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# Lecture Comprehension Enhancement within the Context of English as Medium of Instruction: A Case Study of First-Year Technical and Scientific Students and Teachers at Yahia Fares University of Medea

A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of Master's in English (Linguistics)

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*“The Great Aim of Education Is Not Knowledge But Action.”*

***- Herbert Spencer***

# DECLARATION

We do hereby solemnly declare that the substance of this thesis is entirely the result of our investigation, and that due reference or acknowledgement is made, whenever necessary, to the work of other researchers. We are duly informed that any person practicing plagiarism will be subject to disciplinary sanctions issued by the university authorities under the rules and regulations in force.

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# DEDICATION

*To my **lovely mother**, the pulse of my heart, whose affection, love, and encouragement have, despite illness, been my guiding light throughout this journey*

*To the first author of my story, my **father** whose grace is unending and whose love is unfailing*

*To my beloved brother, **Achraf**, who stood by me when things looked bleak*

*To my grandparents, uncles, aunts, and my dearest cousins "**Khaoula**, **Hadil**, **Lina**, **Soulaf**, **Youcef**, **Sarah**, **Mounir**, **Meriem**, **Houyam**, **Ranim**, and **Zakaria**", who encouraged me in a sort of back door way by continually asking when I would be finished*

*To my esteemed teacher, **Remikia Kadi**, who saw in me what I failed to see in myself*

*To the experiences I have never expected, and the paths that were redirected*

*To those rare, beautiful friendships that leave an indelible mark in my life*

*To my soul mate, **Hafsa**, who knows the chapters I left unsaid. Our memories are forever etched in concrete*

*To my incredible friends "**Raouya**, **Afaf**, **Ikram**, **Amira**, **Wissam**, and **Seloua** ", Who turn every day into an unforgettable adventure*

*To the brilliant minds I have taught these past three years, whose relentless pursuit of knowledge ignited my own in this research*

*Finally, to all those who shared the burden and joy of this demanding academic path*

*To you fellow readers*

*To all of them I dedicate this work*

***Aya***

# DEDICATION

*In the name of Allah, the most Gracious, the most Merciful, and may prayers and peace be upon our Prophet, Muhammad and upon his companions. I thank Almighty Allah who gave me such strength to achieve this work successfully.*

*In embarking on this journey, I would like to dedicate this modest work to the most precious people to my heart: to my* ***dear father*** *and my* ***beloved mother****, the ones who gave birth, meaning, encouragement, and love to my life. The ones who taught me that the best kind of knowledge to have, is what we learn for the sake of Allah.*

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*To my family members, and my cousins, "****Dhikra****,* ***Sabrina****,* ***Sarah****,* ***Nessrine****,* ***Ihsane****,* ***Sirine, Radhia, and Inaam****" who prayed for me and supported me along the way. To* ***the teachers*** *whom I offer a heartfelt thanks for their priceless contribution to this journey. To my cherished friend* ***Rania*** *and my friends with whom I shared university life with its lights and shadows.*

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# ABSTRACT

Despite the undeniable locus of lectures in the teaching-learning process, the use of strategies to enhance lectures comprehension in English as a medium of instruction (EMI) classrooms seems to be disregarded. Its benefits, however, have been praised in academia. This exploratory study sets out to explore and investigate the andragogical approaches and learner strategies used to improve comprehension in EMI lectures. A case study was conducted at the Department of Science and Technology at Dr. Yahia Fares University (Ouzera, Medea).

The present study relied on mixed-methods design, utilizing both quantitative and qualitative data collection instruments: a student questionnaire, a teacher questionnaire, and classroom observations. The sample of the current study consisted of (46) first-year students and (17) teachers. The obtained data were analyzed quantitatively and qualitatively, denoting that teachers frequently employ a range of activities and strategies to enhance comprehension, including the use of check-up questions, visual aids, audio-visual materials, collaborative learning through teamwork and discussions, and translanguaging. Conversely, learners tend to utilize multiple strategies, such as recording lectures, collaborative note-taking with classmates, and translating key vocabulary into Arabic. Therefore, the findings of the present study have significant implications for educators, providing evidence-based recommendations to enhance instructional practices and most importantly improve students' learning outcomes and address their needs that can ultimately contribute to a more effective and student-centered learning environment.



