**People's Democratic Republic of Algeria**
**Ministry of Higher Education and Scientific Research**
**University of Tlemcen**

**Faculty of Letters and Languages**
**Department of English**

# *Developing Academic Writing Skills in ESP: Case of Doctoral Students of Mechanical Engineering at the University of Ain Temouchent*

Thesis submitted to the Department of English in candidacy for the degree of Doctorate in Didactics of Foreign Languages

**Presented by:**
Ms. Khadidja BELMOKHTAR

**Supervised by:**
Prof. Chamseddine LAMRI

## BOARD OF EXAMINERS

| | | |
|---|---|---|
| Prof. Hafida HAMZAOUI - EL ACHACHI | President | University of Tlemcen |
| Prof. Chamseddine LAMRI | Supervisor | University of Tlemcen |
| Dr. Fatima Zohra BELKHIR | Examiner | University of Tlemcen |
| Dr. Nouria MESSAOUDI | Examiner | University of Ain Temouchent |
| Dr. Nouzha BEN HABIB SOULIMANE | Examiner | Higher School of Applied Sciences |

**Academic Year: 2024-2025**

## Declaration

I, Belmokhtar Khadidja, declare that this doctoral thesis is the outcome of my own investigation, and that it neither includes material previously published by another researcher, in whole or in part, nor had been accepted for the award of any other academic degree. I also certify that it contains no plagiarism, except where otherwise stated.

***March 05th, 2025*** ***Miss. BELMOKHTAR Khadidja***

## ACKNOWLEDGEMENTS

First and foremost, I would like to express my deepest gratitude to my supervisor, Pr. Lamri Chamseddine, for his invaluable guidance, support, and patience throughout the course of my doctoral studies. His insightful feedback, encouragement, and belief in my work has been a constant source of motivation.

I am sincerely grateful to the honourable board of examiners, Prof. Hamzaoui, Dr. Belkhir, Dr. Messaoudi, and Dr. Ben Habib Soulimane who have kindly accepted to read and evaluate this work.

I am also indebted to Pr. Hamzaoui, Pr. Mouro, Pr. Benyelles, Pr. Bouklikha, Pr. Haddam, and Pr. Bensafa for their constructive comments and guidance during the doctoral weeks.

I also wish to extend my heartfelt thanks to my family for their love, support, and understanding. This journey would not have been possible without the support and encouragement of those around me, and I am deeply thankful to all who have contributed, directly or indirectly, to the completion of this thesis.

## ABSTRACT

The issues discussed in this dissertation revolve around the difficulties experienced by ESP doctoral students in the Department of Mechanical Engineering at Belhadj Bouchaib University, Ain Temouchent, in their academic writing. The main aim of this research study is to explore the nature of these difficulties, help doctoral students overcome them, and develop their academic writing performance. Hence, this research is structured into four main parts. First, it reviews relevant literature regarding the key concepts of this research: ESP, academic writing, and TBLT. Second, it describes the teaching and learning situation of English at the Department of Mechanical Engineering, in addition to the methodological framework adopted. Third, an academic writing needs analysis of mechanical engineering doctoral students was conducted. Finally, based on the outcomes of the needs analysis, a task-based academic writing course was designed and implemented to improve doctoral students' academic writing. Three research tools were used in this experimental case study, namely: questionnaires for doctoral students and subject- specialist teachers, interviews with officers, and writing tests. Data were analysed both quantitatively and qualitatively. The findings revealed that the nature of doctoral students' academic writing challenges was both linguistic and strategic. Accordingly, the researcher tested the effectiveness of an academic writing course in mitigating the writing difficulties faced by students through the implementation of a task-based approach. A comparison of the pre- and post-test results showed that the course was effective and contributed to addressing the major problems encountered by doctoral students. Therefore, task-based instruction reduced the number of challenges students faced during writing and helped enhance their academic writing skills.

## TABLE of CONTENTS

## CHAPTER TWO
### Situation Analysis and Research Methodology

## CHAPTER THREE

### Academic Writing Needs Analysis

## CHAPTER FOUR

## Course Experimentation and General Recommendations

## List of Tables

## List of Figures



**********

## List of Abbreviations

AI: Artificial Intelligence

APA: American Psychological Association

ASSET: Assessment of Skills for Successful Entry and Transfer

CFD : Comité de Formation Doctorale

CEIL : Centre D'Enseignement Intensif des Langues

EAP: English for Academic Purposes

EBE: English for Business and Economics

EGP: English for General Purposes

ELT: English Language Teaching

EOP: English for Occupational Purposes

ESP: English for Specific Purposes

ESS: English for Social Studies

EST: English for Science and Technology

ICTs: Information and Communication Technologies

IELTS: International English Language Testing System

LMD: Licence, Master, Doctorate

LSA: Learning Situation Analysis

MLA: Modern Language Association

NA: Needs Analysis

NIA: Needs Identification and Analysis

PhD: Doctor of Philosophy

PSA: Present Situation Analysis

TBLT: Task-Based LanguageTeaching

TSA: Target Situation Analysis

# GENERAL INTRODUCTION

# General Introduction

Writing is one of the fundamental skills that serve as a medium for sharing knowledge, facilitating professional exchange, and fulfilling academic needs. Within academic settings, it functions as a tool that allows individuals to convey their ideas, construct arguments, and participate in academic debates. Among the different forms of writing, academic writing plays a significant role in generating knowledge by emphasizing features such as accuracy, coherence, conciseness, and clarity. Therefore, it is of paramount importance for university students, especially at the doctoral level, as they are required to produce well-structured and logically developed papers as part of their research requirements.

The field of English for Specific Purposes (ESP) aims to equip learners with the essential linguistic and communicative competencies required for their academic or professional disciplines. English for Academic Purposes (EAP), as an important area within ESP, seeks to familiarize learners with specialised terminology and conventions specific to their disciplines in order to fulfil academic purposes.

Doctoral students are expected to produce dissertations, articles, and other research papers, such as conference papers, in English. Thus, developing academic writing proficiency in ESP settings is essential. Nevertheless, many ESP doctoral students encounter various challenges when writing academically in English, both at the linguistic and strategic levels. These include, for instance, difficulties with grammar, limited vocabulary, syntactic issues, poor coherence and cohesion, a lack of paraphrasing, summarising, and referencing skills, limited writing strategies, and difficulties in following academic writing conventions in general, all of which hinder their ability to produce well-written academic texts.

In light of the challenges mentioned above, there is a strong need to support doctoral students in overcoming writing difficulties and developing the academic writing competencies necessary for their academic success. Hence, this research study investigates the case of PhD candidates in the Department of Mechanical

Engineering at Belhadj Bouchaib University, Ain Temouchent. The main aim of this study is to identify the linguistic and strategic challenges doctoral students face in their academic writing, through a needs identification and analysis (NIA) of the target population, and to examine the effectiveness of Task-Based Instruction (TBI), via a suggested experimental academic writing course delivered through the Zoom platform, in addressing these challenges and improving learners' academic writing proficiency.

To achieve these aims, the following research questions have been raised:

1- What are doctoral students' academic writing needs?
2- What type of syllabus would be appropriate to develop doctoral students' academic writing?
3- What is the impact of task-based instruction on doctoral students' academic writing performance?

In an attempt to answer the above questions, the following hypotheses have been formulated:

1- Doctoral students need to develop their linguistic competence namely the basic notions of language as well as their strategic skills to write academic papers.

2- Task-based instruction would have a positive impact on doctoral students' academic writing performance to develop both their linguistic and strategic competence.

3- The tasks implemented would help the students to write different types of academic papers such as scientific articles and conference abstracts.

To test these hypotheses, an experimental case study was conducted, in which an interview, a questionnaire, and pre- and post-writing tests served as research tools for data collection. The respondents in this investigation comprised mechanical engineering doctoral students, subject-specialist teachers, and officers at Belhadj Bouchaib University of Ain Temouchent. Accordingly, this research work is divided

into two main parts. The first part presents a case study in which a Needs Identification and Analysis (NIA) was carried out, whereas the second part is devoted to an experiment in which the suggested course was implemented and evaluated.

The current thesis is organised into four main chapters:

Chapter One presents the relevant literature related to the three key components of this research, namely English for Specific Purposes (ESP), academic writing, and Task-Based Language Teaching (TBLT). The researcher begins with a theoretical overview of ESP, highlighting the notion of needs analysis as a core element of ESP, along with its types and approaches. It also discusses ESP course design and the various roles of ESP teachers. The importance of writing is then explored, including the common challenges encountered in the writing process. Following this, the chapter focuses on academic writing, which is the main concern of the present study, shedding light on its key characteristics and the different approaches to teaching writing. Finally, the notion of TBLT is discussed, with an emphasis on the roles of both teachers and learners within this approach.

Chapter Two sheds light on the LMD system in Algeria and describes Belhadj Bouchaib University of Ain Temouchent, including its faculties, disciplines, and branches, with emphasis on the teaching and learning situation of English at the Department of Mechanical Engineering. In addition, the research objectives as well as the methodology adopted in this study are outlined. This includes the research design, which encompasses both the case study and the experimental research; the target population; instrumentation (including NIA and experimental tools); as well as data analysis procedures.

Chapter Three is dedicated to the academic writing needs analysis. The data collected from the informants were analysed quantitatively and qualitatively, followed by a detailed interpretation and discussion of the main results. Based on these findings, a relevant ESP course for mechanical engineering doctoral students was designed.

Chapter Four is concerned with the experimental phase of the research study. It presents and discusses in detail the academic writing course design and its implementation, followed by an interpretation of the outcomes of the evaluated course. This chapter also offers suggestions and recommendations intended to help doctoral students overcome the major challenges they face in academic writing and to contribute to improved performance.

The significance of the current research lies in its contribution to enhancing PhD candidates' academic writing within the ESP context, by exploring and identifying their writing needs and difficulties and suggesting effective solutions. It also provides practical recommendations for improving learners' academic writing skills and for supporting them in becoming proficient academic writers.

# CHAPTER ONE

# CHAPTER ONE

Teaching Writing Skills for Academic Purposes

1.1 Introduction

1.2 English for Specific Purposes: A Background Account

1.2.1 English for Science and Technology (EST)

1.2.1.1 English for Academic Purposes (EAP)

1.2.1.2 English for Occupational Purposes (EOP)

1.2.2 Needs Analysis

1.2.2.1Types of Needs

a/ Target Needs

b/ Learning Needs

1.2.2.2 Approaches to Needs Analysis

a/ Present Situation Analysis (PSA)

b/ Learning Situation Analysis (LSA)

c/ Target Situation Analysis (TSA)

1.2.3 Approaches to ESP Course Design

1.2.3.1 Language-centered Approach

1.2.3.2 Skills-centered Approach

1.2.3.3 Learning-centered Approach

1.2.4 Steps in ESP Course Design

1.2.5 ESP Practitioner Roles

1.2.5.1 The ESP Practitioner as a Teacher

1.2.5.2 The ESP Practitioner as a Course Designer and Material Provider

1.2.5.3 The ESP Practitioner as a Collaborator

1.2.5.4 The ESP Practitioner as a Researcher

1.2.5.5 The ESP Practitioner as an Evaluator

1.3 Nature of Writing

1.4 The Importance of Writing

1.5 The Writing Process

## 1.1 Introduction

This chapter focuses on the teaching of writing skills for academic purposes. It reviews the relevant literature related to the core areas examined in this research, namely English for Specific Purposes (ESP) and academic writing. It begins by presenting an overview of the development of ESP, with a particular focus on English for Science and Technology (EST), and discusses its main branches: English for Academic Purposes (EAP) and English for Occupational Purposes (EOP). The chapter then explores the notion of needs analysis, outlining its types and approaches. Furthermore, it examines approaches to ESP course design, the key stages involved in developing an ESP course, and the various roles performed by the ESP practitioner.

Following this, the researcher highlights the nature and significance of writing, the main stages of the writing process, and the common challenges encountered in writing. Most importantly, she explores academic writing as the core focus of the current research, reviewing its key characteristics and the traditional approaches to the teaching of writing. Furthermore, this chapter addresses the notion of task-based language teaching (TBLT), outlines the three stages involved in task-based instruction, and examines the roles of both teachers and learners within this approach.

## 1.2 English for Specific Purposes: A Background Account

The origins of English for Specific Purposes (ESP) have been widely discussed. According to Hutchinson and Waters (1987), three major factors contributed to its emergence and development, namely the demands of the new world, the revolution in linguistics, and the shift of focus toward the learner. They claim that ESP emerged during two major historical periods. First, the end of the Second World War was accompanied by the expansion of technology and commerce, which created an urgent need for a global language to address the emerging issues of the New World. English was assigned this role as a result of the United States' economic dominance. Moreover, English gained international status due to Britain's colonial leadership in

the eighteenth and nineteenth centuries. Thus, it became the primary language used for communication, interaction, and the exchange of information across various regions of the world, most notably in the domains of business and technology. Hence, EST emerged and marked the beginning of ESP. Second, a significant influx of western expertise and finances entered oil-rich nations during the oil crises of the early 1970s. This led to the widespread emergence of specific language situations that required tailored courses aimed at achieving particular objectives and fulfilling learners' professional needs. As a result, ESP courses were developed to achieve this purpose.

The revolution in linguistics was the second contributing factor, as stated by Hutchinson and Waters (1987). The emphasis was placed on how language can be used in real-life contexts. The communicative approach to English Language Teaching (ELT), through the notion of communicative competence, broadened the perspective of language teaching and learning, redirecting the primary focus towards the communicative functions of language instead of the grammar rules. In this respect, Brumfit (1977, as quoted in Smaihi, 2019) claims that "an ESP course is directly concerned with the purposes for which learners need English, purposes which are usually expressed in functional terms. ESP, thus, fits firmly within the general movement towards "communicative" teaching of the last decade or so" (p.43).

The third major factor identified by the authors, which influenced the rise and expansion of ESP, is related to learning psychology. Increased attention was given to how learners acquire language, how they perceive learning, and their individual differences in language acquisition. Learners' motivation and learning efficiency were found to be influenced by their needs and interests. Therefore, ESP courses were developed to meet learners' specific needs and enhance their motivation to learn.

Defining ESP has always been a challenging task for researchers and language educators. Thus, the researcher aims to present various definitions of ESP in order to gain a better understanding of what it truly means. Hutchinson and Waters (1987:19)

define ESP as "an approach to language teaching in which all decisions as to content and method are based on the learner's reason for learning". In the same vein, Munby (1978: 2) states that "ESP courses are those where the syllabus and materials are determined in all essentials by the prior analysis of the communication needs of the learners, rather than by non-learner centered criteria such as the teachers or institution's pre-determined preference for General English or for treating English as part of a general education".

Other researchers have attempted to define ESP by highlighting its characteristics, including Strevens (1988) and Dudley-Evans and St. John (1998). Strevens (1988:1-2) categorised ESP's main characteristics into absolute and variable ones:

1/ Absolute characteristics: ESP consists of English language teaching which is:

- designed to meet specified needs of the learner;
- related in content (i.e.in its themes and topics) to particular disciplines, occupations and activities;
- centered on the language appropriate to those activities in syntax, lexis, discourse, semantics, etc., and analysis of this discourse;
- in contrast with General English.

2/ Variable characteristics: ESP may be, but is not necessarily:

- restricted as to the language skills to be learned (e.g. reading only);
- not taught according to any pre-ordained methodology.

Following this, Dudley-Evans and St. John (1998: 4-5) modified Strevens' categorisation by removing the fourth absolute characteristic i.e. "in contrast with general English". They also argued that ESP may, but is not necessarily, intended for a specific discipline. Moreover, they developed further characteristics as follows:

1/ Absolute Characteristics:

- ESP is defined to meet specific needs of the learner;
-ESP makes use of the underlying methodology and activities of the discipline it serves;

- ESP is centered on the language (grammar, lexis, register), skills, discourse and genres appropriate to these activities.

2/ Variable Characteristics:

- ESP may be related to or designed for specific disciplines;

- ESP may use, in specific teaching situations, a different methodology from that of general English;

- ESP is likely to be designed for adult learners, either at a tertiary level institution or in a professional work situation. It could, however, be for learners at secondary school level;

- ESP is generally designed for intermediate or advanced students;

- Most ESP courses assume some basic knowledge of the language system, but it can be used with beginners.

The different characteristics presented above have contributed to defining what ESP is. Yet, understanding the difference between ESP and General English helps to further clarify its meaning. In explaining the difference between ESP and English for General Purposes (EGP), Hutchinson and Waters (1987:53) argue that "in theory nothing, in practice a great deal". They believe that, in ESP, most learners are adults, thus, are to some extent aware of their language needs. ESP courses take into account the specific disciplines to which these learners belong and focus on fulfilling those needs. In this way, it differs from EGP.

Widdowson (1983) also outlined the distinctive features of EGP and ESP as follows:

The most important EGP features are:

1. the focus is often on education;
2. as the learners' future needs are impossible to predict, the course content is more difficult to select;
3. due to the above point, it is important for the content in the syllabus to have a high surrender value.

The most relevant ESP features are:

1. the focus is on training;
2. as English is intended to be used in specific vocational contexts, the selection of the appropriate content is easier;
3. it is important for the content in the syllabus to have a high surrender value, most relevant to the vocational context;
4. the aim may be to create a restricted English competence.

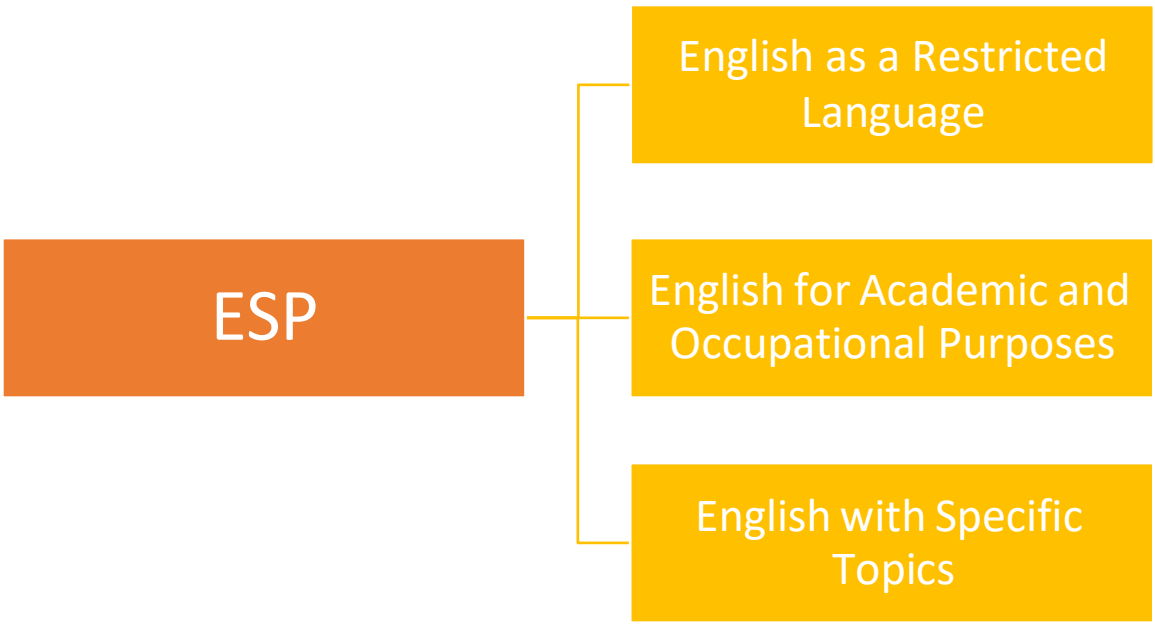
Basturkmen (2006: 18) states that in ESP, "language is learnt not for its own sake or for the sake of gaining a general education, but to smooth the path to entry or greater linguistic efficiency in academic, workplace or professional environments". In this regard, Robinson (1991) views language as a tool used for practical purposes rather than merely as a subject of study. That is, learners' aims are not solely to learn English, but to use it. She also explains that needs analysis is a significant feature of ESP. The process of needs analysis aims to identify learners' needs and is considered the core component of ESP courses.

ESP can be simply defined as a learner-centered approach to English language teaching that seeks to address learners' specific needs. It involves the identification of these needs, the development of instructional materials, and the implementation of an appropriate teaching methodology (Bouklikha, 2016).

Carter (1983) distinguishes three types of ESP, as illustrated in the figure below.

**Figure 1.1**

*Division of ESP (Carter, 1983)*




According to Carter (1983), English as a restricted language is primarily used to ensure effective communication in a specific situation. The language used by flight attendants is an example of this type. A distinction between general and restricted language was drawn by Mackay and Mountford (1978) in the following statement:

> … the language of international air-traffic control could be regarded as 'special', in the sense that the repertoire required by the controller is strictly limited and can be accurately determined situationally, as might be the linguistic needs of a dining-room waiter or air-hostess. However, such restricted repertoires are not languages, just as a tourist phrase book is not grammar. Knowing a restricted 'language' would not allow the speaker to communicate effectively in novel situation, or in contexts outside the vocational environment (pp. 4-5).

That is to say, a restricted language limits speakers' abilities to develop the communication skills required in situations and contexts beyond purely professional ones. English for Academic and Occupational Purposes, as the second category of

ESP defined by Carter (1983), addresses vocational and professional needs in disciplines such as business and economics (English for Business and Economics, EBE), medicine (English for Medical Purposes, EMP), and so on.

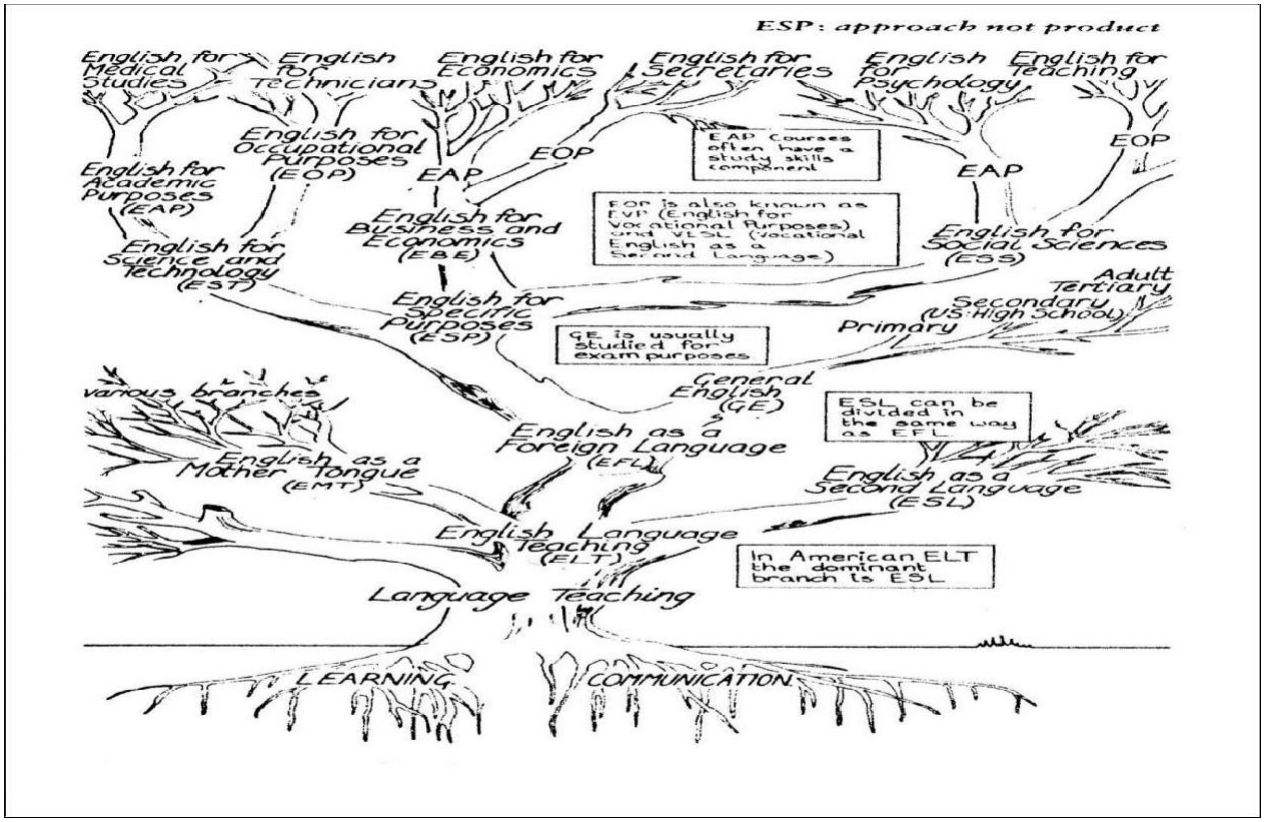
Carter (1983) views the third type of ESP, "English with Specific Topics" as unique, as the focus is placed on addressing the anticipated future English requirements of professionals, such as scientists who might need English for their postgraduate studies, to work within international institutions, or to participate in conferences. He claims that English with Specific Topics is not a distinct category but is instead regarded as a crucial part of ESP programmes, where situational language is emphasised. The latter derives from the results of needs analysis concerning the authentic language used in targeted academic and professional contexts.

### 1.2.1 English for Science and Technology (EST)

In the 'Tree of ELT' (see Figure 1.2), Hutchinson and Waters (1987) divide ESP into three branches: English for Science and Technology (EST), English for Business and Economics (EBE), and English for Social Studies (ESS). Each of these branches is further divided into two sub-branches: English for Academic Purposes (EAP) and English for Occupational Purposes (EOP).

**Figure 1.2**

*The Tree of ELT (Hutchinson and Waters, 1987: 17)*




As shown in the figure above, an example of EOP within the EST branch is 'English for Technicians,' while an example of EAP is 'English for Medical Studies.'

### 1.2.1.1 English for Academic Purposes (EAP)

English for Academic Purposes (EAP) involves teaching or learning English in academic environments, such as universities, institutes, centres, and private schools, with the aim of meeting specific academic needs or objectives. Kennedy and Bolitho (1984: 4) assert that "EAP is taught generally within educational institutions to students needing English in their studies." Therefore, it typically focuses on developing essential skills, such as reading academic texts, taking notes (for students in higher-education institutions), writing reports, and so on.

### 1.2.1.2 English for Occupational Purposes (EOP)

English for Occupational Purposes, or EOP for short, is concerned with English that is used in particular job-related contexts by learners or workers. In this vein, Kennedy and Bolitho (1984:4) explain that "EOP is taught in a situation in which learners need to use English as part of their work or profession." For example, learners engaged in particular fields such as medicine, banking, administration, or law, or future workers, require EOP to prepare for various careers and ensure they can perform effectively in their chosen fields. Dudley-Evans and St. John (1998:7) provide a more recent definition, asserting that "the term EOP refers to English that is not for academic purposes, it includes professional purposes in administration, medicine, law and business, and vocational purposes for non-professionals in work or pre-work situations."

Hutchinson and Waters (1987) argue that there is no clear distinction between EAP and EOP, noting that "people can work and study simultaneously; it is also likely that in many cases the language learnt for immediate use in a study environment will be used later when the student takes up, or returns to a job" (p.16). Nonetheless, a distinction can be made on the basis of their functional aspects. In this respect, Lamri (2015) argues that EOP courses aim to assist individuals in using English effectively within their professions. He states that "this type of course would be useful for the training of lawyers, for instance, and administrative chiefs aiming to reach a proficiency level" (Lamri, 2015: 35). However, EAP courses place emphasis on improving fundamental academic skills, such as writing academic papers, taking notes, being selective and making appropriate observations, giving presentations, and so on (Lamri, 2015).

Robinson (1991:100) distinguishes between the two areas, explaining that "EAP is thus specific purpose language teaching, differentiated from EOP by the type of learner: future or practising student as opposed to employee or worker." That is to say, the learner is the main focus of both EAP and EOP. The learner's current or future situation determines his or her needs and, thus, defines the type of ESP course to be undertaken (Mebitil, 2015).

### 1.2.2 Needs Analysis

As stated by Long (2005: 1), "just as no medical intervention would be prescribed before a thorough diagnosis of what ails the patient, so no language teaching programme should be designed without a thorough needs analysis". The concept of needs analysis was first introduced in the 1920s to address the needs of learners who were studying English for general purposes, such as using it for everyday communication. Later, with the rise and expansion of ESP programmes in the mid-1970s and early 1980s, the term became popular and was regarded as an essential step in the design of ESP courses (Munby, 1978; Robinson, 1991; Dudley-Evans and St John, 1998).

Needs analysis is also known as "needs assessment." Brown (1995) refers to the latter as the tasks undertaken to collect data that will provide the basis for designing a curriculum focused on fulfilling learners' needs. Therefore, he defines needs analysis as "the systematic collection and analysis of all subjective and objective information necessary to define and validate defensible curriculum purposes that satisfy the language learning requirements of students within the context of particular institutions that influence the teaching and learning situation" (p. 36).

In the same line of thought, Kennedy and Bolitho (1984:2) note that "once a learner's needs have been defined, in terms of why he wishes to learn English and the kind of English he will have to use, this information can be used as a guideline for the content of a course suited to his particular interests and needs". Furthermore, Richards and Schmidt (2013) state that needs analysis is "the process of determining the needs for which a learner or a group of learners acquires a language and arranges the needs according to priorities." (p.389). Hence, its purpose is to develop effective curricula that can optimise the learning process, resulting in better learning outcomes.

Regarding the tools and sources of data, Dudley-Evans and St. John (1998:132) state that the main sources of data for NA involve the learners, people working or studying in the field, ex-students, documents relevant to the field, clients, employers, colleagues, and ESP research in the field. On the other hand, data can be collected

using questionnaires, analysis of authentic spoken and written texts, discussions, structured interviews, observations, and assessments.

#### 1.2.2.1 Types of Needs

Hutchinson and Waters (1987) distinguish between two types of needs: target needs and learning needs.

### a/ Target Needs

Hutchinson and Waters (1987) categorize target needs into three types: necessities, lacks, and wants.

Necessities refer to the knowledge that learners need to acquire in order to perform effectively in the target situation. The required data regarding necessities can be obtained by observing the target situation and analysing its elements.

Lacks represent the gap between learners' current level of proficiency and the level required in the target situation. In simpler terms, they refer to what learners already know or are familiar with, and what they are lacking, that is, what they are unaware of or cannot perform in English.

Wants pertain to what learners personally believe they need to achieve through the language course. As individual perceptions, such needs are considered "subjective".

### b/ Learning Needs

Learning needs refer to what learners are required to do in order to learn. Hutchinson and Waters (1987) explain that learning needs involve the various strategies that learners employ to meet their target needs, beginning with the identification of their lacks. Therefore, learning needs represent the learners' progression from "lacks" to the final goal, namely, necessities. This involves addressing different questions, including: how will learners reach their goal? Are they motivated? Are the teaching materials and methods appropriate? and so on. Hence, it is important for course designers to determine learners' needs by taking into account their learning situation as well as their current skills and knowledge levels (Makhlouf and Arar, 2022).

### 1.2.2.2 Approaches to Needs Analysis

ESP scholars have identified three fundamental approaches to needs analysis, namely: Present Situation Analysis (PSA), Learning Situation Analysis (LSA), and Target Situation Analysis (TSA).

#### a/ Present Situation Analysis (PSA)

Present Situation Analysis (PSA) seeks to identify learners' language proficiency, along with their strengths and weaknesses, at the beginning of a language course (Robinson, 1991; Hyland, 2006).

#### b/ Learning Situation Analysis (LSA)

According to Hutchinson and Waters (1987), Learning Situation Analysis (LSA) involves analysing the learning environment to determine how learners use the language. In other words, it seeks to understand how learners develop their language skills. Therefore, LSA focuses on identifying learners' preferred learning styles, as well as their learning strategies (Aleb, 2022).

#### c/ Target Situation Analysis (TSA)

As its name suggests, target situation analysis (TSA) is concerned with analysing the target situation. This involves identifying and conducting an in-depth analysis of the target situation, including its linguistic aspects, activities, and knowledge requirements (Hyland, 2006; Basturkmen, 2010). In this regard, TSA emphasizes the communication needs specific to the target situation rather than the learners' learning needs (Aleb, 2022).

As the three approaches to needs analysis are integrated, they are perceived as complementary. In fact, Dudley-Evans and St. John (1998: 125) describe needs analysis in terms of the types of information that should be collected as follows:

A. Professional data regarding the learners: the tasks and activities that they are/will be using English for, via objective analysis and TSA;

B. Personal data regarding the learners: factors which may affect the way they learn, such as cultural information, previous learning experiences, reasons for attending the course, expectations of it and attitudes to English, i.e. wants and subjective needs;

C. English language learning regarding the learners: what their current skills and language use are, via PSA, which enables the assessment of (D);
D. The learners' lacks, defined as the gaps between (C) and (A);
E. Language learning data: effective ways of learning the language and skills in (D), i.e. learning needs;
F. Professional communication information regarding (A): knowing how language and skills are used in the target situation, via linguistic analysis, discourse analysis and genre analysis;
G. What is wanted from the course;
H. Data regarding the environment in which the course will be run, via means analysis.

However, failing to fully understand learners' needs may hinder the analysis, leading to inaccurate or inappropriate outcomes. An example of this is the neglect of learners' attitudes towards the target language and their level of motivation, while considering only their linguistic needs. Therefore, the term "needs" is regarded as a broad concept that encompasses various dimensions, including those discussed above (Hutchinson & Waters, 1987; Hyland, 2006).

### 1.2.3 Approaches to ESP Course Design

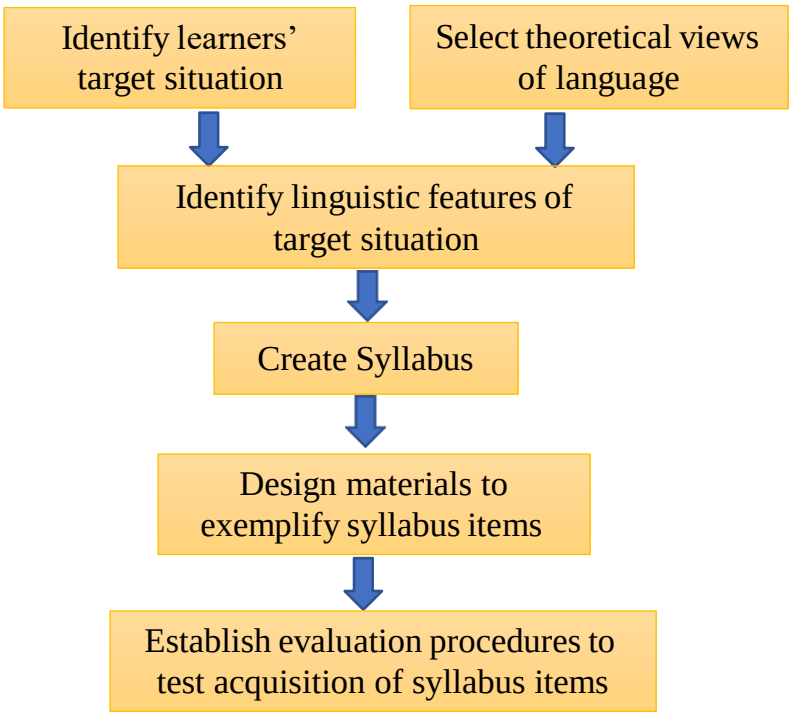
Hutchinson and Waters (1987) identify three main approaches to ESP course design namely, the language-centered, skills-centered, and learning-centered approaches.

#### 1.2.3.1 Language-centered Approach

The language-centred approach begins with the identification of the linguistic aspects of the target situation in order to define learners' needs, design a syllabus, develop course materials, and establish assessment methods. Hence, the ESP course content is directly connected to the target situation. The methodology of this approach is illustrated in the figure below.

**Figure 1.3**

*A Language-centered Approach to Course Design (Hutchinson and Waters,1987:66)*

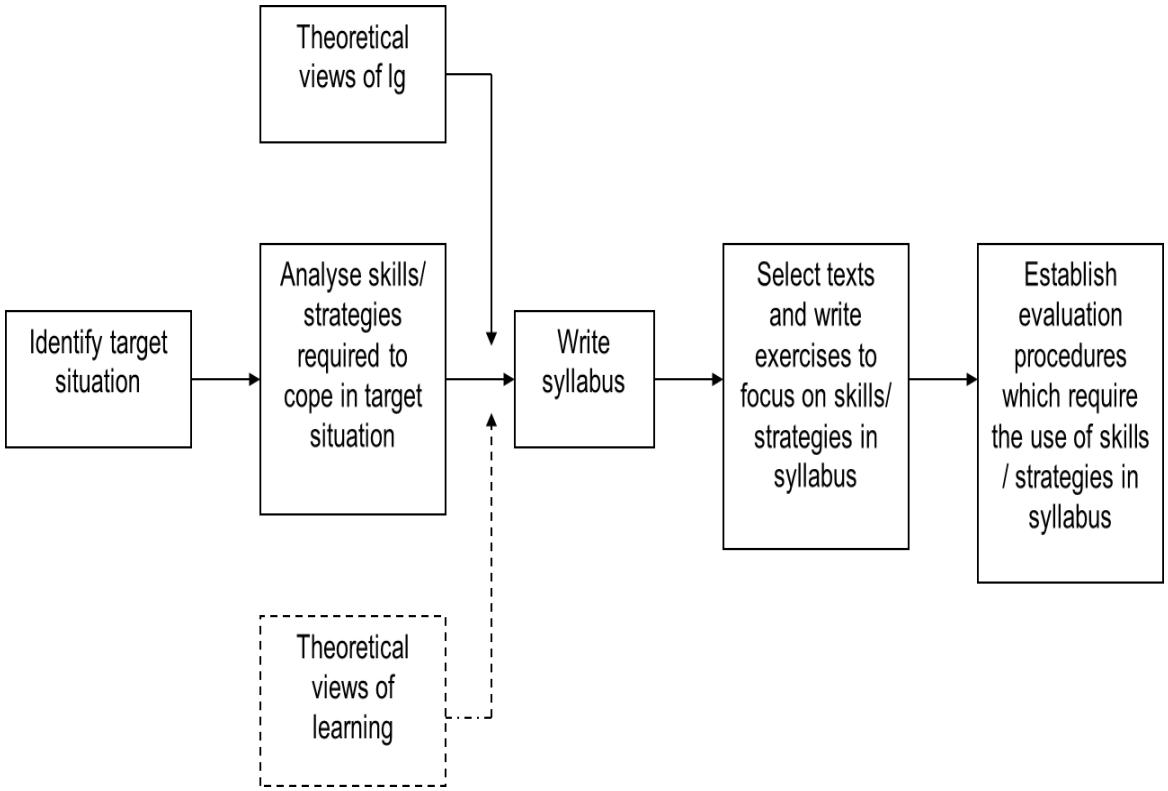



### 1.2.3.2 Skills-centered Approach

The skills-centered approach to course design emphasizes the development of strategies and skills that are likely to be utilised in the workplace and applicable to real-life situations (Britel and Sebane, 2023). This means that the approach aims to help learners develop competencies and skills extending beyond the ESP course. Creswell (2003, as quoted in Bouklikha, 2016:32) points out that such an approach is based on "the theoretical hypothesis that underlying any language behavior there are certain skills and strategies, which the learner uses in order to produce or comprehend discourse". This implies that learners use specific learning strategies to process information. Hutchinson and Waters (1987) illustrate the skills-centered approach using the following model:

**Figure 1.4**

*A Skills-centred Approach to Course Design (Hutchinson & Waters, 1987:71)*




In addition to the theoretical hypothesis, there also exists a pragmatic basis for the skills-centred approach, which stems from Widdowson's differentiation between goal-oriented and process-oriented courses (Widdowson 1981, as cited in Britel & Sebane, 2023). This approach, therefore, focuses on the way the learner's mind processes language, viewing learners as language users rather than merely language learners.

### 1.2.3.3 Learning-centered Approach

The learning-centred approach to ESP course design considers the learner as a fundamental component of the learning process. This approach relies primarily on the learner, who uses existing knowledge and abilities to comprehend and acquire new information (Bouklikha, 2016).

Kumaravadivelu (2006: 92) argues that "a language is best learned when the focus is not on the language, that is, when the learner's attention is focused on understanding, saying, and doing something with language, and not when their attention is focused explicitly on linguistic features". In the same vein, Dudley-Evans & St. John (1998) note that the learning-centered approach seeks to optimise the learning situation by shifting the focus towards understanding how learners acquire the target competence that enables them to perform, rather than focusing only on the competence itself. This can be achieved by conducting an in-depth analysis of learners' motivation, learning styles, and overall learning processes.

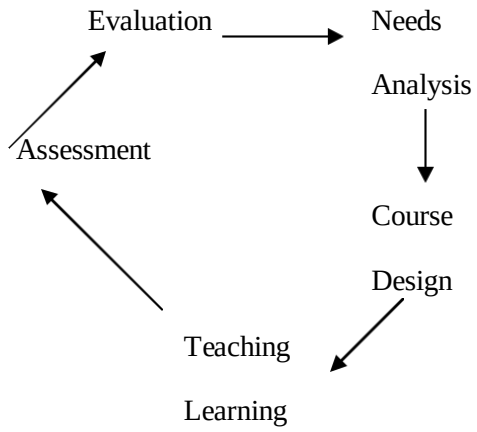
According to Hutchinson and Waters (1987), a distinction exists between the terms "Learning-centered" and "Learner-centered". They favour the former, explaining that "Learner-centered" suggests that "learning is totally determined by the learner"; whereas, learning is not solely a cognitive process. A learning-centred approach incorporates the learner as a key factor in the learning process and implies that learning is "a process of negotiation between individuals and society" (Hutchinson & Waters, 1987:72).

### 1.2.4 Steps in ESP Course Design

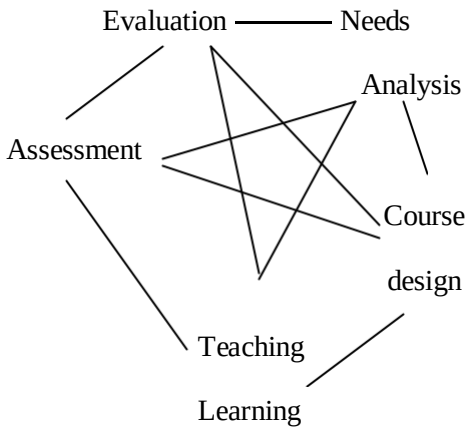
In designing an ESP course, the ESP practitioner is required to follow several steps. Dudley-Evans and St. John (1998) state that course design involves five main phases, namely: needs analysis, syllabus design, materials production, instruction, and evaluation. These phases follow a cyclical pattern rather than a linear sequence, entailing dynamic interaction (Richards, 2001). In this respect, Dudley-Evans and St. John (1998) assert that the main stages in the ESP process are interrelated, as illustrated in the figure below.

**Figure 1.5**

*Stages in the ESP Process: theory vs reality (Dudley-Evans & St. John, 1998: 121)*




**Stages in the ESP Process: Theory**




**Stages in the ESP Process: Reality**

The course designer, therefore, begins by conducting a needs identification and analysis (NIA) as the first step in order to determine learners' target needs, including their necessities (what they need to know), lacks (the gap between the learner's current proficiency level and target level), and wants (the learner's personal expectations from the course), as well as their learning needs (Hutchinson and Waters, 1987).

This information can be gathered using various instruments, such as interviews, questionnaires, observations, and tests. Needs analysis is, therefore, a crucial stage in ESP course design. Following this step, the ESP practitioner is able to identify the course objectives, select appropriate teaching materials, and determine the classroom activities to be used (Bouguenous, 2021). In the same vein, Basturkmen (2010) describes needs analysis as the process of collecting data that guides the course designer in identifying the course focus, content, and the teaching and learning methods to be implemented.

Following this phase, the course designer must consider another important component, namely the syllabus design. Bouguenous (2021) points out that "a syllabus deals with the major elements that serve in planning a language course and

provides the framework for its content and instructional application". In other words, a syllabus defines the content to be covered in a language course.

Hutchinson and Waters (1987: 80) also define a syllabus as "... a document which says what will (or at least what should) be learnt". It is a tool through which the teacher aligns the goals and needs of the learners with the tasks that take place in the classroom (Yalden, 1987). According to Basturkmen (2006:20), "in order to specify what language will be taught, items are typically listed and referred to as the syllabus". She further outlines the characteristics of a syllabus as illustrated in the figure below.

**Figure 1.6**
*Characteristics of a Syllabus (A Course in Language Teaching, CUP, 1996:177 qtd in Basturkmen 2006:21)*

1. consists of a comprehensive list of
   - content items (words, structures, topics)
   - process items (tasks, methods)
2. Is ordered (easier, more essential items first)
3. Has explicit objectives (usually expressed in the introduction)
4. Is a public document
5. May indicate a time schedule
6. May indicate preferred methodology or approach
7. May recommend materials

Basturkmen (2006:21) distinguishes between two types of syllabi, synthetic syllabi, where "language is segmented into discrete linguistic items for presentation one at a time" and analytic syllabi, in which "language is presented in whole chunks at a time without linguistic control". Similarly, Long and Crookes (1993) further explain that synthetic syllabi "rely on learners' (assumed) ability to learn a language in parts (e.g. structures and functions) independently of one another, and also to

integrate, or synthesize, the pieces when the time comes to use them for communicative purposes" (p.12). In essence, synthetic syllabi are based on the idea that learners can learn language elements separately and then combine them when needed for communication. Examples of synthetic syllabi include structural, functional-notional, and lexical types (Long & Crookes, 1993). Conversely, analytic syllabi are grounded in "the learners' presumed ability to perceive regularities in the input and induce rules, and/or the continued availability to learners of innate knowledge of linguistic universals" (Long &Crookes, 1993:11). In simple terms, analytic syllabi imply that learners can recognise patterns in the language to which they are exposed and infer rules based on their innate linguistic knowledge. Examples of analytic syllabi include task-based, process, and procedural types (Long & Crookes, 1993).

Harmer (2001:295) claims that, regardless of its type, "every syllabus needs to be developed on the basis of certain criteria", which he lists as follows:

- Learnability: Content should be taught progressively, moving from simple to more complex items, as learners tend to grasp certain elements (structural, lexical, etc.) more easily than others. The level of difficulty should gradually increase in line with the learners' proficiency level.
- Frequency: Teachers should introduce items that are frequently used in the target language, particularly in the early stages of instruction, rather than those rarely used by native speakers.
- Coverage: Some words and structures have a wider range of use than others; therefore, they should be introduced earlier in the learning process.
- Usefulness: the focus should be on language that is relevant and applicable to the learners' communicative needs.

After designing an ESP syllabus, the next stage is materials development. Materials refer to any resources that facilitate language learning, such as textbooks, videos, audio materials, and so on. Developing materials means "creating, choosing, or adapting, and organizing materials and activities so that students can achieve the objectives that will help them reach the goals of the course" (Graves, 2000: 150).

Pinter (2006, as cited in Harsono, 2007) claims that teachers can develop or produce teaching materials by evaluating available resources, adapting, supplementing, and designing their own materials. Material adaptation, therefore, follows an important step, which is evaluation. Adapting involves matching materials to the learners' needs. Maley (1998) proposes the following methods for adapting teaching materials (see Table 1.1).

