain that the effects of rehearsal and repetition affect all levels of vocabulary acquisition. Indeed, they claim that “these effects are pervasive across all levels, from the graphic symbols used to write down passages of text, to the sound patterns involved in uttering them, and the morphology and lexical levels, right up to the grammatical structures observed” (2014, p. 46)

As a matter of fact, through constant exposure to vocabulary items, chances of long term acquisition are increased. From the checklist, the first four principles can be classified in vocabulary distribution (see table 03). Considering that both PEUM (2007) and MTIG (2021) are EMP textbooks designed for adult learners, the number of words to be introduced per lesson is not fixed, as Azamatovna (2021, p.423) claims that “to develop students’ communicative competence, language teachers should encourage them to learn as many words as possible”. Therefore, the more words are included, the more effective the acquisition of medical terms is to be for learners. Necessarily, the number of words introduced in each unit of study is appropriate to the level of students. As the process of introducing medical terminology in both textbooks follows a regular pattern, it is to be concluded that these words are well distributed.

However, such words are not repeated in later units of study. In both PEUM (2007) and MTIG (2021), each unit of study introduces a theme that is never discussed in other units. Medical terminology introduced at the beginning of the textbooks is not repeated in later chapters. This is due to the nature of medical textbooks. Unlike EGP textbooks meant to develop language skills, EMP textbooks rely on learners’ background knowledge of both the English language and the medical domain. Necessarily, they are not designed in a way that

would allow rehearsal of vocabulary items in later chapters but introduce each theme separately from the other. This aspect may hinder the ability to memorise complex medical terms as chances of encountering them is limited even within a single unit. This is more applicable to PEUM (2007), where one unit of study discussing a theme is given only two (02) pages: one for introducing the topic and the other for activities. This, as a matter of fact, limits one's chances of encountering a newly introduced medical term for more than once. Consequently, it negatively affects learners' ability to memorise it.

In MTIG (2021), there is a balance of simple and complex words throughout the units of the textbook. New terms are introduced in the form of definitions. In addition, each unit of the textbook includes terminology tables and key terms that provide simple and clear definitions. However, this is not the case when it comes to PEUM (2007). Even though the latter features few terminology tables presented at the end of the textbook, medical terms in its units are introduced in the form of context-based content. Such an approach is beneficial as it links vocabulary items to real life situations; however, it may not be suitable to teach complicated medical terminology as it involves inferring meaning of words from a context, rather than providing direct definitions. As inferring depends on learner's ability to draw the meaning of a word based on surrounding input, it can result in errors especially if the word is complicated.

2.2. Vocabulary Contextualisation

As previously introduced in this chapter, vocabulary contextualisation refers to “learning from extensive reading, learning from taking part in conversations, and learning from listening to stories, films, television or the radio” Nation (2013, p.348). In the context of using a textbook to learn medical terminology, learning from context involves understanding words based on the situation they are used in. From the checklist, principle 5, 7, 9 and 10 cover

vocabulary contextualisation. Indeed, in both textbooks, vocabulary items are contextualised. In PEUM (2007), new medical terminology is introduced in context-based situations, and is practised in vocabulary tasks that stress the dimension of use. Similarly, in MTIG (2021), case studies and case study questions provide real-life medical situations that allow learners to practise newly acquired medical terms. Based on the results of the previous chapter, the dimension of use is indeed featured in both textbooks with acceptable percentages. Thus, vocabulary tasks encourage learners to use medical terms in real life meaningful situations. Therefore, vocabulary contextualisation is presented in both PEUM (2007) and MTIG (2021).

2.3. Vocabulary Newness

Hussin, et al (2015) checklist of vocabulary evaluation has been specifically selected for the current study as it includes the feature of vocabulary newness. The latter may not seem significant in literary studies, but is of paramount importance in EMP studies. Indeed, as previously explained in the dissertation, change in ESP vocabulary is mostly the result of change in the defined subject matter. In fact, the last principle in the checklist stresses vocabulary newness. It discusses the inclusion of an index of new vocabulary at the end of both textbooks. It is worth mentioning that this principle does not refer to the inclusion of recent medical terms, rather it simply reflects introducing vocabulary items not previously mentioned in units of the textbooks. Indeed, both PEUM (2007) and MTIG (2021) include detailed indexes featuring new terminology that has not been introduced in earlier units under study. The importance of indexes has been highlighted by Adetoro (2014, p. 12) who maintains that “indexes are needed to provide effective shortcuts to needed information”. This would allow users of the textbook to immediately find medical terms they are searching for in the textbook.