**Key Terms:** English-medium instruction, lecture comprehension, andragogical approaches, student engagement.

# ملخص

على الرغم من مكانة المحاضرات التي لا يمكن إنكارها في عملية التدريس والتعلم، يبدو أنه قد تم تجاهل استخدام استراتيجيات تعزيز فهم المحاضرات باللغة الإنجليزية كوسيلة للتعليم، ومع ذلك تم الاشادة بفوائدها في الأوساط الأكاديمية. تهدف هذه الدراسة الاستكشافية إلى استكشاف ودراسة الأساليب الأندراغوجية واستراتيجيات المتعلم المستخدمة لتحسين الفهم في المحاضرات. ولهذا الغرض، تم اجراء دراسة حالة مع طلاب السنة اولى في قسم العلوم والتكنولوجيا في جامعة الدكتور يحي فارس بلدية وزرة ولاية المدية. اعتمدت الدراسة الحالية على نهج مزدوج الاسلوب لغرض جمع البيانات الكمية والنوعية، حيث تضمنت أدوات جمع البيانات المستخدمة في هذه الدراسة استبيانات للمعلمين والطلبة والملاحظات في القسم. كما تكونت عينة الدراسة الحالية من (46) طالباً من طلاب السنة الأولى، و(17) أستاذا. تم تحليل البيانات التي تم الحصول عليها كميا ونوعيا، واظهرت النتائج أن المعلمين يستخدمون في كثير من الأحيان مجموعة من الأنشطة والاستراتيجيات لتعزيز الفهم، بما في ذلك استخدام أسئلة الفحص، والوسائل البصرية، والمواد السمعية والبصرية، والتعلم التعاوني من خلال العمل الجماعي والمناقشات، والترجمة اللغوية. على عكس ذلك، يميل المتعلمون إلى استخدام استراتيجيات متعددة، مثل تسجيل المحاضرات، ورسم الخرائط الذهنية، وتدوين الملاحظات التعاونية مع زملائهم في الفصل، وترجمة المفردات الرئيسية إلى اللغة العربية. لذلك، فإن نتائج الدراسة الحالية لها آثار كبيرة على المعلمين، حيث تقدم توصيات قائمة على الأدلة لتعزيز الممارسات التعليمية والأهم من ذلك تحسين نتائج تعلم الطلاب وتلبية احتياجاتهم التي يمكن أن تسهم في نهاية المطاف في بيئة تعليمية أكثر فعالية وتركز على الطالب.

**الكلمات الدلالية:** التدريس باللغة الإنجليزية، فهم المحاضرات، المناهج الأندراغوجية، ومشاركة الطلاب.

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# LIST OF ABBREVIATIONS

**EMI**: English as a Medium of Instruction

**AHEIs**: Algerian Higher Education Institutions

**LLS:** Language Learning Strategies

**%**: Percentage

# General Introduction

## 1. Research Background

Formerly, the study of English was prestigious and represented a privileged education, but now it becomes a need and responsibility. In recent decades, the adoption of English as the medium of instruction, commonly called EMI, has spread widely and gained much prevalence in various industries, particularly within globalization and internationalization (Crystal, 2003; Wright, 2004). In Algeria, the policy of tertiary education has witnessed a change in the language used from the French language to English being used as a medium of instruction. That is, by integrating English, Algeria is aimed to enhance teaching quality, offering better pedagogical methods, and developing students' transversal competencies in areas such as language proficiency and information technology.

Although the potential advantage of the implementation of EMI in Algeria is undeniable, especially in improving the language skills and academic performance of students, however, research suggests that students in EMI settings can face challenges understanding complex subject matter delivered in a non-native language (Kinsella et al., 2017). This is particularly present in fields like Science and Technology, where students may struggle with grasping technical terminology, following fast-paced lectures, and expressing themselves clearly during discussions that can lead to frustration and hinder academic achievement.

Though past studies have looked at the main challenges encountered by students in EMI programs, insufficient research has been directed to the particular strategies used by both students and teachers to improve understanding of lectures in EMI settings, especially in Algeria. This research seeks to address this deficiency by investigating the strategies employed by students and teachers to enhance understanding in EMI lectures in Algeria. As a result, educators and learners need to employ innovative and impactful

teaching and learning strategies to navigate the challenges and opportunities presented by this linguistic transition.

By employing the suitable strategies, both educators and students can navigate the challenges and opportunities presented by EMI, ultimately leading to improved learning experiences and maximized academic outcomes.

## 2. Problem Statement

With the linguistic transition in Algerian tertiary education towards adopting EMI, significant challenges arise in ensuring understanding course content, effectively participating in discussions and excel academically for students. The root cause of this challenge lies in the potential barriers students face in comprehending lectures and engaging effectively in EMI classrooms.