**Table 1.1**

*Ways for Material Adaptation (Maley,1998 as cited in Bensafa, 2016:179)*

| **Way** | **Description** |
|---|---|
| **Omission** | The teacher leaves out things deemed inappropriate, offensive, unproductive, etc., for the particular group. |
| **Addition** | Where there seems to be inadequate coverage, teachers may decide to add to textbooks, either in the form of texts or exercise material. |
| **Reduction** | Where the teacher shortens an activity to give it less weight or emphasis. |
| **Extension** | Where an activity is lengthened in order to give it an additional dimension (For example, a vocabulary activity is extended to draw attention to some syntactic patterning). |
| **Rewriting/ Modification** | Teacher may occasionally decide to rewrite material, especially exercise material, to make it more appropriate, more "communicative", more demanding, more accessible to their students, etc. |
| **Replacement** | Text or exercise material which is considered inadequate, for whatever reason, may be replaced by more suitable material. This is often culled from other resource materials. |
| **Re-ordering** | Teachers may decide that the order in which the textbooks are presented is not suitable for their students. They can then decide to plot a different course through the textbooks from the one the writer has laid down. |
| **Branching** | Teachers may decide to add options to the existing activity or to suggest alternative pathways through activities (an experiential route or an analytical route.) |

Supplementing means providing additional materials to existing ones in order to fulfil the objectives of the syllabus. However, when adapting or supplementing existing materials is not sufficient, the teachers' final option for developing materials is to design his own (Harsono ,2007).

According to Hutchinson and Waters (1987), "it is likely that a course tailored to the needs of a specific group of ESP learners will not be available" (p. 106). Therefore, teachers are required to develop appropriate teaching materials to meet learners' requirements; however, "few have had any training in the skills and techniques of materials writing" (ibid,1987: 106). Thus, developing adequate teaching materials in ESP is a difficult task.

In an attempt to help ESP teachers develop appropriate materials, Hutchinson and Waters (1987: 107-108) proposed a set of principles to be considered when writing materials, which are highlighted as follows:

a) Materials function as a stimulus for learning. Good materials motivate learners to engage in the learning process. Hence, they involve:
- texts that engage learners.
- enjoyable tasks that stimulate learners' thinking.
- opportunities for learners to apply what they already know as knowledge and skills.
- content that both students and instructors can handle.

b) Effective materials should offer a systematic, comprehensible unit structure that helps direct both the teacher and the learner through different activities to optimise learning. Therefore, "a materials model must be clear and systematic, but flexible enough to allow for creativity and variety" (ibid, 1987: 107).

c) Materials should illustrate a vision of how language and learning are perceived, and reflect teachers' opinions and attitudes regarding the learning process.

d) Materials highlight the nature of learning and "should try to create a balanced outlook which both reflects the complexity of the task, yet makes it appear manageable." (ibid, 1987:108).
e) Materials should expose instructors to updated teaching strategies.
f) Materials should offer examples of appropriate, accurate language use.

Widdowson (1990:67) argues, "it has been traditionally supposed that the language presented to learners should be simplified in some way for easy access and acquisition. Nowadays, there are recommendations that the language presented should be authentic.". Authentic materials in ESP are, indeed, crucial because they provide a realistic context for activities that align with learners' needs (Benavent and Peñamaría, 2011). These authors argue that authentic materials "can increase students' motivation and expose them to real language and culture, as well as to the different genres of the professional community to which they aspire" (Benavent and Peñamaría, 2011:90).

Although writing materials is "one of the most characteristic features of ESP in practice" (Hutchinson & Waters, 1987: 106), it remains a challenging task for material designers, especially when they are required to develop authentic materials for an entire course (De Chazal, 2014). Therefore, some characteristics of effective materials are highlighted as follows:

- Materials need to be relevant to the learners' academic needs.
- They should be applicable, i.e. learners should be able to use the language and skills in the materials in their own contexts.
- Learning outcomes need to be well-specified.
- Materials should be easy to understand. This includes the language and content.
- The material's objectives need to be clear, meaning that learners should know why they are performing the tasks and what they can gain from them.

- Materials need to be motivating and engaging by selecting interesting tasks, particularly those which align with the learner's real-life contexts.
- Materials should be diverse, i.e. include a variety of tasks, topics, and genres.
- Materials need to be correct in terms of referenced source texts, mechanics of writing (spelling, punctuation, etc.), and language use.
- Materials need to be well-presented, using visual aids if needed. (De Chazal, 2014).

After designing appropriate teaching materials, the next step involves course instruction. At this stage, the aim is to create an engaging and interactive learning environment in which students can improve their language skills across various contexts (Hutchinson &Waters, 1987; Dudley Evans &St. John,1998). Consequently, teachers must make effective use of the materials they have developed and apply appropriate teaching strategies to achieve this goal. Furthermore, given that learners in ESP contexts often possess greater content knowledge than the teacher, the latter takes on the role of a facilitator of language learning, in addition to other roles such as monitor, advisor, and classroom manager.

The teaching phase is followed by evaluation. Hutchinson and Waters (1987) suggested two levels of evaluation: learner assessment and course evaluation. Learner assessment involves measuring learners' performance and language proficiency level, that is, determining whether learners can communicate effectively in the target language and apply subject knowledge to achieve their goals. Course evaluation, on the other hand, focuses on assessing the effectiveness of the course, in other words, the extent to which the course has achieved its intended objectives.

These authors further argue that the two levels of evaluation are not always distinct, as assessing learners' performance can, to some extent, reflect the effectiveness of the course. Furthermore, both types of evaluation provide the teacher with feedback regarding the course, highlighting what learners have achieved and

what aspects need to be improved.

### 1.2.5 ESP Practitioner Roles

Since there is a wide range of ESP courses and contexts, Robinson (1991: 79) argues that "there is no single, ideal role description" for an ESP teacher. Therefore, the role is considered challenging, as it extends beyond teaching to include conducting research, designing courses, developing teaching materials, collaborating with subject- specialists, assessing students, and evaluating courses (Dudley-Evans and St. John, 1998).

In ESP, the term “Practitioner” is preferred over “teacher” to reflect the broader scope of responsibilities involved. As previously mentioned, Dudley -Evans and St John (1998) identify five key roles for the ESP practitioner: teacher, course designer and materials provider, collaborator, researcher, and evaluator.

#### 1.2.5.1 The ESP Practitioner as a Teacher

As agreed upon by many researchers, including Kennedy and Bolitho (1984), Hutchison and Waters (1987), Robinson (1991), Dudley-Evans and St John (1998), the ESP practitioner, as a language teacher, must possess several key qualities. These include the ability to promote effective communication, adapt to various situations, show interest in learners’ specialisms, and demonstrate flexibility. In this regard, Dudley-Evans and St John (1998:14) assert that “the willingness to be flexible and to take risks is one of the keys to success in ESP teaching”.

The role of the ESP practitioner, therefore, involves being a consultant, classroom manager, and negotiator. In this respect, Dudley Evans and St John (1998), claim that “in specific ESP teaching it may be the learner who asks the questions and the teacher who responds” (p.14). Hence, in such a case, the teacher assumes the role of a negotiator.

### 1.2.5.2 The ESP Practitioner as a Course Designer and Material Provider

In addition to his role as a teacher, the ESP practitioner is also responsible for designing courses and developing teaching materials in accordance with learners' needs (Mackay and Mountford, 1978; Swales, 1988; Robinson, 1991; Dudley-Evans and St John, 1998). According to Dudley-Evans and St John (1998), the "role of ESP teachers as 'providers of material' thus involves choosing suitable published material, adapting material when published material is not suitable, or even writing material where nothing suitable exists" (p.15).

However, researchers debate whether material providers should use authentic textbooks or develop their own materials. For instance, Swales (1980, as quoted in Dudley-Evans &St John, 1998:15) claims that "The role of the materials writer has become such a desirable characteristic of the ESP teacher in the eyes of employers that there is a danger that the advantages of published material are ignored even when that material is suitable for a given situation".

On the other hand, Hutchinson and Waters (1987) argue that developing new materials should be considered the final option. Yet, in both cases, material providers need to evaluate the effectiveness of the materials used. Furthermore, they should collaborate with colleagues and subject-specialist teachers to gain knowledge and understanding of the subject and how it connects with the language. This enables the ESP practitioner to design effective courses and select appropriate teaching materials (Dudley Evans & St John, 1988), thereby helping to achieve the course's objectives.

### 1.2.5.3 The ESP Practitioner as a Collaborator

Collaboration in an ESP context aims to identify the link between language and specialised fields. It occurs "when the ESP teacher finds out about the subject syllabus in an academic context or the tasks the students have to carry out in a work or business situation" (Dudley-Evans & St John, 1998:16).

Dudley-Evans and St John (1998) considered various forms of collaboration and concluded that the most effective approach "is where a subject expert and a language teacher team-teach classes" (p.16). However, for team-teaching to be successful, cooperation between ESP and subject -specialist teachers must be reciprocal (Kennedy and Bolitho, 1984).

### 1.2.5.4 The ESP Practitioner as a Researcher

ESP practitioners are required to conduct research to comprehend the genres and discourse of the texts their learners use (Makhlouf & Arar, 2022), and to remain updated on whether these texts adequately address learners' needs. In addition, Dudley-Evans and St John (1998) assert that:

> An ESP practitioner has to go beyond the first stage of Needs Analysis -Target Situation Analysis (TSA) which identifies key target events, skills and texts- to observe as far as possible the situation in which students use the identified skills, and analyse samples of the identified texts (p.15).

Simply put, acting as a researcher allows ESP practitioners to stay informed about developments in the field of ESP and to apply research findings within their specific contexts to effectively meet learners' needs.

### 1.2.5.5 The ESP Practitioner as an Evaluator

The role of the ESP practitioner as an evaluator is highly significant in ESP teaching. Dudley Evans and St John (1998:17) note that "it is important to follow up with students sometime after the course in order to assess whether the learners have been able to make use of what they learned and to find out what they were not prepared for". Hence, as evaluators, ESP practitioners need to assess their learners' progress through tests, for example. Moreover, they are required to evaluate the course they have delivered and the materials they have selected for teaching (Dudley

Evans & St John,1998). According to these researchers, evaluation also contributes to syllabus improvement through continuous needs analysis and ongoing discussion.

## 1.3 Nature of Writing

Writing constitutes a vital academic skill that enables the transformation of new ideas and concepts. It involves the intricate task of converting human thoughts and information into written form, extending beyond the mere arrangement of words. Writing requires a complex cognitive process that entails the simultaneous management of various elements, including grammatical rules, lexical choices, graphical features, and rhetorical structures, to produce coherent texts. Flynn and Stainthorp (2006) assert that writing, as a complex activity, places significant demands on the cognitive system, requiring the coordination of multiple tasks. Berninger et al. (2002, cited in Westwood, 2008) note that writing proficiency encompasses basic transcription skills, such as handwriting, punctuation, and spelling, alongside higher- order cognitive tasks including planning, organising, and conveying content. Therefore, writing is not merely the graphical representation of spoken language; it involves the careful selection and organisation of ideas to communicate messages effectively.

Writing is often perceived as a mentally demanding process in which writers engage in various sub-processes, including planning, constructing, organising, evaluating, and refining their style to convey their ideas efficiently (Saddler et al., 2004, cited in Westwood, 2008). Thus, it is commonly regarded as "the most difficult of all skills to acquire because its development involves the effective coordination of many different cognitive, linguistic and psycho - motor processes" (Westwood, 2008: 56).

## 1.4 The Importance of Writing

According to Bacha (2002), writing plays a crucial role in learners' academic journeys, as it forms the foundation for many examinations, research projects, and reports. Other researchers have also emphasised the importance of writing, including Coffin et al. (2003), who argue that writing serves as a tool for assessing learners, enhancing their communication skills, and preparing them for their future careers. Bello (1997) asserts that the significance of writing lies in its ability to help learners express their thoughts more efficiently while reinforcing the grammar and vocabulary they have already acquired in class. Writing is described as "a tool for language development, for critical thinking and for learning in all disciplines" Bjork and Raisanen (1997: 8). Therefore, as a skill, writing holds paramount importance in language teaching and learning.

## 1.5 The Writing Process

Researchers have studied writing as a language skill since the 1970s, focusing on the processes and stages that effective writers typically follow. Although the names and number of these stages differ among scholars, common steps have been identified and are generally classified into five phases, namely: the prewriting phase, drafting, revision, editing, and publishing or presentation stages (Frederick, 1987).

### 1.5.1 The Pre-Writing Phase

The prewriting phase is the stage during which writers prepare for writing, and it is regarded as the most important stage. Richards and Renandya (2002:316) define prewriting as "an activity in the classroom that encourages students to write. It stimulates thoughts for getting started. In fact, it moves students away from having to face a blank page towards generating tentative ideas and gathering information for writing". At this stage, learners engage in brainstorming to select a topic, generate ideas individually or collaboratively, collect information, determine the purpose and

appropriate style, and prepare a plan (Frederick, 1987). This stage is often overlooked and, therefore, needs to be acknowledged and given due emphasis (Bouyakoub, 2012).

As previously discussed, the main strategies involved in this stage are brainstorming and planning.

#### 1.5.1.1 Brainstorming

Brainstorming involves spontaneously generating words or phrases related to a topic. However, when employing this technique, writers must be fully aware of both its advantages and limitations. In this regard, Bouyakoub (2012: 44) notes that "it is sometimes the case that students have a lot of ideas that do not fall into a pattern which can be inhibiting". Therefore, writers should use this technique appropriately to benefit from its strengths.

#### 1.5.1.2 Planning

Following brainstorming and the selection of ideas, the next strategy is to plan and organise these ideas. Without adequate planning, learners may feel disoriented and are likely to lose coherence in their writing. Thus, it is essential that learners acknowledge the importance of this stage. However, the plan is not expected to be perfect in terms of form or accuracy, as it is likely to be revised and refined several times before the first draft is produced (Bouyakoub, 2012). After brainstorming and planning, the next stage involves drafting.

### 1.5.2 The Drafting Stage

Drafting is the stage during which learners begin to structure and translate their thoughts into a preliminary version of a written text, which will later undergo revision. Learners often find this stage challenging at first, as they may not know how or where to start and may feel blocked. The drafting phase helps them overcome these difficulties by allowing them to begin with what they find easiest (Bouyakoub, 2012). White and Arndt (1991) state that drafting involves both creation and production.

During this phase, learners focus on articulating their ideas without being overly concerned with the mechanics of writing, as excessive attention to form may otherwise impede the flow of their thoughts.

### 1.5.3 The Revision Stage

As the first draft is rarely final, learners should make changes during the revision stage by adding, modifying, or deleting words and/or ideas. Revision is an essential component of the writing process. During this stage, writers are required to evaluate broader aspects of writing, including organisation, content, and style, rather than simply checking for spelling errors (Bouyakoub, 2012).

### 1.5.4 The Editing Stage

Hedge (1988: 23) states that "good writers tend to concentrate on getting the content right first and leave the details like correcting spelling, punctuation and grammar until later". This represents the focus of the editing stage. Nation (2009) further describes this phase as "going back over the writing and making changes to its organization, style, grammatical and lexical correctness, and appropriateness" (p. 120). At this point, learners are expected to check for any remaining errors in spelling, grammar, punctuation, word order, and other mechanical aspects to ensure the text is ready for presentation or publication.

### 1.5.5 The Publishing / Presentation Stage

Williams (2003: 107) defines publishing as "sharing your finished text with its intended audience, publishing isn't limited to getting a text printed in a journal. It includes turning a paper in to a teacher, a boss, or an agency". This phase marks the completion of the writing process, during which the final product is either presented (for example, to a group) or published.

To conclude, the writing process is highly crucial, with each stage serving a distinct purpose. Therefore, writers must pay careful attention to the various steps and strategies involved in order to produce a well-structured and effective piece of writing.

## 1.6 Common Difficulties of Writing Skill

Abu Rass (2015) states that writing is a challenging skill for both native and non-native speakers, as "writers must balance multiple issues in their writing such as content, organization, purpose, audience, vocabulary and mechanics which means using the right punctuation, spelling, and capitalization" (p.49). The following figure illustrates the main issues that writers need to address.

**Figure 1.7**

*Producing a Piece of Writing (Raimes ,1983: 6)*


As illustrated in the figure, learners must take all these elements into account, which makes writing a demanding task. Alsamadani (2010, cited in Ibnian, 2017) asserts that writing in a second language is even more challenging, as writers are expected to produce content that is syntactically accurate, meaningful, and culturally appropriate.

Adas and Bakir (2013) identify several difficulties that learners encounter in writing, including a limited vocabulary in the foreign language, which often leads to the repetition of the same words, thereby limiting their creativity. In this context, Weigle (2002, as quoted in Bouyakoub, 2012: 41) notes that:

> The process of text generation, or encoding internal representations (ideas) into written text, may be disrupted by the need for lengthy searches for appropriate lexical and syntactic choices. Consequently, the written product may not match the writer's original intention.

Furthermore, learners often produce ill-structured sentences, making it difficult for the reader to understand their meaning. Touchie (1986) identifies another issue: the overgeneralisation of grammatical rules. He defines overgeneralisation as "the use of one form or construction in one context and extending its application to other contexts where it should not apply" (p.78). In other words, learners apply the same rule to all grammatical structures, disregarding exceptions, such as using the "-ed" ending for the past tense and "-s" for the simple present (Ghouali, 2021). Touchie (1986) further explains that learners overgeneralize "to reduce their linguistic burden "(Ibid, 1986: 78). However, repeated mistakes may become fossilized, making them difficult for learners to eliminate.

Writing difficulties may also stem from other factors, including psychological ones. Learners often experience anxiety when attempting to convey their intended meaning while coping with a limited vocabulary, lack of motivation, and other challenges.

## 1.7 Academic Writing Defined

Greene and Lidinsky (2014) argue that academic writing "is what scholars do to communicate with other scholars in their fields of study, their disciplines. It's the research report a biologist writes, the interpretive essay a literary scholar composes" (p.1). In other words, academic writing is a style of writing used by researchers to express their ideas within their specific fields of interest. It is also the type of writing

used by university students to produce dissertations, articles, and reports, which differ from letters, diaries, and other forms of personal writing. Therefore, academic writing has particular characteristics that distinguish it from non-academic writing and these should be recognised by learners (Ng, 2003). In this regard, Clark (2003) notes that "academic writing is at an even higher level of formality and is governed by even stricter conventions; thus, academic writing represents what we call formal Standard English" (p. 320). Clark highlights one of the main features of academic writing: its formality.

According to Al Fadda (2012), academic writing is "a mental and cognitive activity, since it is a product of the mind. The image of an individual working alone in a quiet environment has furthered the view of writing as a mental and cognitive activity" (p.124). However, other scholars, such as Ivanic (1998), view academic writing as a social activity that involves a dynamic interaction between the writer and the reader. Writers consider their audience when presenting their ideas, while readers engage with and interpret those ideas.

To sum up, academic writing can be defined as a form of writing required to meet educational or research purposes, including writing for conferences, publications, and university assignments. It encompasses a set of conventions and features that will be discussed in detail below.

## 1.8 Academic Writing Features

Academic writing is a distinct form of writing that is guided by a set of rules and conventions. The different types of academic texts that learners produce exhibit key characteristics that distinguish academic writing from other genres (Hyland, 2006). The main features defining academic writing include formality, explicitness (clarity), objectivity, cautious language, use of the passive voice, academic vocabulary, coherence and cohesion, and adherence to writing mechanics.

### 1.8.1 Formality

As mentioned earlier, the use of a formal style is one of the key characteristics of academic writing. Murray and Hughes (2008) assert that the degree of formality is a central aspect that differentiates academic writing from other types of writing. In formal writing, writers should avoid colloquial language, idiomatic expressions, and informal words (Bailey, 2011). For instance, the word "boss" should be replaced with the formal term "manager". Similarly, contracted or abbreviated forms should be avoided in academic writing. Gillett et al (2009:96) assert that "contracted words such as 'don't', 'can't', and 'shouldn't' are informal and should normally not be used when writing in an academic context (unless they are quotations which cannot be changed)". It is also inappropriate to use two-word verbs such as "put off", and "bring up" (Nga, 2009), interjections, hesitation fillers such as 'um', 'well', and 'you know', or personal adverbs and adjectives like 'personally' and 'best'.

### 1.8.2 Explicitness

In academic writing, it is important for writers to make explicit the relationships between the ideas in the text (Nga, 2009). This means that they must explicitly connect various parts of the text, such as arguments, evidence, and conclusions, to help the reader follow the logical flow of the content, through comparison, cause-effect links, and so on. Nga (2009) asserts that explicitness also involves properly acknowledging the sources of ideas presented in the text. In addition to presenting ideas clearly, writers must cite their sources accurately using in-text citations and a full reference. This ensures academic integrity and allows readers to distinguish between the writer's own ideas and other scholars' contributions.

### 1.8.3 Academic Vocabulary

Academic vocabulary is another defining feature of academic writing. As Bailey (2011: 179) states, "students need to be familiar with the rather formal vocabulary used in this area", since the vocabulary used in academic writing differs from that of everyday conversation. Learners, for example, must replace informal words such as "show," "see," and "so" with their formal counterparts: "illustrate", "observe", and

"therefore" (Murray & Hughes, 2008). To help learners develop their vocabulary, Hinkel (2002) recommends that teachers provide explicit instruction on academic vocabulary and expose learners regularly to texts at an appropriate academic level.

### 1.8.4 Objectivity

A key characteristic of academic writing is objectivity, which requires the use of impersonal language. According to Nga (2009), academic writing focuses on the information and arguments rather than the writer's personal views. Readers are more interested in the research findings and the conclusions drawn from them than in the writer's personal opinions. As such, personal pronouns like "I" and "we," or phrases like "in my opinion" and "you," should be avoided. For example:

"In my opinion, this technique is very useful." (avoided)
"This is a very useful technique." (Accepted)
"You can follow this strategy …" (avoided)
" This strategy can be followed ..." (Accepted)

In short, writers should avoid using a personal voice and aim for objectivity by grounding arguments in evidence from valid research.

### 1.8.5 Cautious Language (Hedging)

Another significant feature of academic writing is cautious language, also referred to as "hedging". Nurmukanedov and Kim (2009) define hedging as "the strategy when a speaker or writer wishes to avoid coming straight to the point or to avoid speaking directly" (p.274). In academic writing, while writers must take a position, they must also present their claims as tentative and open to interpretation. Therefore, they use hedging devices such as "probably," "possibly", and "likely," etc.

According to Hewings (2001:206), hedging devices are used "to qualify a writer's commitment to a proposition", allowing the writer to moderate the strength of their claims and indicate openness to alternative interpretations or future developments. Hedging also reflects the complexity of the issue under investigation. Writers may also use hedging when formulating hypotheses (Bailey, 2011). A hypothesis is a

possible answer to a research question and is, by nature, uncertain. Therefore, modal verbs such as “might”, “can”, “could”, and “would” are used.

### 1.8.6 Passive Voice

Unlike the active voice, where the subject performs the action, the passive voice places the object of the action at the beginning of the sentence. This structure is common in academic writing. In this respect, Hinkel (2004) notes that the passive voice is frequently used in academic genres.

According to Sanders et al (2005), writers may use the passive voice when the doer of the action is unknown or when they want to avoid personal pronouns like “I” or “we”. For instance, instead of writing "I conducted an interview with ten informants", the writer can use the passive voice: "An interview was conducted with ten informants." Another example:

- "Everyone claims that good readers are good writers." (Active voice)
- "It is claimed that good readers are good writers." (Passive voice)

### 1.8.7 Mechanism

The mechanics of writing are crucial for ensuring that the message is clearly understood by the reader. They refer to the rules of written language that ensure grammatical correctness and clarity. These include punctuation and capitalization.

#### 1.8.7.1 Punctuation and Capitalization

Punctuation is essential in academic writing to ensure clarity. Hinkel (2003: 300) asserts that “an academic text written without using [punctuation marks] can appear ungrammatical, no matter how well it adheres to the rules of English sentence structure”. Incorrect or absent punctuation can lead to ambiguity and hinder comprehension. Common punctuation marks include commas, colons, semicolons, quotation marks, apostrophes, and brackets. Each of these marks serves a specific purpose, such as indicating possession, quoting, or separating related ideas. Punctuation plays a significant role in conveying meaning and aiding the reader’s

understanding.

Capitalization, on the other hand, involves using capital letters at the beginning of sentences, for proper nouns, and for key words in titles. It is equally important for conveying clear information, such as marking the beginning of a sentence.

### 1.8.7.2 Coherence and Cohesion

Jones (2007) defines coherence as the logical flow of ideas, in which these ideas "stick together; they flow smoothly from one sentence to the next in logical order" (p.128). Murray (2012: 17) adds that coherence refers to "the ways in which your ideas connect together; the way in which one idea leads into that which follows it". Coherence is essential for maintaining the clarity of the writer's ideas, enabling the reader to understand the writer's intended meaning.

To achieve coherence, Cleary (2008) suggests that writers should organise their ideas logically, beginning with an introduction, followed by a thesis statement, supporting paragraphs, and a conclusion. Furthermore, writers should employ cohesive devices to ensure a smooth and logical flow of ideas.

Zuniga and Macias (2006) define cohesive devices as words or phrases that link different parts of a text, making its flow logical and allowing the reader to grasp the intended message. This includes the use of transitional words like "however", "moreover", "first", "next", and "finally", which are examples of cohesive devices that help readers follow the argument. They further argue that the flow of ideas within a text does not depend solely on grammatical correctness; therefore, it is equally important for the writer to pay attention to how the content is structured, logically sequenced, and cohesively connected.

## 1.9 Traditional Approaches to Teaching Writing

Researchers have identified three main approaches to teaching writing, namely the product-based approach, the process-based approach, and the genre-based approach.

### 1.9.1 The Product-based Approach

Badger and White (2000) state that the product approach to writing focuses on the final outcome of the instructional process, placing emphasis on language structure and grammatical knowledge. It is a teacher-centered approach in which learners are provided with model texts to imitate. This approach typically consists of four stages, namely familiarisation, controlled writing, guided writing, and free writing. Similarly, Steele (2004, as cited in Hasan and Akhand, 2010) outlines comparable stages, beginning with learners observing linguistic features, followed by constructing sentences, organising ideas, and demonstrating their writing skills.

According to Rusinovci (2015), the product approach originates from the audio-lingual method, where grammar is prioritised and language patterns are reproduced. However, this approach has been criticised for restricting writers' creativity, which led to the development of the process approach, which is now widely adopted in writing instruction.

### 1.9.2 The Process-based Approach

According to Badger and White (2000), the process approach to writing involves a series of steps that learners undertake before producing their final written product. In contrast to the product approach, the process approach shifts the focus away from linguistic knowledge and instead prioritises the development of writing as a holistic skill through repeated drafting, editing, proofreading, and revision. Unlike the teacher-centered nature of the product approach, the process approach is characterised by learner-centeredness, whereby the teacher acts as a facilitator rather than a model. Rusinovci (2015) notes that the process approach views writing as a recursive rather than a linear activity, highlighting its cyclical nature. In the same vein, Richards and

Schmidt (2010) describe the process approach as a set of techniques and strategies used by the writer, emphasising the complex nature of writing that involves planning, revising, and reviewing.

Oshima and Hogue (2007) describe the process approach to writing as an ongoing set of stages aimed at improving and refining a piece of writing until the required form is achieved. They identify four key phases: prewriting, organising, writing, and polishing. The process begins with selecting a topic, followed by brainstorming to generate related ideas and eliminating those that are irrelevant. The next step involves arranging these ideas into an outline to guide the drafting process. During the writing stage, the focus is placed on developing ideas rather than on grammatical accuracy or the mechanics of writing. In the final phase "polishing", the writer corrects and refines the work through revision and editing, addressing existing errors and improving language use. Editing can be carried out independently (self-editing) or collaboratively (peer-editing) (Oshima & Hogue, 2007). However, the process approach has been criticised for neglecting sociocultural aspects of writing, such as purpose, style, genre, and audience (Rusinovci, 2015) which led to the emergence of the genre-based approach.

### 1.9.3 The Genre-based Approach

Ahn (2012) argues that the process approach does not sufficiently guide learners on how to structure different types of texts, leaving them to discover text types independently. He further claims that understanding the social contexts of different types of texts is essential, noting that each piece of writing is shaped by its social environment, which influences language use. The genre-based approach, therefore, focuses on purposeful writing adapted to particular social settings. It highlights the significance of key elements in writing and their practical use, placing emphasis on clear explanations throughout the teaching process.

Badger and White (2000) claim that the genre approach shares a common feature with the product approach, namely its focus on the linguistic aspects of writing. In essence, the genre-based approach considers the sociocultural norms that are often overlooked by the previous approaches. It recognises that there are different genres in writing, each shaped by its social contexts and governed by particular purposes.

## 1.10 Task-Based Language Teaching

The Task-Based Language Teaching (TBLT) approach has emerged as a response to the limitations identified in traditional language teaching methods.

### 1.10.1 Definition

Task-based Language Teaching (TBLT) has been defined by various researchers as a distinct pedagogical approach. Ellis (2003) asserts that TBLT focuses on tasks that mirror real-life language use, thereby promoting natural language acquisition. In this approach, tasks represent the core unit of instruction. Nunan (2004) defines tasks as activities in which learners are required to comprehend, produce, and interact in the target language, with a primary focus on meaning rather than form. Ellis (2003) outlines six criteria features of a task, which are as follows:

- A task is a work plan for learner activity.
- It involves a primary focus on meaning.
- It involves real-world processes of language use.
- It can involve any of the four language skills.
- It engages cognitive processes.
- It has a clearly defined communicative outcome. (Ellis, 2003: 9-10)

Task-based instruction is based on key principles such as authenticity, learner-centeredness, and task involvement (Willis, 1996), all of which aim to motivate learners and encourage them to take responsibility for their own learning. The task-based approach differs from traditional approaches that focus on teaching grammatical structures and vocabulary in isolation or outside meaningful

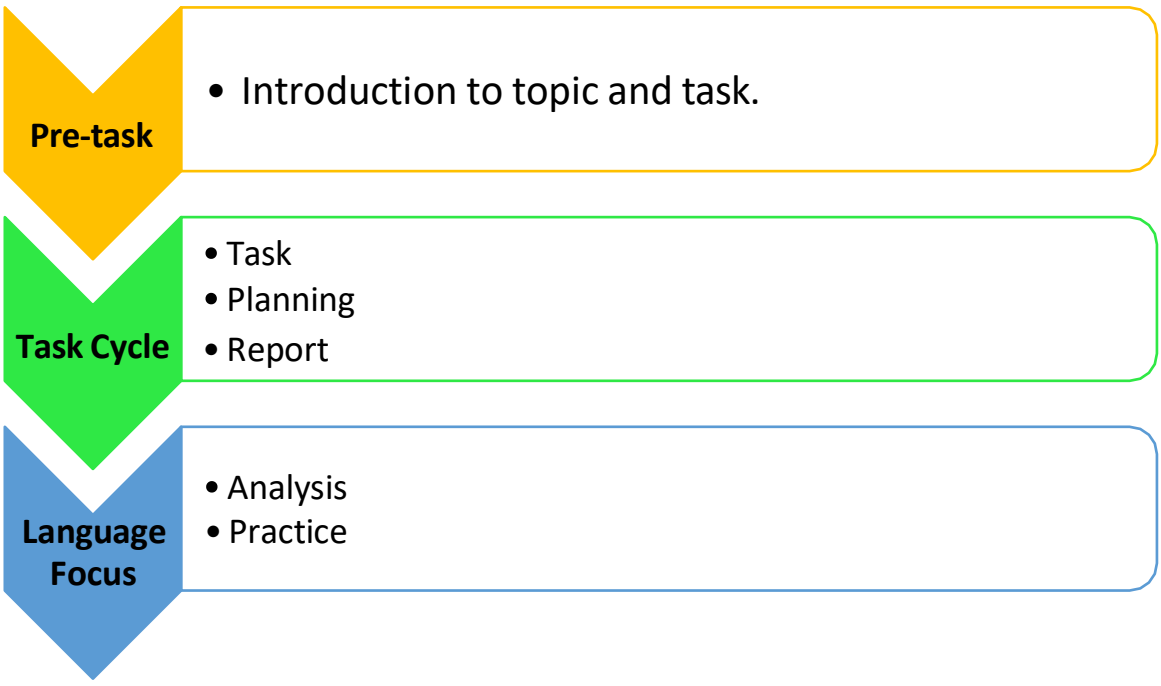
contexts (Long, 2015). Instead, it aims to enhance learners' understanding of language structures and functions trough meaningful tasks, while developing their ability to communicate effectively in real-life situations (Richards & Rodgers, 2001). Therefore, this approach seeks to foster both learners' linguistic competence and communicative ability, preparing them to use the language in various real-world contexts (Skehan, 1996).

### 1.10.2 Stages in TBLT

Researchers in TBLT propose three main stages for task-based lessons, namely pre-task, task cycle, and language focus (Skehan, 1998; Willis, 1996). Other researchers, such as Ellis (2003), use alternative terminology for these phases, referring to them as the pre-task, during task, and post-task stages. Willis (1996) outlines these three stages through his framework as follows:

**Figure 1.8**

*Willis' Framework for Task-Based Learning (1996:52)*



### 1.10.2.1 The Pre-task Phase

The pre-task stage is a fundamental component of TBLT, particularly in the context of teaching writing. It serves as a warm- up activity.

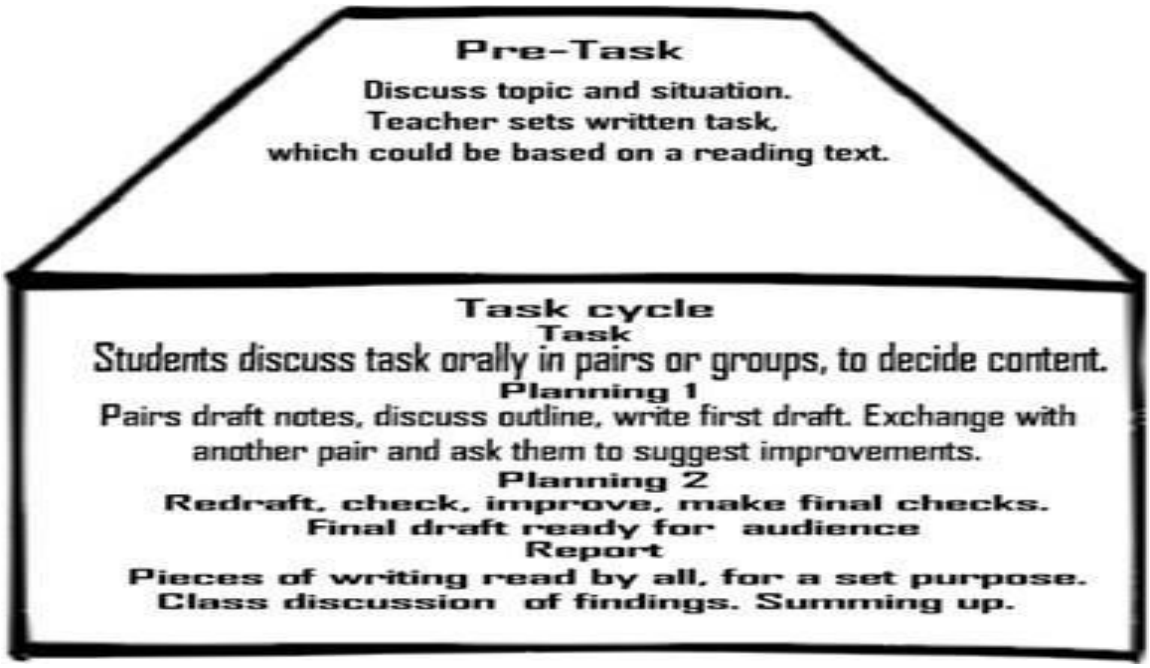
At this stage, teachers prepare learners by activating their prior knowledge and providing them with essential language input, which lays the ground for effective task performance (Willis, 1996). Similarly, Skehan (1998) asserts that pre-task activities are crucial for activating learners' linguistic resources and increasing their engagement with the task, thus enhancing their overall performance. Willis (1996:62) explains that the final product of the task cycle "will first be introduced orally or through reading in the pre-task phase, then discussed as an integral part of the task stage, drafted collaboratively at the planning stage and finalized for the report stage". In other words, during this phase, teachers prepare learners, assign the written task, which can be based on a reading text, serving as a model of how to deal with the task. Pre-task activities in writing instruction might include activities such as brainstorming and revisiting essential vocabulary and grammar structures. Teachers during this phase aim to help learners tackle the writing task with confidence.

### 1.10.2.2 The During-task Phase

During this stage, learners focus on understanding and conveying meaning to achieve the aim of the task. Willis (1996) divides the task cycle phase into three sub-stages: task, planning (1-2), and report, as illustrated in the following figure.

**Figure1.9**

*Willis' Doing a Written Task Framework (1996:62)*




Willis's framework (1996) suggests that during the task phase, learners should work in pairs or groups to discuss how to approach the task, including decisions about content. In the first planning phase, these pairs or groups discuss the outline of the draft they intend to write and take notes. Next, they begin writing the first draft, focusing on content rather than on grammar, spelling, or other mechanics. After the draft is completed, it should be exchanged with other pairs or groups for review. This peer evaluation allows learners to receive feedback that can help improve their drafts.

In the second planning phase, each pair or group of learners uses the feedback they received to revise and improve their final draft, which will be shared with the audience. In the report phase, each group presents their final piece of writing to the class, followed by a class discussion focusing on the content of their written work.

### 1.10.2.3 The Post-task Phase

Panavelil (2015) states that the post-task stage, also known as the "Language Focus" stage, gives learners the opportunity to examine specific linguistic features that naturally emerged during the task cycle. After focusing on meaning in the previous stage, learners then shift their attention to the language forms used to convey that meaning. In other words, this stage places emphasis on form.

As previously mentioned, the post-task stage consists of two steps: analysis and practice (see Figure 1.9). During the analysis phase, the teacher focuses on specific grammatical points or language structures that are related to the tasks learners have performed, based on the errors observed during the task cycle. In the practice phase, learners engage in activities that target these identified language points (Panavelil, 2015).

To sum up, task-based instruction is built on the idea that learners perform better when they focus on completing the task rather than on the language itself. Language issues are therefore addressed by the teacher after the task, through appropriate corrections, modifications, and feedback.

## 1.10.3 Teachers and Learners' Roles

Richards and Rodgers (2001) point out that both teachers and learners have specific roles in TBLT.

Learners are expected to act as group participants, monitors, risk-takers, and innovators. As participants, they engage in tasks in pairs or small groups. Therefore, learners who are used to working individually or in whole-class settings may need to adapt. As monitors, they are expected to focus not only on the content of the activity but also on the language forms used to express that content. To support this, teachers should design and structure tasks that encourage learners to observe how language is used in real communication.

In TBLT, learners' roles as risk-takers and innovators involve creating and understanding messages even if they do not fully master all the necessary linguistic resources or lack prior experience. This ability reflects one of the main goals of

task-based activities. To succeed in this role, learners need to develop certain strategies, such as paraphrasing or restating ideas, using contextual clues to deduce meaning, and asking for help or clarification when needed.

On the other hand, teachers' roles in TBLT include selecting, adapting, and sequencing tasks in ways that match learners' language proficiency levels, needs, and interests. Teachers are also responsible for preparing learners for the tasks through warm-up activities. These activities help introduce the topic, explain the task instructions, and support learners in recalling useful vocabulary and phrases that will assist them in completing the task.

Teachers also have the role of raising learners' awareness of language form to help them notice key aspects of the language they use. To achieve this, teachers may implement techniques such as attention-focusing pre-task activities and exposing learners to similar tasks that highlight relevant language features.

## 1.11 Conclusion

This chapter has reviewed the key components of the present research, namely ESP, writing in general, academic writing in particular, and TBLT. Particular emphasis was placed on needs analysis as a fundamental component of ESP course design. The main steps involved in course design were outlined, including needs identification and analysis, syllabus design, material development, course evaluation, and learner assessment. The chapter also highlighted the common difficulties learners encounter when writing, discussed the essential features of academic writing, and examined what distinguishes it from other types of writing. It concluded by providing an overview of the stages of TBLT and the roles of both teachers and learners within this approach. The next chapter presents in detail the methodology adopted in this research along with a contextual analysis of the teaching and learning situation.

# CHAPTER TWO

# CHAPTER TWO

Situation Analysis and Research Methodology

## 2.1 Introduction

This chapter is divided into two main parts. The first part begins with presenting an overview of the LMD system in Algeria and offers a general description of Belhadj Bouchaib University of Ain Temouchent, including the various disciplines, branches and specialisations offered. Particular emphasis is placed on the current teaching and learning situation of English within the Department of Mechanical Engineering.

The second part outlines the methodological framework employed in this research. It first presents the main objectives that the researcher seeks to achieve through the study, followed by a detailed description of the research design. This includes the selected research methods, the sample population, the instruments used for data collection, and the procedures used for data analysis.

## 2.2 Situation Analysis

This section provides an overview of the LMD system in Algeria and highlights the training offered across various disciplines at Belhadj Bouchaib University of Ain Temouchent. It also outlines the faculties and departments, as well as the fields of study and specialisations available at each cycle (i.e. Licence, Master's, and Doctorate), with particular emphasis on the status of English within the Department of Mechanical Engineering.

### 2.2.1 The LMD System in Algeria

The Algerian Ministry of Higher Education and Scientific Research adopted the Anglo-Saxon system known as "The LMD System", standing for "Licence-Master-Doctorate", as part of a broader reform that replaced the classical system. Under the classical system, students completed four years of study to obtain a Licence degree, followed by three additional years to earn a Magister degree. Upon obtaining the Magister, they were appointed as permanent university lecturers, with the option of pursuing doctoral studies to obtain a Doctorate degree. However, with the implementation of the LMD system, significant changes have been introduced to the

structure of higher education in Algeria (Lamri, 2015; Bouklikha, 2016; Ghouali, 2021).

In order to enhance the quality of teaching and align with the demands of the modern world, the LMD system has restructured the framework of higher education and introduced new mechanisms to facilitate its application, while promoting international mobility, collaboration, and competitiveness (Hemche, 2014). Since the adoption of the LMD system in 2004, universities have awarded a Licence degree upon the accumulation of 180 credits during the first cycle, which spans three years or six semesters (two semesters per academic year). The Master's degree is granted upon the completion of 120 credits in the second cycle, which lasts two years or four semesters. According to Lamri (2015: 92), "A credit is equivalent to an hourly volume of 20 to 25 hours, encompassing all forms of education and hours of student's personal work".

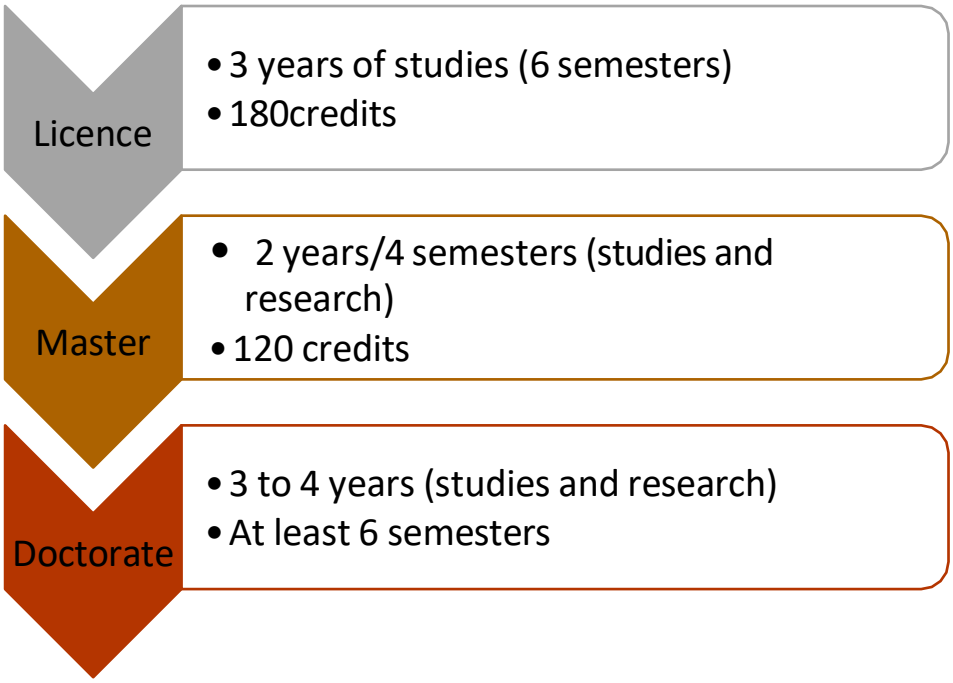
The LMD system also consists of teaching units, which refer to a set of subjects broken down into four units (Bouklikha, 2016). The latter are taught differently in each semester:

- The Fundamental Unit: it includes essential and core subjects related to the learners' area of specialisation.
-The Methodological Unit: It aims to equip learners with the methodological skills necessary to conduct research within their field of study.
- The Discovery Unit: this unit is not directly linked to the learners' primary field of study. It seeks to broaden their competencies by introducing them to new disciplines, thereby facilitating interdisciplinary transitions.
-The Transversal Unit: this unit includes compulsory courses such as languages and Information and Communication Technologies (ICTs).

In the third cycle, a Doctorate degree is awarded after the completion of a postgraduate programme, which begins with a competitive entrance exam. The following figure illustrates the three-cycle structure of the LMD system:

**Figure 2.1**

*The Three-Cycle LMD System*



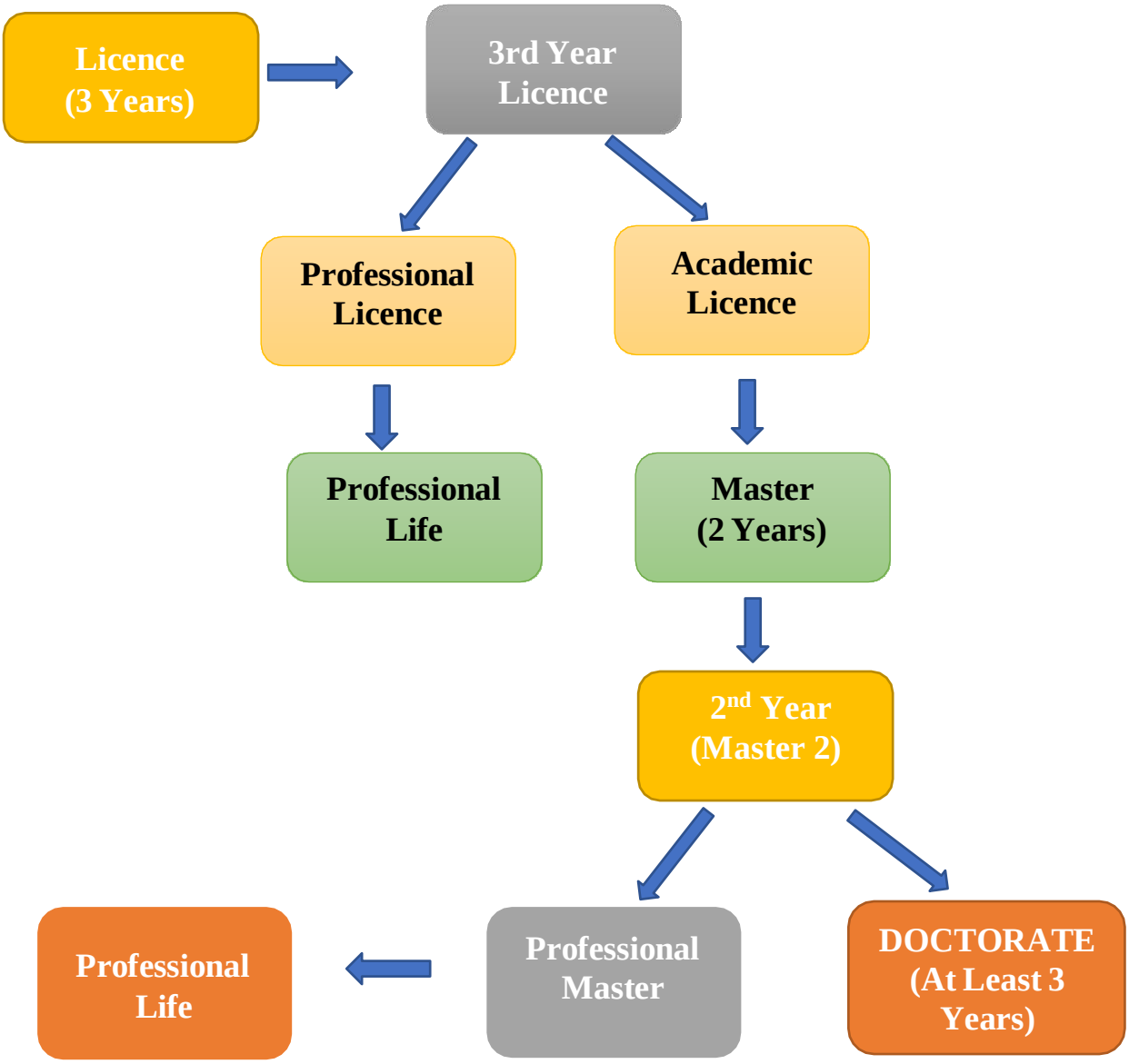

The Licence aims to equip students with technical and professional competencies that enable them to develop advanced skills. It may lead either to a Professional Licence, which qualifies learners for direct employment, or to an Academic Licence, which prepares them for Master's studies.