Vocabulary newness can also be linked to the appropriateness of the textbook according to the requirements of education and current curriculum. Necessarily, using a textbook published few years ago may raise questions concerning its appropriateness to the current teaching and learning situation. In this regard, Macalister & Nation (2020, p. 182) point out that “because teaching must be matched to the learners’ current knowledge, course books will not be effective because they are not in touch with the state of this knowledge”. This does not mean that newly published textbook fully fulfil the requirements of learning. Indeed, ESP course design is based on the context of study in that adopting a textbook involves addressing the needs of the target situation. As Littlejohn (2013, p. 203) stresses, “an evaluator would need to set out precisely which aspects of the materials are appropriate or inappropriate and why”. However, considering that PEUM (2007) is currently used as an instructional material in many contexts including the Department of English at Mouloud Mammeri University of Tizi Ouzou, it is legitimate to assume that the textbook is still up-to-date. Consequently, and as far as PEUM (2007) and MTIG (2021) are concerned, the principle of newness is respected as both textbooks introduce new medical terms that march with the requirements of the curriculum of study.

Principle 6 in Hussin, et al (2015) checklist discusses the presentation of visuals in the textbooks. This principle is not the concern of the current study, as this work merely seeks to analyse vocabulary items in PEUM (2007) and MTIG (2021). However, for the sake of giving a closer look of both textbooks, and considering that the visual element plays a role in introducing new vocabulary items, the checklist has not been adopted to the demands of this research. In MTIG (2021), coloured images and detailed anatomical drawings are used as aids to support the introduction of new terms. Similarly, visuals are used as aids to present vocabulary in PEUM (2007). However, these pictorial elements are more detailed in MTIG (2021) as images are represented in black and white in PEUM (2007).

From what has been discussed above, the way vocabulary knowledge dimensions have been distributed in vocabulary tasks differs from PEUM (2007) to MTIG (2021). Indeed, in both textbooks, the dimensions of meaning and use are more included in vocabulary tasks compared to the dimension of form. This answers the first research question and confirms the first hypothesis in that the semantic and syntactic dimensions of vocabulary knowledge are more highlighted in both PEUM (2007) and MTIG (2021). Additionally, it is worth noting that the three dimensions of vocabulary knowledge are represented in a more regular pattern in MTIG (2021) compared to PEUM (2007). Similarly, aspects of vocabulary distribution, contextualisation and newness are more represented in MTIG (2021). This answers the second research question and confirms the second hypothesis in that dimensions of form and use are more included in MTIG (2021) where the principles of vocabulary distribution, contextualisation and newness are more represented.

Conclusion

This chapter has discussed the findings presented in the results chapter. The discussion has answered the two research questions of the current study and has confirmed the two hypotheses. Indeed, the three dimensions of vocabulary knowledge are included in vocabulary tasks within both PEUM (2007) and MTIG (2021). In addition, in both textbooks, the semantic and syntactic dimensions are more highlighted, which confirms the first hypothesis. Moreover, the discussion has revealed a difference in the distribution of vocabulary dimensions in both textbooks, which confirms the second hypothesis.

General Conclusion

The present investigation has analysed two medical English textbooks that are “Professional English in Use: Medicine” (2007) and “Medical Terminology: An Illustrated Guide” (2021) by using Nation’ (2013) taxonomy of vocabulary knowledge and Hussin, et al (2015) checklist of vocabulary evaluation.

The study has sought to reach two objectives. The first objective consisted in uncovering vocabulary dimensions in the tasks of both textbooks. The second objective was to draw a comparison between the two textbooks based on the distribution of vocabulary knowledge dimensions and vocabulary items across units of study. To do so, Nation’ (2013) taxonomy of vocabulary knowledge has been used to analyse vocabulary tasks in both textbooks. Nation (2013) proposes a three dimensional model of vocabulary knowledge maintaining that knowing a word involves being aware of its form, meaning and different aspects of use. In addition, a checklist designed by Hussin, et al (2015) for the purpose of evaluating vocabulary in EFL textbooks has been used to evaluate vocabulary in the two textbooks. It comprises 11 principles that discuss vocabulary distribution, contextualisation and newness.