The Master's programme provides scientific and technical training. It includes two tracks: a Professional Master's, intended for students seeking to enter the labour market and take up employment; and a Research Master's, designed for those who plan to pursue doctoral studies.

The Doctorate cycle, in turn, focuses on research and advanced training that prepare candidates to innovate and contribute to knowledge and practice in their respective fields (Hemche,2014). The following figure presents a detailed overview of the structure of the LMD system:

**Figure 2.2**

*The LMD System's Structure* (Hemche, 2014)



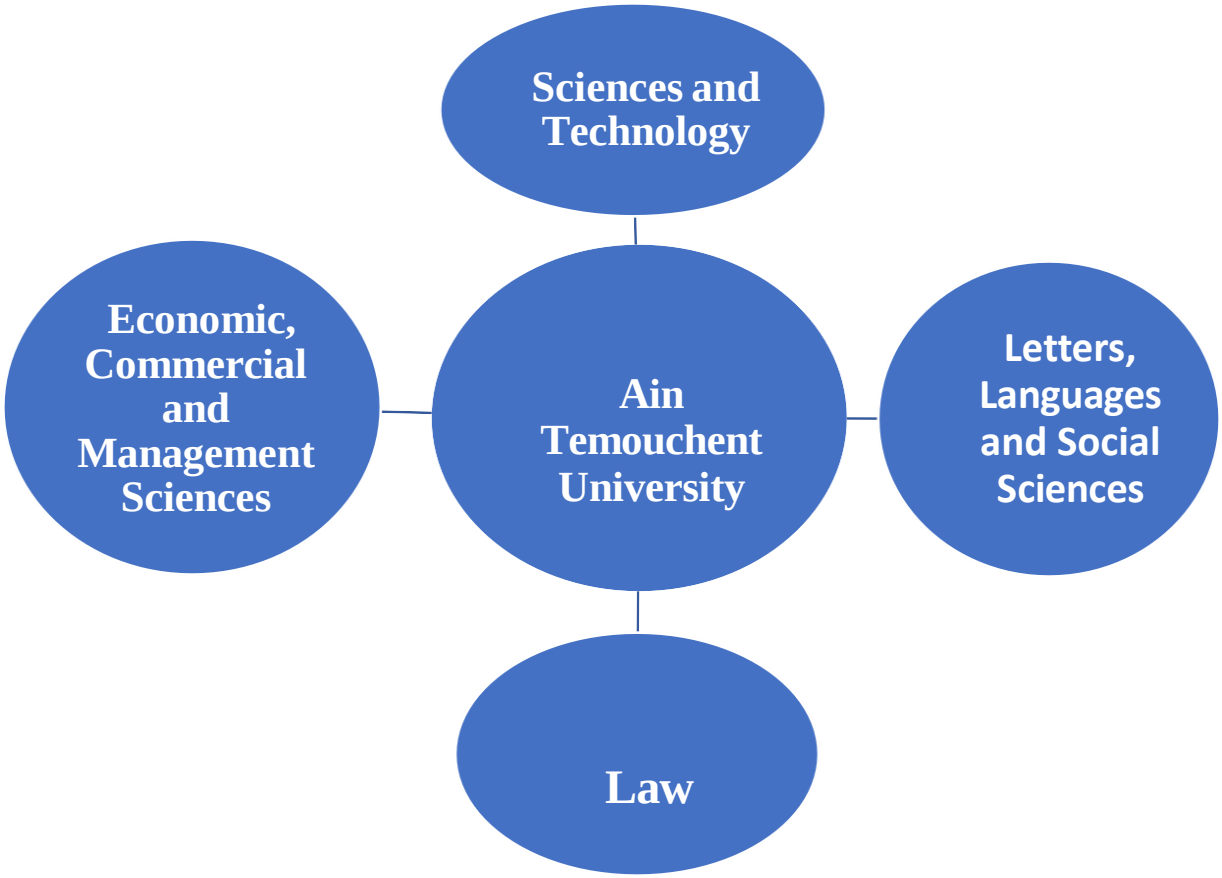
### 2.2.2 University of Ain Temouchent

The University of Ain Temouchent, Belhadj Bouchaib, was established in 2009 as a university centre and was officially promoted to the status of a full university in 2020. The University offers training in nine academic disciplines, namely: Sciences and Technology, Mathematics and Computer Science, Sciences of Matter, Natural and Life Sciences, Arabic Language and Literature, Human and Social Sciences, Letters and Foreign Languages, Economics, Commerce and Management Sciences, and Law.

In the first cycle (Licence), these disciplines are organised into thirty branches or fields of study, including forty specialisations. In the second cycle (Master), they are grouped into twenty-eight branches, also comprising forty specialisations. Accordingly, the University consists of four faculties encompassing these branches and specialisations, as illustrated in the following figure.

**Figure 2.3**

*Ain Temouchent University' Faculties*




The Faculty of Sciences and Technology comprises nine departments: Materials Science; Mathematics and Computer Science; Agricultural and Nutritional Sciences; Biology; Irrigation; Civil Engineering and Public Works; Electronics and Telecommunications; Mechanical Engineering; and Electrical Engineering.

The Faculty of Economic, Commercial and Management Sciences consists of three departments: Economic Sciences; Management Sciences; and Finance and Accounting Sciences.

The Faculty of Letters, Languages and Social Sciences includes four departments: Arabic Language and Literature; Letters and English Language; Letters and French Language; and Social Sciences. Additionally, the Faculty of Law comprises a single department: the Department of Law.

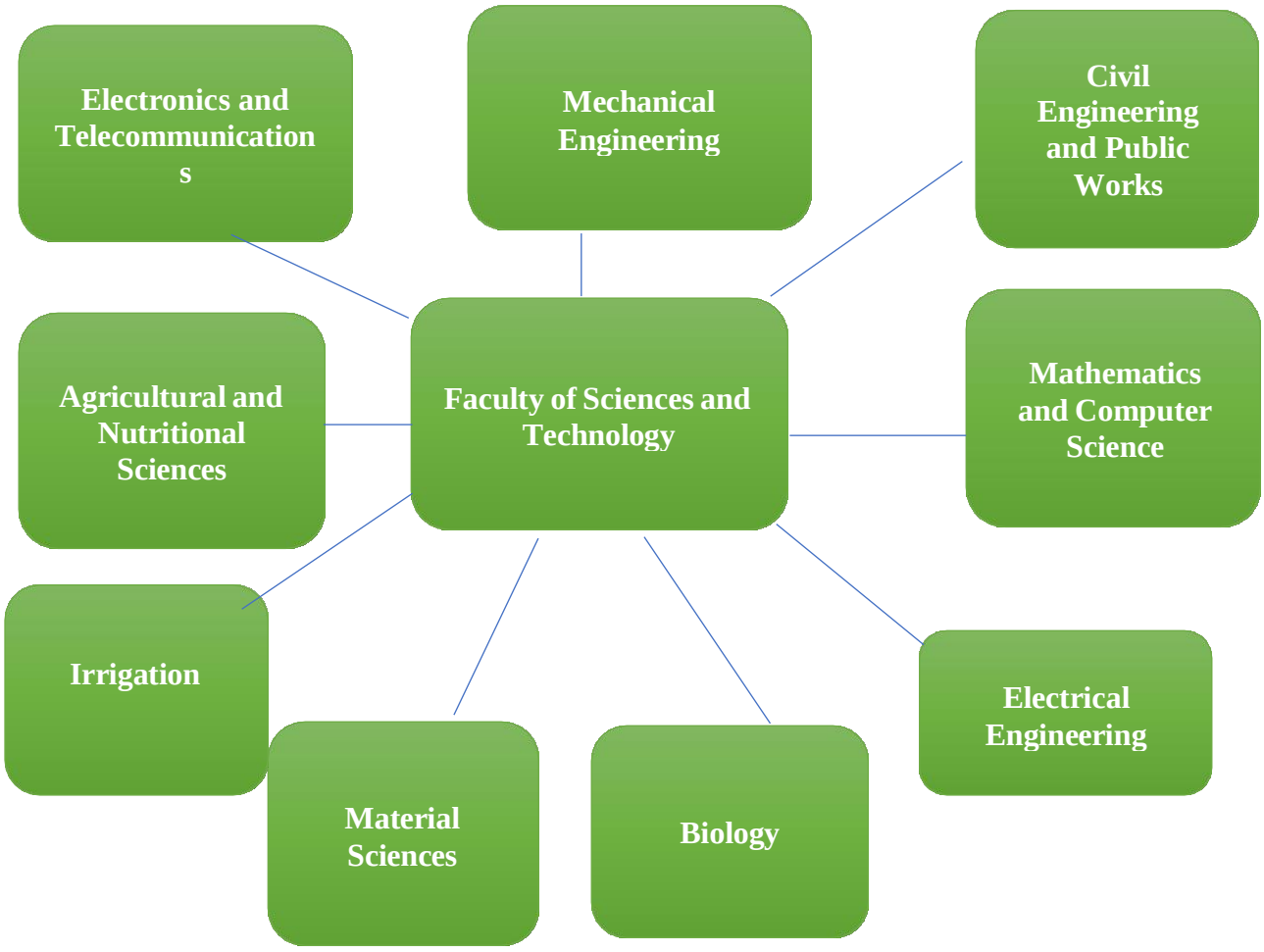
The university also comprises laboratories equipped with advanced technological and scientific instruments, which contribute to enhancing students' academic performance. Moreover, it hosts a Centre d'Enseignement Intensif des Langues (CEIL) that provides intensive language instruction, primarily in English and French, thereby supporting students' language development. This is complemented by the various services offered by the university library.

### 2.2.3 Faculty of Sciences and Technology

As previously mentioned, the Faculty of Sciences and Technology is one of the earliest faculties to be established at Belhadj Bouchaib University of Ain Temouchent. It comprises nine departments, each of which encompasses its own branches and specialisations. At present, the faculty offers a total of forty-six specialisations and employs approximately 120 academic staff members. (http://fst.univ-temouchent.edu.dz/). The following figure provides an overview of the various departments within the faculty.

**Figure 2.4**

*Faculty of Sciences and Technology' Departments*




### 2.2.4 Department of Mechanical Engineering

The Department of Mechanical Engineering offers training in two branches, Mechanical Engineering and Process Engineering, across both the first and second cycles (Licence and Master studies). The Mechanical Engineering branch includes two specialisations: Mechanical Construction and Energetics. The Process Engineering branch includes a single specialisation: Process Engineering. At the Master level, however, students are trained in a different specialisation titled Materials Process Engineering. (http://fst.univ-temouchent.edu.dz/departement/61981464c6247. )

The following figures illustrate the branches and specialisations offered by the Department of Mechanical Engineering in both the Licence and Master cycles.

**Figure 2.5**

*Branches and Specialties in the First Cycle*

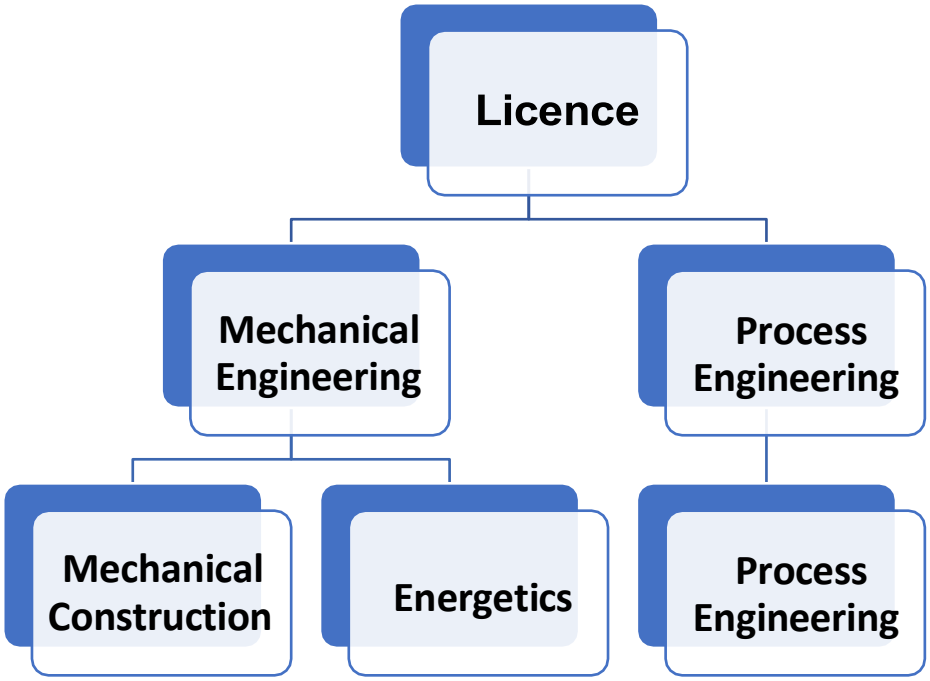
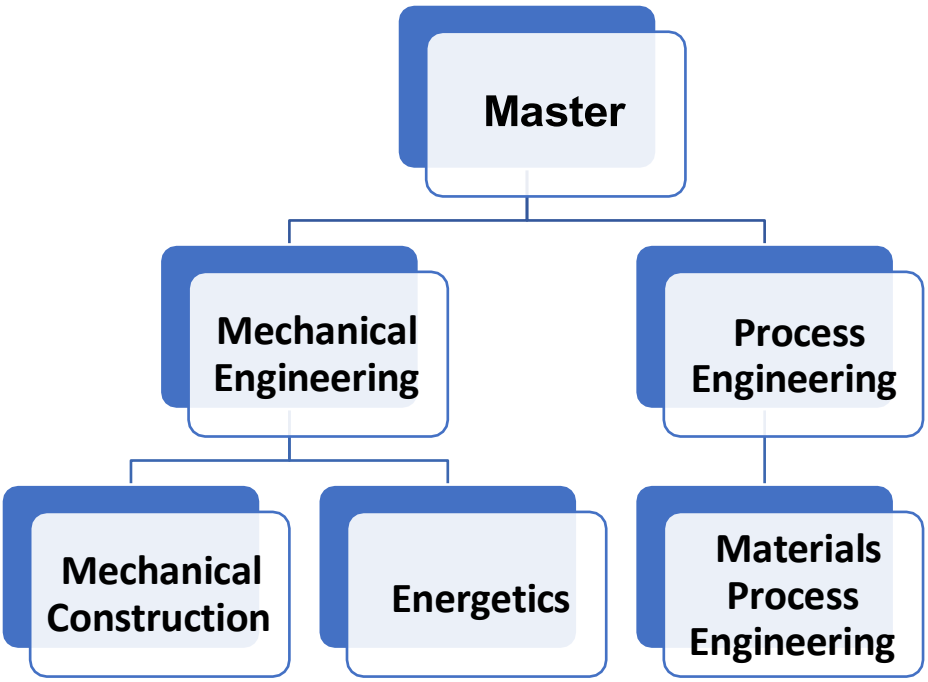



**Figure 2.6**

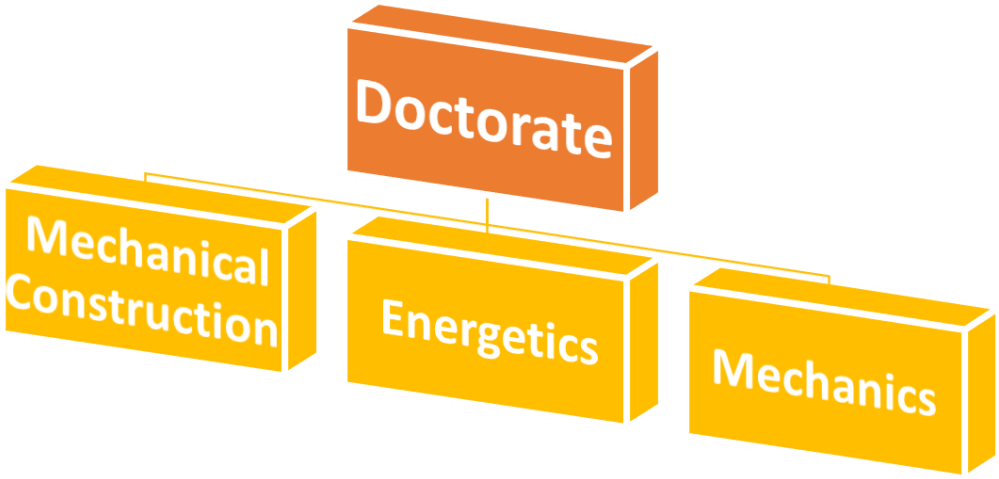
*Branches and Specialties in the Second Cycle*



Following Master's studies and based on a national competitive examination, the Department of Mechanical Engineering offers third-cycle (Doctorate) training in three specialisations (http://fst.univ-temouchent.edu.dz/phds;see Figure 2.7). Doctoral students undertake a three-year programme, comprising six semesters, which includes coursework, typically in the first year, and research for obtaining a Doctorate degree.

**Figure 2.7**

*Specialties in the Third Cycle*




### 2.2.4.1 Mechanical Engineering as a Field of Study

Mechanical Engineering is one of the oldest and most extensive branches of engineering. It emerged in Europe during the 18th century, in the context of the Industrial Revolution, and evolved into a scientific discipline in the 19th century as a result of advancements in physics.

https://en.wikipedia.org/wiki/Mechanical_engineering#History.

Mechanical Engineering, as a field, involves the application of principles related to forces, materials, energy, fluids, and motion to design products that contribute to societal development (Wickert & Lewis, 2013). Mechanical engineers are responsible for designing, developing, manufacturing, and testing machines, engines, and other mechanical systems. Consequently, their role is very significant, as they aim to meet human needs through the invention of new technologies.

### 2.2.4.2 English in the Department

English is recognised as a significant medium of international and scientific communication. Accordingly, enhancing its status has become part of the educational policy of the Algerian Ministry of Higher Education and Scientific Research. To achieve this aim, English has been integrated as a module within Algerian universities.

At the University of Ain Temouchent, students in the Department of Mechanical Engineering are required to take a compulsory English course titled 'Technical English', which is scheduled for one and a half hours per week. Typically, students begin this course in the second year of their Licence studies and continue it for two semesters (i.e., throughout the academic year). However, they do not receive English instruction during their third Licence year. The course continues in the first year of Master studies, after which no English course is offered in the second year. Thus, mechanical engineering students receive English instruction for a total of four semesters distributed across their Licence and Master studies.

As its name suggests, this course aims to provide students with technical terminology and vocabulary specific to their field of study, typically through texts that also expose them to the language forms and functions used and required in the context of mechanical engineering. However, in the second semester of their second year of Licence studies, students take a different module titled "Techniques of Expression and Communication" instead of Technical English.

After acquiring the necessary vocabulary, language forms, and functions in the first semester, the module of Techniques of Expression and Communication aims to help students apply what they have already learned by producing written documents they may need either as students, future researchers, or job-seekers. For instance, this includes learning how to structure a Curriculum Vitae (CV), write effective job application letters, write professional emails, and so forth.

At the doctoral level (third cycle), English instruction is limited to one semester, which follows the courses offered during the Licence and Master cycles. However, despite its relevance, this course has proven insufficient to support their academic writing development. Doctoral students continue to face various challenges when attempting to produce their academic papers in English. Publishing articles in English is often compulsory and constitutes a prerequisite for defending their theses. Hence, it becomes apparent that the English courses taught during the Licence, Master, and Doctoral cycles did not adequately help them in developing their academic writing skills. The primary focus of these courses was on providing technical vocabulary, language forms, and functions through texts, with students mainly engaged in reading comprehension, vocabulary, and syntax exercises. In contrast, the writing skill was given limited attention, except during one semester through the module Techniques of Expression and Communication; however, even this module did not adequately address their academic writing needs, as it focused primarily on general writing tasks rather than the demands of academic research writing.

## 2.3 Research objectives

The main aim of the present research work is to develop the academic writing skills of doctoral students in mechanical engineering. It seeks to assist them in overcoming the major challenges they encounter when writing in English and to enable them to produce, successfully, the various types of academic papers required in English. Accordingly, the researcher intends to achieve three central objectives. First, to conduct a needs identification and analysis (NIA) of mechanical engineering doctoral students' academic writing difficulties. Second, to design a sample course intended to address the identified needs and improve the students' academic writing skills. Third and finally, to measure the effectiveness of the proposed course on the academic writing performance of the targeted doctoral students.

## 2.4 Research Design

Before conducting any scientific research, it is essential for researchers to consider the approach or research methodology on which to base their study. According to Kumar (2014), the research design is a structured blueprint or scheme that the investigator must follow when conducting research in order to find answers to the research questions. This includes the selection of the sample, the research instruments to be used, and the procedures for collecting, analysing, and interpreting data. The researcher must therefore choose carefully the most appropriate research method that can effectively guide the study and help answer the research questions and test the hypotheses.

Nevertheless, it is possible to combine various methods, allowing the researcher to benefit from the strengths of each in order to achieve the research objectives. In this respect, Gorard and Taylor (2004:7) argue that "combined methods research, and the combination of data derived through the use of different methods, has been identified by a variety of authorities as a key element in the improvement of social science, including education research."

As far as applied linguistics is concerned, Nunan (1992) identified nine types of research, namely: experimental, ethnography, case study, classroom observation, introspective, elicitation, interaction analysis, programme evaluation, and action research. Therefore, the researcher is required to have a clear awareness and understanding of the differences between each method in terms of their purposes, characteristics, and focus, in order to choose and adopt the most suitable model that would help achieve precise and accurate research results.

In the present study, the researcher opted for a case study combined with an experimental research design. The combination of these two methods was considered the most appropriate for answering the research questions, testing the hypotheses, and thereby fulfilling the objectives of the investigation.

### 2.4.1 Case Study

The case study method is described in a variety of ways. Yin (1993:11) defines a case as "an event, an entity, an individual, or even a unit of analysis. It is an empirical inquiry that investigates a contemporary phenomenon within its real-life context using multiple sources of evidence". In Anderson's view (1993:152), a case study examines "how and why things happen, allowing the investigation of contextual realities and the differences between what was planned and what actually occurred". It places emphasis on a specific problem or feature and enables researchers to understand complex real-world practices through the use of various sources of evidence. In the same vein, Dyer (1995) notes that a case study "provides a more detailed, qualitative, and exploratory approach to research."

Yin (2014) highlights three kinds of case studies: exploratory, descriptive, and explanatory. As the name implies, the exploratory case study seeks to explore or investigate an issue or a problem. The explanatory case study aims to explain the causes of the problem or situation under investigation, whereas the descriptive case study focuses on describing, step by step, the problem or issue itself.

Stake (1995) proposes three additional types of case studies: intrinsic, instrumental, and multiple case studies. The intrinsic case study examines a single case from multiple perspectives in order to gain a deeper understanding of the actual factors that led to a problem. In the instrumental case study, generalisations are made from a single investigated case. In contrast, the multiple case study examines several cases in parallel as part of the same investigation. However, the case study method involves both strengths and weaknesses. For example, case studies are often criticised for lacking scientific reliability and not being generalisable (Johnson, 1994). On the other hand, Lamri (2015:93) claims that case studies "can allow generalizations as the findings can lead to some form of replication", which could be considered a point of strength.

Similarly, Abercrombie et al. (1984) argue that although a case study may not provide accurate information about a broader population, it can be useful in the early stages of research, as it generates hypotheses that can later be tested across a broader range of cases in a systematic manner. Furthermore, De Vaus (2001) states that case studies can break down broad themes into more manageable components and gather information on issues that have been insufficiently addressed or inadequately explored. Hopkins (2014) also outlines the advantages and disadvantages of this method as follows:

**Table 2.1**

*Advantages and Disadvantages of the Case Study (*Hopkins, 2014:14)

| Advantages | Disadvantages |
|---|---|
| - a relatively simple way of plotting the progress of a course or group's reaction to teaching methods.<br>- tends to give more accurate and representative picture than will any one of the research methods: cases studies draw on data gathered by many methods. | - In order for a case study to be of value, it must be fairly exhaustive: this means that it will be time consuming in its preparation and in its writing.<br>- Feedback available to teacher only after considerable lapse of time. |

Hence, the current research is an exploratory case study of doctoral students in the Department of Mechanical Engineering at the Faculty of Sciences and Technology in Belhadj Bouchaib University of Ain Temouchent. Despite its limitations, the case study method was found to be the most appropriate for this investigation. The rationale for selecting this method lies in the researcher's interest in gaining an in-depth understanding of the target and learning needs of mechanical engineering doctoral students by exploring, in detail, the major challenges they encounter when attempting to write academically in English. Furthermore, the researcher aimed to

fulfil these needs by designing a task-based course and evaluating its effectiveness in improving the students' academic writing performance through an experiment.

### 2.4.2 Experimental Research

Being frequently implemented in scientific studies involving experimentation, the experimental method is typically regarded as the most scientific among all research methods. According to Moore and McCabe (2006:177), "the best method, indeed the only fully compelling method of establishing causation is to conduct a carefully designed experiment in which the effects of possible lurking variables are controlled. To experiment means to actively change x and to observe the response in y". An experiment can thus be defined as a controlled procedure conducted to verify a hypothesis or validate a previously established fact.

Ary et al. (2010:26) assert that experimental research entails "a study of the effect of the systematic manipulation of one variable(s) on another variable. The manipulated variable is called the experimental treatment or the independent variable. The observed and measured variable is called the dependent variable". The independent variable is the one assumed to influence the dependent variable, while the latter is the one that undergoes change as a result.

The experimental approach is the only method that can adequately examine hypotheses related to cause-and-effect relationships (Gay et al., 2012). It serves as an effective means for addressing both practical and theoretical educational issues, and for contributing to the development of education as a scientific discipline. Experimental methods are particularly significant in the field of education for investigating the relevance and effectiveness of particular courses, as they offer a logical and structured approach to resolving pedagogical problems (Lamri, 2015).

In selecting the appropriate research design, Denning (2008, as cited in Lamri, 2015:98) argues that "If the question is about cause-effect – meaning that a result, or an effect, is caused by what the researcher is doing – the type of research design should be experimental". In this study, the main aim was to examine the effectiveness of the proposed task-based course on doctoral students' academic writing performance, with the expectation of obtaining positive results. Therefore, the experimental design was selected. This method is frequently used when the researcher aims to highlight the positive outcomes of a new instructional strategy (Bouklikha, 2016).

In this context, the researcher implemented an academic writing course based on tasks and examined its impact on doctoral students' writing proficiency by experimenting with the course over a set period and measuring its effectiveness using the results of a pre-test and a post-test, which were administered before and after the implementation of the course. Accordingly, the researcher adopted the one-group pretest-posttest design, which was considered the most suitable for achieving the objectives of this study in comparison to other experimental designs. The one-group pretest-posttest design typically consists of three phases, as identified by Ary et al. (2010:303), as follows:

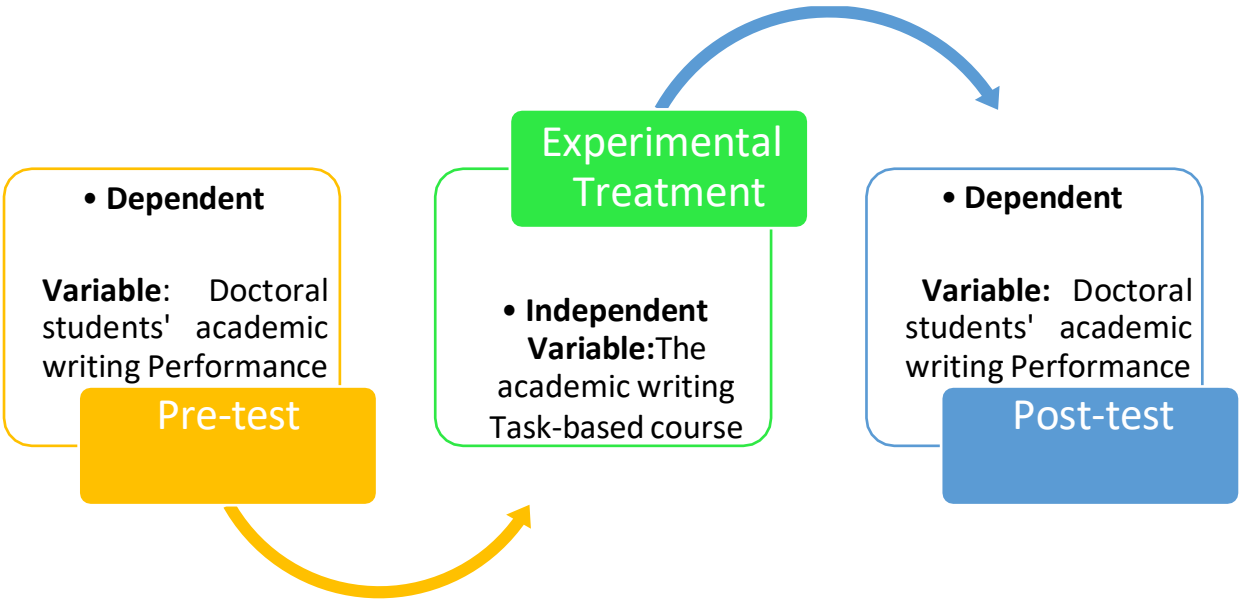
(1) administering a pretest measuring the dependent variable.
(2) applying the experimental treatment X to the subjects.
(3) administering a posttest, again measuring the dependent variable.

Following these steps, the researchers further explain that a comparison between the results of the pre-test and post-test is necessary to assess the differences resulting from the experimental treatment.

Similarly, in the current study, the pre-test aims to provide the researcher with insight into the doctoral students' background knowledge and to measure their academic writing abilities before conducting the experiment. The second phase involves the application of the experimental treatment, namely the course. The students' progress, as well as the effectiveness of the course, is then evaluated through the post-test by comparing the scores of both tests. This comparison is conducted to determine whether the experimental course had any impact, which will enable the researcher to either confirm or reject the third research hypothesis. The following figure illustrates the one-group pretest-posttest design adopted in the present research:

**Figure 2.8**

*One-Group Pretest and Posttest Design*



To sum up, the current research necessitates the combination of the case study method, which was used to identify and analyse doctoral students' needs, and the experimental design, which was employed to evaluate the efficacy of the task-based course.

## 2.5 Sampling

Time, financial resources, and accessibility to the target population are just a few of the restrictions that researchers face when carrying out their studies, which may prevent them from gathering information about the target population (Cohen et al., 2007). Thus, they make use of a sample in order to overcome such challenges.

A sample consists of a set of respondents referred to as sampling units. The latter are cases selected from the entire population with the intention of representing it (Kumar, 2010) and they are considered a source from which researchers obtain data in order to respond to the research questions and verify the hypotheses. In the same vein, McMillan (1992:70) claims that the aim of sampling is "to obtain a group of subjects who will be representative of the larger population". Following that, generalisations about the target group are drawn in light of the study's results (Perry, 2011). However, the selection of a sample is based on several criteria, namely the size of the sample, its accessibility and representativeness, as well as the strategy adopted for its selection (Bouklikha, 2016; Ghouali, 2021).

### 2.5.1 Students' Profile

Thirty-one mechanical engineering doctoral students from the University of Ain Temouchent participated in this study. Twenty-two of them were former doctoral students who participated in the needs identification and analysis (NIA) process and constituted the first primary source of data. The researcher chose to conduct the NIA with these students, as they were assumed to be more aware of their needs. Therefore, they were expected to provide reliable data regarding the challenges they had faced

while attempting to write academically in English during their doctoral journey, as well as the deficiencies they continued to experience as researchers. In contrast, nine doctoral students enrolled in their second year were involved in the experimental phase. Due to the limited number of students (only nine), all of them were selected to participate in the study. Moreover, the experimental academic writing course was integrated into their doctoral training and delivered alongside the remaining modules of their specialty.

### 2.5.2 Teachers' Profile

The respondents were nineteen subject-specialist teachers from the Department of Mechanical Engineering at the University of Ain Temouchent. The majority were full-time mechanical engineering teachers with many years of teaching experience and were therefore considered experienced. As teachers and specialists in the field of mechanical engineering, they were regarded as an important source of valuable information regarding doctoral students' needs, namely, what they perceived students needed to develop and enhance, what they continued to lack, and their views concerning the implementation of the course.

### 2.5.3 Officers' Profile

The informants comprised six officers in the Department of Mechanical Engineering, including the coordinator of the doctoral programme, four CFD (Comité de Formation Doctorale) members, and the Head of the Department. They were selected as respondents due to their extensive experience working with doctoral students, both as supervisors guiding their supervisees over several years and in overseeing other doctoral candidates. These officers were expected to provide in-depth insights into students' needs, areas of deficiency, and challenges. In addition, the researcher sought to obtain their recommendations concerning the academic writing course.

## 2.6 Research Instruments

In conducting a scientific research study, one of the most important aspects the researcher must consider is the careful selection of appropriate research instruments for collecting reliable data that will help address the research questions and test the hypotheses. Benyelles (2009:26) states that "the most frequently used methods are questionnaires, interviews, observation and informal consultations with sponsors, learners and others". However, given that a single data source may be insufficient or limited, researchers are advised to adopt a triangulation approach for data collection (Richards, 2001). This approach ensures a more comprehensive and accurate understanding of the situation under investigation by using multiple research tools.

For this study, the researcher also decided to use different research tools to collect data from the respondents, namely the questionnaire, the structured interview, and writing tests. On the one hand, the questionnaire and the interview were designed for the needs identification and analysis (NIA). Two questionnaires were administered, one to doctoral students and another to subject-specialist teachers, whereas the officers were interviewed through a structure format. On the other hand, pre- and post-writing tests were devised for the experimental phase of this study.

### 2.6.1 Needs Identification and Analysis Instruments

To conduct the needs identification and analysis (NIA), the researcher chose to adopt Hutchinson and Waters' (1987) model and adapt it to meet the objectives of this study. The following sub-sections provide a definition and description of the research tools used for the NIA, namely the questionnaire and the interview.

#### 2.6.1.1 The Questionnaire

According to Brown (2001), a questionnaire is a written instrument that consists of a set of questions designed to be answered by informants. It is considered a significant, cost-effective, and practical source of information that can be distributed to a large sample size. In the same vein, Richards (2001:60) claims that "questionnaires are one of the most common instruments used. They are relatively easy to prepare, they can be used with a large number of subjects, and they obtain

information that is easy to tabulate and analyse."

Designing a questionnaire is an important step that researchers must consider and approach carefully. They should ensure that the questions are clear and legible, meaning they can be easily read and understood by the respondents. This implies that questions need to be clearly formulated; vague language and complex vocabulary should be avoided. Instead, researchers should use simple terms to facilitate comprehension. In addition, the questions should follow a logical order that allows for a coherent flow of ideas (Kuzmina, 2010, as cited in Ghouali, 2021).

### *A/ Doctoral Students' Questionnaire*

The questionnaire was designed for mechanical engineering doctoral students and was emailed to twenty-two of them. It comprised three types of questions, namely close-ended, open-ended, and mixed.

In close-ended questions, the informants were provided with a set of predefined answer options. Some of these were dichotomous, requiring a simple "yes" or "no" response (see Questions 4, 8, 14, 15, 18, 19, 20, 21), while others were multiple-choice, allowing respondents to select either a single or several answers (see Questions 3, 6, 7, 8, 9, 10, 11, 12, 13, 16, 17, 22). Close-ended questions did not require respondents to provide further explanation. These questions offer several advantages, as they restrict the number of responses, making it easier for the researcher to collect, process, and quantify data while minimising irrelevant answers often found in open-ended questions.

This questionnaire also included one open-ended question (see Question 23). Open-ended questions allow informants greater freedom to express their opinions in detail and are appropriate for collecting subjective data. However, a major limitation of this type is that the responses are more difficult to analyse statistically and may be subject to multiple interpretations.

Mixed questions combined both close- and open-ended formats. In such questions, the informants were asked to choose from a set of options and then provide further clarification or justification for their selections (see Questions 1, 2, 5).

The aim of designing this questionnaire was to examine the significance of English for doctoral students and the extent to which the English course addressed their needs. More specifically, it sought to identify students' academic writing needs by investigating the difficulties they face in producing academic papers in English. It also aimed to gather their perspectives regarding a task-based academic writing course intended to enhance doctoral students' academic writing performance, as well as to determine the types of tasks they preferred to be included in such a course.

Accordingly, the questionnaire was divided into two rubrics, each aiming to gather a particular type of information. The first rubric consisted of four questions, while the second included nineteen questions, making a total of twenty-three questions.

**Part One:** aims to collect background information related to students' English language learning and to examine the impact of the English course taught on doctoral students.

**Question One**: seeks to determine at which academic level doctoral students received an English course and further inquire about the duration of English learning at each level.

**Question Two**: aims to explore whether mastering English in their field of study is perceived as a necessity, and to identify the reasons why students believe it is important to do so.

**Questions Three and Four**: attempt to investigate whether the English course addressed their needs and whether it helped them to write academically in English.

**Part Two**: focuses on doctoral students' academic writing needs.

**Question Five:** aims to identify the types of papers students are required to write in English.

**Questions Six and Seven**: inquire about students' perceptions of writing in English and the types of difficulties they encounter during the writing process.

**Question Eight**: intends to determine whether students face grammatical difficulties and, if so, to identify the nature of these difficulties.

**Question Nine**: explores whether students struggle to express their ideas clearly in writing.

**Question Ten**: investigates whether they are capable of writing simple and clear sentences.

**Question Eleven**: investigates students' ability to link sentences and paragraphs using appropriate cohesive devices.

**Question Twelve**: aims to determine whether students are able to write a coherent paragraph with ease or difficulty.

**Question Thirteen**: examines whether doctoral students know how to develop and organize their ideas within various types of essays.

**Question Fourteen**: intends to find out whether students are able to write proper introductions and conclusions.

**Question Fifteen**: seeks to explore whether students know how to paraphrase and summarize their ideas.

**Question Sixteen**: investigates which stage of the writing process students find most challenging.

**Question Seventeen**: is intended to determine whether students are familiar with the techniques of revising and editing their writing.

**Questions Eighteen and Nineteen**: aim to find out whether students know how to cite references within the text and how to organise a reference list in accordance with a particular citation style.

**Question Twenty**: proposes the idea of an academic writing course and seeks to gather doctoral students' views on its relevance.

**Question Twenty-One**: attempts to determine whether students prefer to develop their academic writing skills through a task-based course.

**Question Twenty-Two**: concerns the types of tasks students find most engaging and would prefer to be included in such a course.

**Question Twenty-Three**: provides respondents with the opportunity to express themselves freely and offer their suggestions.

### *b/ Subject- Specialist Teachers' Questionnaire*

This questionnaire targets subject- specialist teachers in the Department of Mechanical Engineering. It was emailed to nineteen participants and translated into French to prevent any misunderstanding of the questions and to enable them to provide relevant answers. Similar to the doctoral students' questionnaire, it includes three types of questions: close-ended, open-ended, and mixed. In this questionnaire, close-ended questions fall into two categories: dichotomous (yes/no) questions (see Questions 1, 3, and 8) and multiple-choice questions (see Questions 2, 5, 6, and 9). Additionally, two mixed questions were used (see Questions 4 and 7), along with one open-ended question (see Question 10).

Through this questionnaire, the researcher aims to collect data from subject-specialist teachers regarding the importance of English for doctoral students. More specifically, she seeks to explore the challenges these students encounter when writing their academic papers in English. In addition, the questionnaire investigates their views on dedicating an English course entirely to academic writing, with the aim of improving doctoral students' academic writing performance, as well as identifying the types of writing tasks they consider most useful to be included in such a course.

Subject- Specialist teachers' questionnaire consists of ten questions, each designed with a clear and specific purpose, as follows:

**Question one and two**: investigate whether doctoral students need to master English and the purposes for which they require it.

**Question three and four**: examine whether they are required to write academically in English and identify the types of papers they need to produce.

**Question five**: aims to identify the nature of the writing difficulties doctoral students face.

**Question six and seven**: seek to determine both their linguistic and strategic difficulties.

**Question eight**: explores teachers' views regarding the idea of dedicating an English course entirely to academic writing for doctoral students.

**Question nine**: is designed to determine which writing tasks teachers consider most essential to include in the academic writing course.

**Question ten**: invites teachers to provide their suggestions.

### 2.6.1.2 The Interview

The interview is defined as a discussion in which two or more individuals exchange ideas and opinions (Cohen et al., 2007). In scientific research, it is a data collection method involving a conversation between the interviewer(s) (i.e. researchers) and the informants, resembling a questionnaire in structure (Perry, 2011). As a research instrument, the interview was selected for this study because "it is feasible for smaller groups and allows more consistency across responses to be obtained" (Richards, 2001:61). Moreover, it facilitates interaction between the interviewer and interviewees, providing the latter with the freedom to express their ideas and share their views without constraints (Lamri, 2015).

According to Perry (2011), there are three types of interviews: structured, semi-structured, and unstructured. In a structured interview, interviewers are required to adhere strictly to the prepared questions without any modifications. In contrast, the semi- structured interview consists of pre-set questions that may be adapted by adding or removing items depending on the flow of the interview. In this regard, Lamri (2015:107) notes that "researchers do not prepare determined questions to be answered, but they know at what time, during the interview, how to ask questions to obtain what is aimed at".

As for the unstructured interview, interviewers are not limited to pre-prepared questions; rather, they are free to guide the conversation in ways that serve the research objectives. However, this may lead to unanticipated responses from interviewees, which could divert the researcher from the intended focus (Lamri, 2015).

For the purpose of this study, the researcher chose a structured interview, in which the questions were carefully prepared and formulated to achieve specific objectives. The intention was to obtain clear and direct responses that would help address the research questions.

### *Officers' Interview*

Through conducting interviews with officers, the researcher aimed to collect data on the English course taught to doctoral students, the academic papers they are required to produce in English, and their views regarding the proposed English course designed to enhance doctoral students' academic writing skills.

The structured interview consisted of nine questions and was conducted with six officers from the Department of Mechanical Engineering, namely: the person in charge of the doctoral programme, four members of the CFD (Comité de Formation Doctorale), and the Head of the Department. It is also worth noting that the interviews were conducted in French to avoid any misunderstanding of the questions.

**Question One and Two**: seek to explore whether doctoral students received an English course and to inquire about the purpose of including this course in their programme.
**Question Three and Four**: focus on the time allocated to the English course and whether it was sufficient.
**Question Five and Six**: examine whether the English course met doctoral students' needs in general, and whether it helped to enhance their academic writing performance in particular.
**Question Seven**: inquires into the types of academic papers doctoral students are required to write in English.
**Question Eight:** aims to gather officers' views regarding the proposed academic writing course.
**Question Nine**: invites them to share their suggestions.

## 2.6.2 Experiment Instruments

Richards and Schmidt (2010) define tests as tools used to assess an individual's knowledge, skills, or performance. They are considered an effective method of data collection for both researchers and instructors (Cohen et al., 2007). As research instruments, tests serve as valuable tools for gathering data and measuring the impact

of a variable within specific contexts and among defined groups. They provide insights into students' abilities and skills, the effectiveness of instructional methods, and the materials used in teaching (Lamri, 2015).

In this study, the researcher employed pre- and post-writing tests as experimental tools. The following sections describe the nature of each test and outline its main objectives.

### 2.6.2.1 The Pre-Test

The pre-test was designed for doctoral students in mechanical engineering. It was administered to eight participants at the very beginning of the course, before the experiment began. Its aim was to assess their pre-existing knowledge as well as their readiness for the course. The test combined ASSET Writing Skills and IELTS Writing (Task 2), and was adapted to fulfil the specific needs of doctoral students.

By combining ASSET Writing Skills and IELTS Writing (Task 2), the researcher aimed to measure the students' linguistic and strategic competence, namely their understanding of the conventions of standard written English, including punctuation, vocabulary, spelling, grammar, sentence structure, writing strategies, organisation, and style.

#### *A / ASSET Writing Skills*

ASSET Writing Skills (Task 1) follows a multiple-choice format and has a duration of 30 minutes, meaning that doctoral students are expected to spend approximately 1 minute and 30 seconds per question. The task consists of twenty multiple-choice questions designed to assess students' understanding of linguistic and strategic aspects of academic writing.

**Question One and Two**: aim to assess doctoral students' understanding of subject-verb agreement.

**Question Three**: evaluates their knowledge of verb tenses.

**Question Four**: examines their ability to use pronouns correctly.

**Question Five**: tests their understanding of sentence fragments.

**Question Six**: addresses their understanding of the possessive case.

**Question Seven and Eight**: focus on the correct use of punctuation marks.

**Question Nine**: explores their grasp of parallelism in writing.

**Question Ten and Eleven**: assess their awareness of sentence conciseness and wordiness.

**Question Twelve**: measures their ability to use linking devices appropriately.

**Question Thirteen**: investigates their understanding of the impersonal style typically used in academic writing.

**Questions Fourteen to Seventeen**: aim to assess their ability to organise paragraphs and essays effectively.

**Question Eighteen to Twenty:** evaluate their understanding of referencing and appropriate use of sources.

### *B/ IELTS Writing (Task2)*

IELTS Writing (Task 2) has a duration of 30 minutes. Doctoral students are required to write an essay of approximately 180 words on a topic of general interest (the advantages and disadvantages of nuclear power), and to support their arguments with evidence drawn from their own knowledge or experience. This task is designed to assess their understanding of academic writing conventions. Specifically, it evaluates their ability to write a concise and coherent essay, present and justify a point of view, compare and contrast evidence, and use an appropriately formal tone. In addition, it aims to assess their spelling, grammar, and vocabulary use.

### 2.6.2.2 The Post-Test

At the end of the course in April 2022, doctoral students took a post-test using the same content and questions as those in the pre-test. It is important to note that, in order to obtain valid data, the pre-test was not corrected for the students; that is, they did not receive their papers back after completing the test. The purpose of the post-test was to evaluate the effectiveness of the experimental course.

## 2.7 Data Analysis

The information gathered during a scientific investigation needs to be converted into findings. This process is known as the analysis and interpretation of data. Data can be analysed quantitatively, qualitatively, or through a combination of both approaches. According to Perry (2011), qualitative analysis aims to explain the results verbally, based on how informants perceive the situation under investigation, whereas quantitative analysis relies on statistical methods to interpret the findings and make generalisations.

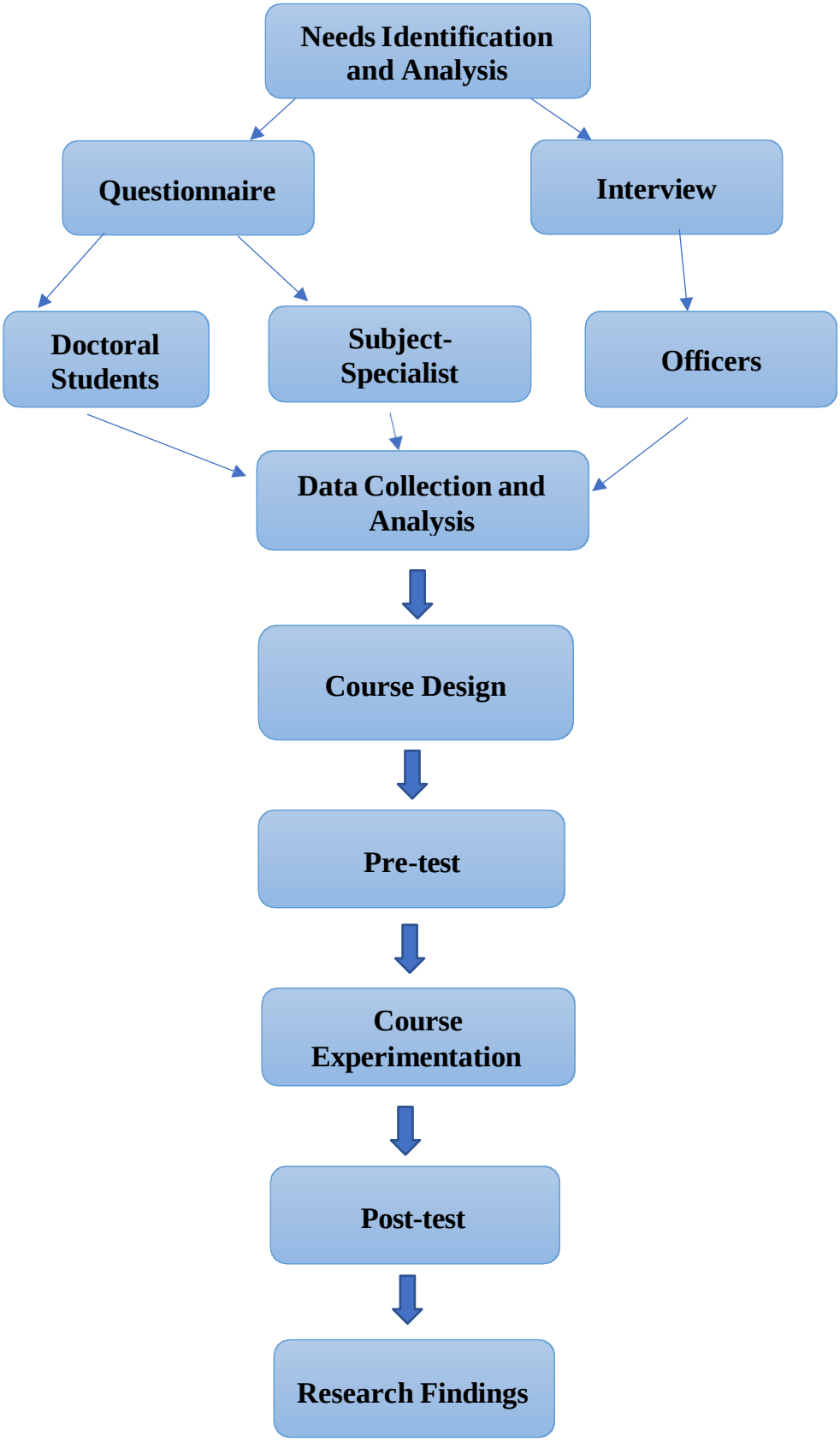
Hamzaoui (2006:130) states, "Using more than one type of analysis is believed to provide more reliable research findings since the latter are not compressed into a single dimension of measurement". Accordingly, in this research study, the data collected from doctoral students' and subject- specialist teachers' questionnaires, the officers' interview, and the pre- and post-tests were analysed both quantitatively and qualitatively.

For the quantitative analysis, responses to the closed-ended questions were quantified, interpreted, and presented in the form of numerical data using tables, figures, and percentages. This type of analysis was applied to the doctoral students' questionnaire, the subject-specialist teachers' questionnaire, as well as the pre- and post-writing tests. In contrast, the qualitative analysis aimed to provide descriptive data regarding the teaching and learning situation, the respondents' opinions and attitudes towards the academic writing task-based course, and their suggestions. This was achieved through the open-ended questions included in all research instruments, with the exception of the pre- and post-writing tests, in which the analysis was purely quantitative relying on numerical data and percentages to compare pre- and post-test scores, interpret the results, measure students' progress, and evaluate the effectiveness of the proposed course. At the end of this chapter, and in order to summarise the research methodology adopted in this study, the figure below has been

designed.

**Figure 2.9**

*Research Design*



## 2.8 Conclusion

In chapter two, the researcher provided an overview of the teaching and learning situation of ESP within the Department of Mechanical Engineering, Faculty of Sciences and Technology at Ain Temouchent University. This was followed by a detailed presentation of the research methodology adopted in the current study. The chapter began by stating the main objectives of the research, then moved on to describe the research design, outlining the data collection and analysis methods, the sample population, and the research instruments used.

This chapter revealed that the case study and experimental research designs complemented one another, despite differing in purpose, structure, and methodological tools. The case study method served to identify the academic writing needs of doctoral students through needs analysis, which in turn formed the basis for the experimental phase aimed at addressing those needs. The next chapter will be devoted to needs analysis, which constitutes a fundamental step in the development of any ESP course.

# CHAPTER THREE

# CHAPTER THREE

Academic Writing Needs Analysis

## 3.1 Introduction

In an attempt to test the first and second research hypotheses, data were collected from three different sources using two research instruments. A questionnaire was emailed to doctoral students, another one to subject- specialist teachers, whereas interviews were conducted with officers. Using these tools, the researcher aimed to identify and analyse the academic writing needs of doctoral students by conducting a NIA, and to gather the informants' perspectives regarding the implementation of a task-based course to improve doctoral students' academic writing.

Accordingly, this chapter presents the quantitative and qualitative analysis of data collected from doctoral students, subject-specialist teachers, and officers, followed by an interpretation and discussion of the key findings. The outcomes of the NIA will serve as the foundation for designing a suitable academic writing course tailored to the specific needs of doctoral students.

## 3.2 Doctoral Students' Questionnaire Analysis

The collected data revealed important insights into doctoral students' academic writing needs. In this section, the researcher provides a detailed analysis of their responses in order to identify their specific needs and offer interpretations.

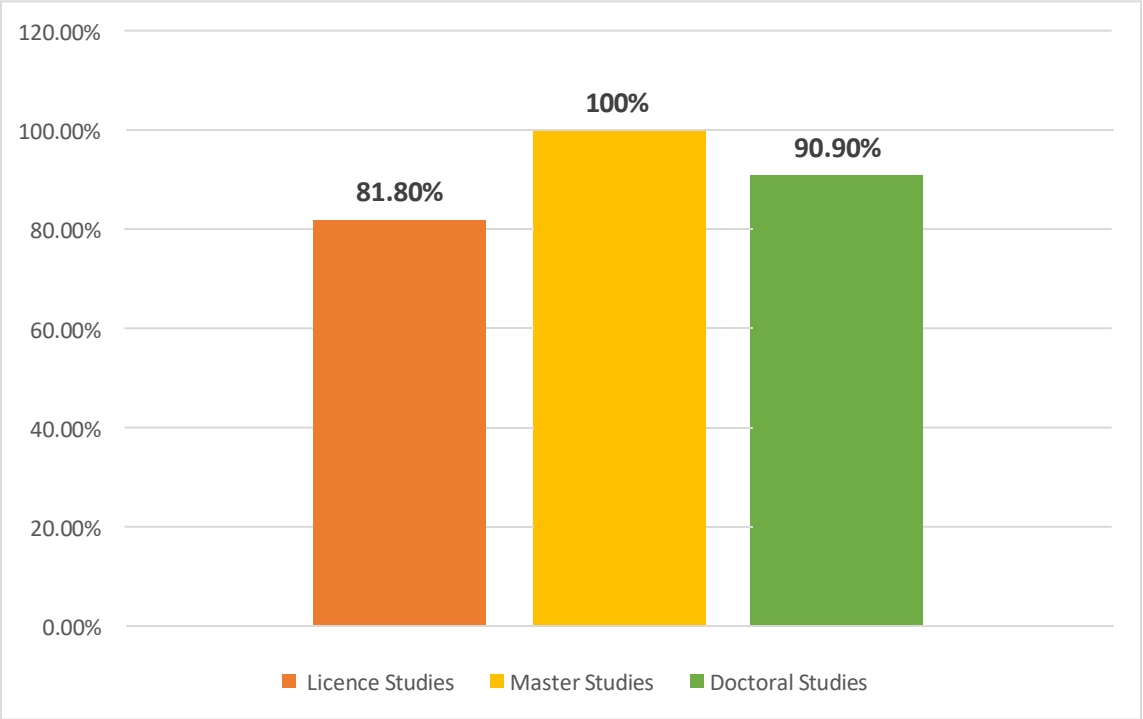
### 3.2.1 Part One: Background Information

**Question One:** English Language Learning

The results regarding English language learning are gathered in the following figure. It should be noted that all the respondents selected more than one answer.

**Figure 3.1**

*English Language Learning*




As illustrated in the figure above, all respondents had received an English course during their Master's studies; 90.90% of them had an English course during their doctoral studies, while 81.80% had studied English during their Licence programme.

When the respondents were asked to specify the duration of English instruction at each academic level, seventeen of them reported having an English course for one semester at each of the three levels mentioned above; a total of three semesters. Four respondents stated that they had an English course for one semester during their Master and Doctoral studies, amounting to a total of two semesters. In contrast, only one respondent stated having studied English for one semester during both the Licence and Master levels, resulting in a total of two semesters. The table below summarises the main results.

**Table 3.1**

*Period of Learning English*

| Doctoral Students | Period of Learning English |
|---|---|
| 17 | Three semesters (one semester in each level) |
| 04 | Two semesters (Master and doctoral studies) |
| 01 | Two semesters (Licence and Master studies) |

These varying responses indicate that students did not receive the same English instruction throughout the Licence, Master's, and Doctoral levels.

**Question Two:** The necessity to master English

The data obtained clearly indicate that mastering English is essential for mechanical engineering doctoral students. All respondents (100%) replied with "Yes" to the question, confirming that English mastery is necessary in their field of study. The respondents provided reasons for their need to master English, which are presented in the table below.

**Table 3.2**

*Reasons for Mastering English*

| Doctoral Students | Answers |
|---|---|
| **1** | All books and literature are in English. |
| **2** | It is easier than French and I like it |
| **3** | We are obliged to write an article in English |
| **4** | Writing a dissertation, well-structured essays, and conference papers |
| **5** | The research papers are written in English |
| **6** | It is important in our specialty |
| **7** | For scientific research and to summarize articles |
| **8** | We need it in our research and we have to publish an article using the English language |
| **9** | Most research in technology is in English |
| **10** | All the research papers in my field are published in English. Besides, mastering English can open doors for more opportunities locally and abroad. |
| **11** | To write an article, for speech… etc. |
| **12** | All research papers are available in English |
| **13** | My references are in English |
| **14** | All modern science is in English |
| **15** | Modern science is in English |
| **16** | Because articles are in English |
| **17** | Most of research in my field is in English |
| **18** | Modern technology and development in mechanical machines are all in English |
| **19** | All significant scientific works (Papers, thesis...) are in English |
| **20** | Because we need English in our research and all documents are in English |
| **21** | To write articles, for communication |
| **22** | To publish articles in English, papers for conferences |

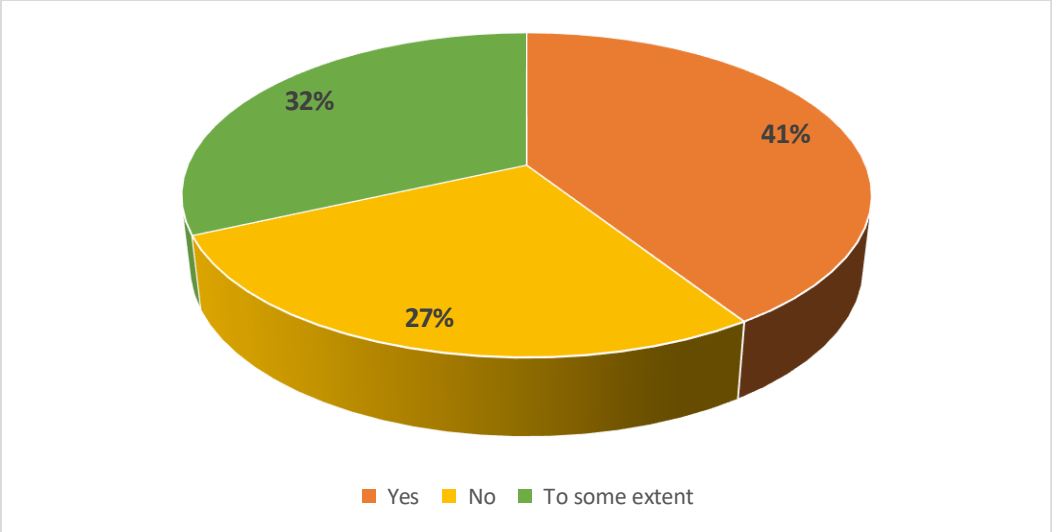
From the answers presented in the table above, it is evident that the respondents need to master English for various reasons, most of which are related to their scientific research. The majority stated that they need to master English because modern science, along with the most relevant research papers, books, and references, is available in English. Six respondents stated that they need to master English in order to summarise, write, and publish articles. Two respondents reported that they need it to write papers for conferences. One respondent favoured English over French, as he finds it easier, while the remaining respondents stated that they needed English to write dissertations, produce well- structured essays, and communicate effectively.

**Question three:** The impact of the English course on doctoral students' needs

According to the data, 41% of the respondents affirmed that the English course provided met their needs, 27% reported that it did not meet their needs, while 32% stated that it did to some extent. The figure below illustrates the respondents' answers:

**Figure 3.2**

*The Impact of the English Course on Doctoral Students' Needs*

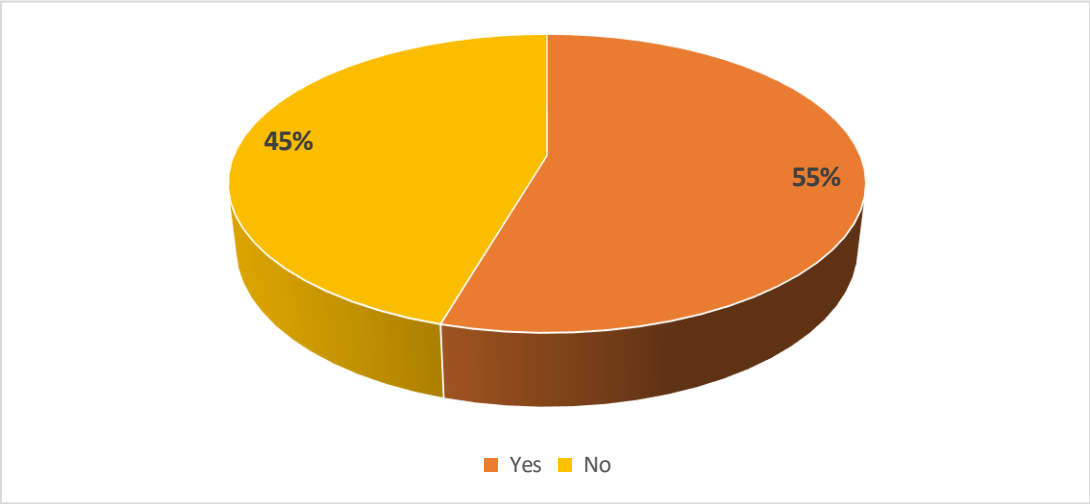


**Question Four:** The impact of the English course on doctoral students' academic writing.

According to the results obtained, more than half of the respondents (55%) confirmed that the English course helped them write academically in English, whereas the remaining 45% stated that it did not. The figure below illustrates the respondents' answers:

**Figure 3.3**

*The Impact of the English Course on Doctoral Students' Academic Writing*



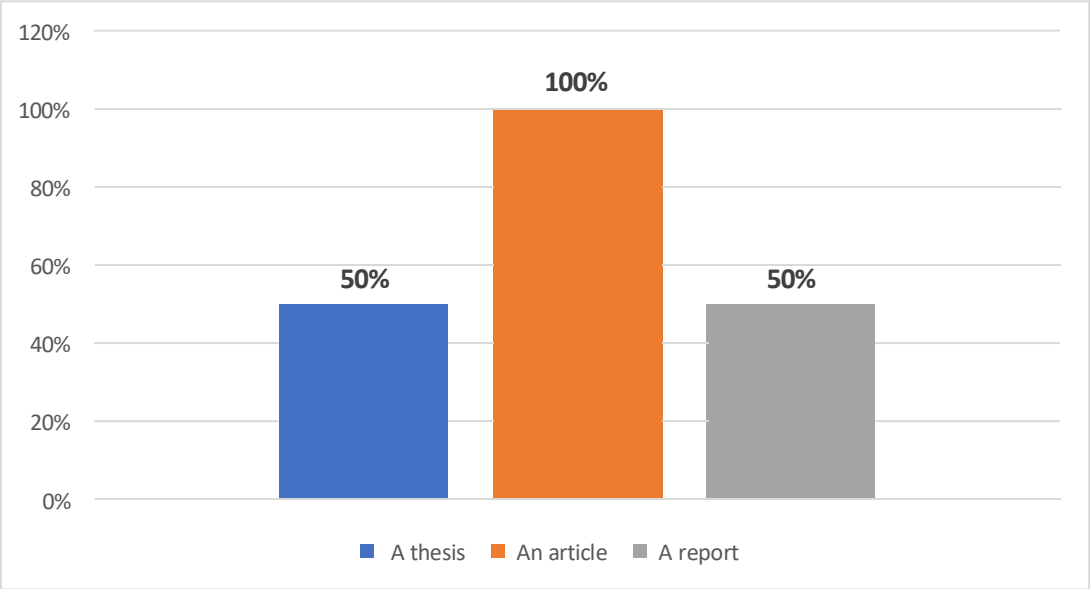

### 3.2.2 Part Two: Academic Writing Needs

**Question Five:** Types of papers required in English

The results regarding the types of papers required in English are presented in the figure below. It is worth noting that more than half of the respondents chose more than one option.

**Figure 3.4**

*Types of Papers Required in English*




The results above show that doctoral students are required to write more than one type of paper in English. However, the article appears to be the most required, as all respondents reported the need to write an article in English. Half of the respondents (50%) stated that they are required to write a thesis, while the remaining 50% indicated that they need to write a report.

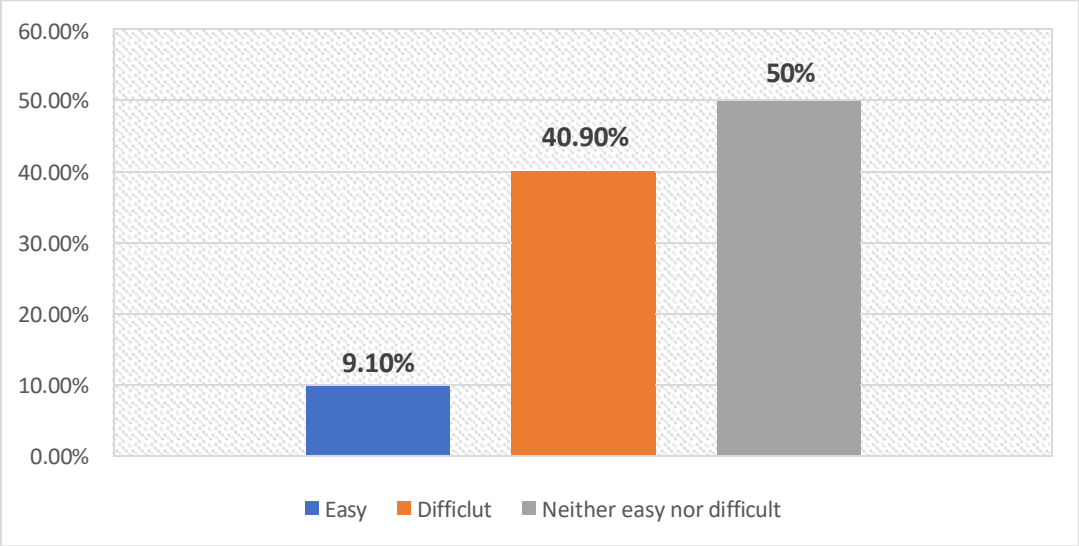
In addition to the three types of papers mentioned above, the majority of respondents identified another type of paper they are required to write in English. Seventeen respondents stated that they need to write conference papers, while the remaining respondents did not provide any additional answers.

**Question Six:** Writing in English

The results for this question are presented in the figure below.

**Figure 3.5**

*Writing in English*



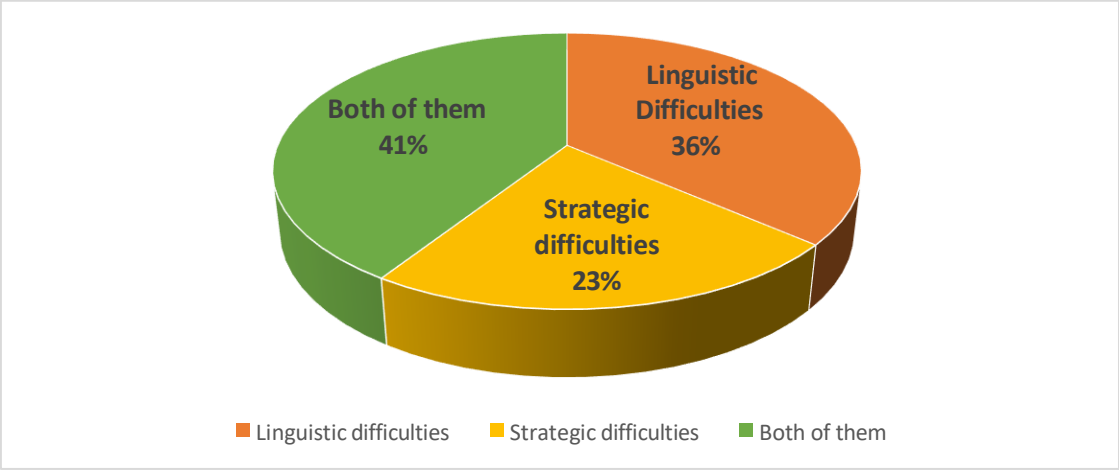

As shown in the figure above, half of the respondents (50%) reported that writing in English is neither easy nor difficult, 40.90% stated that they find it difficult, and only a small proportion (9.10%) considered it easy.

**Question Seven:** Types of writing difficulties

The results reported by the respondents are illustrated in the figure below.

**Figure 3.6**

*Types of Writing Difficulties*



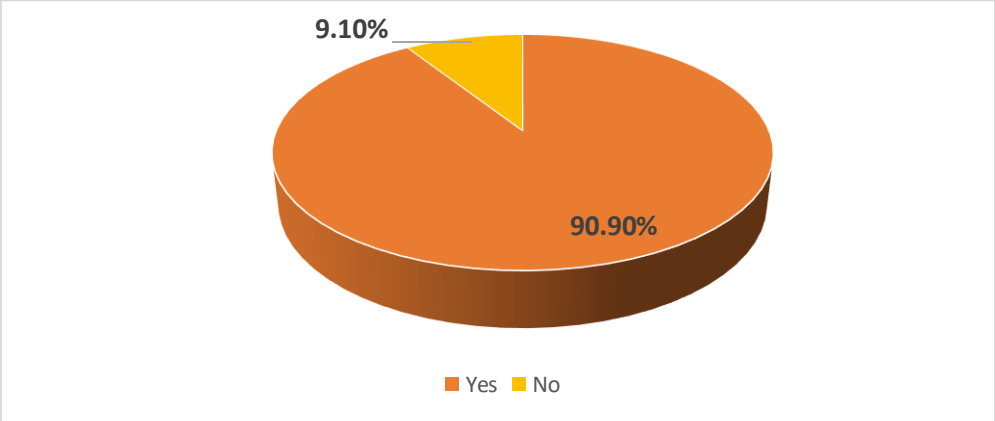
The results show that 36% of the respondents face linguistic difficulties when writing, 23% report facing strategic difficulties, whereas the remaining 41% encounter both linguistic and strategic difficulties.

**Question Eight:** Grammar difficulties

The results related to grammatical difficulties are presented in the figure below.

**Figure 3.7**

*Grammar Difficulties*




It is evident from the figure above that the majority of respondents (90.90%) face grammatical difficulties in writing, whereas only a small proportion (9.10%) do not. The results related to the grammatical issues encountered by doctoral students are presented in the following table. It should be noted that nearly half of the respondents selected more than one option.

**Table 3.3**

*Problems in Grammar*

| Problems in Grammar | Doctoral Students | Percentage |
|---|---|---|
| **The use of verbs** | 13 | 59.1% |
| **The use of tenses** | 12 | 54.5% |
| **The use of pronouns** | 05 | 22.7% |
| **The use of articles** | 09 | 40.9% |

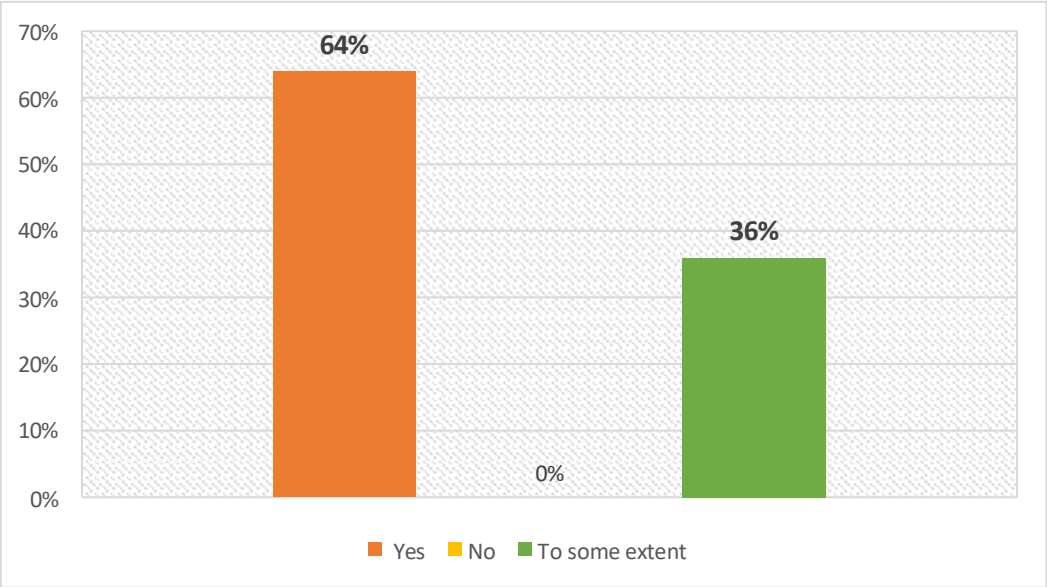
It is clear from the table above that doctoral students experience various grammatical difficulties. Thirteen respondents (59.1%) reported problems with the use of verbs, twelve (54.5%) indicated difficulties with tenses, nine (40.9%) reported problems with articles, whereas five (22.7%) stated that they struggled with pronouns.

**Question Nine:** Difficulties in expressing ideas

More than half of the respondents (64%) reported experiencing difficulties in selecting appropriate words and constructing sentences to convey their ideas, whereas 36% indicated encountering such difficulties to some extent. The respondents' answers are presented in the following figure.

**Figure 3.8**

*Difficulties in Expressing Ideas*

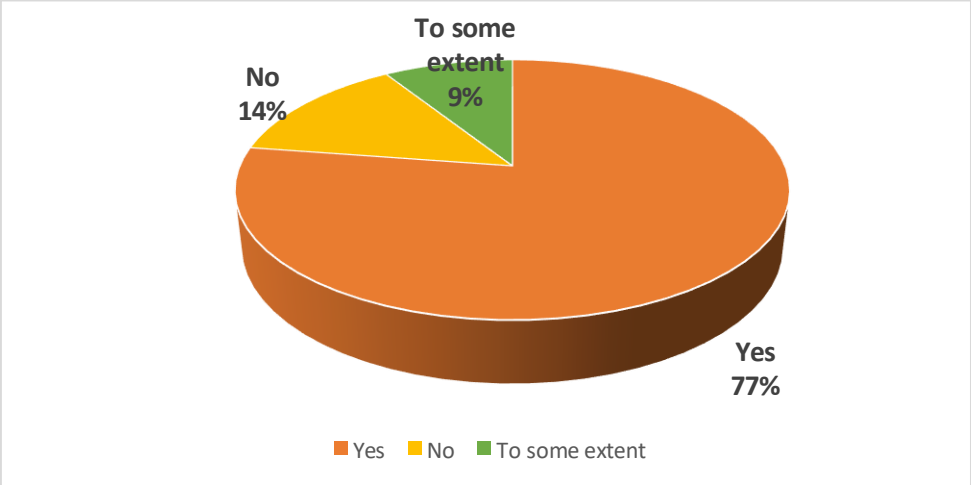



**Question Ten:** Writing simple sentences

The respondents' answers are presented in the following figure.

**Figure 3.9**

*Writing Simple Sentences*



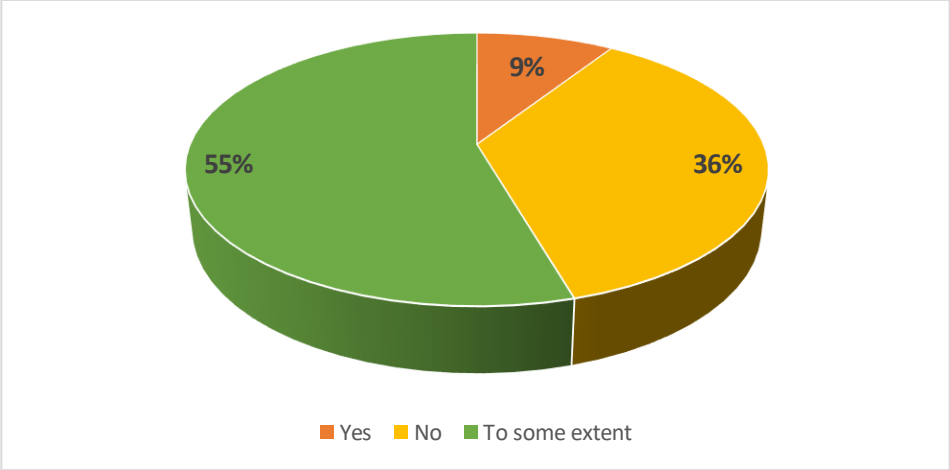
The results displayed in the figure above reveal that the majority of respondents (77%) are able to write simple, clear sentences. Meanwhile, 9% reported that they are able to construct such sentences only to some extent, whereas 14% indicated that they are unable to do so.

**Question Eleven:** The use of cohesive devices

The figure below presents the respondents' answers concerning their use of cohesive devices.

**Figure 3.10**

*The Use of Cohesive Devices*



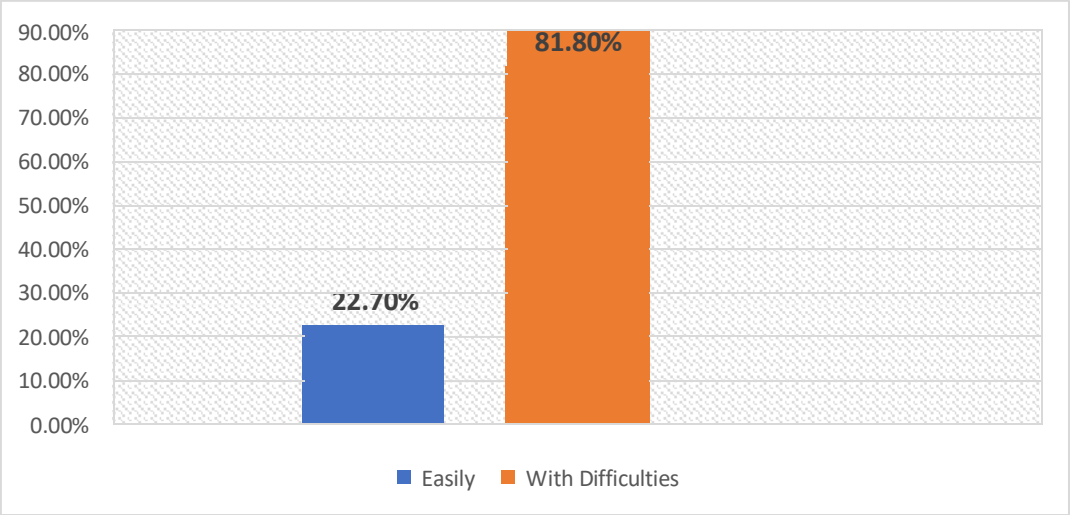

As shown in the figure above, more than half of the respondents (55%) know to some extent how to use cohesive devices when writing. In contrast, 36% stated that they do not use them appropriately, whereas only 9% confirmed that they can use them correctly.

**Question Twelve:** Writing a coherent paragraph

The findings revealed that 22.70% of the respondents are able to write a coherent paragraph easily; however, a large number of them (81.80%) manage to write a coherent paragraph, but with difficulty. The figure below highlights the respondents' answers.

**Figure 3.11**

*Writing a Coherent Paragraph*

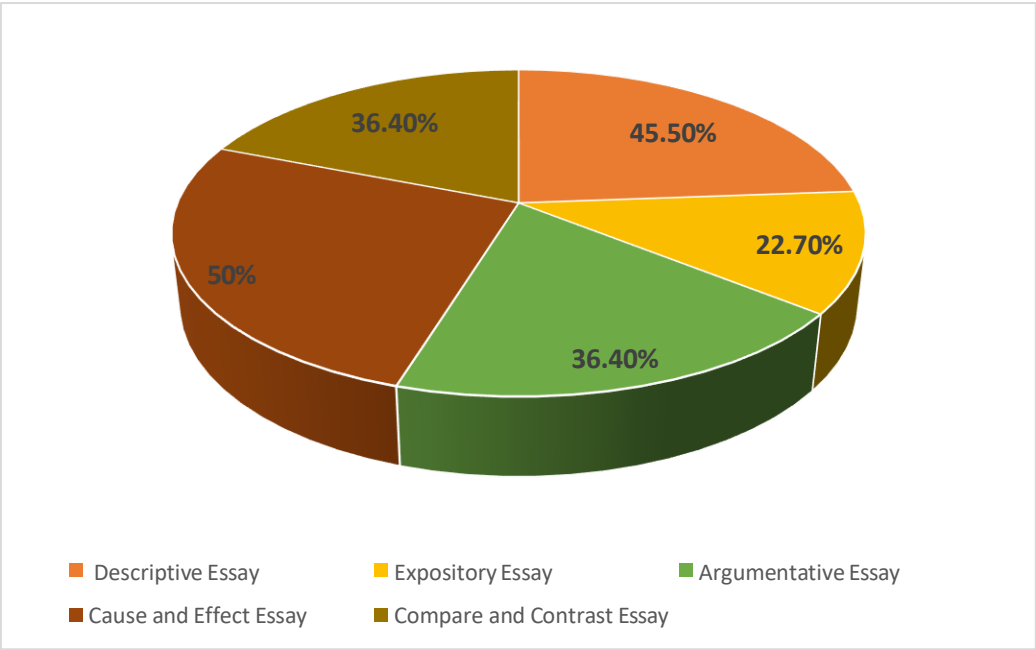



**Question Thirteen:** Developing and organizing ideas in different types of essays.

The results obtained are summarised in the following figure. It is worth noting that nearly half of the respondents selected more than one option.

**Figure 3.12**

*Developing and Organizing Ideas in Different Types of Essays*



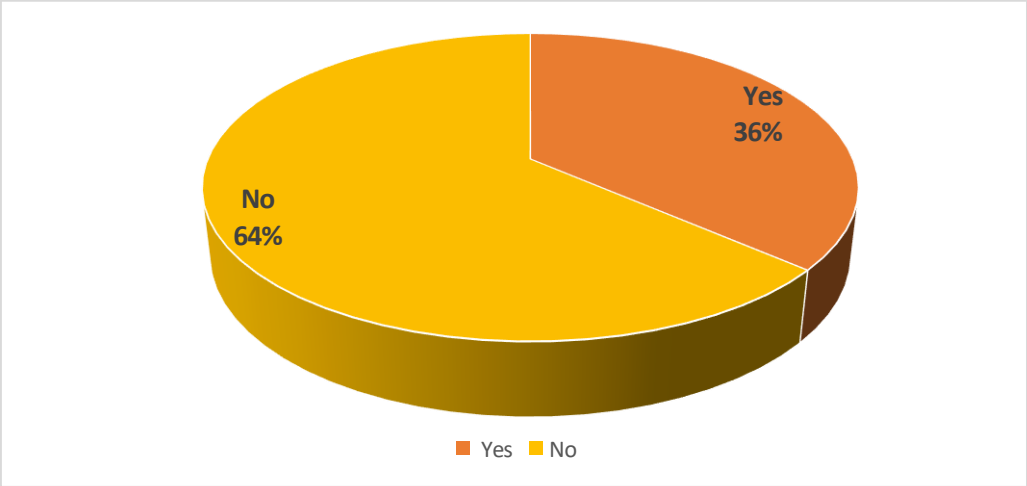
As shown in the figure above, half of the respondents (50%) reported that they know how to develop and organize their ideas in a cause-and-effect essay. In addition, 45.5% indicated they are able to do so in a descriptive essay, 36.4% in an argumentative essay, and the same percentage (36.4%) in a compare-and-contrast essay. However, only 22.7% of them reported that they know how to develop and organize ideas in an expository essay.

**Question Fourteen:** Introduction/ Conclusion Writing

The results show that 36% of the respondents are able to write a proper introduction and conclusion, whereas the majority (64%) are unable to do so. The respondents' answers are illustrated in the figure below.

**Figure 3.13**

*Introduction/ Conclusion Writing*

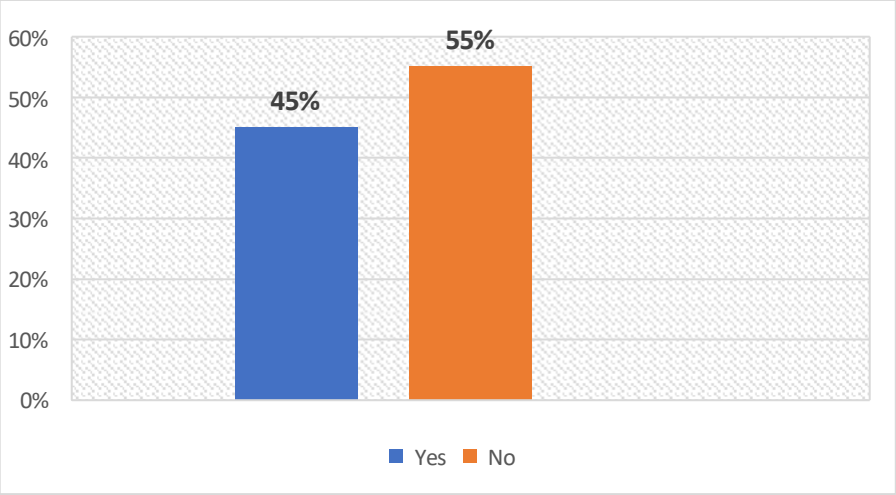


**Question Fifteen:** Paraphrasing and summarizing

The results related to paraphrasing and summarizing are presented in the following figure.

**Figure 3.14**

*Paraphrasing and Summarizing*




As shown in the figure above, more than half of the respondents (55%) reported that they do not know how to paraphrase and summarize their ideas, whereas the remaining 45% affirmed that they do.

**Question Sixteen:** Stages of the writing process

The findings are presented in the following table. It is worth noting that half of the respondents selected more than one option.

**Table 3.4**

*Stages of the Writing Process*

| Stages of the Writing Process | Doctoral Students | Percentage |
|---|---|---|
| **Prewriting** | 09 | 40.9% |
| **Drafting** | 09 | 40.9% |
| **Revising and Editing** | 11 | 50% |
| **Proofreading** | 08 | 36.4% |

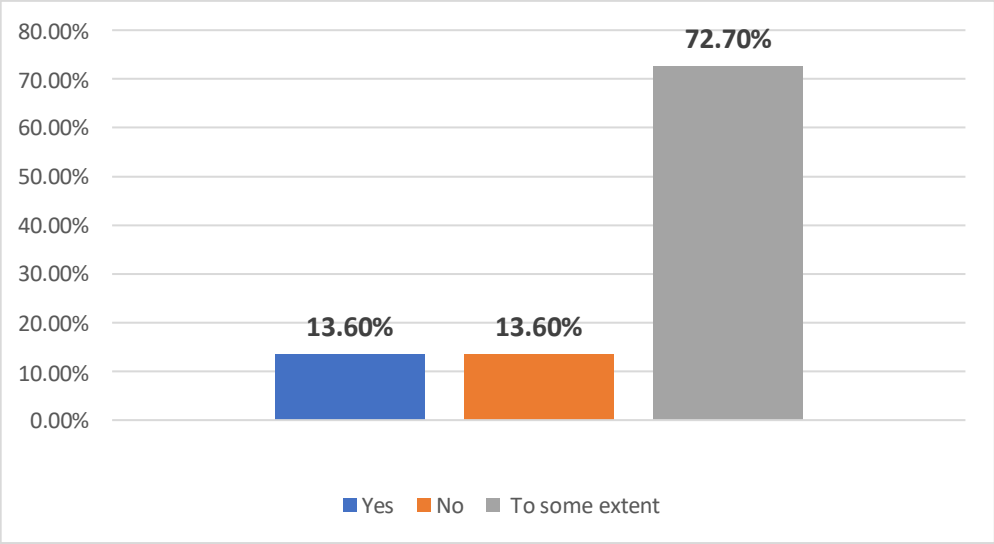
As illustrated in the table above, half of the respondents (50%) reported that revising and editing is the most difficult stage of writing. Nine of them (40.9%) appear to be particularly challenged during the prewriting phase, the same percentage of respondents (40.9%) stated that difficulties occur during drafting whereas 36.4% claimed to experience them in the proofreading stage.

**Question Seventeen:** Revising and editing

Concerning this question, the information gathered is represented in the following figure.

**Figure 3.15**

*Revising and Editing*



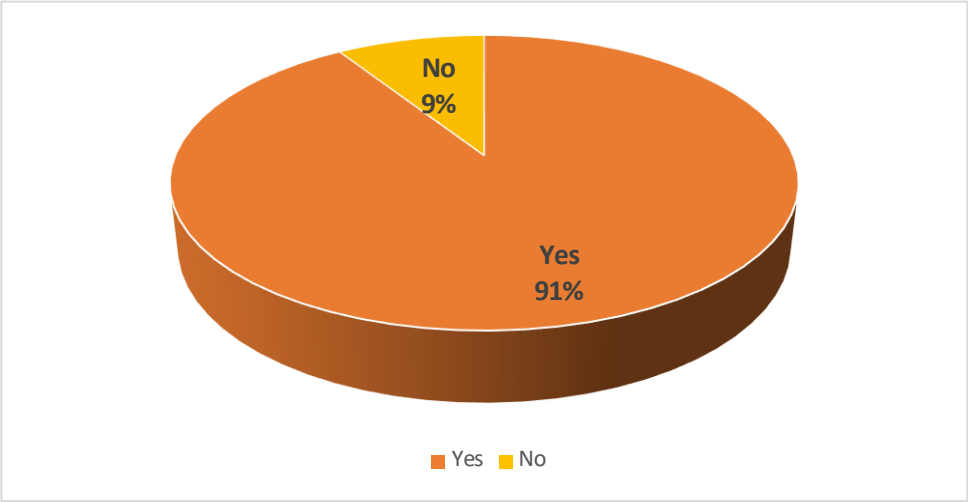

It is noticeable from the figure above that only a minority of respondents (13.6%) confirmed that they know how to revise and edit their writing, whereas the majority (72.7%) stated that they know how to do so to some extent. However, 13.60% of them reported that they are unable to revise and edit their writing.

**Question Eighteen:** Citing references

The data obtained reveal that the majority of respondents (91%) know how to cite references within a text, whereas only a minority of respondents (9%) indicated that they do not know how to do so. Their responses are illustrated in the figure below.

**Figure 3.16**

*Citing References*

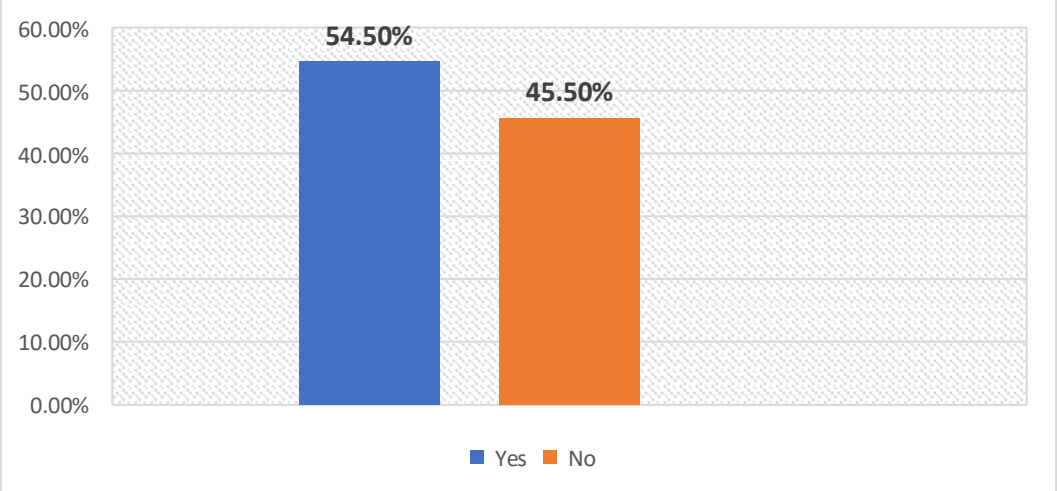



**Question Nineteen:** Organising a reference list

The findings related to organising the reference list are presented in the following figure.

**Figure 3.17**

*Organising a Reference List*



As displayed in the figure above, more than half of the respondents (54.50%) stated that they know how to organise a reference list according to a particular style; however, 45.50% of them reported that they do not.

**Question Twenty:** Academic writing course

This question was devised to propose an English course specifically designed to improve doctoral students' academic writing, while also exploring their interest in such a course. According to the data collected, all respondents (100%) asserted the need to receive this course.

**Question Twenty-One:** Task-based course

Regarding this question, the findings revealed that all respondents (100%) showed interest in taking this course.

**Question Twenty-Two:** Types of tasks

This question proposed different writing tasks, and respondents were asked to select the ones they found most interesting. The table below summarises their responses.

**Table 3.5**

*Types of Tasks*

| Tasks | Students' answers | Relative frequency |
|---|---|---|
| Writing a paragraph | 10 | 45.5% |
| Writing an essay | 08 | 36.4% |
| Ordering paragraphs to write a coherent essay | 08 | 36.4% |
| Writing scientific reports | 16 | 72.7% |
| Writing an abstract | 11 | 50% |
| Writing an outline | 03 | 13.6% |
| Paraphrasing and summarizing | 11 | 50% |
| Writing references | 04 | 18.2% |

The results presented above show that all the proposed tasks were considered by the respondents; however, their preferences differed. A majority of participants (72.7%) found writing scientific reports to be the most interesting. Writing an abstract, as well as paraphrasing and summarising, were preferred by half of the respondents (50%). Tasks such as writing an essay and ordering paragraphs to construct a coherent essay were found interesting by 36.4% of participants. Writing a paragraph was selected by 45.5%. Meanwhile, writing references was selected by four students (18.2%), while writing an outline was chosen by only three respondents (13.6%), making them the least preferred tasks.

**Question Twenty-Three:** Doctoral students' suggestions

From the data collected, it was noticed that none of the respondents offered any suggestions, except for one who stated that doctoral students could help themselves by using Google Translate.

## 3.3 Subject-Specialist Teachers' Questionnaire Analysis

Important information was obtained concerning the difficulties experienced by doctoral students in their academic writing. This section presents a detailed analysis of subject-specialist teachers' answers.

**Question One:** The necessity of mastering English

According to the findings, all the teachers (100%) affirmed that mastering English is essential for doctoral students.