A mixed methods research has been adopted to carry out this investigation. It combines both qualitative and quantitative methods for data collection and analysis. Data has been collected from both textbooks by applying the convenience sampling technique. In this context, it is used in order to draw a comparison between the two textbooks based on the distribution of vocabulary knowledge dimensions. The sample selected for the study has been subject of analysis using Nation’s (2013) taxonomy of word knowledge. Outcomes of this analysis have been displayed in the form quantitative data represented through tables and diagrams. Later, a qualitative analysis has been applied to both textbooks using Hussin, et al (2013) checklist of vocabulary evaluation. The method consisted in contrasting items of both medical textbooks against the 11 principles of the checklist. The results of both quantitative analysis and qualitative content analysis have been discussed in the discussion chapter.

The discussion of the outcomes of analysis has revealed the inclusion of the three aspects of vocabulary dimensions in both textbooks with different percentages. In both PEUM (2007) and MTIG (2021), the dimensions of meaning and use are found to be more dominant than the dimension of form. In PEUM (2007), the aspect of meaning is represented with the highest percentage, followed by the aspect of use, and finally the aspect of form. The gap between the percentages of these dimensions is significant as the aspect of meaning alone holds more percentage than both the aspects of use and form combined. This over representation of the aspect of meaning encourages passive acquisition of vocabulary items.

On the other hand, MTIG (2021) highlights the aspect of use with the highest percentage, followed by the aspect of meaning and finally the aspect of form. The gap between such aspects is not significant as the three hold somehow similar percentages. In fact, developing the dimension of use promotes context-dependent learning. However, neglecting the dimension of form downplays productive learning as most tasks in both textbooks encourage learners to passively remember the meaning of words rather than producing them in correct spoken and written forms.

Results of the checklist have revealed an almost similar inclusion of the 11 principles in both textbooks. However, more principles are respected in MTIG (2021) compared to PEUM (2007). The difference lies mostly in the fact that MTIG (2021) is a recent published material, more detailed and more conforming to the demands of EMP learning compared to PEUM (2007).

The discussion of results answers the two research questions in that the three dimensions of vocabulary knowledge are preset in both textbooks but with different distributions. This confirms the two hypotheses in that the semantic and syntactic aspects of vocabulary knowledge are more highlighted in the textbooks compared with the aspect of form. In

addition, dimensions of form and use are indeed more included in vocabulary activities within MTIG (2021) compared to PEUM (2007). Moreover, the discussion has revealed that the distribution of vocabulary items is more balanced in MTIG (2021) in comparison with PEUM (2007).

● **Limitations of the Study**

Although the present study has analysed two medical English textbooks by making use of Nation's (2013) word knowledge taxonomy and Hussin, et al (2015) checklist of vocabulary evaluation, it is important to mention that there are limitations to the research. In fact, the use of convenience sampling hinders the possibility of generalising results to the entire research population. In other words the outcomes represented in this study do not reflect the two textbooks as a whole but only represent the 11 units under study. Even though the study has compared similar units, some units of both textbooks have not been treated, which affects the validity of results.

● **Recommendations for Further Research**

Considering the increasing importance of ESP and EMP in EFL teaching and learning, analysing ESP textbooks is of significant importance. In this context, the current study is an attempt to add to the existing stock of knowledge in EMP studies. Regarding further investigations, it is recommended to analyse both textbooks individually using Nation's (2013) taxonomy of vocabulary dimensions and Hussin, et al (2015) checklist of vocabulary evaluation. Separating the two textbooks from one another would allow the research to cover all units in the textbooks. This would result in more valid outcomes representing the two textbooks as no sampling technique is required for the analysis.

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Appendices

- 14.1 Complete the table with words from C opposite. Put a stress mark in front of the stressed syllable in each word. The first one has been done for you.

Noun	Adjective
ex'haustion	
fatigue	
lethargy	
tiredness	

- 14.2 Make word combinations using a word from each box. Look at A, B and C opposite to help you.

complain
off-
out of
present
put
worn

with
of
out
on
colour
sorts

- 14.3 Complete the sentences with the correct form of the verb *present*.