**Question Two:** Reasons for doctoral students' need to master English

This question aimed to explore the reasons why doctoral students need to master English. A number of reasons were provided, from which the respondents were asked to select. The following table presents the teachers' responses.

**Table 3.6**

*Reasons for Doctoral Students' Need to Master English*

| Reasons for Mastering English | Subject- Specialist Teachers | Percentage |
|---|---|---|
| **To read papers related to their field of study** | 19 | 100% |
| **To take part in international seminars** | 17 | 89.5% |
| **To make presentations in English** | 14 | 73.7% |
| **To report research findings in international journals** | 17 | 89.5% |

It is evident from the data presented above that the informants selected more than one response. All of them (19) affirmed that doctoral students need to master English in order to read papers related to their field of study. Additionally, 17 of the respondents (89.5%) stated that English proficiency is necessary for participating in international seminars and the same percentage (89.5%) indicated that it is essential for reporting research findings in international journals. Moreover, 73.7% of the respondents reported that doctoral students need to master English to deliver presentations effectively.

**Question Three:** Writing academic English

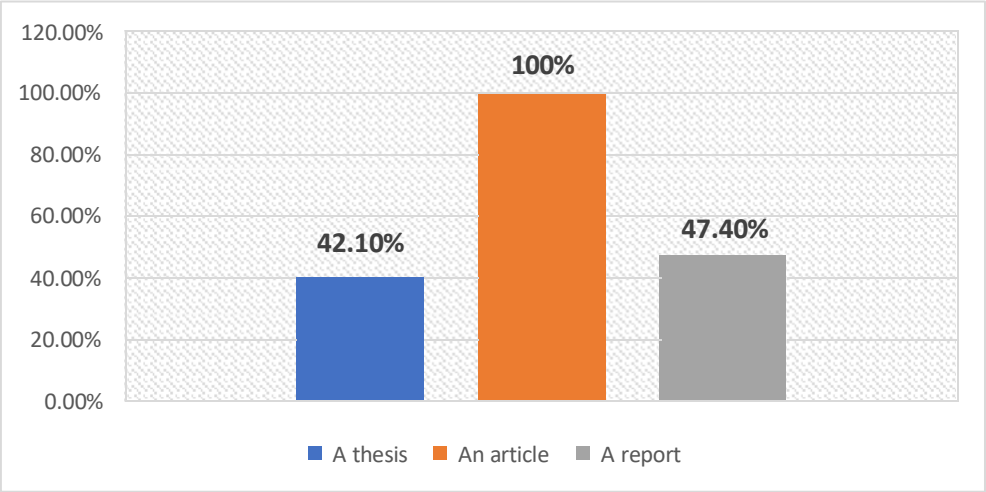
Regarding this question, all the informants (100%) affirmed that doctoral students need to write academically in English.

**Question Four:** Types of papers required in English

Concerning the types of papers required in English, the figure below presents the teachers' responses. It should be noted that more than half of the informants selected more than one option.

**Figure 3.18**

*Types of Papers Required in English*




The results presented above show that all the teachers (100%) identified the article as the most essential type of paper that doctoral students need to write in English, followed by the report (47.40%) and the thesis (42.10%). In addition, teachers were invited to suggest other types of papers besides those given. Their responses are summarised in the following table.

**Table 3.7**

*Other Types of Papers Required in English*

| Subject-Specialist Teachers | Answers |
|---|---|
| **12** | Conference papers |
| **03** | International seminar papers |
| **02** | International application letters |
| **02** | No answer |

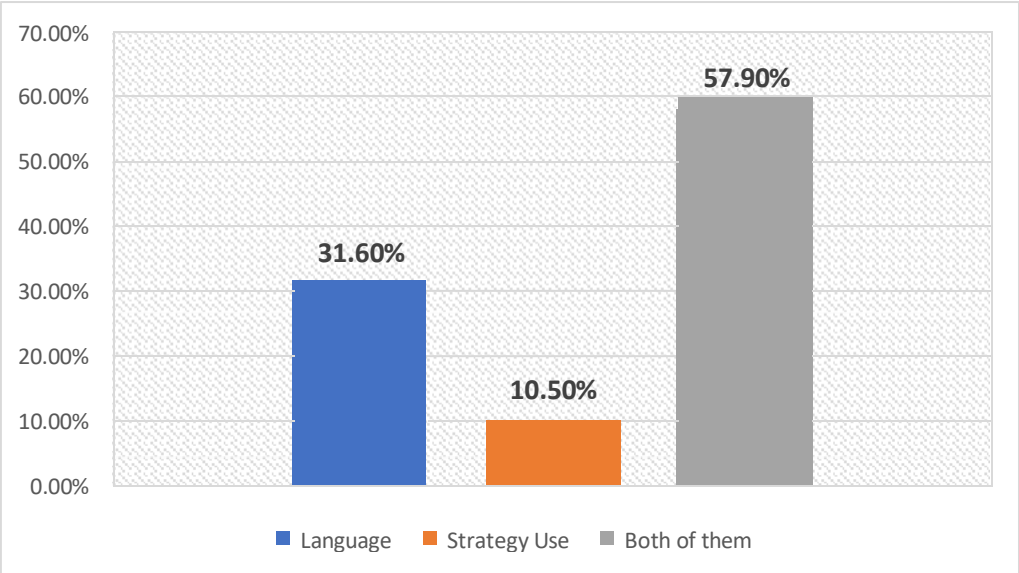
As displayed in the table above, the majority of informants (12) stated that doctoral students also need to write conference papers. Three of them reported that they need to write papers for international seminars, while two indicated the need to write international application letters. The remaining two informants did not provide a response.

**Question Five:** The nature of writing difficulties

Teachers' responses concerning the nature of writing difficulties are presented in the figure below.

**Figure 3.19**

*The Nature of Writing Difficulties*



**Question Six:** Linguistic difficulties

In this question, a number of linguistic difficulty items were proposed for the informants to select from. The table below summarises the teachers' responses.

**Table 3.8**

*Linguistic Difficulties*

| Linguistic Difficulties | Subject- Specialist Teachers | Percentage |
|---|---|---|
| **Difficulties in grammar** | 15 | 78.9% |
| **Difficulties in vocabulary choice** | 14 | 73.7% |
| **Difficulties in syntax** | 12 | 63.2% |
| **Coherence and cohesion** | 11 | 57.9% |

It is observable from the table above that most teachers selected more than one answer, indicating that doctoral students face linguistic difficulties at different levels. Fifteen respondents (78.9%) stated that students struggle with grammar, while fourteen of them (73.7%) reported difficulties in selecting appropriate vocabulary. Eleven teachers (57.9%) stated that their linguistic difficulties involve coherence and cohesion, whereas twelve respondents (63.2%) claimed that students encounter difficulties at the syntactic level.

**Question Seven:** Strategic difficulties

Regarding the strategic difficulties encountered by doctoral students in writing, the collected data are presented in the following table. It should be noted that the majority of informants selected more than one option.

**Table 3.9**

*Strategic Difficulties*

| Strategic Difficulties | Subject-Specialist Teachers | Percentage |
|---|---|---|
| **Structuring a proper introduction and conclusion** | 16 | 84.2% |
| **Paraphrasing and summarizing** | 13 | 68.4% |
| **Revising and editing** | 08 | 42.1% |
| **Referencing** | 04 | 21.1% |

As shown in the table above, a large number of teachers (84.2%) stated that doctoral students encounter difficulties in structuring a proper introduction and conclusion. Additionally, 68.4% reported that they face obstacles in paraphrasing and summarising. Less than half (42.1%) declared that their strategic difficulties include revising and editing, whereas a few (21.1%) indicated that doctoral students seem to have difficulties with referencing. Furthermore, the informants were asked to mention any additional difficulties that doctoral students face when writing. Their responses are summarised in the following table.

**Table 3.10**

*Other Strategic Difficulties*

| Subject-Specialist Teachers | Answers |
|---|---|
| **04** | Structuring a well-organised article |
| **03** | Reporting results |
| **04** | Interpreting and discussing results |
| **02** | Using keywords |
| **06** | No answer |

As displayed in the table above, various responses were provided. Four teachers reported that doctoral students encounter difficulties in structuring a well-organised article. A total of seven informants stated that other difficulties include reporting, interpreting, and discussing results. Two respondents indicated that students face problems using keywords; however, six of them did not provide an answer to this question.

**Question Eight:** Academic writing course

According to the results, all the informants (100%) affirmed that an academic writing course is essential for doctoral students.

**Question Nine:** Writing tasks

The informants' responses concerning writing tasks are presented in the table below.

**Table 3.11**

*Writing Tasks*

| Tasks | Subject-Specialist Teachers | Percentage |
|---|---|---|
| **Writing a paragraph** | 14 | 73.7% |
| **Writing an essay** | 08 | 42.1% |
| **Writing scientific reports** | 18 | 94.7% |
| **Writing an abstract** | 14 | 73.7% |
| **Writing an outline** | 09 | 47.4% |
| **Paraphrasing and summarizing** | 10 | 52.6% |
| **Writing references** | 04 | 21.1% |

It is noticeable that all the proposed tasks were considered by the informants. Almost all the teachers (94.7%) regarded writing scientific reports as an extremely significant task. A large number of them (73.7%) selected both writing a paragraph and writing an abstract. More than half (52.6%) stated that paraphrasing and summarising are very important tasks. Writing an essay and writing an outline were selected by nearly half of the respondents, whereas only a few (21.1%) considered writing references to be an essential task.

**Question Ten:** Subject- Specialist teachers' suggestions

**Table 3.12**

*Subject-Specialist Teachers' Suggestions*

| Subject- Specialist Teachers | Suggestions |
|---|---|
| **01** | Writing articles |
| **01** | Oral expression |
| **17** | No suggestions |

As illustrated in the table above, only two teachers out of nineteen offered suggestions. One informant proposed adding "writing articles" to the list of tasks, while the other recommended including oral expression.

## 3.4 Officers' Interview Analysis

The data collected from the interviewees are considered useful for the researcher. This section presents a detailed analysis of their responses.

**Question One:** The English course

Regarding whether doctoral students had an English course in their programme, all the officers confirmed that such a course was included.

**Question Two:** The aim of incorporating an English course in doctoral students' programme.

The interviewees' responses to this question are presented in the table below.

**Table 3.13**

*The Aim of Incorporating an English Course into the Doctoral Students' Programme*

| Officers | Answers |
|---|---|
| **Responsible for Doctoral Programme** | In order to improve their proficiency in English for research purposes. |
| **CFD Member 1** | In today's globalised world, English has become the primary medium through which scientific research is conducted and communicated. |
| **CFD Member 2** | Over 80% of bibliographic references in technical fields are written in English, and most scientific articles in academic journals use the same language. |
| **CFD Member 3** | English is necessary for doctoral students' scientific research. |
| **CFD Member 4** | To enrich their knowledge; Develop their ability to read, write and summarize; Being up to date with their field of research |
| **The Head of the Department** | To help doctoral students develop their language skills, as they need English for research purposes, such as writing scientific articles. |

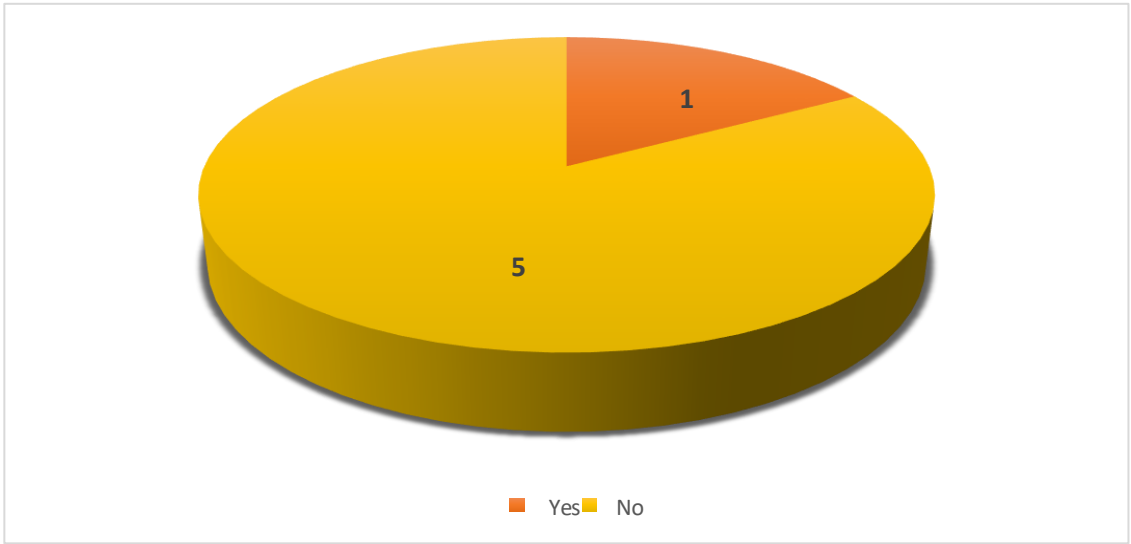
It is evident from the informants' responses that the main aim of incorporating an English course into the doctoral students' programme is to help them improve their English language skills, as this language is essential for conducting scientific research. Three interviewees explained the importance of English for doctoral students. The first stated that English is now the main language used to carry out and share scientific research at the international level. The second one declared: "Over 80% of bibliographic references in technical fields are written in English, and most scientific articles in academic journals use the same language". The third interviewee pointed out that English is essential for doctoral students to effectively carry out their scientific research. Other respondents did not explain the importance of English in detail, but they mentioned that it helps students improve their language skills for research, write scientific papers, understand and summarise texts, and keep up with progress in their field.

**Question Three and Four:** Time load for the English course and its sufficiency

All the interviewees stated that the time allocated to the English course is one and a half hours per week. The results concerning the sufficiency of this time are presented in the following figure.

**Figure 3.20**

*The Sufficiency of Time Allocated to the English Course*



As shown in the figure above, the majority of the interviewees (five out of six) stated that the time allocated to the English course is not sufficient.

**Question Five:** The impact of the English course on doctoral students

According to the collected responses, three officers confirmed that the English course met their needs, one stated that it partially did, while two responded negatively.

**Question Six:** The impact of the English course on doctoral students' academic writing competence

According to the data obtained, only two interviewees affirmed that the English course helped doctoral students improve their academic writing competence, whereas the majority (four out of six) stated that it did not.

**Question Seven:** Types of academic papers required in English

The respondents' answers to this question are presented in the table below.

**Table 3.14**

*Types of Academic Papers Required in English*

| Officers | Answers |
|---|---|
| **Responsible for Doctoral Programme** | Scientific articles, a conference paper, a report |
| **CFD Member 1** | Research papers |
| **CFD Member 2- CFD Member 3** | Scientific articles, a thesis |
| **CFD Member 4 - The Head of the Department** | Scientific articles |

As shown in the table above, the interviewees mentioned different types of academic papers. Almost all of them stated that doctoral students need to write scientific articles in English, whereas one informant indicated that they are required to write research papers. Some interviewees also mentioned writing a thesis, a conference paper, and a report.

**Question Eight:** Officers' opinions of an academic writing course

All the interviewees supported the implementation of an English course entirely dedicated to academic writing. They stated that such a course is essential and would be beneficial for doctoral students. The table below summarises their responses.

**Table 3.15**

*Officers' Opinions of an Academic Writing Course*

| Officers | Answers |
|---|---|
| **Responsible for Doctoral Programme** | It is an important idea |
| **CFD Member 1** | Supportive |
| **CFD Member 2** | Very useful |
| **CFD Member 3** | Very good idea because they need it in their area of specialization |
| **CFD Member 4** | It is very important |
| **The Head of the Department** | It is very beneficial for doctoral students. |

**Question Nine:** Officers' suggestions

Regarding this question, only one respondent offered a suggestion, while the others did not. He proposed that the English course should be compulsory throughout the three years of doctoral training, as he believes it is essential for researchers in the field of technology.

## 3.5 Interpretation and Discussion of the Results

The officers' interviews, along with doctoral students' and subject-specialist teachers' questionnaires, aimed to identify the importance of English for doctoral students; investigate the impact of the English course provided on their overall language needs, particularly focusing on academic writing; explore their academic writing needs; and suggest a task-based course to improve doctoral students' academic writing performance. These research tools were used to conduct a needs identification and analysis of doctoral students' academic writing difficulties.

With these goals in mind, the researcher sought to test the first and the second research hypotheses. The results obtained from the research instruments clarified the academic writing needs of doctoral students, which will assist in designing a suitable course and testing its impact on improving their academic writing performance. Consequently, the third research hypothesis will be verified.

The results of the two questionnaires and the interview revealed that mastering English is highly important for doctoral students. Question Two of the doctoral students' questionnaire indicated that all participants (100%) are aware of the significance of English in their field of study and recognize the necessity of mastering it, particularly for scientific research purposes.

Doctoral students need to master English because the most important references and research papers in their field are written in English. Moreover, they are required to write scientific articles in English in order to report their research findings and publish their work in reputable international journals, which generally accept submissions only in

English. These journals also consider the quality of the language used, especially regarding accuracy, adherence to academic writing conventions, and methodological clarity. This explains why doctoral students need to master English in general, and academic writing in particular. In addition, they must produce various academic documents in English, such as research papers, theses, reports, and conference or seminar papers, particularly in international contexts. Thus, developing their academic writing skills is essential.

Regarding the impact of the English course provided on doctoral students' overall needs and their academic writing competence in particular, findings from the officers' interviews and the doctoral students' questionnaire indicate that the course addressed their needs in general terms (see Question 3 from the doctoral students' questionnaire and Question 5 from the officers' interview). However, it did not help them improve their academic writing in English (see Question 4 from the doctoral students' questionnaire and Question 6 from the officers' interview).

Question four of the doctoral students' questionnaire revealed that nearly half of the respondents did not benefit from the course provided. In other words, the course did not help them improve their academic writing skills. However, the other respondents stated that the English course supported their ability to write academically. The variation in responses may be attributed to several factors, including the course content, students' level of English proficiency, their degree of participation, their expectations, and the instructor's delivery. In addition, the time allocated to the English course is one and a half hours per week (see Question 3 from the officers' interview), which the interviewees considered insufficient (see Question 4 from the officers' interview). As a result, it may not be adequate to meet all doctoral students' academic writing needs.

However, it is equally important to highlight other factors that contribute to the ineffectiveness of the English course. Firstly, the majority of teachers recruited by the university are part-time instructors, most of whom are PhD students or recent Master's degree graduates. These teachers often lack teaching experience and have not received

any ESP training. Moreover, since they do not hold permanent positions, the university tends to recruit different teachers of English each academic year, sometimes, even replacing them in mid-semester.

Secondly, the content of the English course is not determined by the department. Teachers are given the freedom to design and select their own course materials. Consequently, lessons vary from one teacher to another, which poses a challenge for students, as they are unable to follow the course in a gradual, coherent, and systematic manner. They often learn new and unrelated content from different teachers, which hinders their ability to focus on improving specific skills.

Thirdly, the department typically provides teachers with a list of course objectives, which are broad and often do not align with the actual needs of students. In other words, the aims set by the department do not adequately prepare students to write the various types of academic papers required in English. Furthermore, students study English for only four semesters during their five years of Licence and Master studies, in addition to just one semester in the Doctorate, which remains insufficient to improve the necessary skills.

Another issue faced by teachers is the large class size, particularly with second-year Licence (L2) students, who attend the same English module together with students from other specialties such as Civil Engineering, Electrical Engineering, and Irrigation. This makes it extremely difficult for teachers to address all students' needs, especially given that they belong to different fields. As a result, the learning context and needs vary significantly.

Fourthly, students tend to prioritize modules based on their coefficients, showing varying degrees of interest accordingly. As a result, the English module, which carries the lowest coefficient compared to specialty modules, is often perceived as supplementary. Consequently, students tend not to prioritize it, affecting their motivation and limiting their efforts to improve their language skills.

Finally, doctoral students, particularly in their first year, often lack awareness of the specific role of English in their academic and research activities. While they may acknowledge its general importance, many are not fully aware of the particular skills they need to prioritize and develop. Although Needs Analysis is intended to identify students' needs regardless of their level of awareness, this lack of clarity may still hinder the process. When students are unable to clearly express their difficulties or expectations, it becomes more challenging for teachers to conduct an adequate NIA. As a result, designing an effective course that meets students' actual needs is difficult, and students may continue to struggle with academic writing.

Question five of the doctoral students' questionnaire, question four of the subject-specialist teachers' questionnaire, and question seven of the officers' interview all revealed that the scientific article is the most required academic paper for doctoral students, with 100% of respondents agreeing on its importance. This type of paper is particularly significant for doctoral students as it must be published in reputable international scientific journals. However, nearly half of the respondents (40.90%) reported that writing in English is difficult for them (see Question Six of the doctoral students' questionnaire).

Regarding the first research hypothesis, the findings obtained from the doctoral students' and subject-specialist teachers' questionnaires demonstrated that doctoral students encounter both linguistic and strategic difficulties when writing (57.90%; see Question Five of the subject-specialist teachers' questionnaire). Moreover, Question Six of the same questionnaire highlighted that they face various difficulties related to language use.

Concerning linguistic difficulties, a large number of students reported obstacles related to grammar (see Question Eight of the doctoral students' questionnaire), occurring at different levels, namely the use of verbs, tenses, pronouns, and articles. Students reported greater difficulty with verbs (59.1%) and tenses (54.5%).

In addition to grammar, most students reported difficulties in expressing their ideas, specifically in selecting appropriate vocabulary (see Question Nine). This indicates that the English course did not provide the necessary technical terminology, possibly because it was a general English course rather than an ESP course. Consequently, it did not help them acquire or expand vocabulary required in their field of research.

The results also revealed that the majority of doctoral students are able to write simple, clear sentences (see Question Ten); however, they face difficulties in using cohesive devices appropriately to link sentences and paragraphs. In fact, only 9% of them affirmed that they know how to do so (see question eleven). Furthermore, the majority reported problems with coherence in their writing (see Question Twelve).

Regarding strategic difficulties, question thirteen of the doctoral students' questionnaire revealed that students are able to develop and organize their ideas in some types of essays, but struggle in others. Half of the respondents (50%) reported that they can do so in a cause-and-effect essay, and 45.5% in a descriptive essay. Fewer respondents said they could organize ideas in an argumentative essay (36.4%) and a compare-and-contrast essay (36.4%). Only 22.7% reported that they know how to organize ideas in an expository essay, which appears to be the most challenging.

Additionally, a large number of teachers reported that doctoral students face difficulties in structuring proper introductions and conclusions (see Question Seven), confirmed by students (see Question Fourteen). More than half encounter difficulties in paraphrasing and summarising (see Question Fifteen), also reported by subject-specialist teachers.

The results also revealed that doctoral students encounter difficulties at different stages of the writing process; however, the most challenging stage for half of them was reported to be revising and editing, followed by prewriting, drafting, and proofreading (see Question Sixteen). Furthermore, nearly half of the teachers confirmed that revising and editing is one of the strategic difficulties that doctoral students face. Nevertheless, despite its difficulty, the majority of doctoral students manage, to some extent, to revise and edit their writing (see Question Seventeen).

Data from Questions Eighteen and Nineteen revealed that a considerable number of doctoral students know how to cite references within a text, while nearly half face difficulties organizing a reference list according to a particular style. Furthermore, doctoral students encounter other strategic difficulties, namely structuring a proper article; reporting, interpreting, and discussing research findings as well as using appropriate keywords (see Question Seven of the subject-specialist teachers' questionnaire).

All these results demonstrate that doctoral students need to develop both linguistic and strategic competences to write successfully in academic contexts. Hence, the first hypothesis is confirmed. Furthermore, the researcher believes that these results support the design of an appropriate syllabus. Question Twenty highlighted doctoral students' positive attitude towards the suggested academic writing course; all affirmed they need such a course. Subject-specialist teachers and officers also asserted the course is highly beneficial (see Question Eight).

Regarding the second research hypothesis, results revealed that all doctoral students are interested in a task-based course (see Question Twenty-One), indicating that they seek to improve academic writing through practice. Both doctoral students and subject-specialist teachers expressed interest in all proposed writing tasks; however, some tasks are preferred by both groups due to higher frequency of selection, namely writing scientific reports, writing an abstract, paraphrasing and summarizing, and writing a paragraph (see Question Twenty-Two and Question Nine of the doctoral students' and subject-specialist teachers' questionnaires, respectively). In light of these results, a task-based language teaching syllabus is suitable for enhancing doctoral students' academic writing performance. Thus, the second hypothesis is confirmed.

Finally, a few suggestions were offered by informants. One doctoral student proposed using Google Translate, whereas one officer suggested making the English course mandatory throughout the three years of doctoral training. Two subject-specialist teachers also offered suggestions: one proposed adding "writing a scientific article" to the list of tasks, and the other suggested including oral expression, as doctoral students

are expected to give presentations at international conferences and seminars. Therefore, they need to improve the quality of their spoken English in general, and their presentation skills in particular.

## 3.6 Conclusion

Chapter Three aimed to analyse, interpret, and discuss findings from the officers' interviews and the questionnaires administered to doctoral students and subject-specialist teachers. The results highlighted the importance of academic writing in English and identified students' main challenges in writing academic papers. Furthermore, the findings provided a clearer understanding of the attitudes of officers, subject- specialist teachers, and doctoral students towards the proposed task-based course.

Data analysis revealed that doctoral students require development in both linguistic and strategic competencies to write effectively. Accordingly, the first research hypothesis was confirmed. In addition, participants were fully aware of the importance of mastering English, particularly in improving academic writing competence. Their positive attitudes, along with those of subject-specialist teachers and officers, towards the proposed academic writing task-based course, confirmed the second research hypothesis.

The next chapter will be devoted to the experimental phase of this research. Based on the findings presented in Chapter Three, the researcher will design a task-based academic writing course for doctoral students and examine whether it improves their academic writing performance.

# CHAPTER FOUR

# CHAPTER FOUR

Course Experimentation and General Recommendations

# CHAPTER FOUR *Course Experimentation and General Recommendations*

## 4.1 Introduction

Considering the importance of the results obtained in the previous chapter, it was necessary to address the target and learning needs of mechanical engineering doctoral students. The main findings of this study show that these students face both linguistic and strategic challenges when writing academic papers in English. This is primarily due to the inadequacy of the English course they received, which did not meet their academic writing needs, and the limited amount of time allocated to it. Therefore, based on students' identified needs and their positives attitudes towards the proposed course, along with the support of teachers and officers, a sample academic writing course implementing a task-based approach to language teaching and learning was designed and experimented.

Being entirely devoted to developing doctoral students' academic writing, the task-based course is of paramount importance to mechanical engineering students as it seeks to address their specific needs. The identification and analysis of these needs reveals that students must improve both their linguistic and strategic competencies in order to write the various types of academic papers required throughout their research journey. Accordingly, the tasks proposed in this course aim to fulfil this objective. The selection of these tasks was based on students' identified needs in order to improve their academic writing performance. This chapter aims to evaluate the effectiveness of the course. Therefore, the results obtained at the end of this experiment will either confirm or reject the final research hypothesis.

## 4.2 Academic Writing Course Design

The findings of this research study prompted the researcher to design an academic writing task-based course for mechanical engineering doctoral students in the Faculty of Sciences and Technology. As the name suggests, the course adopts a task-based language teaching approach, which places tasks as the core of instruction to develop students' academic writing skills. In other words, students learn by performing tasks online via the Zoom platform. It is worth mentioning that the content of the course was

selected based on the students' target and learning needs.

### 4.2.1 Course Objectives

The main objective of the academic writing task-based course is to develop doctoral students' linguistic and strategic competencies and to enhance their academic writing performance.

Each unit is designed to achieve specific goals that contribute to the overall objective. Unit One focuses on reviewing the basic notions of language. In Unit Two, Part One aims to help students structure paragraphs and essays; Part Two focuses on organizing academic papers; Part Three assists students in using sources effectively; and Part Four aims to help them avoid redundancy and write with conciseness. The structure of the course is presented below.

**Academic Writing Task - Based Course**

*Programme for Mechanical Engineering Doctoral Students*

| | |
|---|---|
| **Unit 01** | **Review session** |
| **Duration** | **12 hours** |
| **Aim(s):** | **To help doctoral students review the basic notions of language.** |
| **Objectives:** | **Doctoral students will improve:**<br>**-Structuring short sentences.**<br>**-The use of punctuation, subject verb agreement, tenses, passive form, articles**<br>**-Replacing adjectives with verbs in sentences.**<br>**-Connecting ideas and sentences using linking devices.** |
| **Assumed prior knowledge:** | **It is assumed that doctoral students have basic already knowledge of language structure** |
| **Assessment** | **Pre- test / Post –test assessment of learning.**<br>**Pre-test: to assess students' pre-existing knowledge.**<br>**Post-test: to measure the effectiveness of the course.** |

## CHAPTER FOUR *Course Experimentation and General Recommendations*

### A/ Review Sessions (Linguistic Tasks)

### Course 01

1/ Punctuation

2/ Subject -verb agreement

3/ Verbs

4/ Tenses

5/ Passive Voice

6/ Articles

7/ Linking devices

8/ Writing short sentences

| | |
|---|---|
| **Unit 02** | **Academic Writing** |
| **Duration** | **40 hours** |
| **Aims:** | **To help doctoral students:**<br>**1/ Structure paragraphs and essays.**<br>**2/ Organize papers.**<br>**3/ Use sources.**<br>**4/ Avoid redundancy** |
| **Objectives:** | **Students will be able to:**<br>**1/ Structure an academic paragraph (write a topic sentence, supporting sentences and a concluding sentence).**<br>**2/ Structure different types of essays: expository essay, argumentative essay, compare and contrast essay (structure an introductory paragraph, body paragraphs and a concluding paragraph)**<br>**3/ Structure an article**<br>**4/ Structure an abstract**<br>**5/ Use and cite direct quotations.**<br>**6/ Paraphrase**<br>**7/ Summarize** |

| | |
|---|---|
| | **8/ Reference sources**<br><br>**9/ Avoid wordiness and write more concisely.** |
| **Assumed prior knowledge:** | **It is assumed that doctoral students already know how to structure short sentences, when and how to use punctuation marks, tenses, passive form, articles, and how to connect ideas and sentences using linking devices.** |
| **Assessment** | **Pre- test / Post –test assessment of learning.**<br>**Pre-test: to assess students' pre-existing knowledge.**<br>**Post-test: to measure the effectiveness of the course.** |

## B/ Strategic Tasks

## Course 3

### Part 1: Structuring a paragraph/ an essay

Structuring a paragraph

Structuring an essay

Expository essay

Argumentative essay

Compare-and-contrast essay

### Part 2: Organising papers

Structuring an article

Structuring an abstract

### Part 3: Using Sources

Quoting

Paraphrasing

Summarising

Referencing

### Part 4: Conciseness

Avoiding redundancy

### 4.2.2 Course Layout

The academic writing course is divided into two units. Unit One is devoted to review sessions and comprises eight lessons that cover the basic notions of language. It should be noted that doctoral students are provided with the same types of lessons and tasks, but with different content, before proceeding to the second unit. This means that Unit One includes a total of sixteen linguistic tasks. The aim is to offer additional practice by repeating the same types of activities with varied input.

Unit Two, however, is dedicated to writing activities and is divided into four parts consisting of eleven lessons.

-Part One focuses on structuring a paragraph and an essay and includes four lessons.

-Part Two is concerned with organising papers and involves two lessons.

-Part Three consists of four lessons that deal with using sources.

-Part Four includes one lesson focused on conciseness.

Similarly to Unit One, once all the tasks are completed, students will be given the same number of tasks, with the same type and order, but with different content; that is, this unit comprises a total of twenty-two strategy-based tasks. In both units, each lesson is delivered in sessions ranging from 1hour 30min to 3 hours depending on the difficulty of the task.

## 4.3 Tasks Description

In order to help doctoral students overcome their academic writing difficulties, two types of tasks were suggested: linguistic and strategic tasks. Linguistic tasks aim to review the basic notions of language with the objective of improving learners' linguistic competence. In contrast, the strategic tasks focus on academic writing and seek to develop learners' strategic competence necessary for academic writing. The instructor decided to address linguistic problems first, believing that reviewing the basic notions of language would facilitate the academic writing process. Therefore, the course started with review sessions, involving linguistic tasks, followed by academic writing activities. All tasks, except those assigned as homework, were delivered online via Zoom. This section presents a sample of these tasks.

### 4.3.1 Linguistic Tasks

#### *1/ Punctuation Tasks*

In these tasks, doctoral students are given passages and asked to punctuate them. The aim of these exercises is to help them use punctuation marks correctly.

**Task 01:** Punctuate the following passage using appropriate punctuation marks.

Alloy steels are alloys of iron with the addition of one or more of the following elements carbon manganese silicon nickel chromium molybdenum and vanadium The alloy steels cover a wide range of steels including low-alloy steels stainless steels heat-resistant steels and tool steels Some alloy steels such as austenitic stainless steels do not contain intentional additions of carbon Silicon when required is added as a deoxidizer to the molten steel Nickel provides strength and assists in hardening the steel by quenching and tempering heat treatment This latter effect is called hardenability which has been described earlier Chromium is found in stainless steels for corrosion resistance Chromium and molybdenum also assist in hardenability of the low-alloy steels Vanadium strengthens the steel by forming precipitates of vanadium carbonitride Vanadium is also a potent hardenability element ( text adapted from Mechanical Engineers' Handbook: Materials and Engineering Mechanics, 2015).

As mentioned earlier, students are exposed to the same type of task with different content, as illustrated in the sample task below.

**Task 01:** Punctuate the following extracts using appropriate punctuation marks.
*(extracts adapted from Mechanical Engineers' Handbook: Materials and Engineering Mechanics, 2015).*

a/ Sulfur is also considered a tramp element in steel and is usually restricted to below about 0.02% although an element with a small atomic diameter sulfur is not considered an interstitial alloying element because it is insoluble in iron however as in the case of phosphorus sulfur is added to a special class of steels called resulfurized steels that have improved machinability these steels are called free-machining steels.

b/ In most steels copper is considered a tramp (residual) element and is restricted to levels below 0.04% copper having a much lower melting point than iron can create a detrimental steel surface condition known as hot shortness although not generally added to steel there is a very special class of steels that contain high levels of copper to take advantage of the precipitation of copper particles during aging (a tempering process).

c/ These copper particles increase strength and hardness copper is also added to low-alloy steels for atmospheric corrosion protection (these steels are called weathering steels) one problem with copper in steel is that it cannot be oxidized and removed during steel refining thus over time the copper level of steel produced from steel scrap is slow.

### *2/ Subject -Verb Agreement*

**Task 02:** Correct the following sentences by ensuring correct subject-verb agreement. *(content adapted from English in mechanical engineering: English in focus, 1974).*

a/ Two masses is suspended from the metre stick at points X and Y.

b/ A single point tool consist of a tip made of high-speed steel and a plain carbon steel shank welded to the tip.

c/ The screw run in a fixed nut incorporated in the jack.

d/ Vector a-b were converted into a force of 60N.

e/ Fluid is applied to cutting tools to cool and lubricate them and to wash away chips and swarf.

f/ When a rod of mild steel have a compressive force of 5 kN applied to it, it contracts by 0.889 mm.

g/ If a weight of 6 kg are attached to a wire of uniform c.s.a., the wire extend by 0.05mm.

In this task, doctoral students are provided with a number of sentences and are required to correct them. This task aims to assess their understanding of subject-verb agreement. A similar subject-verb agreement task with different content is presented below.

**Task 02:** Correct the following sentences by ensuring correct subject-verb agreement.

a/ When the chamber are filled to the correct level, the float and needle-valve rises, cutting of the fuel supply.

b/ Man have used simple machines for over 2.000 years.

c/ The 5 kg mass were removed to make the load on the test piece lighter.

d/ Friction between two surfaces depend on the nature of the surfaces in contact.

e/ If the load exceeds 60 kN, the bar do not return to its original seize when the load is removed.

f/ Cranes often has a warning device which operate when the safe load is exceeded.

g/The carburetor are a device which provide/ provides the engine with an air and petrol mixture in the correct proportions for all running conditions.

### *3/ Using Verbs*

In this activity, students are given sentences containing adjectives and are asked to rewrite them using verbs from a provided list. This task helps them replace adjectives with appropriate verbs in sentences.

**Task 03:** Re-write the following sentences using the verbs from the list.

(Harden, soften, enlarge, tighten, ensure, weaken, lighten, widen)

a/ The 5kg mass was removed to make the load on the test piece lighter.

b/ A reamer can be used to make drill holes larger.

c/ Repeatedly flexing copper wire makes it hard and thus makes it easy to break.

d/ A torque wrench should be used to make the bolts tight on a cylinder head.

e/ Solvents can be used to make coatings soft.

f/ The gap between tailstock and spindle nose can be made wider by rotating the hand wheel.

g/ Piston rings make sure that the piston makes a gas-tight seal with the cylinder wall.

h/ Dirty materials may make reinforced concrete weak. *(task adopted from English in mechanical engineering: English in focus, 1974).*

The following is another sample activity using varied content.

**Task 03:** Re-write the following sentences using the verbs from the list:

(Roughen, lengthen, loosen, sharpen, strengthen, shorten, lessen)

a/ A tensile force will make a body longer.

b/ The surface should first be made rough using a coarse file.

c/ Wing nuts can be made loose easily by hand.

d/ Friction between two rough planks can be made less if they are planed.

e/ A compressive force will tend to make a body shorter.

f/ Extra struts will make the framework stronger.

g/ Drills can be made sharp with grinding stone.

### *4/ Tenses*

In this task, students are provided with a passage containing verbs in brackets. The verbs are in the infinitive form, and students are asked to conjugate them into the correct tense. This activity provides them with a practice in using appropriate verb tenses.

**Task 04:** Put the verbs in brackets into the correct tense. *(text adapted from English in mechanical engineering: English in focus, 1974).*

A force of attraction (to exist) between everybody in the universe. It (to investigate) by many scientists including Galileo and Newton. This Gravitational force (to depend) on the mass of the bodies involved. Normally it is very small but when one of the bodies (to be) a planet like earth, the force (to be) considerable. Everything on or near the surface of the earth (to be) attracted by the mass of the earth. The greater the mass, the greater is the earth's force of attraction on it. We call this force of attraction gravity.

Because of gravity, bodies (to have) weight. We can (to perceive) weight only when a body (to resist) gravity. For example, when we pick up a stone there are two forces involved. One is the lifting force we (to exert) and the other is the force of

gravity which (to attract) the stone downwards and thus (to give) it weight.
When a body (to escape) from the influence of the earth's gravitational pull, it can become 'weightless'. For example, the centrifugal Force of a spacecraft spinning in orbit round the earth (to cancel) the effect of gravity. The crew therefore experience Weightlessness. One of the minor disadvantages of weightlessness is that normal pens will not (to write) because the ink is not attracted by gravity to flow out off the pen.

Another tense- focused task with different content is presented below.

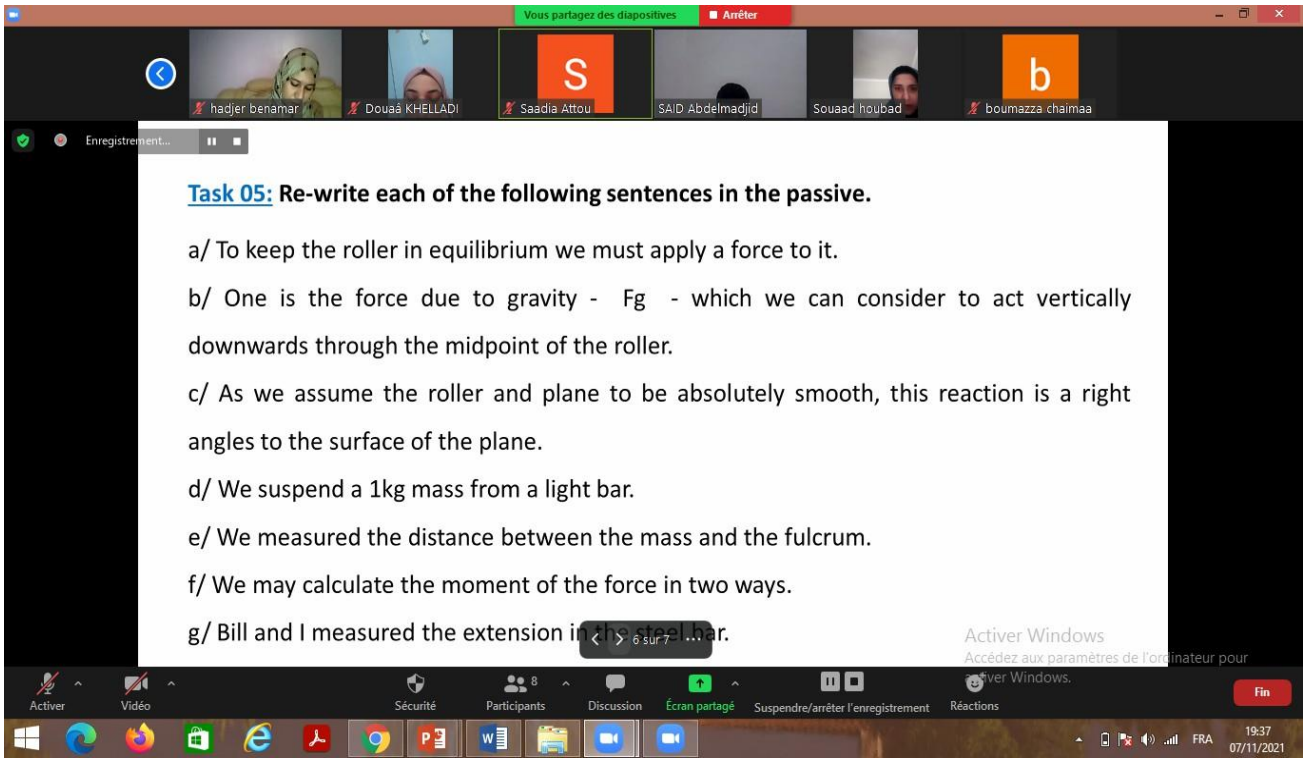
**Task 04:** Put the verbs in brackets into the correct tense.

Designers of any stress-bearing structure, from a bracket to a suspension bridge, must accurately calculate the stresses they (to expect) the structure to bear. They must also have a good understanding of the properties of materials. In the past, miscalculation of stresses and lack of knowledge of the properties of materials (to lead) to disaster. For example, the first Tay Bridge in Scotland (to collapse), killing 77 people, because no allowance (to make) for wind pressure. Even with today's testing equipment errors (to be) sometimes made in calculating the safe loads a structure can carry. For instance, a number of box girder bridges (to collapse) during construction.

To safeguard structures, designers normally (to work) within a factor of safety so that materials are kept within their permitted working stress. Working stress is the greatest stress to which a part of a structure is ever subjected. It is calculated by dividing the ultimate strength of the material by a factor safety. The former is the stress at which the material (to fracture). The latter is the product of four main factors.

### *5/ Using the Passive Voice*

In this exercise, students are provided with sentences written in the active voice and are required to change them into the passive voice. This task aims to help them form and use the passive voice appropriately.




*(content adopted from English in mechanical engineering: English in focus, 1974).*

The following is another sample activity with varied content.

**Task 05:** Re-write each of the following sentences in the passive.

a/ If we place a smooth roller on an inclined plane, it will run down the plane.

b/ Two other forces act on the roller.

c/ We can apply this force in any direction providing one component acts up the plane.

d/ We call the third force the normal reaction- R.

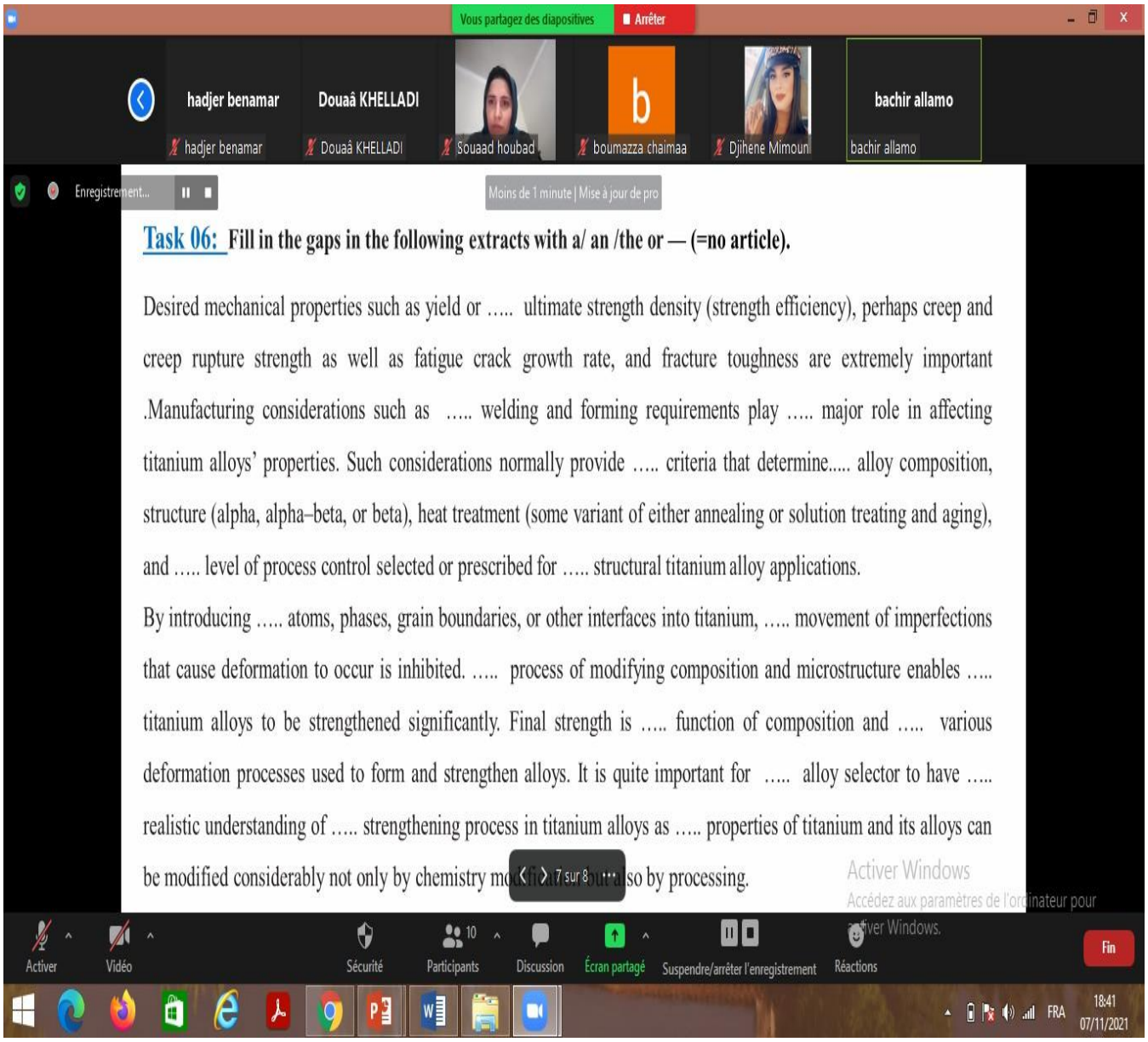
e/ We can therefore draw a triangle of forces for the system.

f/ The diagram shows this force –P- acting parallel to the plane.

### *6/ Using Articles*

In this task, students are given extracts containing gaps and are required to fill them with the appropriate articles (a, an, the) or insert a slash mark (/) when no article is needed. This activity is designed to train students in the correct use of articles and to help them understand when articles should be omitted. *(the extract in task 6 below is adapted from Mechanical Engineers' Handbook: Materials and Engineering*

*Mechanics, 2015).*




Another task on article usage with different content is presented below.