- A 67-year-old man with a 9-month history of increasing shortness of breath.
- The most common is loss of consciousness.
- Cranial arteritis may as fever without any obvious causes.
- The patient usually with a severe sore throat.
- The symptoms in this patient could perhaps be due to renal failure.
- Other conditions with a similar include acute cholecystitis.
- Reduced growth is an important complaint of coeliac disease.
- Two months following, the patient was able to walk.

- 14.4 Read the patient's description of her symptoms then complete the case report. Look at C opposite to help you.

I was well until a few months ago. In the beginning, I just felt off-colour and a bit tired. But lately I've been feeling completely worn out at the end of the day. I'm not eating any more than usual but I've put on nine kilos in the last year. My motions are hard and my hair has started to fall out.

Case 13

A 50-year-old housewife, who had been well until four months previously,
(1) of tiredness and
(2) She had (3)
9 kg in weight in the year before she
(4) to her GP although she
denied eating more than usual. She was
(5) and she noticed that her
hair had started to fall out.

Over to you

Write a short case report about this 60-year-old man:

I haven't been myself for several months now. I feel completely worn out after doing anything. I've been off my food and I've lost ten kilos in weight.

Write in the past tense and use medical terms for the underlined expressions.
Practise writing similar case reports for your own patients.

Appendix 1: Tasks pertaining to unit "Symptoms and Signs"

15.1 Find words in the box with opposite meanings. Look at B and C opposite to help you.

adequate	unlikely	mild	common	insidious	for
against	severe	rare	sudden	inadequate	likely

15.2 Make word combinations using a word from each box. Look at B and C opposite to help you.

bone
differential
insidious
iron
pernicious
progressively
vibration

diagnosis
sense
onset
marrow
increasing
deficiency
anaemia

15.3 Complete the sentences. Look at A, B and C opposite to help you.

- 1 A 39-year-old man presented with a history of _____ abdominal distension over a period of six months.
- 2 Blindness may be caused by vitamin A _____.
- 3 The bleeding and purpura are caused by abnormal _____ function.
- 4 The white cell count is normal so we can _____ acute leukaemia.
- 5 The yellow colour of her skin and conjunctivae is probably due to _____.
- 6 There was a _____ mass in the right upper quadrant of the abdomen.
- 7 Treatment is aimed at restoring fluid balance with _____ intravenous fluids.
- 8 The anaemia may be due to increased red cell _____.

15.4 Complete the conversation. Look at C opposite to help you.

Professor: What is against the diagnosis of pernicious anaemia on physical examination?

Student: The problem started quite suddenly. So it didn't have the typical (1) _____
_____. He doesn't have any skin (2) _____ and he doesn't have
(3) _____ paraesthesiae, or absent (4) _____ sense, and I couldn't
feel his spleen.

Professor: What about his tongue?

Student: His tongue was normal and not inflamed or (5) _____.

Over to you



List the causes of anaemia mentioned in the conversation in B opposite. Then choose another condition that you encounter regularly and make a similar list of the causes in English. Use the index to help you.

Appendix 02: Tasks pertaining to unit "Blood"

PEUM (2007) p: 39

Exercise 3-1 (Continued)

Fill in the blanks

5. Arteriosclerosis (*ar-te-re-o-skleb-RO-sis*) is a(n) _____ of the arteries.
6. A urolith (*U-ro-lith*) is a(n) _____ in the urinary tract (*ur/o*).
7. A cystotome (*SIS-to-tome*) is an instrument for incising the _____.
8. The term pathogenic (*path-o-JEN-ik*) means producing _____.
9. A carcinogen (*kar-SIN-o-jen*) is a substance that causes _____.
10. An exotoxin (*ek-so-TOK-sin*) is a(n) _____ secreted by bacterial cells.
11. Pyoderma (*pi-o-DER-mab*) is a skin disease associated with _____.
12. An algometer (*al-jeh-SIM-eh-ter*) is used to measure sensitivity to _____.
13. An oncogene (*ON-ko-jene*) is a gene that causes a(n) _____.
14. A pyrogenic (*pi-ro-JEN-ik*) agent induces _____.

Appendix 03: Exercise taken from unit “Disease and Treatment”

MTIG (2021) p: 83

Exercise 3-3

Complete the exercise. To check your answers go to Appendix 11.

Match the following terms, and write the appropriate letter to the left of each number.

- | | |
|--|--------------------------------------|
| ___ 1. adipocle (<i>AD-ih-po-sele</i>) | a. hernia containing fat |
| ___ 2. blastoma (<i>blas-TO-mab</i>) | b. fissure of the chest |
| ___ 3. thoracoschisis (<i>tho-rab-KOS-kib-sis</i>) | c. breaking of a bone |
| ___ 4. melanoma (<i>mel-ab-NO-mab</i>) | d. tumor of immature cells |
| ___ 5. osteoclast (<i>os-te-OK-lab-sis</i>) | e. tumor of pigmented cells |
| ___ 6. gastrodynia (<i>gas-tro-DIN-e-ab</i>) | a. local dilatation containing fluid |
| ___ 7. menorrhagia (<i>men-o-RA-je-ab</i>) | b. pain in the stomach |
| ___ 8. hydrocele (<i>HI-dro-sele</i>) | c. pain in the head |
| ___ 9. cephalgia (<i>seb-FAL-je-ab</i>) | d. profuse menstrual flow |
| ___ 10. hepatorrhexis (<i>hep-ab-to-REK-sis</i>) | e. rupture of the liver |

Appendix 04: Exercise pertaining to unit “Disease and treatment”

MTIG (2021) p: 85

Exercise 3-8

Complete the exercise. To check your answers go to Appendix 11.

Match the following terms, and write the appropriate letter to the left of each number.

- | | |
|--|------------------------------------|
| ___ 1. nephropexy (<i>nef-ro-PEK-se</i>) | a. crushing of a stone |
| ___ 2. rhinoplasty (<i>RI-no-plas-te</i>) | b. surgical fixation of the kidney |
| ___ 3. lithotripsy (<i>LITH-o-trip-se</i>) | c. puncture of the abdomen |
| ___ 4. adenectomy (<i>ad-eh-NEK-to-me</i>) | d. excision of a gland |
| ___ 5. celiocentesis (<i>se-le-o-sen-TE-sis</i>) | e. plastic surgery of the nose |

The root *cyst/o* means “urinary bladder.” Use this root to write a word that means each of the following.

- 6. Incision into the bladder _____
- 7. Surgical fixation of the bladder _____
- 8. Plastic repair of the bladder _____
- 9. Surgical repair of the bladder _____
- 10. Creation of an opening into the bladder _____

The root *arthr/o* means “joint.” Use this root to write a word that means each of the following.

- 11. Plastic repair of a joint _____
- 12. Instrument for incising a joint _____
- 13. Incision of a joint _____
- 14. Puncture of a joint _____
- 15. Fusion of a joint _____

Write a word for each of the following definitions using the roots given.

- 16. Incision into the trachea (*trache/o*) _____
- 17. Surgical repair of the stomach (*gastr/o*) _____
- 18. Creation of an opening into the colon (*col/o*) _____

Appendix 05: Exercise pertaining to unit “Disease and Treatment”

MTIG (2021) p: 101

Case Study 3-2: Asthma

Chelsea, a 20 y/o woman with asthma, visited the preadmission testing unit 1 week before her cosmetic surgery to meet with the nurse and anesthesiologist. Her current meds included several bronchodilators, which she takes by mouth and by inhalation, and a tranquilizer that she takes when needed for nervousness. She sometimes receives inhalation treatments with Mucomyst, a mucolytic agent. On Chelsea’s preoperative note, the nurse wrote:

Theo-Dur 1 cap 200 mg t.i.d.
 Flovent inhaler 1 spray (50 mcg each nostril b.i.d.)
 Ativan (lorazepam) 1 mg po b.i.d.
 Albuterol metered-dose inhaler 2 puffs (180 mcg) p.r.n. q4-6h for bronchospasm and before exercise

3

Chelsea stated that she has difficulty with her asthma when she is anxious and when she exercises. She also admitted to occasional use of marijuana and ecstasy, a hallucinogen and mood-altering illegal recreational drug. The anesthesiologist wrote an order for lorazepam 4 mg IV 1 hour preop. The plastic surgeon recommended several supplements to complement her surgery and her recovery. He ordered a high-potency vitamin, 1 tab with breakfast and dinner, to support tissue health and healing. He also prescribed bromelain, an enzyme from pineapple, to decrease inflammation, one 500 mg cap po q.i.d. 3 days before surgery and postoperatively for 2 weeks. Arnica montana was prescribed to decrease discomfort, swelling, and bruising; three tabs sublingual t.i.d. the evening after surgery and for the following 10 days.