**Task 06:** Fill in the gaps in the following paragraphs with a/ an /the, or — (no article).

Steel is ….. most common and widely used metallic material in today's society. It can be cast or wrought into numerous forms and can be produced with tensile strengths exceeding 5 GPa. A prime example of ……versatility of steel is in the

automobile where it is the material of choice and accounts for over 60% of the weight of the vehicle. Steel is highly formable as seen in ……contours of the automobile outerbody. Steel is strong and is used in ….. body frame, motor brackets, driveshaft, and door impact beams of the vehicle. Steel is corrosion resistant when coated with the various zinc-based coatings available today. Steel is dent resistant when compared with other materials and provides exceptional energy absorption in ….. vehicle collision. Steel is recycled and easily separated from other materials by ….. magnet. Steel is inexpensive compared with other competing materials such as aluminum and various polymeric materials.

In the past, steel has been described as ….. alloy of iron and carbon. Today, this description is no longer applicable since in some very important steels, e.g., interstitial-free (IF) steels and type 409 ferritic stainless steels, carbon is considered ….. impurity and is present in quantities of only ….. few parts per million. By definition, steel must be at least 50% iron and must contain one or more alloying elements. These elements generally include carbon, manganese, silicon, nickel, chromium, molybdenum, vanadium, titanium, niobium, and aluminum. Each chemical element has ….. specific role to play in the steelmaking process or in achieving particular properties or characteristics, e.g., strength, hardness, corrosion resistance, magnetic permeability, and machinability.

## *7/ Linking Devices*

**Task 07:** Join the following groups of sentences to make twelve longer sentences. Where a connecting word is given at the beginning of a group, use it to join the sentences. Where there is no connecting word, use a relative clause. Make any punctuation changes you think are necessary. *(task adopted from English in mechanical engineering: English in focus, 1974).*

## CHAPTER FOUR *Course Experimentation and General Recommendations*

1. a/ We can think of the weight of a body as acting at one point.
   b/ This point is known as the body's centre of gravity.
2. ALTHOUGH

a/ A body will always act as if its mass were concentrated as its centre of gravity.
b/ Its centre of gravity need not to be within the body itself.

3. SUCH AS

a/ The centre of gravity of some regular shapes can be found by inspection.
b/ A cube is a regular shape.

4. FOR EXAMPLE

a/ It is easy to make such regular shapes stand upright.
b/ A cylinder will stand on its base.

5. a/ If a body is to stand upright, the line of action of its weight must act through the base.
   b/ The line of action of its weight passes through its centre of gravity.
6. AND THEREFORE

a/ If a rectangular solid is placed on one face its weight will act through the centre of the base.
b/ The solid will stand upright.

7. BUT

a/ If the solid is tilted slightly, the line of action of its weight will move towards the edge of the base.
b/ It will still fall within the base.

8. THEREFORE

a/ If the solid is tilted further, the line drawn vertically downwards from its centre of gravity will fall outside the base.
b/ The solid will topple over.

9. WHEREAS

a/ If a body returns to its original position after a slight disturbance it is said to be stable.

b/ If a body moves into a new position after a slight disturbance it is said to be unstable.

10. BECAUSE

a/ Unstable structures can be dangerous.

b/ They have to be stabilized.

11. a/ Cranes are normally stabilized by a large counter-weight.

b/ This counter-weight ensures that the total mass of the crane and its load always acts through the crane's base.

12. SO THAT

a/ Cranes often have a warning device which operates when the safe load is exceeded.

b/ The crane is never in danger of toppling over.

In this task, groups of sentences are provided, each with a linking device indicated at the top as shown above. Doctoral students are required to join the sentences in each group using the given linking device to produce twelve longer sentences. When no linking word is provided, students must use a relative clause. While combining the sentences, they are also asked to make any necessary punctuation adjustments. This task trains them in the appropriate use of linking devices to connect ideas coherently. Another activity with different content that involves linking devices is presented below.

**Task 07:** Join the following groups of sentences to make eleven longer sentences, using the connecting words (at the beginning of each group, except group 6). You may omit words and make whatever changes you think are necessary in the word order and punctuation of the sentences. *(task adopted from English in Mechanical Engineering: English in focus, 1974).*

Example:

**BECAUSE/ AND/ HOWEVER**

Plastics are used widely in engineering.

They are cheap.

They have a resistance to atmospheric corrosion.

Plastics are not particularly strong.

= Plastics are used widely in engineering because they are cheap and have a resistance to atmospheric corrosion; however, they are not particularly strong.

**1- AND**

a/ There are two types of plastics.

b/ Thermoplastics are plastics.

c/ Thermosets are plastics.

**2- AND/ WHEREAS/ AND**

a/ Thermoplastics will soften when heated .

b/ Thermoplastics will harden when cooled.

c/ Thermosets set on heating.

d/ Thermosets will not remelt.

**3- FROM/ TO**

a/ Plastics are used to make a great variety of products

b/ Plastics are used to make textiles.

c/ Plastics are used to make engineering components.

**4- SUCH AS**

a/ Plastics are available in many forms.

b/ Plastics are available in the form of sheets, tubes, rods, moulding powders and resins.

**5- TO**

a/ Various methods are used.

b/ These methods convert raw plastic into finished products.

**6-** a/ Compression moulding is a common method.

b/ Compression moulding is used for shaping thermosets.

**7- WITH/ WHICH**

a/ The equipment consists of a press

b/ The press has two heated platens

c/ The two heated platens carry an upper and a lower mould.

**8- THEN**

a/ Powder is placed in the lower mould.

b/ This is moulding power.

c/ The upper mould is pressed down on the lower mould.

**9- TO/ WHICH**

a/ The pressure and the heat change the powder.

b/ The powder becomes liquid plastic.

c/ The liquid plastic fills the space between the moulds.

**10- WHEN / AND**

a/ The chemical changes have taken place.

b/ The mould is opened.

c/ The moulding is extracted.

**11- BY**

a/ Plastic bowls are made.

b/ The compression moulding method is used,

### *8/ Writing Short Sentences*

As explained in the task instructions below, students are asked to write short sentences about the methodology section of their research. The aim of this activity is to prepare them for academic writing, beginning with the construction of short, coherent sentences.

**Task 08:** Write 8-10 sentences about the methodology of your current research. Each sentence should contain a maximum of 20 words. Another task on writing short sentences is presented below.

**Task 08:** Write five or six sentences about the objectives of your current research. Each sentence should contain a maximum of 15 words.

## 4.3.2 Strategic Tasks

### *1/ Structuring Paragraphs*

**Task 01:** Write a paragraph on the importance of mechanical engineering. Include the following elements.

**a/Topic sentence** (in which you make the reader understand what you are writing about).

**b/Supporting sentences** (support the topic sentence by providing details, examples ... etc.)

**c/ Concluding sentence** (restate the main idea of the topic sentence using different words).

This task requires students to write a paragraph on the highlighted topic. Students are provided with guidelines to help them complete the activity. The aim is to assess their ability to compose a well-structured paragraph.

Another sample paragraph writing activity (with different content) is presented below.

**Task 01:** Write a paragraph explaining how an air conditioner works. Include the following elements:

**1/ Topic sentence** (in which you make the reader understand what you are writing about).

**2/ Supporting sentences** (support the topic sentence by providing details, examples ... etc.)

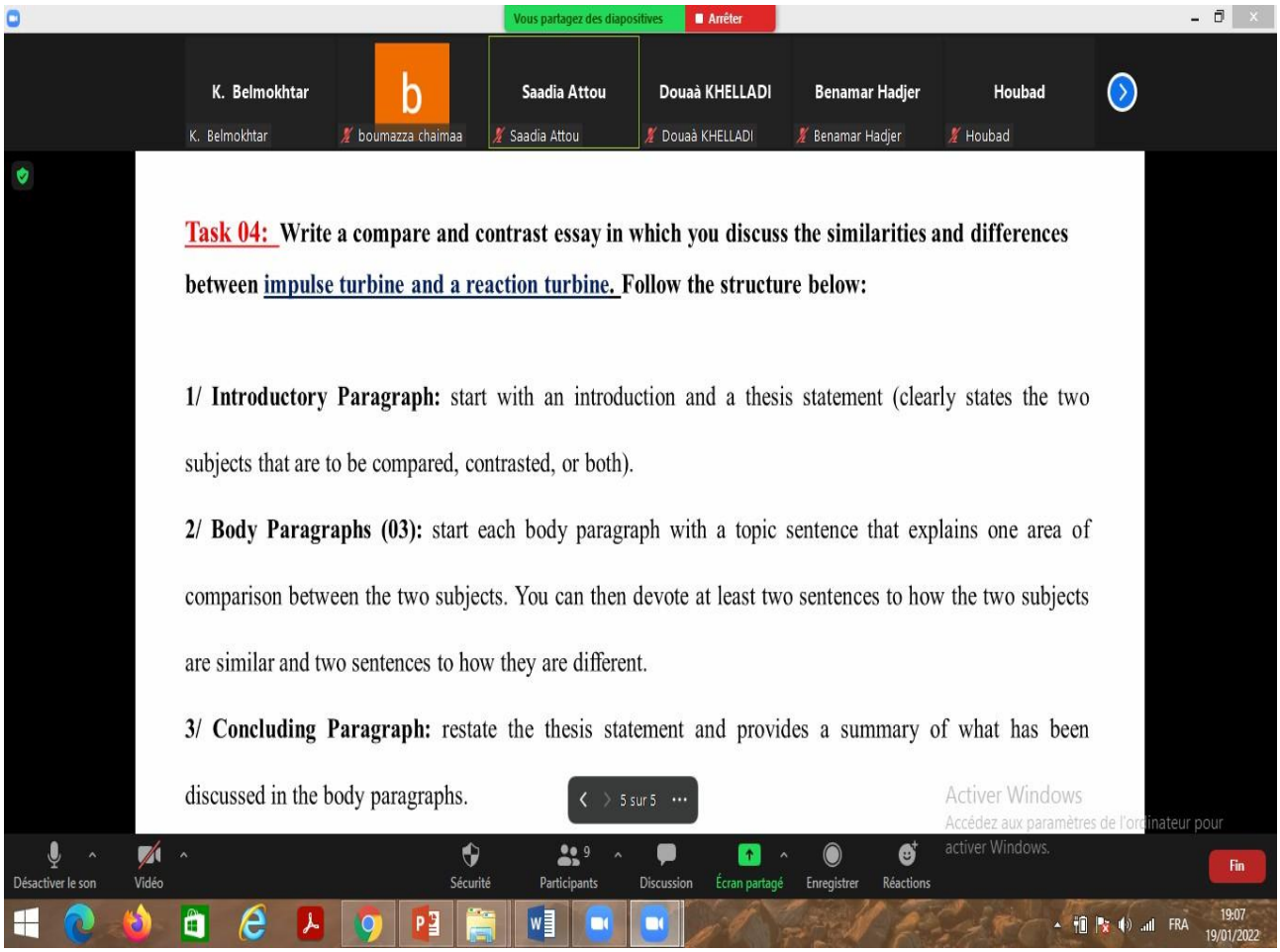
**3/ Concluding sentence** (restate the main idea of the topic sentence using different words).

### *2/ Structuring Essays*

These tasks enable doctoral students to structure different types of essays. The sample exercise below requires them to write a compare-and-contrast essay, discussing the similarities and differences between two highlighted subjects. To guide their writing, the task includes a proposed structure that students are expected to follow.

# CHAPTER FOUR *Course Experimentation and General Recommendations*

## A/ *Structuring a compare- and -contrast essay*




It should be noted that in this type of task, students are initially required to write only the essay's introductory paragraph, followed by the body paragraphs, and finally the concluding paragraph. In other words, the task is approached in stages to help students gradually learn how to write each part effectively. Once sufficient practice has been completed, they are asked to write a complete essay. The same type of activity, using different content, is presented below.

**Task 02:** Write a compare -and- contrast essay in which you discuss the similarities and differences between **petrol engines** and **diesel engines**. Include the following elements:

**1/ Introductory Paragraph:** start with an introduction and a thesis statement (clearly state the two subjects that are to be compared, contrasted, or both).

**2/ Body Paragraphs (03):** start each body paragraph with a topic sentence that explains one area of comparison between the two subjects. You can then devote at least two sentences to how the two subjects are similar and two sentences to how they are different.

**3/ Concluding Paragraph:** restate the thesis statement and provide a summary of what has been discussed in the body paragraphs.

*B/ Structuring an expository essay*: below are sample tasks in which students are required to write an expository essay. These tasks follow the same structure, but involve different content.

**Task 3:** Write an expository essay on **the dangers of artificially intelligent cars.** Include the following elements:

**1/ Introductory Paragraph:** start with a hook to catch the readers' interest, briefly introduce the topic then a thesis statement.

**2/ Body Paragraphs (03):** Each paragraph should include a topic sentence and at least 03 supporting sentences.

**3/ Concluding Paragraph:** include a summary of the main points and a restatement of the thesis.

**Task 3:** Write an expository essay on the benefits and drawbacks of **solar energy.** Include the following elements:

**1/ Introductory Paragraph:** start with a hook to catch the readers' interest, briefly introduce the topic then a thesis statement.

**2/ Body Paragraphs (03):** Each paragraph should include a topic sentence and at least 03 supporting sentences.

**3/ Concluding Paragraph:** include a summary of the main points and a restatement of the thesis.

*C/ Structuring an argumentative essay*: below are sample tasks requiring students to write an argumentative essay, using the same type of activity with varied content.

**Task 4:** Write an argumentative essay in which you state and defend a claim about whether nuclear energy is safe or not. Include the following elements:

**1/ Introductory Paragraph:** start with a hook, background information and a thesis statement.

**2/ Body Paragraphs (03):** develop your arguments and provide evidence. (Each paragraph should include a topic sentence and a different argument/ piece of evidence with examples).

**3/ Concluding Paragraph:** restate your thesis and summarizes the main arguments made in the body paragraphs.

**Task 4:** Write an argumentative essay in which you defend the claim that **marine shipping has a negative impact on air quality**. Include the following elements:

**1/ Introductory Paragraph:** start with a hook, provide background information and a thesis statement.

**2/ Body Paragraphs (03):** develop your arguments and provide evidence. (Each paragraph should include a topic sentence and a different argument/ piece of evidence with examples).

**3/ Concluding Paragraph:** restate your thesis and summarizes the main arguments made in the body paragraphs.

### *3/Structuring an article*

**Task 05:** Read the article below entitled "Design and Fabrication of a Motorized Rice Hulling Machine''. Consider how the article is structured, and write an article related to your area of research, following the same steps.

**The link:**

file:///C:/Users/Pc%20Bridge/Downloads/Design_and_fabrication_of_a_motorized_rice_hulling.pdf

In this exercise, students are provided with a sample article and are asked to read it and follow its structure to write an article related to their area of research. Similarly to structuring essays, writing an article involves different steps, for instance, starting with writing an introduction as a sub-task.

Another activity using the same structure, but with different content is presented below:

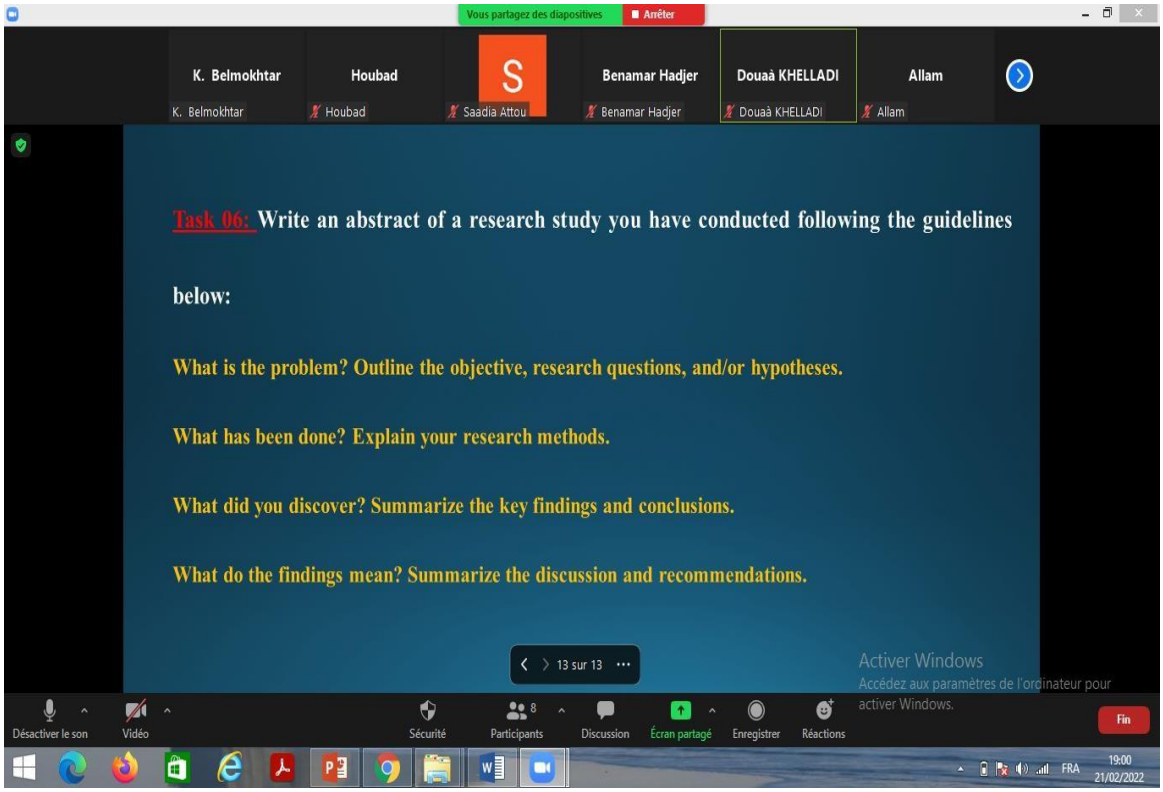
**Task 05:** Write an article related to your field of research (Use the following article as a guide).

**The link:**

https://academicjournals.org/journal/JMER/article-full-text-pdf/06CAD7965720

### *4/ Structuring Abstracts*

In the task below (task 6), students are required to write an abstract of a research study they have conducted, following the given guidelines. These guidelines are presented in the form of questions and instructions. By answering these questions and following the instructions, students are guided step by step to produce a well-structured abstract.




Another task, with different content (guidelines), is provided below, focusing on writing an abstract.

**Task 06:** Write an abstract of a research study you have conducted following the guidelines below. *(content adopted from English for academic research: Writing exercises, 2013).*

1. Begin by saying what you did plus introduce one key result, i.e. begin with information that the reader does NOT already know. (1–2 sentences).
2. Introduce the background by connecting in some way to what you said in your introductory sentence / s. (1 sentence).
3. Use the background information (which the reader may or may not already know) to justify what you did, and outline your methodology (and materials where appropriate). (1–2 sentences).

4. Provide some more information regarding your results. (1–2 sentences).
5. Tell the reader the implications of your results. (1–2 sentences).

### *5/ Quoting*

In the activity below, students are required to provide a direct quotation of a sentence from the book "AN INTRODUCTION TO MECHANICAL ENGINEERING". The authors' names, the publication date, and the page number are provided.

**Task 07:** Provide a direct quotation of the following sentence from the book "AN INTRODUCTION TO MECHANICAL ENGINEERING" by Jonathan Wickert and Kemper Lewis in 2013. p.52**.**

Machining refers to processes whereby material is gradually removed from a workpiece in the form of small chips.

A similar activity with different content is presented below.

**Task 07:** Provide a direct quotation of the following sentences from the book "Mechanical Design of Machine Elements and Machines: A Failure Prevention Perspective" by Jack A. Collins & Henry R. Busby & George H. Staab in 2009.

**a/** Creep failure occurs when the accumulated creep strain results in a deformation of the machine part that exceeds the design limits. **p.52.**

**b/** Adhesive wear is often characterized as the most basic or fundamental subcategory of wear since it occurs to some degree whenever two solid surfaces are in rubbing contact, and remains active even when all other modes of wear have been eliminated. The phenomenon of adhesive wear may be best understood by recalling that all real surfaces exhibit a general waviness. **P.59.**

## *6/ Paraphrasing*

**Task 08:** Paraphrase the following sentences**.** *(content adopted from English for academic research: Writing exercises, 2013).*

a/ X is different from Y in a number of respects.
b/ This tool is targeted at end-users.
c/ This survey provides a summary of the relevant literature.
d/ Our experiments confirm previous results [Wiley 2009].
e/ In conclusion, our work demonstrates that x = y.
f. Figure 1 clearly shows that these values reach a peak when x = y.
g. There is a possibility that dissimilar evaluations would have arisen if the focus had been on x instead of y.

In this exercise, students are provided with sentences and asked to paraphrase them. The aim of this task is to assess and improve their paraphrasing techniques. Below is another activity with different content.

**Task 08:** Paraphrase the following sentences. *(content adopted from English for academic research: Writing exercises, 2013).*

a/ This method suffers from a number of pitfalls.
b/ It is very likely that participants may have answered the questions incorrectly.
c/ The reasons for this result are not yet entirely understood.
d/ Despite the limitations of this method, and consequently the poor results in Test 2, our findings do nevertheless suggest that …
e/ The aim of our work was to further current knowledge of **…**

f/ The samples were prepared as required by current norms.
g/ Many attempts have been made [Kim 2009, Li 2010, Hai 2011] aimed at improving performance

## *7/ Summarizing*

As illustrated in the sample task below, students are provided with a passage and are required to summarise its content.

**Task 09:** Summarize the following passage in approximately 40 words. (*text adapted from Mechanical Engineers' Handbook: Materials and Engineering Mechanics, 2015)*

NATURE OF ALUMINUM ALLOYS

Aluminum is the most abundant metal and the third most abundant chemical element in Earth's crust, comprising over 8% of its weight. Only oxygen and silicon are more prevalent. Yet, until about 150 years ago, aluminum in its metallic form was unknown to humans. The reason for this is that aluminum, unlike iron or copper, does not exist as a metal in nature. Because of its chemical activity and its affinity for oxygen, aluminum is always found combined with other elements, mainly as aluminum oxide. As such it is found in nearly all clays and many minerals. Rubies and sapphires are aluminum oxide colored by trace impurities, and corundum, also aluminum oxide, is the second hardest naturally occurring substance on Earth—only diamond is harder. It was not until 1886 that scientists learned how to economically extract aluminum from aluminum oxide via electrolytic reduction. Yet in the more than 100 years since that time, aluminum has become the second most widely used of the approximately 60 naturally occurring metals, second only to iron.

## CHAPTER FOUR *Course Experimentation and General Recommendations*

Aluminum alloys are broadly used in products and applications that touch us regularly in our daily lives, from aluminum foil for food packaging and easy-open aluminum cans for your beverages to the structural members of the ground vehicles and the aircraft in which we travel. The broad use of aluminum alloys is dictated by a very desirable combination of properties, combined with the ease with which they may be produced in a great variety of forms and shapes plus the ease with which they may be recycled and reused endlessly. In this chapter, we will review the characteristics of aluminum alloys that make them so attractive and note the variety of applications in which they are used. *(text adapted from Mechanical Engineers' Handbook: Materials and Engineering Mechanics, 2015).*

Another activity involving summarising, using different content, is presented below.

**Task 09:** Summarize the following passage in approximately 50 words. *(text adopted from English in mechanical engineering: English in focus, 1974).*

### LUBRICATION

Friction can be useful. For example, the screw-jack depends on friction between the body of the screw and the jack to prevent it running back under heavy loads. Belt driver depend on friction to prevent slipping. Brakes and vices are further examples of useful application of friction. On the other hand, friction in machines causes loss of power. Twenty per cent of the power of a motor car is wasted in overcoming friction. Engineers try therefore to reduce friction as much as possible by good design. They can also use materials with a low coefficient of friction for devices such as bearing. The third method used for reducing friction is lubrication.

Although the surface of a block of polished steel may seem perfectly flat, when we examine it through a powerful microscope we see that it is covered with tiny 'hills and valleys'. If we bring two steel surface together, they will touch at only a few points where one set of 'hills' meets another set. Because the total mass of the steel is

concentrated at these points, the pressure on them is so great that it causes the points of contact to weld together. When we apply a fore to make one block of steel move over another, we must first break these tiny welds before the blocks will move. For this reason, to start a surface moving over another surface requires a force greater than that required to keep the surface in motion. This greater force represents static friction whereas the smaller force represents sliding friction. When one block slides over another the two surface scrape against each other, breaking off tiny pieces from each surface. However, if we lubricate the two surface, oil fills the tiny valleys so that the surface do not weld together, and one block can move over the other.

Lubrication, then, reduces friction and because the surface do not scrape against each other it reduces wear on the material. Although dry friction can be eliminated in this way, some power will still be lost depending on the thickness of the lubricant used. Thus if the oil is too thick the lubricant itself will offer some resistance to motion. Selection of the correct lubricant depends on many factors, chief among which are the operating speeds of the machinery which is lubricant and the temperature range within which the machine must operate.

## *8/ Referencing*

**Task 10:** Create an alphabetically arranged Works Cited list from the sources below using APA style 7th edition. The references have become mixed up and need to be rearranged. References adapted from http://thesis.univ-biskra.dz/5304/1/Thesis-%20Bensaci%20Charaf%20Eddine.pdf

- S.P. Sukhatme, J.K. Nayak, Solar energy, McGraw-Hill Education, 2017.
- H.P. Garg, Solar energy: fundamentals and applications, Tata McGraw-Hill Education, 2000.
- D.J. Close, Solar air heaters for low and moderate temperature applications, Solar Energy. 7 (1963) 117–124.
- S.A. Kalogirou, Solar thermal collectors and applications, Progress in Energy and

Combustion Science. 30 (2004) 231–295.

- B.E. Launder, D.B. Spalding, Mathematical models of turbulence, Academic press, 1972.

- K. Bin Sopian, M. Sohif, M. Alghoul, Output air temperature prediction in a solar air heater integrated with phase change material, European Journal of Scientific Research. 27 (2009) 334–341.

- C. Swinbank, Long-wave radiation from clear skies, Quarterly Journal of the Royal Meteorological Society. 89 (1963) 339–348.

- F.P. Incropera, A.S. Lavine, T.L. Bergman, D.P. DeWitt, Fundamentals of heat and mass transfer, Wiley, 2007.

Students in this task are provided with a mixed-up list of references and are asked to re-arrange it alphabetically using APA style (7th edition). The aim is to train them to reference their sources correctly following this style. A similar activity with different content is presented below.

**Task 10** Create an alphabetically arranged Works Cited list from the sources below using APA style 7th edition. The references have become mixed up and need to be rearranged. References are adopted from http://thesis.univ-biskra.dz/5304/1/Thesis-%20Bensaci%20Charaf%20Eddine.pdf

- A.S. Yadav, J.L. Bhagoria, A numerical investigation of square sectioned transverse rib roughened solar air heater, International Journal of Thermal Sciences. 79 (2014) 111–131.

- H.K. Versed, W. Malalasekera, An introduction to computational fluid dynamics: the finite volume method, Pearson education, 2007.

- R.W. Bliss Jr, The derivations of several “plate-efficiency factors” useful in the design of flat-plate solar heat collectors, Solar Energy. 3 (1959) 55–64.

- P. Sriromreun, C. Thianpong, P. Promvonge, Experimental and numerical study on heat transfer enhancement in a channel with Z-shaped baffles, International Communications in Heat and Mass Transfer. 39 (2012) 945–952.
doi:10.1016/j.icheatmasstransfer.2012.05.016.
- S. V Patankar, Numerical Heat Transfer and Fluid Flow (Series in Computational Methods in Mechanics and Thermal Sciences) (New York: Hemisphere/McGraw-Hill), (1980).
- J.A. Duffie, W.A. Beckman, Solar engineering of thermal processes, Fourth Edi, John Wiley & Sons, New York, 2013.

### *9/ Avoiding Redundancy*

In this activity, doctoral students are given sentences and are required to rewrite them concisely. The aim is to train them avoid wordiness in their writing**.** (*Content adopted from English for academic research: Writing exercises, 2013)*

**Task 11:** Rewrite the following sentences using fewer words, while keeping the original meaning. *(Content adopted from English for academic research: Writing exercises, 2013).*

a/ The installation of the system is done automatically.
b/ The management of these systems can be done by …
c/ This section contains an explanation of the various parameters.
d/ These methods will be used for an investigation of the properties of …
e/ The aim of this document is the evaluation of new solutions for …
f/ Note that the insertion of a new value can be performed by the user .

Another task related to avoiding redundancy, using different content, is presented below.

**Task 11:** Rewrite the following sentences using fewer words, while keeping the original meaning. *(content adopted from English for academic research: Writing exercises, 2013).*

a/ Table 1 shows a comparison between X and Y.
b/ As shown in Figs. 13 and 14, the calculation makes a prediction that X will …
c/ The arrival of the X occurred at …
d/ The evaporation of X then takes place.
e/ An increase in X of 30% was achieved.
f/ This device is used as an interface which allows the transfer of x to y to be performed.

## 4.4 The Pre-Test

As previously mentioned, the ASSET Writing Skills test and IELTS Writing Task 2 were combined to assess doctoral students' prior knowledge and readiness for the course.

### 4.4.1 Assessment Criteria

In task one (ASSET Writing Skills), the 20 multiple-choice questions are graded by awarding 0.5 points for each correct answer and zero points for incorrect responses. These scores help identify the areas in which doctoral students demonstrate strength and those requiring improvement. In Task Two, students' essays are assessed based on four criteria: task response, coherence and cohesion, lexical resource, and grammatical range and accuracy.

Task response refers to how well students address the essay question, including the relevance and development of their main ideas. Coherence and cohesion examine the organisation of the essay, the structure of paragraphs, and the use of linking devices. Lexical resource assesses the range and appropriateness of vocabulary, paraphrasing ability, and spelling accuracy.Grammatical range and accuracy examine sentence structure, tense usage, grammar, and the number and types of errors made.

# CHAPTER FOUR *Course Experimentation and General Recommendations*

IELTS writing task 2 is assessed using band scores ranging from 0 to 9. Doctoral students receive a separate band score for each of the four assessment criteria mentioned above. The overall band score for the task is calculated by adding the four scores and dividing the total by four.

## 4.5 Course Experimentation

In order to test the third research hypothesis, the academic writing course was experimented at Belhadj Bouchaib University of Ain Temouchent. The course was delivered online via Zoom platform to nine doctoral students in the Department of Mechanical Engineering.

### 4.5.1 Time Allocated to the Course

The course began in the first semester of the academic year 2021/2022, specifically in October 2021, and ended in April 2022. A total of six months were allocated to the course. Doctoral students received 72 hours of instruction, which included the pre- and post-tests as well as assessment sessions. The course was delivered every Thursday from 5: 00 p.m. to 8: 00 p.m. i.e., three hours per week were dedicated to each session.

### 4.5.2 Course Instruction

In implementing this course, the researcher shifted from traditional classroom lecturing, where one and a half hours per week were typically allocated, to an online distance learning format. As previously mentioned, Zoom was selected as a platform for delivering the online lessons due to its accessibility via laptops or mobile phones, in addition to the various teaching and learning supports this tool provides.

More importantly, in an attempt to address the issue of insufficient time allocated to the English course, which was previously reported by former doctoral students, teachers, and officers as a major difficulty for both teachers and learners, the

researcher decided to dedicate three hours per week to this course. This adjustment was made possible through online delivery and was expected to adequately fulfil the academic writing needs of doctoral students.

### 4.5.2.1 Using Zoom as a Tool for Online Teaching

Zoom is a video conferencing tool that provides teachers with the opportunity to meet their students in an online space. Teachers can easily schedule Zoom meetings to deliver online classes.

In teaching with Zoom, teachers can use PowerPoint slides to present lectures through the platform's screen-sharing feature. Similarly, tasks were delivered and explained to students using this tool. Doctoral students were given 10-15 minutes to complete each task, depending on its nature and complexity. They were required to work individually, after which corrections were conducted interactively. Once the task was completed, students had the opportunity to engage in group discussions, communicate with each other and the instructor, ask questions, and discuss any confusing points. Accordingly, the instructor provided explanations, clarifications, and occasionally reviewed related points or aspects not yet covered.

Lessons were delivered progressively, beginning with simple tasks and gradually advancing to more complex ones. For instance, doctoral students first practised writing short sentences, then progressed to paragraph writing, followed by essay structuring. The teaching process was systematic and sequential to ensure students' thorough understanding. For example, when required to write an argumentative essay, the assignment was broken down into sub-tasks. Initially, learners focused on writing the introduction only, having first received instruction on how to structure it, starting from the hook, followed by background information about the topic, then writing the thesis statement.

# CHAPTER FOUR *Course Experimentation and General Recommendations*

After successfully writing a well-structured introduction, or at least an acceptable one, students proceeded to the next step, which involved writing the body paragraph(s). This was done after they had learned how to structure and organise body paragraphs effectively. Following this, they moved on to the concluding paragraph, which was also treated as a separate task. Writing a full essay was undertaken only after the instructor ensured that the students had gained sufficient practice in each component of the essay.

It is worth mentioning that doctoral students were provided with sufficient time to address each aspect appropriately. Moreover, the content and the topics included in the tasks were relevant to their field of study, namely mechanical engineering. The aim was to motivate them to complete the tasks.

In order to reflect on and improve the teaching and learning process, a formative assessment was implemented by the researcher. To achieve this, doctoral students were assigned extra tasks to perform as homework at the end of each lecture. This allowed the instructor to identify students' weaknesses and provided constructive feedback, which was used to address their difficulties and assess their learning progress.

In an attempt to help doctoral students recognise and correct their mistakes, additional sessions were arranged to assess their work. Furthermore, to ensure that all students could learn from one another and avoid repeating the same errors, sample works were shared on-screen with the entire group. The selection of these samples was based on the most common mistakes frequently observed in their writing. The correction process was done collaboratively, with all students participating in identifying and discussing the errors as well as offering their opinions and suggestions.

# CHAPTER FOUR *Course Experimentation and General Recommendations*

## 4.6 Evaluation of the Course

In order to verify the third research hypothesis, the task-based course proposed to improve doctoral students' academic writing performance was experimented. The evaluation of this course was based on the students' pre- and post-test results, including the time they spent completing the tests.

### 4.6.1 Tests Analysis and interpretation

To evaluate the effectiveness and impact of task-based instruction on the academic writing of mechanical engineering doctoral students, the outcomes of the pre-test and the post-test were compared. The analysis of students' performance is presented below.

#### 4.6.1.1 Pre-Test Analysis

As previously mentioned, the pre-test administered to doctoral students consisted of two tasks. In Task One, students were required to answer 20 multiple-choice questions. In Task Two, they had to write an essay of approximately 180 words on a topic of general interest. Each task had a time limit of 30 minutes. This section presents a detailed analysis of the main results.

**Table 4.1**

*Doctoral Students' Pre- Test Scores*

| Student Num | Task One /10 | Correct Answers | Incorrect Answers | Time Spent | Task Two / 09 | Time Spent | Total Score /19 | Total Time Spent |
|---|---|---|---|---|---|---|---|---|
| **1** | 5 | 10 | 10 | 30 min | 4.50 | 30 min | 09.50 | 1h |
| **2** | 4.25 | 9 | 11 | 20 min | 2.50 | 26 min | 06.75 | 46 min |
| **3** | 2.50 | 5 | 15 | 25 min | 1.75 | 30 min | 04.25 | 55 min |
| **4** | 5.50 | 11 | 9 | 29 min | 4.50 | 28 min | 10.00 | 57min |
| **5** | 5.25 | 11 | 9 | 26 min | 4.50 | 30 min | 09.75 | 56min |
| **6** | 6 .00 | 12 | 8 | 26 min | 3.75 | 30 min | 09.75 | 56 min |
| **7** | 5.50 | 11 | 9 | 24 min | 6.00 | 30 min | 11.50 | 54 min |
| **8** | 5.75 | 12 | 8 | 22 min | 3.00 | 30 min | 08.75 | 52 min |
| **9** | Abs | | | / | Abs | / | / | / |
| **Total Number 08** | Average Score 4.96 **50 %** | Total Correct Answers 81 **51%** | Total Incorrect Answers 79 **49.37%** | Average Time **25.25 min** | Average Score 3.81 **42.3 %** | Average Time **29.25 min** | Average Score 8.78 **46.21%** | Average Time **54.5 min** |

As illustrated in the table above, doctoral students obtained an average score of 4.96 (50%) in Task One, with 51 % of their answers being correct. This task was completed in approximately 25 minutes. Regarding Task Two, students received an average score of 3.81 (42.3%) and spent around 29 minutes completing it. Consequently, the overall average score for the pre-test was 8.78 (46.21%), with a total time of approximately 54 minutes spent on the test.

## CHAPTER FOUR *Course Experimentation and General Recommendations*

The results of the pre-test confirmed that doctoral students encountered both linguistic and strategic difficulties. In Task One, nearly half of their responses to the multiple-choice questions were incorrect. In Task Two, students struggled to respond appropriately to the task, construct coherent paragraphs, and use cohesive devices effectively. Additional difficulties were observed in vocabulary selection and usage, grammar and overall language accuracy. Table 4.2 summarizes quantitatively the main results.

**Table 4.2**

*Doctoral Students' Pre-Test Scores (task 2)*

| Doctoral Students' Number | Task Response | Coherence and Cohesion | Lexical Resource | Grammatical Range and Accuracy | Total Score |
|---|---|---|---|---|---|
| 1 | 4 | 4 | 4 | 5 | 4.50 |
| 2 | 2 | 2 | 3 | 3 | 2.50 |
| 3 | 1 | 1 | 2 | 3 | 1.75 |
| 4 | 5 | 4 | 5 | 3 | 4.50 |
| 5 | 5 | 4 | 5 | 4 | 4.50 |
| 6 | 4 | 3 | 4 | 4 | 3.75 |
| 7 | 6 | 6 | 6 | 6 | 6.00 |
| 8 | 3 | 3 | 3 | 3 | 3.00 |
| 9 | Abs | / | / | / | / |
| Total Number 8 | Average Score 3.75 **42%** | Average Score 3.37 **37.4%** | Average Score 4 **44.4%** | Average Score 3.87 **43%** | Average Score 3.81 **42.3 %** |

As shown in the table above, doctoral students achieved an average score of 42% in response to the task. In evaluating their performance, the instructor considered several criteria such as the extent to which students addressed all parts of the task, the clarity of their position, the appropriateness of the format, the development and clarity of ideas, and the relevance, adequacy, and level of support provided in their responses.

Regarding coherence and cohesion, students obtained an average score of 3.37 (approximately 37%). The instructor evaluated whether their ideas were logically organized and coherently arranged, the extent to which cohesive devices were used appropriately, and the structure and organisation of paragraphs, as well as the flow and progression of ideas.

In terms of lexical resource, students received an average score of approximately 44%. The instructor considered the range of vocabulary and expressions used, their appropriateness and adequacy in relation to the task, lexical choices, word formation, and spelling accuracy.

Concerning grammatical range and accuracy, students obtained an average score of 43%. The instructor assessed the range and accuracy of grammatical structures and punctuation.

### 4.6.1.2 Post-Test Analysis

At the end of the course in April 2022, doctoral students were post-tested using the same content and questions as in the pre-test. It is important to note that, in order to obtain valid data, the pre-test was not returned to the students, meaning they did not receive their papers after completing it. This test served as a summative assessment, enabling the researcher to determine how well the students had mastered the content delivered throughout the course, including their ability to address previous mistakes. As a result, reliable data were collected, allowing the researcher to measure both students' learning progress and the effectiveness of the course. The main findings are illustrated in the following table.

**Table 4.3**

*Doctoral Students' Post-Test Scores*

| Doctoral Students' Number | Task One /10 | Correct Answers | Incorrect Answers | Time Spent | Task Two / 09 | Time Spent | Total Score /19 | Total Time Spent |
|---|---|---|---|---|---|---|---|---|
| **1** | 8 .00 | 16 | 4 | 20 min | 6.00 | 26 min | 14.00 | 46 min |
| **2** | 7 .00 | 14 | 6 | 18 min | 5.75 | 23 min | 12.75 | 41 min |
| **3** | 5.50 | 11 | 9 | 20 min | 4.75 | 28 min | 10.25 | 48 min |
| **4** | 8.50 | 17 | 3 | 19 min | 6.75 | 26 min | 15.25 | 45 min |
| **5** | 9 .00 | 18 | 2 | 21 min | 6.00 | 28 min | 15.00 | 49 min |
| **6** | 8.50 | 17 | 3 | 19 min | 6.75 | 30 min | 15.25 | 49 min |
| **7** | 8.00 | 16 | 4 | 16 min | 6.75 | 30 min | 14.75 | 46 min |
| **8** | 7.50 | 15 | 5 | 15 min | 5.50 | 25 min | 13.00 | 40 min |
| **9** | Abs | | | / | Abs | / | / | / |
| **Total Number 08** | Average score 7.75 **78%** | Total Correct Answers 124 **77.5 %** | Total Incorrect Answers 36 **22.5%** | Average Time **18.5min** | Average score 6.03 **67%** | Average Time **27 min** | Average Score 13.78 **73%** | Average Time **45.5 min** |

With regard to the post-test, doctoral students achieved an average score of 7.75 in Task One, with approximately 78% of their responses correct. This task was completed in around eighteen minutes. In Task two, students obtained an average score of 67% and spent approximately 27 minutes completing it. Consequently, the overall average score for the post-test was 73% as presented in Table 4.3. The total average time for completing the entire test was approximately 45 minutes.

It is observable that there are significant statistical differences between the pre-test and post –test results. Compared to the pre-test, students had only 22 % incorrect answers in Task One. In Task Two, they achieved an improved average score of 67%. These results indicate that students successfully overcame some of the linguistic and strategic difficulties they had previously encountered. The table below illustrates students' performance in Task Two.

**Table 4.4**

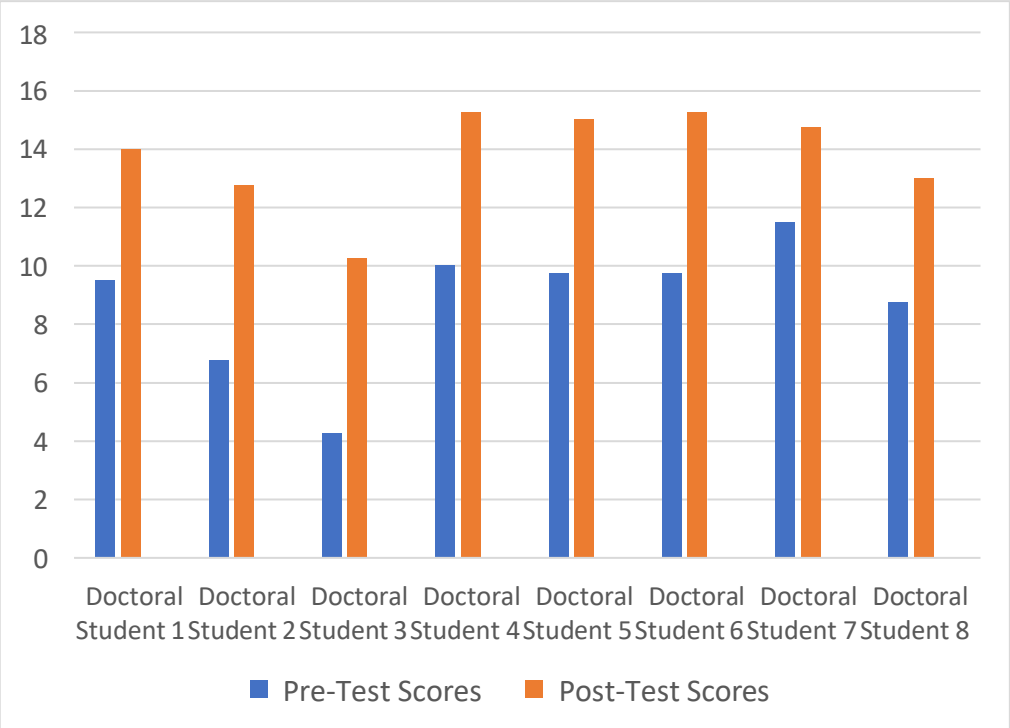
*Doctoral Students' Post-Test Scores (task 2)*

| **Doctoral Students' Number** | **Task Response** | **Coherence and Cohesion** | **Lexical Resource** | **Grammatical Range and Accuracy** | **Total Score** |
|---|---|---|---|---|---|
| 1 | 6 | 6 | 6 | 6 | 6.00 |
| 2 | 6 | 6 | 5 | 6 | 5.75 |
| 3 | 4 | 5 | 5 | 5 | 4.75 |
| 4 | 7 | 7 | 7 | 6 | 6.75 |
| 5 | 6 | 6 | 6 | 6 | 6.00 |
| 6 | 7 | 7 | 7 | 6 | 6.75 |
| 7 | 7 | 7 | 7 | 6 | 6.75 |
| 8 | 5 | 5 | 5 | 6 | 5.50 |
| 9 | Abs | / | / | / | / |
| Total Number 8 | Average Score 6 **67%** | Average Score 6.12 **68%** | Average Score 6 **67%** | Average Score 5.87 **65.2%** | Average Score 6.03 **67%** |

Compared to the pre-test, doctoral students achieved an average of 67% in task response, 68% in coherence and cohesion, 67% in lexical resource, and approximately 65% in grammatical range and accuracy. These results clearly indicate that doctoral students made noticeable progress in several areas, such as addressing the task effectively, writing coherently, using cohesive devices appropriately, employing a more adequate and suitable range of vocabulary, and reducing grammatical errors. Furthermore, students completed the test in less time, with an average reduction of nine minutes compared to the pre-test. The following figure illustrates the differences observed in each student's performance between the pre-test and the post-test.

**Figure 4.1**

*Comparison of Students' Test Scores*



As illustrated in the figure above, all students demonstrated remarkable and significant improvement in their performance. This indicates that the tasks implemented in the course effectively contributed to the development of their linguistic and strategic competence. Consequently, students were able to complete the post-test in a shorter amount of time while achieving higher scores.

Within just six months, doctoral students were able to overcome major challenges related to both language and strategy use, demonstrating significantly improved academic writing performance. This progress was achieved thanks to the proposed academic writing course, which adopted a learning-by-doing approach. The course guided students through a series of tasks that reviewed the basic notions of language and equipped them with the knowledge and competencies necessary for effective academic writing.

It is worth mentioning that students had more opportunities to practise due to online instruction through Zoom. This method allowed them to complete twice as many tasks as they could in a traditional classroom. The instructor was also able to provide more explanations and support by sharing figures and examples on the screen, which helped clarify and simplify difficult points. In addition, Zoom facilitated time management, task correction, and formative assessment sessions, which would have been difficult to implement in a conventional classroom due to limited time. Online learning also enabled students to ask questions, discuss difficulties, and collaborate with peers, particularly during feedback and assessment sessions.

More importantly, online learning enhanced students' motivation. It was evident that they were interested in completing the tasks, particularly because the sessions were scheduled according to their preferences. Students were given the opportunity to choose the day and time of the sessions, ensuring their availability, as many were both students and employees. This flexibility promoted regular attendance, facilitating the learning process for both students and the instructor. Therefore, Zoom proved to be a highly effective platform for teaching and learning.

In summary, the comparison between pre-test and post-test results showed that doctoral students performed significantly better in the post-test, reflecting improved knowledge and understanding. They provided more accurate answers and produced higher-quality academic essays in less time. Consequently, the task-based course, delivered via the Zoom platform, had a positive impact on students' academic writing performance, confirming its effectiveness. Thus, the third and final hypothesis, which posits that the implemented tasks would help students write different types of academic papers, is confirmed.

## 4.7 Suggestions and Recommendations

In addition to the proposed course, further alternative activities can be suggested to enhance learners' linguistic and strategic academic writing skills, as outlined below.

### 4.7.1 Linguistic Activities

Linguistic activities aim to improve students' understanding of key grammatical areas, including punctuation, subject–verb agreement, verb forms, tenses, the passive voice, articles, linking devices, and the construction of short, clear sentences.

*A / Error Detection activities (punctuation)*

During the correction of students' tasks, it was observed that many learners encountered common difficulties with punctuation. For instance, they frequently overused or misused commas and confused semicolons with colons. Therefore, in addition to providing passages to punctuate, teachers may implement error detection activities. In such tasks, students are required to identify and correct punctuation errors in given sentences, which helps raise awareness and improve understanding of proper punctuation use. A sample activity is presented below.

**Activity 01**: Read the following sentences carefully. Identify any punctuation errors, then rewrite the sentences with the correct punctuation.

a/The engineer evaluated the new design; but the prototype was not complete, as a result the data gathered were unreliable.
b/ The team proposed their design, however, they did not give enough details about the thermal system.
c/ The target project involved three conditions: good materials; accuracy in production, and structural stability examination.

After completing the task, learners may participate in peer review by exchanging their written work, identifying errors, and providing constructive feedback.

*B/ Sentence- Building Activities (subject-verb agreement)*

It was observed that learners still encounter difficulties with subject–verb agreement. Therefore, rather than simply providing doctoral students with sentences to correct as a way of evaluating their understanding of the rules, the teacher may introduce sentence-building tasks such as fill-in-the-blank activities. In these tasks, learners are required to complete sentences by selecting the appropriate verb form. An example of this type of activity is presented below.

**Activity 02:** Complete the sentences by selecting the appropriate verb form.

**a-** The data gathered from the questionnaires (shows/show) that ...
**b-** Each of the instruments (requires/ require) an examination.
**c-** The findings of the research (confirms/confirm) the stated hypothesis.

**d-** Neither the technicians nor the supervisor (is/ are) responsible for the calibration.

**e-** The efficacy of the adopted methods (has/ have) developed remarkably.

**f-** None of the questions (was/were) answered.

**g-** A number of technicians (work /works) on the project.

Through this activity, learners also learn how to deal effectively with sentences that contain multiple subjects.

*C/ Fill in the Blanks Activities (verb usage)*

In addition to helping learners replace adjective-based expressions with more precise verbs, teachers can design further activities that address common difficulties identified in students' use of verbs. Learners often confuse verbs that sound similar, as well as different verb forms such as the infinitive and the gerund. Accordingly, such tasks can enhance their ability to select the correct verb form based on context. Examples of such activities are presented below.

**Activity 03:** Complete the following sentences by using the correct form of the verb in brackets.

a- The cooling system **(effects / affects)** how the engine functions during long term usage.

b- Technicians have to **(raise/rise)** the hydraulic system to examine its capacity.

c- Before starting a machine, the technician needs to **(insure/ensure)** that all its parts are correctly positioned.

d- Engineers should **(adapt/adopt)** innovative tools to ameliorate the power system's effectiveness.

e- The pressure gauge **(indicates/dedicates)** whether the system functions under safe parameters or not.

**Activity 04:** Select the appropriate form of the verb provided in brackets.

a- The team decided **(to upgrade/upgrading)** the software to achieve improved control of the system.

b- The team decided **(to design/designing)** new machine components to fulfil various manufacturing needs.

c- Following the unexpected vibrations, technicians decided **(to inspect/inspecting)** the turbine.

*D/ Error Correction Activities (tenses)*

Learners often encounter difficulties in selecting the appropriate tense, managing complex tense structures, and they also tend to overgeneralize grammatical rules. To address these challenges and support learners in using tenses more accurately, teachers can implement error correction tasks. An example of this type of activity is presented below.

**Activity 05: Read the following paragraph carefully. Identify and correct the errors in verb tense.**

"Throughout this experiment, researchers are adjusting the sensors and recorded data from different trials. They will examine the outcomes followed by a thorough report. By the end of this month, they have presented their results to the committee, which analyze the data and will provide some suggestions and recommendations."

This type of activity enables learners to address common errors related to tense usage, such as confusion between past, present, and future forms. Moreover, it supports the accurate use of more complex tenses in academic writing.

*E/ Justification Activities (the passive voice)*

Although learners are generally familiar with transforming sentences from the active to the passive voice, they often overuse the passive form, which can make their writing less effective. Hence, instead of simply asking learners to convert sentences between active and passive voice, justification tasks can be offered. In such tasks, learners are provided with a set of active and passive sentences and are required to justify the use of each form.

**Activity 06:** Read the following sentences carefully. For each one, justify the use of either the active or passive voice.

1-A questionnaire was administered to respondents to collect information.

2- The results reveal a significant improvement in performance.

3- The researcher formulated the hypotheses based on the results of previous studies.

4- The researcher analyzed the data quantitatively and qualitatively.

*F/ Error Identification/ Correction Tasks (using articles)*

Although learners may be familiar with the rules of article usage, they often struggle with applying them accurately. Therefore, it is important to provide support that enables them to apply the rules appropriately. An effective alternative would be to provide students with sentences or paragraphs containing errors related to article use, and require them to identify and correct these mistakes. The primary objective of this activity is to strengthen learners' understanding of definite, indefinite, and zero article usage. It is also beneficial to select extracts from academic sources, such as methodology or results sections from theses and research articles, in order to familiarise learners with academic texts. Such tasks help them recognise when and why each type of article is used, which in turn enhances clarity in their academic writing. A sample activity is presented below.

**Activity 07: Read the following paragraph carefully. Identify and correct any incorrect or missing articles.**

***Paragraph*:**

Analysis of data showed remarkable differences between experimental group and control group. Increase in temperature was associated with improvement in performance. Nevertheless, extended studies are necessary to determine whether effect is stable across all conditions or not. Findings show that techniques used in experiment might be improved.

*G/ Paragraph Building Activities (linking devices)*

One of the common issues observed in learners' writing is the overuse or misuse of linking devices, which often results in incoherent texts. Therefore, instead of simply asking learners to link pairs of sentences using linking devices, teachers can provide paragraph-building tasks, such as fill -in-the-gap activities in which learners must select appropriate linking devices from a given list to complete and develop a coherent paragraph. A sample activity is presented below.

**Activity 08: Complete the following paragraph by filling in the blanks with appropriate connectors from the list provided.**

in contrast, however, for instance, furthermore, consequently, thus

**Paragraph**:

The newly adopted material displayed remarkable strength during preliminary examination. ___, it revealed certain weaknesses when exposed to higher temperature levels. _____, researchers suggest that they require some modifications. _____, similar research studies have demonstrated that other materials show better performance when subjected to extreme heat conditions._____, the results give new perspectives for future studies.

Teachers may also encourage learners to re-write the same paragraph using different connectors.

*H/ Peer Review Activities* (developing *short sentences*)

In addition to having learners write short sentences, teachers can allocate time for peer review. That is, learners are encouraged to exchange their work with peers to assess the structure of the sentences they have produced. This strategy enables learners to identify their own mistakes and benefit from constructive feedback. Moreover, it allows them to gain new insights into sentence structuring, which can help refine and improve their writing in future tasks.

### 4.7.2 Strategic Activities: (*structuring a paragraph, an essay, an abstract, an article)*

Instead of assigning paragraph-writing tasks to doctoral students, other alternative activities can be suggested. For instance, teachers can provide learners with paragraph reconstruction activities, where they are required to unscramble a set of sentences to get a coherent paragraph.

Teachers may also engage learners in analysing well-structured paragraphs. This can be achieved by providing them with excerpts from well-written academic papers relevant to their field of study and asking them to identify the topic sentence, supporting details, and concluding sentence. Such an activity enhances learners' understanding of the essential components of a coherent and well-organised paragraph.

The same type of activity can be used to help learners develop well-structured academic essays, abstracts, and articles. Similarly, learners can be provided with disorganised paragraphs and asked to re-order them to produce a coherent essay. They

may also engage in analysing a range of academic essays of different types, such as expository, descriptive, and argumentative. This activity enables learners to recognise and identify the key components of an academic essay, namely the introductory paragraph, body paragraphs, and concluding paragraph.

Regarding abstracts and articles, instead of simply providing learners with complete samples or step-by-step instructions, teachers can offer disorganized sections, such as the introduction, literature review, methodology, data analysis, discussion, and conclusion, and ask learners to rearrange them into the correct order. This activity helps students recognise how an abstract or article is structured. As with paragraphs and essays, encouraging learners to analyse sample abstracts and articles can help them become familiar with structural conventions, common tense usage, writing style, and other features of academic writing.

### 4.7.3 Artificial Intelligence (AI) Tools

Technology has significantly reshaped various aspects of life in recent years. Among its most remarkable innovations is artificial intelligence (AI), which has had a positive global impact and gained widespread recognition. One of the domains notably influenced by this technological advancement is academic writing. The latter plays a vital role in the transmission of knowledge and scientific advancement, serving as a primary tool for communicating information and ideas.

Artificial intelligence (AI) refers to computer-based systems that operate according to goals set by humans. These systems can handle large amounts of information and produce accurate texts automatically. As a result, they help accelerate both the research process in general and the writing process in particular (Djaghrouri, 2024). In academic writing, AI supports a range of activities, including analysing and summarising texts, organising and interpreting information, identifying patterns, paraphrasing, reviewing references, providing sources, and generating new ideas.

Overall, AI helps guide the writing process and provides valuable support to researchers and academic writers. Therefore, AI tools such as ChatGPT, Grammarly, and QuillBot are recommended to support the development of both the linguistic and strategic competencies of doctoral students.

ChatGPT is an AI-powered language tool that can engage in conversations and provide answers, explanations, and clarifications based on user input. This helps learners follow academic norms and improve the quality of their writing. ChatGPT can support the development of doctoral students' strategic skills, such as paraphrasing, summarising, citation, and referencing. For example, learners can type a sentence or paragraph, and the tool will immediately provide a paraphrased version. It can also suggest different ways to rephrase the same idea, helping learners explore various expressions. In addition, students can improve their summarising skills by using ChatGPT to generate clear and accurate summaries of texts. By comparing their own summaries with the ones provided by the tool, they can learn effective summarising techniques. The more they practise, the more confident and skilled they become in academic writing.

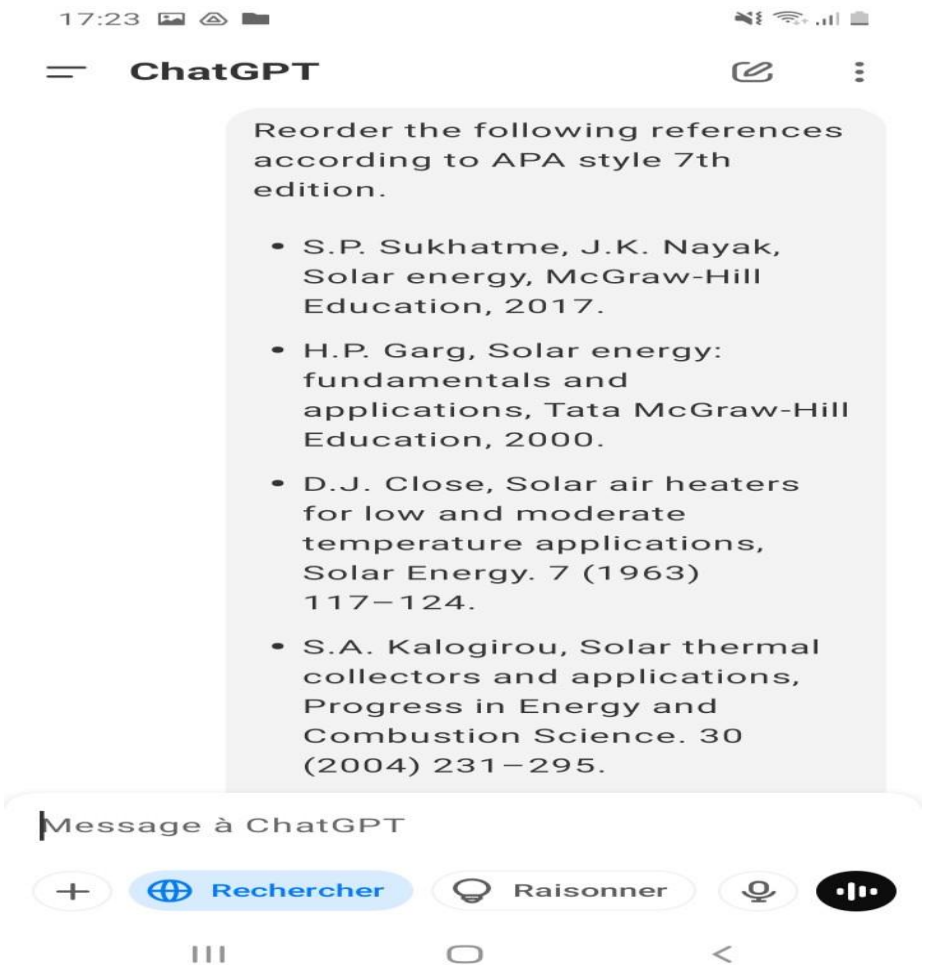
ChatGPT can also help doctoral students improve their referencing skills by showing them how to format citations in different styles, such as APA or MLA, and how to organise a reference list correctly. Based on the learner's instructions, the tool can provide clear explanations with examples. It can also assist researchers in organising their reference lists, which would otherwise take a lot of time to complete manually. For instance, learners can upload or type out their reference list and ask ChatGPT to arrange it according to a specific style, and the tool will do so immediately.

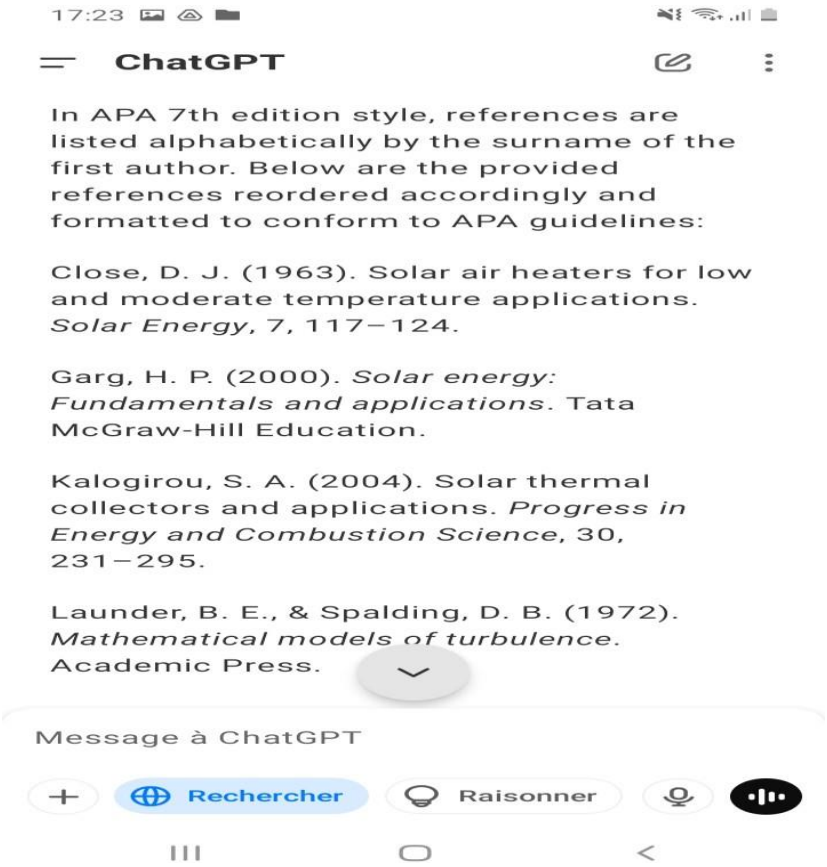
Similarly, learners can use ChatGPT to do short quizzes on conciseness, which help them understand redundancy and learn how to avoid it in their writing. The tool provides explanations and suggestions that guide students in producing clearer and more concise texts. The following figure shows an example of how ChatGPT can

assist in arranging a list of references.

**Figure 4.2**

*Arranging a List of References Using ChatGPT*





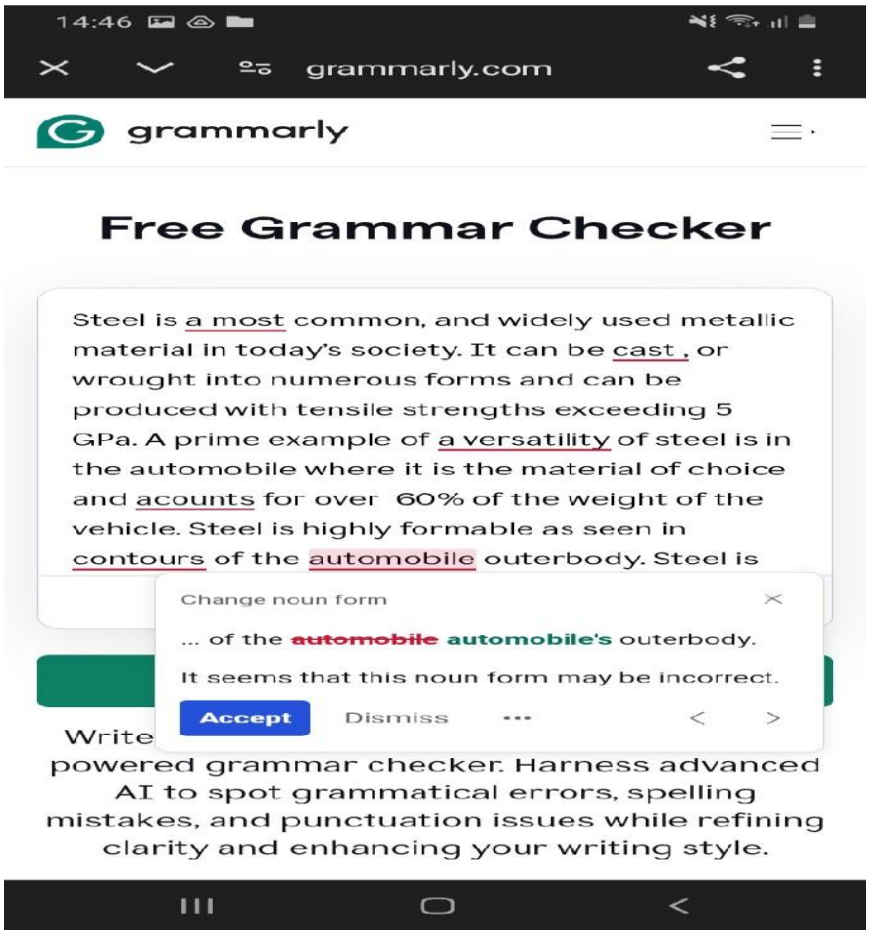

Learners can also improve their linguistic skills by using ChatGPT, as it can provide useful activities targeting language areas such as punctuation, subject–verb agreement, verb usage, articles, tenses, and the passive voice. These activities can be adapted to content from their field of study, such as mechanical engineering or biology. What makes ChatGPT especially useful is its ability to give immediate feedback on any question or task. It also allows learners to practise interactively, which helps them correct mistakes and gain better understanding of the rules.

Grammarly, an AI-powered tool, is also recommended for enhancing learners' linguistic skills. It can automatically detect grammar and punctuation errors, subject–verb agreement issues, incorrect verb usage, and tense problems. It also provides suggestions related to writing style and tone. In addition, Grammarly helps writers produce clearer and more concise texts. For these reasons, it is a reliable and useful tool for academic writing. The following figures show examples of how Grammarly

Operates.

**Figure 4.3**

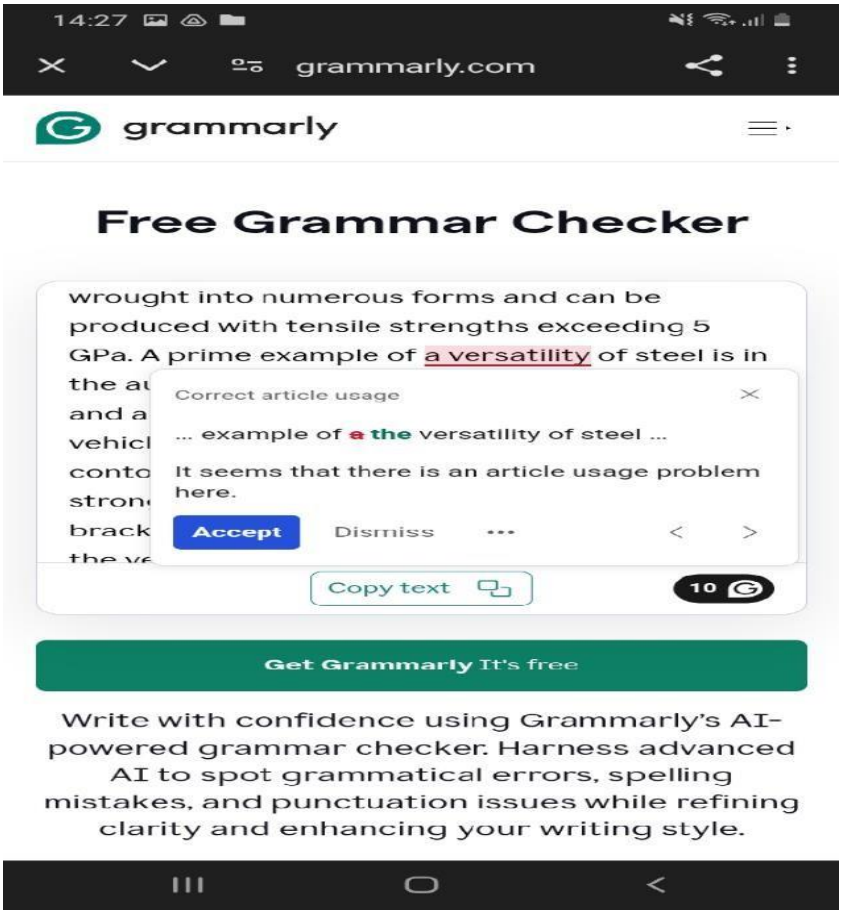
*Checking Mistakes Using Grammarly*




As shown in the figure above, Grammarly identifies and underlines all errors in the text. In addition, it provides comments explaining each mistake. The tool also offers two options: 'Accept' if the writer chooses to correct the error, and 'Dismiss' if they decide to retain the original version.

**Figure 4.4**

*Checking Articles' Usage Mistakes*




Another useful tool for paraphrasing and summarising is QuillBot, which can also be recommended for learners. In addition to rewriting texts, it helps identify grammar errors, enhancing the overall readability of the text. Therefore, it is important for university instructors to introduce students to various AI tools and train them to use these tools effectively to develop essential academic skills. The figures below illustrate how QuillBot can be used for paraphrasing and summarising.

**Figure 4.5**

*Paraphrasing using QuillBot*

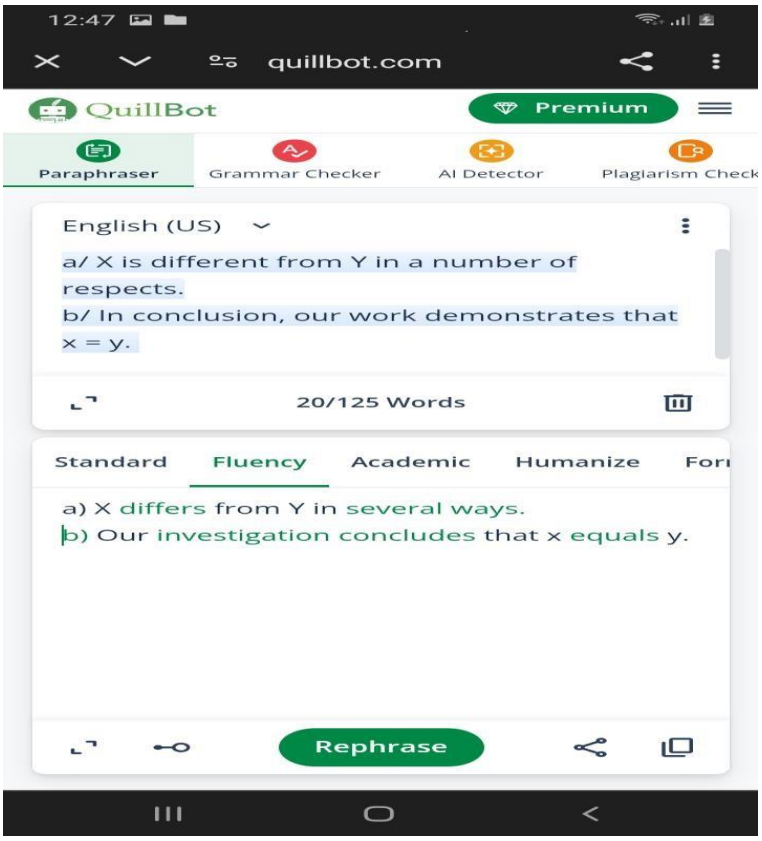
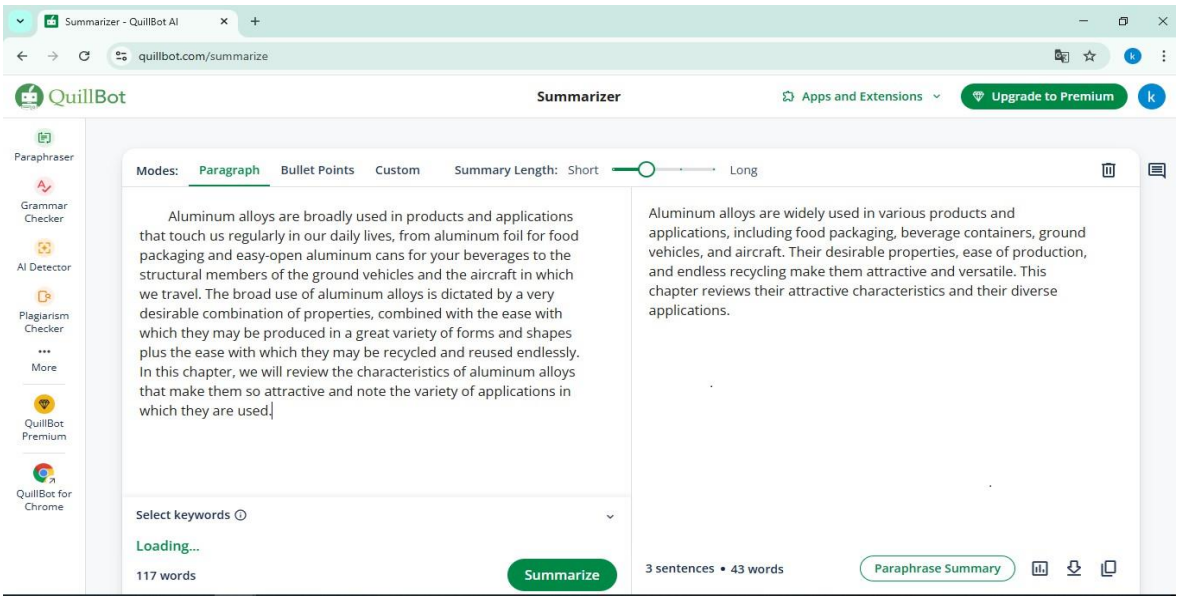



**Figure 4.6**

*Summarizing using QuillBot*



### 4.7.4 Receptive Skills

Doctoral students can enhance their academic writing skills through the use of receptive skills, particularly listening and reading. For listening, it is recommended that learners engage with university lectures, academic talks, and podcasts relevant to their field of study or research interests. Regular exposure to academic language can enrich their vocabulary, improve writing style, and strengthen their understanding of academic structure. Learners are also encouraged to practise note-taking while listening and subsequently summarise the main ideas.

As the saying goes, good readers make good writers. Reading academic texts, such as scientific articles, reports, and theses, especially within their field, expose learners to the vocabulary required for academic writing. It also familiarises them with academic writing conventions, including formality, conciseness, objectivity, logical flow of ideas, and the use of linking devices and transitional expressions, which they can later apply in their own writing.

Reading these materials further supports grammatical competence and enhances understanding of coherence and cohesion. Exposure to diverse academic texts develops reasoning and argumentation skills; for instance, analysing discussion sections of research papers teaches learners how to interpret results and construct well-structured arguments. Learners can combine reading with writing, for example, by summarising or paraphrasing a research paper after reading it. Regular reading practice thus strengthens overall academic writing competence.

### 4.7.5 Motivation and Writing

A lack of motivation is a major factor hindering doctoral students' writing improvement. Motivation is defined as "an inner drive, impulse, emotion or desire that moves one to a particular action" (Brown, 1987:114). It reflects a positive attitude towards learning and plays a critical role in academic writing success.

To boost motivation, university teachers are encouraged to organise writing workshops where learners complete authentic academic tasks, such as conference abstracts and research papers. These tasks allow students to apply known strategies and develop new ones. Teachers should provide constructive feedback to build learners' confidence, while students should participate in peer feedback and collaborate with others by submitting papers to journals or attending conferences. Regular workshops help maintain motivation and support continued progress.

Motivation can be intrinsic, stemming from the individual, or extrinsic, influenced by external factors such as rewards. Extrinsic motivation can encourage students, for instance, through academic writing competitions recognising high-quality work. Doctoral students should also be trained in managing writing time, overcoming procrastination, and reducing writing anxiety, as these factors affect willingness to write. Developing critical thinking and reflective skills further supports academic success.

## 4.8 Conclusion

This chapter analysed and interpreted the results of the academic writing task-based course implemented for mechanical engineering doctoral students. Findings demonstrated significant improvement in students' academic writing skills, clearly reflected in their post-test results. The tasks addressed linguistic and strategic difficulties while providing sufficient instructional time and practice, confirming the effectiveness of the proposed course. The chapter also offered suggestions and recommendations to further enhance doctoral students' academic writing.

# GENERAL CONCLUSION

# ***GENERAL CONCLUSION***

English courses are integrated into the programmes of Algerian universities across various faculties as a mandatory module from the first academic year. This is due to the crucial role that the English language plays in both learners' academic and professional lives. Faculties of sciences and technology have also become increasingly aware of its importance in fulfilling learners' future academic and professional needs.

At the Department of Mechanical Engineering, one and a half hours per week are typically allocated to the module of English during Licence, Master and Doctoral studies, over a total period of five semesters. However, students often face difficulties in academic writing, particularly at the doctoral level, where they are required to publish in English and participate in international conferences that demand well-written abstracts in English. Therefore, improving academic writing skills is considered a necessity and a priority for these students in order to meet the academic and professional requirements of their field. Such an important issue has prompted the researcher to investigate potential solutions with the aim of reducing the common challenges faced by doctoral students, as well as offering suggestions and recommendations intended to enhance their academic writing competencies.

Hence, this research work aimed to describe the teaching and learning situation of ESP, identify the academic writing needs of doctoral students in the Faculty of Sciences and Technology, Department of Mechanical Engineering, at Belhadj Bouchaib University of Ain Temouchent, design an academic writing course based on the outcomes of NIA, and finally experiment and evaluate its effectiveness in developing doctoral students' academic writing performance.

In Chapter One, the researcher began by reviewing key concepts related to ESP, academic writing, and task-based language teaching. Chapter Two described in detail the research design and methods adopted in this study and included an analysis of the teaching and learning situation of English within an ESP context in the Department of Mechanical Engineering. In Chapter Three, the results obtained from the identification

of doctoral students' academic writing needs were analysed. Based on these findings, a task-based course designed to address the identified needs was implemented and evaluated in Chapter Four. This final chapter also offered suggestions and general recommendations, which the researcher believed would contribute to the development of students' academic writing.

The outcomes of the research were found to be significant, as they provided valuable insights into ESP doctoral students' academic writing. Accordingly, the researcher was able to draw the following conclusions:

The results obtained from the questionnaire, interview, and pre-writing test regarding doctoral students' academic writing needs confirmed the first research hypothesis. It was found that doctoral students encountered challenges at the linguistic level, including difficulties in grammar, punctuation, subject-verb agreement, and tense usage. They also faced obstacles at the strategic level, such as a lack of paraphrasing and summarising strategies, difficulties in generating coherent academic paragraphs, essays, abstracts, and articles, referencing issues, and problems adhering to academic writing standards in general. Therefore, it became clear that students needed to improve both their linguistic and strategic writing skills to be able to produce well-structured academic papers in English.

With regard to the second research hypothesis, the data obtained from the research tools revealed that the informants found the task-based syllabus engaging and believed it would enable doctoral students to enhance both their linguistic and strategic competencies. The participants expressed interest in all the proposed tasks, though their preferences varied; some activities were perceived as more engaging than others, such as writing scientific reports, producing abstracts, and completing summarising and paraphrasing tasks. Doctoral students showed enthusiasm for learning through task performance (learning by doing). Thus, the second hypothesis was confirmed.

Concerning the third hypothesis, it was observed that doctoral students demonstrated noticeable improvement in their academic writing performance after attending the task-based course, which was evident from their post- test results. Students attained higher

grades and completed the test in less time. As anticipated, the selected activities enabled them to produce various types of academic papers in English, such as abstracts. Additionally, the use of Zoom as a teaching platform facilitated the experiment for both the instructor and the students. It allowed more time to be dedicated to the course and created greater opportunities for interaction, tasks, and discussions. Consequently, the proposed course contributed to enhancing doctoral students' academic writing skills and positively influenced their overall performance. Considering these findings, the third research hypothesis was confirmed.

In light of this study, it should be noted that the teaching and learning situation of ESP in Algerian universities requires careful re-evaluation, given that multiple factors influence the teaching process and significantly affect learners' ability to benefit from the ESP courses offered. Important changes are needed with regard to the content of these courses to ensure that they address the real needs of learners. To achieve this, ESP teachers must receive training focused on the essential steps involved in developing effective ESP courses so that the content aligns with students' future academic and professional requirements.

Another factor is the limited time allocated to the ESP course, which was found to be insufficient for developing all the required skills, particularly academic writing. Therefore, it is essential to dedicate more hours to ESP instruction to help achieve better learning outcomes. Moreover, to assist ESP doctoral students in overcoming the major linguistic and strategic challenges they encounter in academic writing, challenges that hinder them from producing quality academic texts in English, a course or syllabus specifically dedicated to academic writing should be integrated into the ESP doctoral programme. This would contribute to reinforcing students' academic writing competence.

As recommended in the final chapter, teachers are encouraged to motivate their students to write by implementing innovative teaching methods and strategies that can enhance learners' engagement with writing tasks. These tasks should be varied, context-

based, and designed to encourage greater learner effort. Furthermore, the integration of AI tools such as Grammarly, ChatGPT, and QuillBot into the teaching and learning process is essential, given the vital role they play in facilitating task performance and supporting academic writing development. In addition, Teachers should incorporate other language skills, such as listening and reading, to reinforce and enhance learners' writing abilities.

It is worth mentioning that the findings of this research are not intended for generalisation, as the number of doctoral students who participated in the experiment was relatively small. Therefore, this sample cannot be considered representative of all doctoral students in mechanical engineering departments. As such, the outcomes of this study may be subject to further interpretation and investigation. Moreover, this research may pave the way for future studies that aim to address the existing gaps and strengthen the current findings.

To conclude, this doctoral thesis investigated academic writing challenges within an ESP context. The main objectives were to identify the academic writing needs of mechanical engineering doctoral students and to propose pedagogical solutions aimed at reducing common barriers and improving students 'academic writing performance. The online academic writing course, delivered through task-based instruction, resulted in fruitful outcomes; however, it requires further development and sustained support from universities in order to achieve the intended long-term goals.

# Bibliography

## ***BIBLIOGRAPHY***


- Abercrombie, N., Hill, S. &Turner, B. S. (1984). *The Penguin Dictionary of Sociology*. Penguin Books.
- Abu Rass, R. (2015). Challenges Face Arab Students in Writing Well-Developed Paragraphs in English. *English Language Teaching*, *8* (10), 49-59. https://doi.org/10.5539/elt.v8n10p49
- Adas, D., Bakir, A. (2013). Writing Difficulties and New Solutions: Blended Learning as an Approach to Improve Writing Abilities. *International Journal of Humanities and Social Science* ,*3* (9), 254-266.
- Ahmed, R. Z., & Bidin, S. J. B. (2016). The effect of task-based language teaching on writing skills of EFL learners in Malaysia. Open Journal of Modern Linguistics, 6(3), 207–218. https://doi.org/10.4236/ojml.2016.63022
- Ahn, H. (2012). Teaching Writing Skills Based on a Genre Approach to L2 Primary School Students: An Action Research. *English Language Teaching*, *5(*2*)*, 2-16. https://doi.org/10.5539/elt.v5n2p2
- Aleb, S. (2022). *Implementing the Blended Teaching Approach in ESP Courses: The Case of First Year Master Students of Computer Science at Mostaganem University*. (Doctoral dissertation). Abdelhamid Ibn Badis University of Mostaganem. http://e-biblio.univ-mosta.dz/handle/123456789/22500
- AL Fadda, H. (2012). Difficulties in Academic Writing: From the Perspective of King Saud University Postgraduate Students. *English Language Teaching*, *5* (3), 123-130. https://doi.org/10.5539/elt.v5n3p123

## ***BIBLIOGRAPHY***


- Anderson, G. (1993). *Fundamentals of Educational Research*. Falmer Press.
- Ary, D., Jacobs, L. C., & Sorensen, C. (2010). *Introduction to Research in Education* (8th ed.) Wadsworth: Cengage learning.
- Bacha, N. N. (2002). Developing learners' academic writing skills in higher education: A study for educational reform. Language and Education, 16 (3), 161 – 177.
- Badger, R., & White, G. (2000). A process genre approach to teaching writing. *ELT Journal*, *54* (2), 153-160. https://doi.org/10.1093/elt/54.2.153
- Bailey, S. (2011). *Academic Writing: a Handbook for International Students*. (3rd ed.). Routledge.
- Basturkmen, H. (2006). *Ideas and Options in English for Specific Purposes.* Lawrence Erlbaum Associates.
- Basturkmen, H. (2010). *Developing Courses in English for Specific Purposes*. Palgrave Macmillan.
- Bello, T. (1997). *Writing Topics for Adult ESL Students* (Conference presentation). 31st Annual Teachers of English to Speakers of Other Language Convention, Orlando, Fl, USA.
- Benavent, G. T., & Peñamaría, S.S.R. (2011). Use of Authentic Materials in the ESP Classroom. Encuentro, 20, 89-94.

## ***BIBLIOGRAPHY***


- Bensafa, A. (2015) *Skills-Centred Approach for an ESP Course Design: Case of Master Physics Students Writing Scientific Papers at the University of Tlemcen*. (Doctoral dissertation). University of Tlemcen. http://dspace1.univ-tlemcen.dz/handle/112/8430
- Benyelles, R. (2009). *Teaching ESP at Post Graduate Level*. (Unpublished Doctoral dissertation). University of Tlemcen.
- Bjork, L., & Raisanen, C. (1997). *Academic writing: A university writing course* (2nd ed.). Studentlitteratur.
- Bouguenous, A. ( 2021). How to Design Effective ESP Courses: A Theoretical Support for ESP Teachers. Lougha-kalaam, 7(1). 403-410.
- Bouklikha, W. G. (2016). *Practice of the reading skill in an ESP context using web-retrieved materials: the case of Engineering students at the University of Tlemcen*. (Doctoral dissertation). University of Tlemcen. http://dspace1.univ-tlemcen.dz/handle/112/8872
- Bouyakoub - BOUABDALLAH, N. (2012). *Exploring Writing in an Academic Context: The Case of First-Year University Students*. (Doctoral dissertation).University of Tlemcen. http://dspace1.univ-tlemcen.dz/handle/112/2374
- Britel, A. N., &Sebane, Z. (2023). Towards a Multi Levelled Approach in ESP Course Design for Algerian Economy Students. Economic studies Journal, 17 (03), 118-130.

## ***BIBLIOGRAPHY***


- Brown, H.D. (1987). *Principles of language learning and teaching* (2nd ed.). Prentice-Hall.
- Brown J. D., 1995. *The elements of language curriculum: a systematic approach to programme development*. Heinle & Heinle.
- Brown, J. D. (2001). *Using surveys in language programmes*. Cambridge University Press.
- Carver, D. (1983). Some propositions about ESP. *The ESP Journal*,*2* (2), 131-137.
- Clark, I. L. (2003). *Concepts in Composition: theory and practice in the teaching of writing*. Lawrence Erlbaum Associates.
- Cleary, S. (Ed.). (2008). *Communication: A Hands-On Approach*. JUTA & Co. Ltd.
- Coffin, C., Curry, M.J., Goodman, S., Hewings, A., Lillis, T.M, & Swann, J. (2003). *Teaching academic writing: A toolkit for higher education*. Routledge.
- Cohen, L., Manion, L., & Morrison, K. (2007). *Research Methods in Education* (6th ed.). Routledge. https://doi.org/10.4324/9780203029053
- De Chazal, E. (2014). *English for academic purposes*. Oxford University Press.
- De Vaus, D. (2001). *Research Design in Social Research.* SAGE Publications.
- Djaghrouri, K. (2024). Artificial Intelligence and the Future of Academic Writing: Analysis and Predictions. *Aleph*, *11*(4-2), 537-553.

## ***BIBLIOGRAPHY***


- Dudley-Evans, T., & St. John, M. J. (1998). *Developments in English for Specific Purposes: A multi-disciplinary approach*. Cambridge University Press.
- Dyer, C. (1995). *Beginning research in Psychology: a practical guide to research methods and statistics.* Blackwell.
- Ellis, R. (2003). *Task-based language learning and teaching*. Oxford University Press.
- Ellis, R., Skehan, P., Li, S., Shintani, N., & Lambert, C. (2020). Task-based language teaching: Theory and practice. Cambridge University Press.
- Flynn, N., & Stainthorp, R. (2006). *The Learning and Teaching of Reading and Writing*. John Wiley & Sons.
- Frederick, R. C. (1987). Improving Writing Skills through Social Studies (ERIC Digest No. 40). ERIC Clearinghouse for Social Studies/Social Science Education.
- Gay, L. R., Mills, G. E., &Airasian, P. W. (2012). *Educational research: Competencies for analysis and applications* (10th ed.). Pearson.
- Ghouali, K. (2021). *Integrating E-Assessment into the Evaluation of Learners' Writing Production: Case of First-Year EFL Students at Tlemcen University*. (Doctoral dissertation). University of Tlemcen. http://dspace.univ-tlemcen.dz/handle/112/16835

## ***BIBLIOGRAPHY***


- Gillett, A., Hammond, A., & Martala, M. (2009). *Inside Track: Successful Academic Writing*. Pearson Education Limited.
- Gorard, S., &Taylor, C. (2004). *Combining methods in educational and social research*. Open University Press.
- Glendinning, E. H. (1974). *English in mechanical engineering: English in focus*. Oxford University Press.
- Graves, K. (2000). *Designing language courses: A guide for teachers*. Heinle & Heinle.
- Greene, S., & Lidinsky, A. (2014). *From inquiry to academic writing: A practical guide* (3rd ed.). Bedford/St. Martin's.
- Hamzaoui, H. (2006). *An Exploration into the Strategies used for Essay Writing across three languages: The Case of EFL University Students* (Doctoral dissertation). University of Tlemcen. http://dspace.univ-tlemcen.dz/handle/112/4949
- Hamzaoui, H. (2010). Development of a writing curriculum for academic purposes at tertiary level: The case of Algerian EFL university students. ESP world, 1(27), 1–9.
- Harmer, J. (2001). *The Practice of English Language Teaching* (3rd ed.). Longman.
- Harsono, Y. M. (2007). Developing Learning Materials for Specific Purposes. TEFLIN Journal, 18(2), 169-179. https://doi.org/10.15639/teflinjournal.v18i2/169-179

## ***BIBLIOGRAPHY***


- Hartley, J. (2008). Academic writing and publishing: A practical handbook. Routledge. https://doi.org/10.4324/9780203927984
- Hasan, M. K., & Akhand, M. M. (2010). Approaches to Writing in EFL/ESL Context: Balancing Product and Process in Writing Class at Tertiary Level. *Journal of NELTA, 15* (1-2), 77-88. https://doi.org/10.3126/nelta.v15i1-2.4612
- Hedge, T. (1988). *Writing*. Oxford University Press.
- Hemche, H. (2014). *A Comparative Study of Teaching ESP in the LMD System in Algerian and French Universities*: The Case of the Faculties of Sciences in Tlemcen and Paris- Sud Universities. (Doctoral dissertation). University of Tlemcen. http://dspace1.univ-tlemcen.dz/handle/112/7685
- Hewings, M. (Ed.). (2001). *Academic Writing in Context: Implications and Applications*. University of Birmingham Press.
- Higgins, R. T. (2017). IELTS academic and general task 2: How to write at a band 9 level. IELTS Materials.
- Hinkel, E. (2002). *Second Language Writers' Text: Linguistics and Rhetorical Features.* Lawrence Erlbaum Associates. https://doi.org/10.4324/9781410602848
- Hinkel, E. (2003). *Teaching academic ESL writing: Practical techniques in vocabulary and grammar*. Routledge. https://doi.org/10.4324/9781410609427
- Hinkel, E. (2004 ). Tense, Aspect, and the Passive Voice in L1 and L2 Academic Texts. *Language Teaching Research, 8* (1), 5-29. https://doi.org/10.1191/1362168804lr132oa

## ***BIBLIOGRAPHY***


- Hopkins, D. (2014). *A Teacher's Guide to Classroom Research* (5th ed.). Open University Press.
- Hutchinson, T., & Waters, A. (1987). *English for Specific Purposes: A Learning Centred Approach*. Cambridge University Press.
- Hyland, K. (2006). *English for Academic Purposes: An Advanced Resource Book*. Routledge.
- Ibnian, S. S. K. (2017). Writing Difficulties Encountered by Jordanian EFL Learners. *Asian Journal of Humanities and Social Studies*, *5* (3), 197-206.
- Ivanič, R. (1998). *Writing and identity: The discoursal construction of identity in academic writing*. John Benjamins Publishing.
- Johari, S. K. (2018). The effects of task-based process writing approach on the academic writing skills among second language tertiary learners. Journal of ELT Research, 3(1), 1–20. https://doi.org/10.22236/JER_Vol3Issue1pp1-20
- Johnson, D. (1994). *Research Methods in Educational Management*. Pearson Education.
- Jones, J. (2007). Losing and Finding Coherence in Academic Writing. *University of Sydney Papers in TESOL*, *2* (2), 125-148.
- Jordan, R. R. (1999). Academic writing course: Study skills in English (3rd ed.). Longman: Language Teaching Library.
- Kennedy, C., & Bolitho, R. (1984). *English for Specific Purposes*. Macmillan Press.

## ***BIBLIOGRAPHY***


- Kumar, R. (2010). *Research Methodology: A Step-by-Step Guide for Beginners (3rd ed.)*. SAGE Publications.
- Kumar, R. (2014). *Research Methodology: A Step-by-Step Guide for Beginners*. 4th edition . SAGE Publications.
- Kumaravadivelu, B. (2006*). Understanding Language Teaching: From Method to Post method*. Routledge. https://doi.org/10.4324/9781410615725
- Kutz, M. (Ed.). (2015). Mechanical Engineers' Handbook: Materials and Engineering Mechanics (4th ed., Vol. 1). John Wiley & Sons.
- Lamri, C.E. (2015). *Promoting the Reading Skill through Blended Learning for ELP Students: The case of Master's Students in the Faculty of Law and Political sciences at Abou-Bakr Belkaid University, Tlemcen.* (Doctoral dissertation). University of Tlemcen. http://dspace1.univ-tlemcen.dz/handle/112/9442
- Long, M. H., & Crookes, G. (1993). Units of analysis in syllabus design: The case for the task. In G. Crookes & S. M. Gass (Eds.), *Tasks in a pedagogical context* (pp. 9–44). Multilingual Matters.
- Long, M. H. (2005). *Second Language Needs Analysis*. Cambridge University Press.
- Long, M. H. (2015). *Second language acquisition and task-based language teaching*. Wiley-Blackwell.