Case Study 3-2 Questions

Follow the instructions for each question and check your answers in Appendix 11.

Multiple Choice. Select the best answer, and write the letter of your choice to the left of each number.

<p>___ 1. Chelsea’s Flovent inhaler is indicated as 1 spray of 50 mcg in each nostril b.i.d. How many micrograms (mcg) does she get in 1 day?</p> <ul style="list-style-type: none"> a. 100 mcg b. 200 mcg c. 250 mcg d. 500 mcg 	<p>___ 4. Bromelain and Arnica montana are supplements that can be described as all of the following except</p> <ul style="list-style-type: none"> a. phytopharmaceutical b. alternative c. chronotropic d. complementary
<p>___ 2. As noted in Appendix 10, the Ativan that E.N. takes for nervousness is a(n) _____ drug.</p> <ul style="list-style-type: none"> a. anxiolytic b. antiemetic c. analgesic d. bronchodilator 	<p>___ 5. Arnica montana was prescribed three tabs SL t.i.d. How many tablets would Chelsea take in 1 day?</p> <ul style="list-style-type: none"> a. 6 b. 33 c. 12 d. 9
<p>___ 3. The anesthesiologist ordered lorazepam (Ativan) to be given IV preop to decrease anxiety and to smooth Chelsea’s anesthesia induction. The complementary way that lorazepam and anesthesia work together is called</p> <ul style="list-style-type: none"> a. antagonistic b. complementary medicine c. synergy d. tolerance 	<p>___ 6. Flovent is administered as an inhalant. The form in which the drug is prepared is called a(n)</p> <ul style="list-style-type: none"> a. aerosol b. elixir c. unguent d. emulsion

Appendix 06: Case study tasks pertaining to unit “Disease and Treatment”

MTIG (2021) p: 121

TRUE-FALSE

Examine the following statements. If the statement is true, write T in the first blank. If the statement is false, write F in the first blank, and correct the statement by replacing the underlined word in the second blank.

	True or False	Correct Answer
88. A mycosis is an infection with a <u>protozoon</u> .	_____	_____
89. Round bacteria in chains are <u>streptococci</u> .	_____	_____
90. A sudden disease of short duration is <u>chronic</u> .	_____	_____
91. A tumor that does not metastasize is termed <u>benign</u> .	_____	_____
92. A slower than normal heart rate is <u>tachycardia</u> .	_____	_____
93. An otoscope is used to examine the <u>eye</u> .	_____	_____
94. An image produced by x-rays is a <u>radiogram</u> .	_____	_____
95. Arthroscopy is endoscopic examination of a <u>joint</u> .	_____	_____

ELIMINATIONS

In each of the sets below, underline the word that does not fit in with the rest, and explain the reason for your choice.

- 96. cocci — helminths — chlamydia — bacilli — vibrios

- 97. septicemic — endemic — metastatic — opportunistic — epidemic

- 98. percussion — inspection — palpation — remission — auscultation

- 99. ophthalmoscope — sphygmomanometer — stethoscope — syncope — endoscope

- 100. solution — elixir — tincture — emulsion — tablet

WORD BUILDING

Use the word parts given to build words for the following definitions. Each word part can be used more than once.

tox pyr gen o py -oma -y path nephr -logy -ic

- 101. poisonous for the kidney _____
- 102. producing pus _____
- 103. tumor of the kidney _____
- 104. study of disease _____
- 105. producing fever _____
- 106. study of the kidney _____
- 107. producing disease _____
- 108. any disease of the kidney _____
- 109. producing kidney tissue _____

Appendix 07: Review activities pertaining to unit “Disease and Treatment”

MTIG (2021) p: 118