## ***BIBLIOGRAPHY***


- Mackay, R., & Mountford, A. (1978). *English for Specific Purposes: A Case Study Approach*. Longman.
- Makhlouf, A., Arar, S. (2022). An Investigation into ESP Teachers' and Students' Needs and Difficulties at Medea University, Algeria. Afkar wa Affak, 10 (4), 427-448.
- Mc.Millan, J. H. (1992). *Educational Research: Fundamentals for the Consumer*. Harper Collins College Publishers.
- Mebitil, N. (2015). *Towards Enhancing ESP Practitioners Qualifications Through Implementing In-Service Teacher Training programme: An Action Research on the Newly Appointed ESP Practitioner At The Physics Department of Abou-Bakr Belkaid University, Tlemcen*. (Doctoral dissertation). University of Tlemcen. http://dspace1.univ-tlemcen.dz/handle/112/7811
- Moore, D. S., & McCabe, G.P. (2006). *Introduction to the practice of statistics* (5th ed.). W.H. Freeman and Company.
- Munby, J. (1978). *Communicative Syllabus Design*. Cambridge University Press.
- Murray, N. & Hughes, G. (2008). *Writing Up Your University Assignments and Research Projects: A Practical handbook*. Open University Press.
- Murray, N. (2012). *Writing Essays in English Language and Linguistics Principles, Tips and Strategies for Undergraduates*. Cambridge University Press

## ***BIBLIOGRAPHY***


- Nation, I. S. P. (2009). *Teaching ESL/EFL Reading and Writing*. Routledge. https://doi.org/10.4324/9780203891643
- Ng, P.P. (2003). *Effective Writing*: a Guide for Social Science Students. The Chinese University Press.
- Nga, N. T. H. (2009). Academic English at Tertiary Level: What, Why and How. *VNU Journal of Science*: *Foreign Languages, 25*, 112-117.
- Nunan, D. (1989). Designing tasks for the communicative classroom. CUP.
- Nunan, D. (1992). *Research Methods in Language Learning.* Cambridge University Press.
- Nunan, D. (2004). *Task-based language teaching*. Cambridge University Press. https://doi.org/10.1017/CBO9780511667336
- Nurmukhamedov, U., & Kim, S. H. (2009). 'Would you perhaps consider…': Hedged Comments in ESL Writing. *ELT Journal*, *64* (3), 272-282. https://doi.org/10.1093/elt/ccp063
- Oshima, A., & Hogue, A. (2007). *Introduction to Academic Writing* (3rd ed.). Pearson Longman.
- Panavelil, A. (2015). Teaching and Learning to Write: Using a Task-Based Approach in an EFL Class. In R. Al-Mahrooqi, V. S. Thakur, & A. Roscoe (Eds.), *Methodologies for effective writing instruction in EFL and ESL classrooms* (pp.115-129). IGI Global.
- Perry, F. L., Jr. (2011). *Research in applied linguistics: Becoming a discerning consumer* (2nd ed.). Routledge. https://doi.org/10.4324/9780203839027
- Raimes, A. (1983). *Techniques in Teaching Writing.* Oxford University Press.

## ***BIBLIOGRAPHY***


- Richards, J.C. (2001). *Curriculum Development in Language Teaching.* Cambridge University Press.
- Richards, J. C., & Rodgers, T. S. (2001). *Approaches and methods in language teaching* (2nd ed.). Cambridge University Press.
- Richard, J.C. & Renandya, W.A. (Eds.). (2002). *Methodology in Language Teaching: An Anthology of Current Practice*. Cambridge University Press.
- Richards, J. C., & Schmidt, R. W. (2010). *Longman Dictionary of Language Teaching and Applied Linguistics*. Routledge.
- Richards, J. C., & Schmidt, R. W. (2013). *Longman dictionary of language teaching and applied linguistics* (4th ed.). Pearson Education Limited.
- Robinson, P. (1991). *ESP Today: A Practitioner's Guide*. Prentice Hall.
- Rusinovci, X. (2015). Teaching writing through process-genre based approach. *US-China Education Review A, 5*(10), 699-705.
- Sanders, M., Tingloo, A., & Verhulst, H. (2005). *Advanced Writing in English: A Guide for Dutch Authors*. Garant Uitgevers NV.
- Skehan, P. (1996). A framework for the implementation of task-based instruction. *Applied Linguistics*, *17*(1), 38-62.
- Skehan, P. (1998). *A cognitive approach to language learning*. Oxford University Press.
- Smaihi, N. (2019). *Designing a Syllabus for Teaching English to Islamic Studies: The Case of 3rd Year Undergraduate Students at Batna1University*. (Doctoral dissertation). University of Kasdi Merbah–Ouargla.

## ***BIBLIOGRAPHY***

https://dspace.univouargla.dz/jspui/bitstream/123456789/22547/1/Smaihi_Nadia.pdf

- Stake, R. E. (1995). *The Art of Case Study Research*. SAGE.
- Strevens, P. (1988). ESP after twenty years: A re-appraisal. In M. Tickoo (Ed.), *ESP: State of the Art* (pp. 1–13). SEAMEO Regional Centre.
- Swales, J. (1988). *Episodes in ESP: A Source and Reference Book for the Development of English for Science and Technology*. Prentice Hall.
- Swales, J. M., & Feak, C. B. (2012). Academic writing for graduate students: Essential tasks and skills (3rd ed.). University of Michigan Press.
- Touchie, H. Y. (1986). Second language learning errors: Their types, causes, and treatment. *JALT journal, 8*(1), 75-80.
- Tuzi, F. (2004). The impact of e-feedback on the revisions of l2 writers in an academic writing course. Computers and composition, 21(2), 217–235.
- Wallwork, A. (2013). *English for academic research: Writing exercises*. Springer.
- Westwood, P. (2008). *What teachers need to know about reading and writing difficulties*. ACER Press.
- White, R. & Arndt, V. (1991). *Process writing*. Longman.
- Wickert, J. A., & Lewis, K. (2013). *An Introduction to Mechanical Engineering* (3rd ed.). Cengage Learning.
- Widdowson, H. (1983). *Learning purpose and language use*. Oxford University Press.

## ***BIBLIOGRAPHY***


- Widdowson, H. G. (1990). *Aspects of Language Teaching*. Oxford University Press.
- Williams, J. D. (2003). *Preparing to teach writing: Research, theory, and practice* (3rd ed.). Lawrence Erlbaum Associates. https://doi.org/10.4324/9781410607461
- Willis, D. (1996). *A framework for task-based learning*. Longman.
- Willis, D., & Willis, J. (2007). Doing task-based teaching. Oxford University Press.
- Yalden, J. (1987). *Principles of Course Design for Language Teaching.* Cambridge University Press.
- Yin, R. K (1993). *Applications of Case Study Research*. Sage Publications.
- Yin, R. K. (2014). *Case Study Research: Design and Methods (5th ed.)*. SAGE.
- Zuniga, G., & Macias, D.F. (2006). Refining Students' Academic Writing Skills in an Undergraduate Foreign Language Teaching programme. *Ikala, Revista de lenguaje y cultura, 11* (17), 311- 336. https://doi.org/10.17533/udea.ikala.2792

# APPENDICES

# Appendix A

## Writing Test

**Task One:** Should take 30 minutes (Please do not exceed 1min 30 per question)

**Subject verb agreement**

1. **Choose the correct sentence**

a/ The information obtained from the interviews were useful

b/ The information obtained from the interviews was useful

c/ Both are correct

2. **Is the following sentence correct?**

Molybdenum, in contrast to chromium, have very low resistance to oxidizing solutions.

a/ Yes

b/ No

**Tenses**

3. **Which tense is the verb between brackets in the following sentence?**

Aluminum alloys (melt) at about 1000∘F (535∘C)

a/ Past Simple

b/ Present Simple

c/ Past Perfect

**Pronouns**

4. **Choose the correct pronoun to fill in the blank in the following sentence:**

One property of aluminum that everyone is familiar with is ……light weight.

a/ their

b/ its

c/ there

**Sentence fragment**

5. **Which of the following is an example of a sentence fragment:**

a/ As an important metallic material.

b/ Titanium alloys are widely used in the aviation industry because of their excellent properties.

c/ None of the above

**Possessive case**

6. **In order to show possession with a plural noun ending in's', you are required to:**

a/ Add an apostrophe at the end

b/ Add an apostrophe and's'

c/ No apostrophe is required

**Punctuation**

7. **Read the following sentence and choose the correct use of punctuation:**

   The use of $\beta$-titanium alloys in aerospace applications began in the 1960s, and continued to be used in more important applications from 1970's till now.

a/ began in the 1960s, and,

b/ began in the 1960s; and

d/ No change is required

8. **In the following sentence, the comma is used correctly:**

   Being insoluble in iron, lead particles are distributed through the steel and provide both lubrication and chip-breaking ability during machining.

a/ True

b/ False

**Parallelism**

**9. Check the parallelism of the following sentences and pick the correct answer.**

a/ An alloy is considered to be a beta alloy, if it contains sufficient beta stabilizer alloying element to retain the beta phase without transformation to martensite on quenching to room temperature.

b/ An alloy is considered to be a beta alloy, if it is containing sufficient beta stabilizer alloying element to retain the beta phase without transformation to martensite on quenching to room temperature.

c/ An alloy is considered to be a beta alloy if it contains sufficient beta stabilizer alloying element to retain the beta phase without transformation to martensite on quenching to room temperature.

**Wordiness**

**10. To avoid wordiness in writing you have to:**

a/ make repetition

b/ use few relevant words

c/ use redundant words

**11. Which of the following sentences uses concise language?**

a/ Titanium and its alloys have been considered to be one of the most attractive metallic biomaterials, because of their excellent biocompatibility, good mechanical strength and corrosion resistance.

b/ Titanium and its alloys have been considered to be one of the most attractive metallic biomaterials due to the fact that they have excellent biocompatibility, good mechanical strength and corrosion resistance.

**Linking devices**

**12. Select the appropriate linking word to fill in the blank in the following sentence:**

Compressive residual stresses are generally preferred……. it could mitigate fatigue cracks and prolong fatigue life of materials.

a/ however

b/ furthermore

c/ because

**Impersonal style requirements**

**13. Academic writing makes use of impersonal style which requires to use:**

a/ The active voice

b/ The passive voice

c/ The first person

d/ The third person

**Paragraph and essay organization**

**14. When writing a paragraph, you should start with:**

a/ supporting sentences

b/ a topic sentence

c/ a concluding sentence

**15. A topic sentence:**

a/ Is written at the end of a body paragraph

b/ Summarizes the main idea of the paragraph

c/ Does not have the same role of a thesis statement

**16. Supporting sentences in a paragraph aim to:**

a/ present the topic of the paragraph

b/ mark the beginning of a new paragraph

c/ provide evidence and examples

**17. To write a proper introduction to your essay, you should start with:**

a/ Background information

b/ A hook

c/ A thesis statement

**Using sources and referencing**

**18. Paraphrasing means:**

a/ Using someone else's exact words

b/ Re-writing someone's ideas in your own words

**19. When you use a direct quotation:**

a/ You use different wording

b/ You copy the author's exact words

**20. Is the following reference correct?**

M. L. Sharp, *Behavior and Design of Aluminum Structures*, McGraw Hill, New York.

a/ Yes

b/ No

**Task Two:** Should take 30 minutes

Use the following table to write an essay, of about 180 words, on the advantages and disadvantages of nuclear power and support your ideas with evidence based on your own knowledge.

| **Advantages of Nuclear Power** | **Disadvantages of Nuclear Power** |
|---|---|
| **1-** Promising energy future | **1-**Risk of nuclear accidents |
| **2-**Reliable power source | **2-**Environmental impact |
| **3-**Low-cost energy | **3-**Non-renewable energy source |
| **4-** High energy density | **4-** Water intensive |

# Appendix B

## Course Experimentation Certificate

الجمهورية الجزائرية الديمقراطية الشعبية

République Algérienne Démocratique et Populaire

Ministère de L'enseignement Supérieur et de La Recherche Scientifique

Université Ain Témouchent - Belhadj Bouchaib

Faculté des Sciences et de la Technologie

Vice-Décanat chargé de la Post-Graduation, de La Recherche Scientifique et des Relations Extérieures.

وزارة التعليم العالي والبحث العلمي

جامعة عين تموشنت بلحاج بوشعيب

كلية العلوم و التكنولوجيا

نيابة العمادة لما بعد التدرّج، البحث العلمي والعلاقات الخارجية.

N 392/ VDPGRSRE/FST/UATBB/2022

Ain-Témouchent le 26 Juin 2022

### ATTESTATION D'ENSEIGNEMENT EN TROISIEME CYCLE (DOCTORAT)

Je, soussigné, **Dr. BENCHERIF Kaddour** Vice-Doyen à la Faculté des Sciences et de la Technologie à l'Université d'Aïn-Témouchent, chargé des études en Post-Graduation, de la Recherche Scientifique et des Relations Extérieures, **atteste par la présente que Melle BELMOKHTAR Khadidja, doctorante**, au Département d'Anglais à l'Université Abou Bekr Belkaid de Tlemcen, **a assuré au sein de la Formation Doctorale en Mécanique,** dans le cadre de la partie pratique de sa thèse de Doctorat en Langue Anglaise " English For Specific Purposes " , **l'enseignement en ligne (via zoom) du cours suivant :**

| Cours enseigné | Spécialité | Année d'enseignement |
|---|---|---|
| Academic Writing Task –Based Course | Doctorat de la filière Génie Mécanique | 2021-2022 |

*Cette attestation est délivrée à la demande de l'intéressée pour servir et faire valoir ce que de droit.*

Fait à Ain-Témouchent, le 26 Juin 2022

**Le Responsable du Comité de la Formation Doctorale**

جامعة عين تموشنت بلحاج بوشعيب
كلية العلوم و التكنولوجيا
مسؤول لجنة التكوين في الدكتوراه
شعبة الهندسة الميكانيكية

Dr BELHAMIANI. M

**Le Vice-Doyen**

نائب العميد المكلف بما بعد التدرج والبحث العلمي والعلاقات الخارجية

ق . بن شريف

# Appendix C

## Doctoral Students' Questionnaire

Dear doctoral students, we are undertaking research on the importance of academic writing in your context. The aim is to collect data about the difficulties you face in writing your academic papers in English. Your collaboration is very appreciated to achieve the objectives of our research. So, you are kindly requested to answer the following questions:

**A/ Background Information:**

1- Did you have an English course:

| | | | | |
|---|---|---|---|---|
| a/ In your license studies | Yes | ☐ | No | ☐ |
| b/ In your master studies | Yes | ☐ | No | ☐ |
| c/In your doctoral studies | Yes | ☐ | No | ☐ |

(Please specify the period for each level in the box)

2- Is it necessary to master English in your field of study?

a/ Yes ☐
b/ No ☐

- Why?

……
……

3- Did the current English course meet your needs?

a/ Yes ☐
b/ No ☐
c/ To some extent ☐

4 - Did the English course help you to write academic English?

a/ Yes ☐
b/ No ☐

**B/ Academic writing needs:**

5- What are the types of papers you are required to write in English?

a/ A thesis ☐
b/ An article ☐
c/ A report ☐
Others:
……
…….....

6- How do you find writing in English?

a/ Easy ☐
b/ Difficult ☐
c/ Neither easy nor difficult ☐

7- What kind of difficulties do you face when writing?

a/ Linguistic difficulties ☐
b/ Strategic difficulties ☐
c/ Both of them ☐

8- Do you encounter problems in grammar?

a/ Yes ☐ b/ No ☐

-If yes, are these problems related to the use of:

Verbs ☐ Tenses ☐ Pronouns ☐ Articles ☐

9- Do you face difficulties in finding the appropriate words and phrases to express your ideas?

a/ Yes ☐
b/ No ☐
c/ To some extent ☐

10- Are you able to write simple, clear sentences?

a/ Yes ☐
b/ No ☐
c/ To some extent ☐

11- Do you know how to use cohesive devices appropriately to link sentences and paragraphs?

a/ Yes ☐
b/ No ☐
c/ To some extent ☐

12- Can you write a coherent paragraph:

a/ Easily ☐
b/ With difficulties ☐

13- Do you know how to develop and organize ideas in:

a/ Descriptive essay ☐

b/ Expository essay ☐

b/ Argumentative essay ☐

c/ Cause and effect essay ☐

d/ Comparison and contrast essay ☐

14- Are you able to write a proper introduction and conclusion?

a/ Yes ☐

b/ No ☐

15- Do you know how to paraphrase and summarize your ideas?

a/ Yes ☐
b/ No ☐

16 -Which stage of the writing process is the most difficult for you?

a/ Prewriting ☐
b/ Drafting ☐
c/ Revising and editing ☐
d/ Proofreading ☐

17- Do you know how to revise and edit your writing?

a/ Yes ☐
b/ No ☐
c/To some extent ☐

18- Do you know how to cite references in a text?

a/ Yes ☐
b/ No ☐

19- Do you know how to organise a reference list based on a particular style?

a/ Yes ☐
b/ No ☐

20- Do you think you need an English course dedicated specifically to improving your academic writing skills?

a/ Yes ☐
b/ No ☐

21- Do you prefer to develop your academic writing skills through a task- based course?

a/ Yes ☐

b/ No ☐

22- If yes, which tasks do you find more interesting?

a/ Writing a paragraph ☐

b/ Writing an essay ☐

c/ Ordering paragraphs to write a coherent essay ☐

d/ Writing scientific reports ☐

e/ Writing an abstract ☐

f/ Writing an outline ☐

g/ Paraphrasing and summarizing ☐

h/ Writing references ☐

23- Do you have other suggestions?

……

……

……

# Appendix D

## Subject-Specialist Teachers' Questionnaire

Dear teachers, we are undertaking research on the importance of academic writing for doctoral students. The aim is to collect data about the difficulties doctoral students face when writing their academic papers in English. Your collaboration is very appreciated to achieve our research objectives.

1- Do doctoral students need to master English?

a/ Yes ☐

b/ No ☐

2- If yes, what for?

To read papers related to their field of study

To take part in international seminars

To make presentations in English

To report research findings in international journals

3- Do doctoral students need to write academically in English?

a/ Yes ☐

b/ No ☐

4- What kind of papers doctoral students need to write in English?

a/ A thesis ☐

b/ An article ☐

c/ A report ☐

Others:

……

……....

..... ...

……

5- What is the nature of these writing difficulties?

a/ Language ☐

b/ Strategy use ☐

c/ Both of them ☐

6- Which linguistic difficulties do doctoral students face when writing?

a/ Difficulties in grammar ☐

b/ Difficulties in vocabulary choice ☐

c/ Difficulties in syntax ☐

d/ Coherence and cohesion ☐

7- Which strategic difficulties do doctoral students face when writing?

a/ Structuring a proper introduction and conclusion ☐

b/ Paraphrasing and summarizing ☐

c/ revising and editing ☐

d/ Referencing ☐

- Others:

……

……

……

……

8- Do you think doctoral students need an English course completely dedicated to academic writing?

a/ Yes ☐

b/ No ☐

9- If yes, which tasks do you consider "Very important" to be included in this course?

a/ Writing a paragraph ☐
b/ Writing an essay ☐
c/ Writing scientific reports ☐
d / Writing an abstract ☐
e / Writing an outline ☐
f / Paraphrasing and summarizing ☐
g / Writing references ☐

10- Do you have other suggestions?

……
……
……
……
……..

Thanks for your collaboration!

# Appendix E

## Officers' Structured Interview

Dear CFD members / Responsible for doctoral programme/ Head of the department, we are undertaking research on the importance of academic writing for doctoral students. The aim is to collect data about the difficulties doctoral students face when writing their academic papers in English. Your collaboration is very appreciated to achieve our research objectives.

1- Did doctoral students have an English course in their programme?

2- What is the aim of incorporating an English course in their programme?

3- What is the time load for this course?

4- Is it enough?

5- Did the current English course meet doctoral students' needs?

6- Did the course help them improve their academic writing competence?

7- What are the types of academic papers they need to write in English?

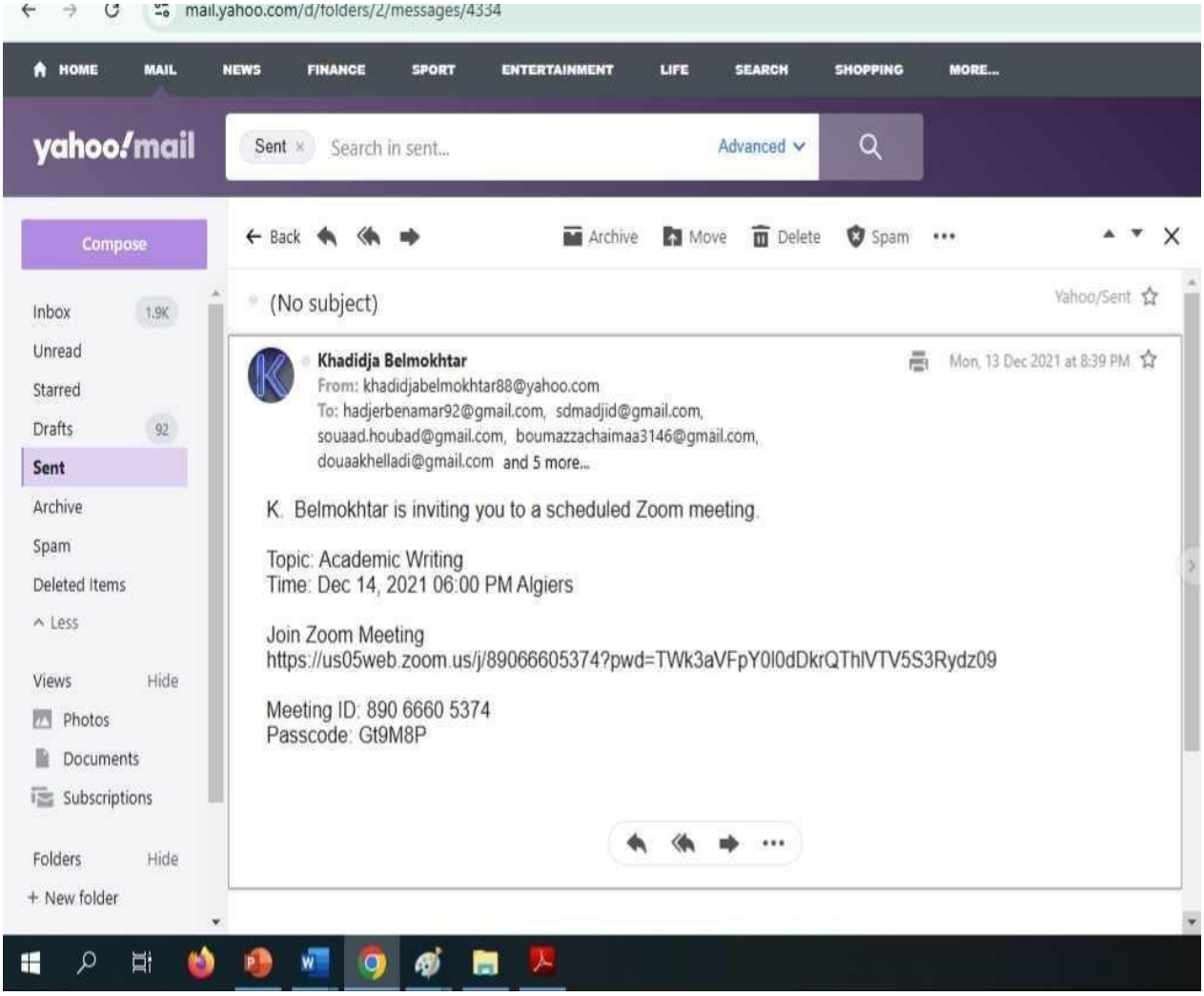
8- What do you think of an English course dedicated to academic writing?

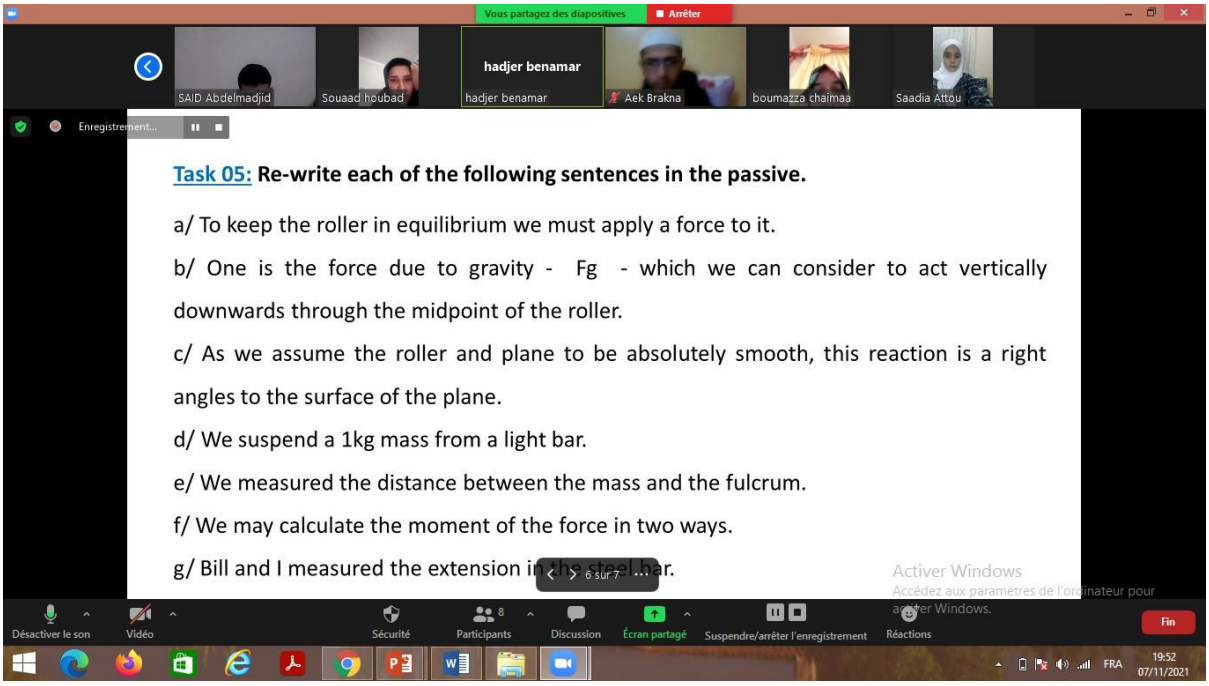
9- Do you have other suggestions?

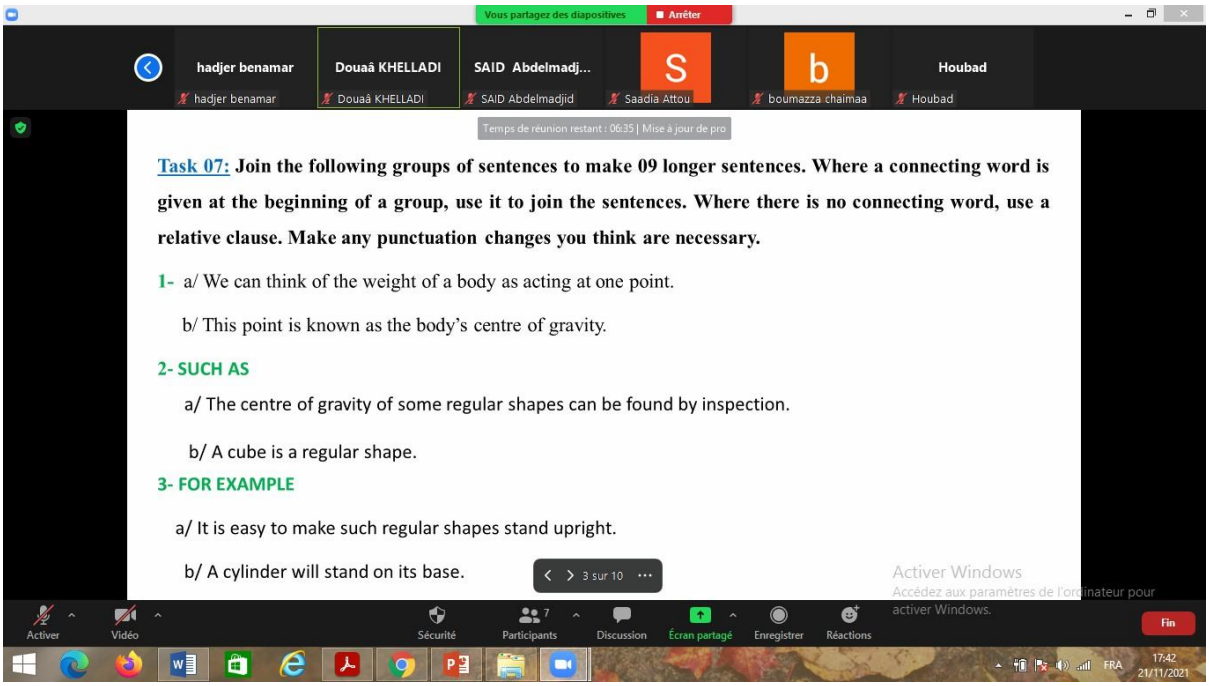
Thanks for your collaboration!

# Appendix F

## Sample Lessons' Screenshots

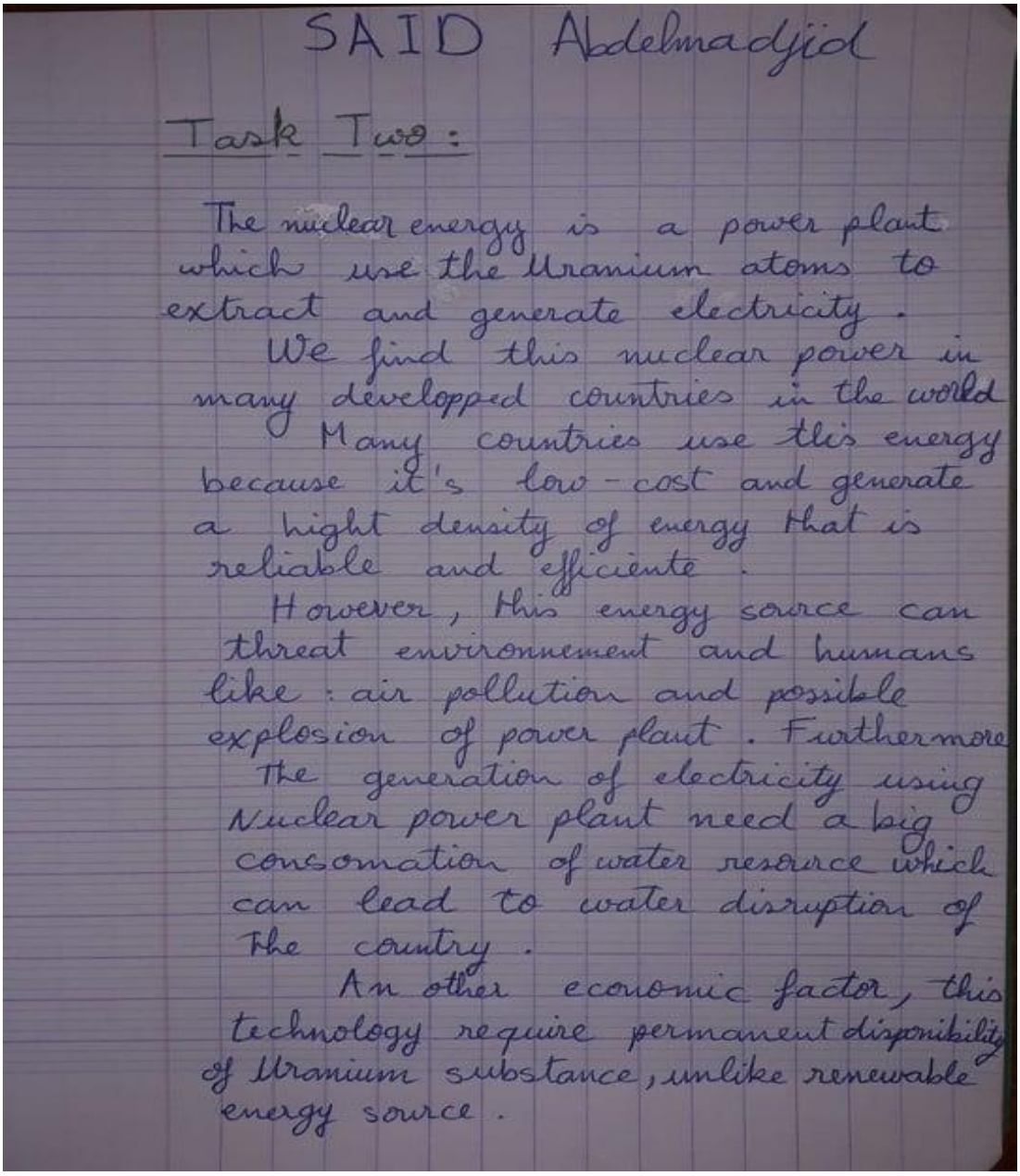



Vous partagez des diapositives
Arrêter
SAID Abdelmadjid
Souaad houbad
hadjer benamar
hadjer benamar
Aek Brakna
boumazza chaimaa
Saadia Attou
Enregistrement...
Task 05: Re-write each of the following sentences in the passive.
a/ To keep the roller in equilibrium we must apply a force to it.
b/ One is the force due to gravity - Fg - which we can consider to act vertically downwards through the midpoint of the roller.
c/ As we assume the roller and plane to be absolutely smooth, this reaction is a right angles to the surface of the plane.
d/ We suspend a 1kg mass from a light bar.
e/ We measured the distance between the mass and the fulcrum.
f/ We may calculate the moment of the force in two ways.
g/ Bill and I measured the extension in the steel bar.
6 sur 7
Activer Windows
Accédez aux paramètres de l'ordinateur pour activer Windows.
Désactiver le son
Vidéo
Sécurité
Participants
8
Discussion
Écran partagé
Suspendre/arrêter l'enregistrement
Réactions
Fin
FRA
19:52
07/11/2021


Vous partagez des diapositives
Arrêter
hadjer benamar
Douaâ KHELLADI
SAID Abdelmadj...
Houbad
Saadia Attou
boumazza chaimaa
Temps de réunion restant : 06:35 | Mise à jour de pro
Task 07: Join the following groups of sentences to make 09 longer sentences. Where a connecting word is given at the beginning of a group, use it to join the sentences. Where there is no connecting word, use a relative clause. Make any punctuation changes you think are necessary.
1- a/ We can think of the weight of a body as acting at one point.
b/ This point is known as the body's centre of gravity.
2- SUCH AS
a/ The centre of gravity of some regular shapes can be found by inspection.
b/ A cube is a regular shape.
3- FOR EXAMPLE
a/ It is easy to make such regular shapes stand upright.
b/ A cylinder will stand on its base.
3 sur 10
Activer Windows
Accédez aux paramètres de l'ordinateur pour activer Windows.
Activer
Vidéo
Sécurité
Participants
7
Discussion
Écran partagé
Enregistrer
Réactions
Fin
FRA
17:42
21/11/2021

# Appendix G

## Students' Sample Writing Tasks



SAID Abdelmadjid

Task Two :

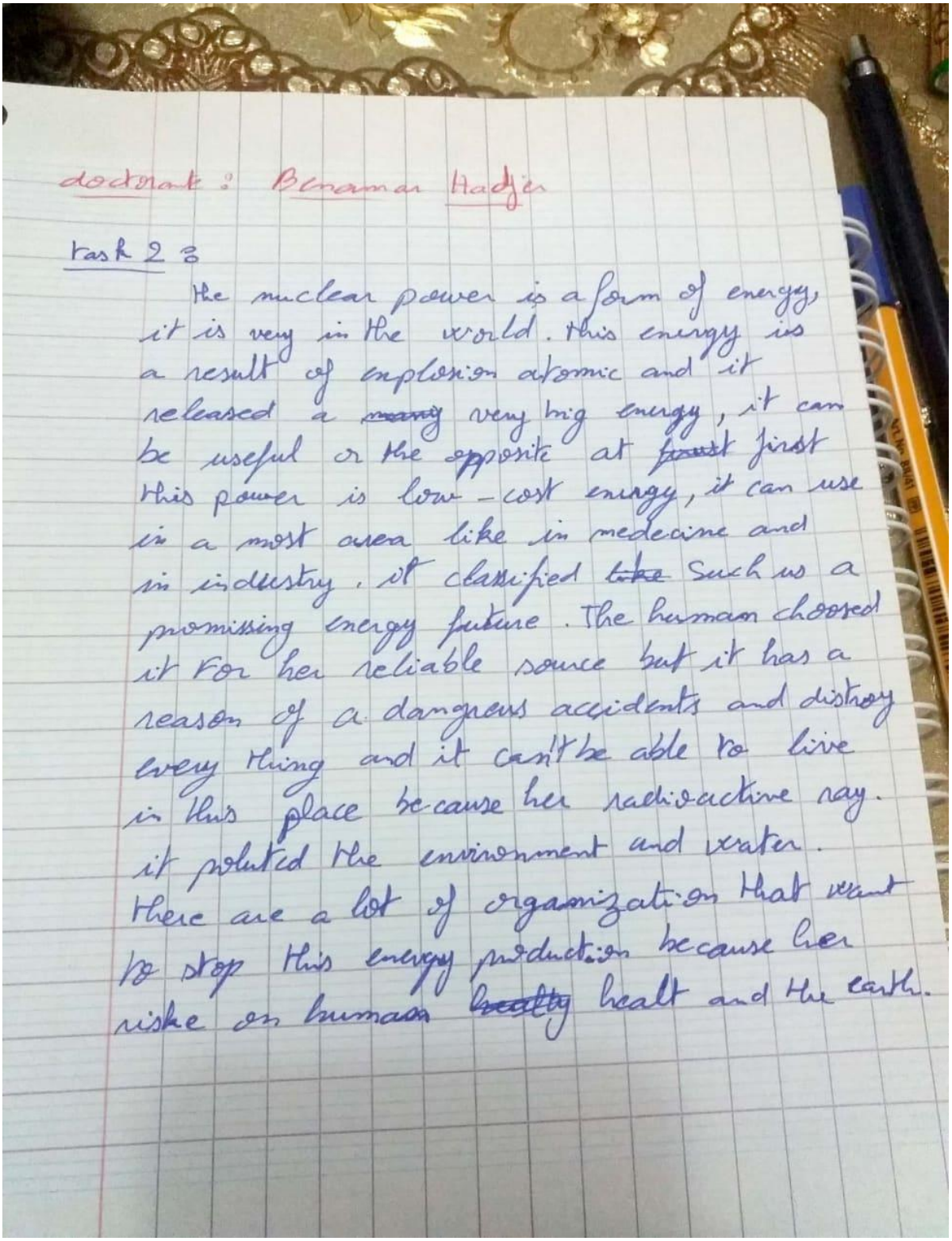
The nuclear energy is a power plant which use the Uranium atoms to extract and generate electricity.

We find this nuclear power in many developped countries in the world

Many countries use this energy because it's low-cost and generate a hight density of energy that is reliable and efficiente.

However, this energy source can threat environnement and humans like : air pollution and possible explosion of power plant. Furthermore The generation of electricity using Nuclear power plant need a big consomation of water resource which can lead to water disruption of the country.

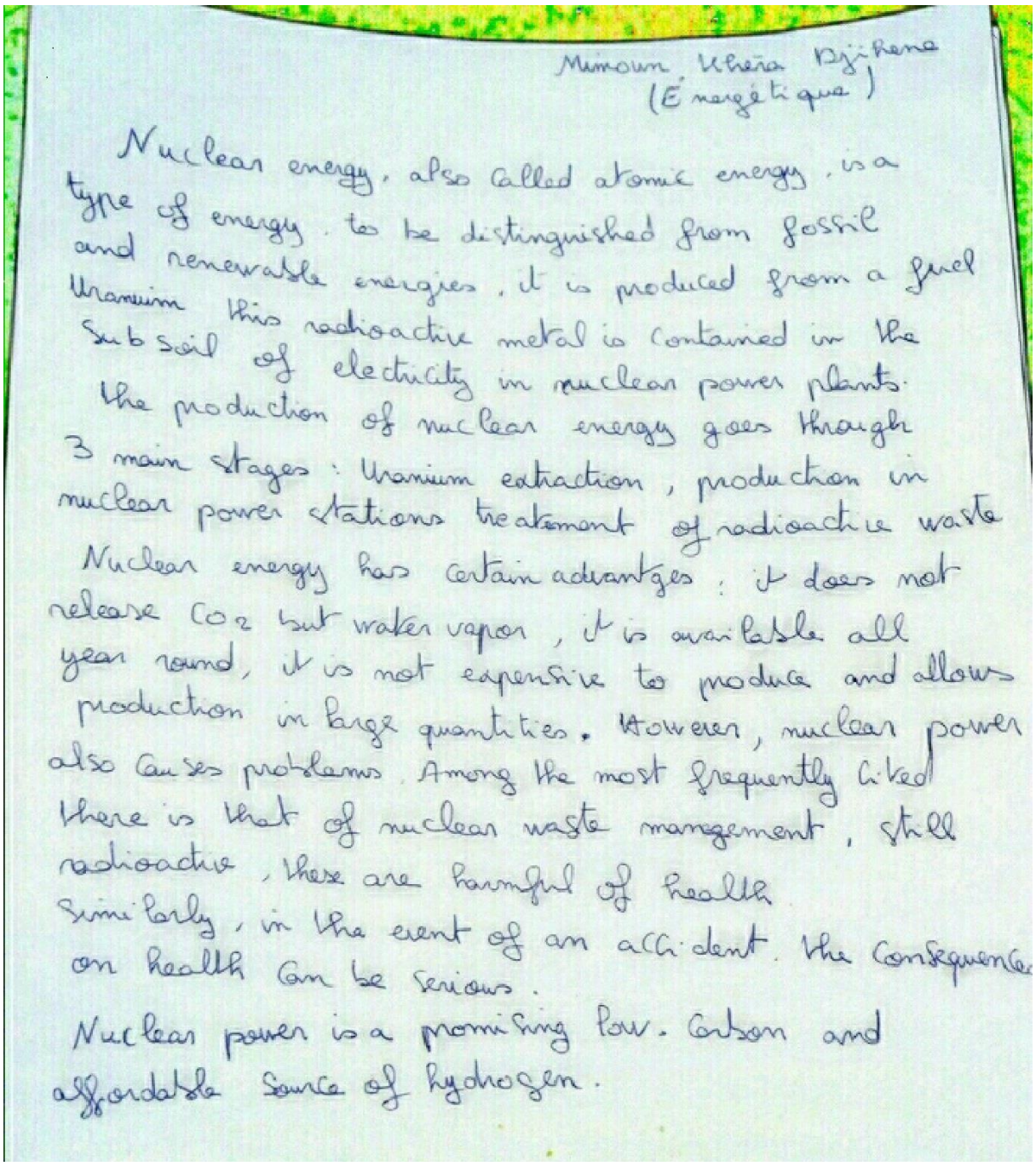
An other economic factor, this technology require permanent disponibility of Uranium substance, unlike renewable energy source.



doctorat : Benamar Hadjer

Task 2 :

The nuclear power is a form of energy, it is very in the world. this energy is a result of explosion atomic and it released a ~~many~~ very big energy, it can be useful or the opposite at ~~first~~ first this power is low-cost energy, it can use in a most area like in medecine and in industry. it classified ~~like~~ such us a promissing energy future. The human choosed it for her reliable source but it has a reason of a dangrous accidents and distroy every thing and it can't be able to live in this place because her radioactive ray. it polutied the environment and water. there are a lot of organizations that want to stop this energy production because her riske on human ~~beauty~~ healt and the earth.



Mimoun Khaïa Bji Rema
(Énergétique)

Nuclear energy, also called atomic energy, is a type of energy to be distinguished from fossil and renewable energies, it is produced from a fuel Uranium this radioactive metal is contained in the Sub soil of electricity in nuclear power plants.
The production of nuclear energy goes through 3 main stages: Uranium extraction, production in nuclear power stations treatement of radioactive waste
Nuclear energy has certain advantges: it does not release $CO_2$ but water vapor, it is available all year round, it is not expensive to produce and allows production in large quantities. However, nuclear power also causes problems. Among the most frequently cited there is that of nuclear waste management, still radioactive, these are harmful of health
Similarly, in the event of an accident the consequences on health can be serious.
Nuclear power is a promising low-carbon and affordable source of hydrogen.

Brakna Djamel Abdelkader

Introductory paragraph

Global demand of energy continues to increase, nuclear energy is one of energy sources exist in our modern world, This last is based on uranium fissio who issues heat which is converted to electricity. This type of energy has some advantages, on the other hand it has many dangers and lot of risks that make them unsafe.

**Abstract**

This dissertation examines the academic writing difficulties experienced by ESP doctoral students at the Department of Mechanical Engineering, Belhadj Bouchaib University, Ain Temouchent. It aims to identify the nature of these difficulties and to improve the students' academic writing performance. The study involves a review of related literature, situation analysis and research methodology, needs analysis, task-based academic writing course experimentation, and general recommendations. An experimental case study was conducted using questionnaires, interviews, and writing tests. The results revealed that students' difficulties were both linguistic and strategic. The implementation of a task-based academic writing course proved effective. Overall, task-based instruction helped reduce writing difficulties and enhanced doctoral students' academic writing skills.

***Keywords:*** academic writing, doctoral students, ESP, task-based approach

**Résumé**

Cette thèse examine les difficultés liées à la rédaction académique en anglais rencontrées par les doctorants du département de Génie Mécanique de l'Université Belhadj Bouchaib d'Ain Témouchent. L'étude vise à identifier la nature de ces obstacles et à optimiser la performance rédactionnelle des chercheurs. Ce travail comprend une revue de la littérature, une analyse du contexte éducatif et de la méthodologie de recherche, une analyse des besoins des étudiants, ainsi que l'expérimentation d'un cours de rédaction académique basé sur les tâches, complété par des recommandations générales. Une étude de cas expérimentale a été menée à l'aide de questionnaires, d'entretiens et de tests de rédaction. Les résultats révèlent que les difficultés des étudiants sont d'ordre aussi bien linguistique que stratégique. La mise en œuvre d'un cours de rédaction académique basé sur les tâches s'est avérée efficace ; globalement, cette approche a permis d'atténuer les obstacles à l'écrit et de renforcer significativement les compétences en rédaction académique des doctorants.

***Mots-clés :*** anglais de spécialité, approche basée sur la tâche, doctorants, rédaction académique.

**ملخص**

تتناول هذه الأطروحة صعوبات التحرير الأكاديمي باللغة الإنجليزية التي يواجهها طلبة الدكتوراه في قسم الهندسة الميكانيكية بجامعة بلحاج بوشعيب بعين تموشنت، حيث تهدف الدراسة إلى تشخيص طبيعة هذه العوائق والعمل على تحسين الأداء الكتابي لدى الباحثين. و يضم البحث مراجعة للأدبيات، تحليل للوضع التعليمي الراهن ومنهجية البحث، تحليل للاحتياجات الخاصة بالطلبة، بالإضافة إلى تجربة دورة تدريبية في التحرير الأكاديمي تعتمد على المقاربة بالمهام، متبوعة بتوصيات عامة. وقد أُجريت دراسة حالة تجريبية اعتمدت على الاستبيانات والمقابلات واختبارات التحرير، حيث كشفت النتائج أن الصعوبات التي يواجهها الطلبة هي صعوبات لغوية وإستراتيجية في آن واحد؛ وقد أثبتت دورة التحرير الأكاديمي القائمة على المهام فاعليتها، إذ ساهمت هذه المقاربة بشكل عام في تخفيف عوائق الكتابة وتعزيز مهارات التحرير الأكاديمي لدى طلبة الدكتوراه بشكل ملموس.

***الكلمات المفتاحية :*** التحرير الأكاديمي، طلبة الدكتوراه، الإنجليزية لأغراض خاصة ،المقاربة بالمهام