To address this, a proposed solution involves implementing tailored strategies to enhance lecture comprehension in EMI settings. This solution intends to benefit the students by enhancing their understanding of the course material, allowing them to participate actively, and eventually enhancing their academic success in the English Medium Instruction context. The research questions guiding this study sought to identify the kinds of lecture comprehension strategies used by students in EMI classrooms and to analyze how EMI teachers promote lecture comprehension and support students' language development.

In addressing these questions in view of the research problem, the practical insights aimed to be applied by educators, curriculum developers, and policy makers to raise standards in education, develop educational practices, and create successful learning experiences in EMI environments.

## 3. Research Questions

This research was built upon the following questions:

**Q1.** What are the strategies that EMI teachers utilize to promote lecture comprehension for students in scientific and technical disciplines?

**Q2.** What lecture comprehension strategies do learners in EMI classrooms use to improve their lecture comprehension?

## 4. Objectives

The purpose of this study is to provide insight on how students and teachers deal with lecture comprehension issues in English-medium instruction (EMI) classes. By highlighting the variety of strategies used by EMI lecturers to increase lecture comprehension for students with varied levels of English proficiency. Furthermore, recognizing and categorizing the various lecture comprehension strategies used by students in EMI classes. Moreover, to investigate the perceived effectiveness of various teacher strategies by both students and instructors.

## 5. Significance of the Study

Whilst the investigation of EMI has brought to light a multitude of challenges encountered by students (Macaro, 2018), insufficient investigation has been directed towards the precise strategies employed in Algerian EMI lectures to ameliorate students' comprehension. This study is dedicated to the examination of the strategies utilized by both students and educators in order to improve comprehension during EMI lectures. In this regard, the benefits expected from this research cut cross different aspects as follows:

- By delving into the specific aspects of lecture comprehension strategies this research adds depth to the existing body of research on EMI, providing a richer understanding of effective teaching and learning practices in EMI settings.

- The findings of this study hold practical implications for educators, informing andragogical approaches that enhance student learning outcomes and offering evidence-based recommendations to improve instructional practices.
- Additionally, insights from this study can inform curriculum developers and policymakers about effective strategies to address challenges students face in EMI classrooms, ultimately leading to improved learning experiences and outcomes.
- Teachers can benefit from evidence-based recommendations to enhance their instructional practices, cater to diverse student populations, and create engaging learning environments, while students can improve their understanding of course content, leading to increased academic success, higher levels of engagement, and overall satisfaction with their educational experience.

In conclusion, this study on enhancing lecture comprehension in EMI classrooms has the potential to positively impact educational practices, teacher professional development, curriculum design, and student learning outcomes in diverse academic settings, benefiting all stakeholders involved in EMI instruction.

## 6. Thesis Layout

This research consists of a general introduction and four main chapters. The general Introduction comprises the introduction, a general background of the study which contains problem of the study, research questions and objectives, significance of the study beside clarification of key used terms. The first chapter is devoted to the literature review that tackles lecture comprehension in the EMI classroom. Highlighting the definition of EMI andragogy, its importance, its principles, research findings, its challenges, and its benefits. With equal importance, the historical background of lecture comprehension, its definition, its importance, and its benefits. In a later part, it presents the learning strategies used to enhance lecture comprehension and the theory adopted in this research.

The second chapter is associated with the methodology followed in conducting this research, it presents the research design, population, sampling, data collection instruments. Chapter three is devoted to the presentation and triangulation of the results obtained in this study. The last chapter, chapter four, presents discussion of main findings obtained from the questionnaires devoted to both teachers and students, and observations, in addition to the pedagogical implications, research limitations, recommendations, and conclusion. The work was concluded by a general conclusion.

## 7. Definition of Key Terms

7.1. **English-Medium Instruction**: Refers to the practice of using the English language as the primary medium of instruction in educational institutions in non-English speaking countries (Macaro, 2018).

7.2. **Lecture Comprehension**: The ability to comprehend and make sense of information and course delivered by instructors during an academic lecture (Dörnyei & Murphey, 2003).

7.3. **Andragogical Approaches**: Refers to the various methods and strategies used by educators to enhance the teaching and learning process and increase adult learners' understanding (Wright, 2004).

7.4. **Student Engagement**: The active participation of learners in the educational process, thereby promoting a dynamic learning environment (Dörnyei & Murphey, 2003).

# Chapter One

## Chapter One: Literature Review

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## 1. Introduction

Although English has been used in education for centuries, employing it as the primary medium of instruction at the tertiary level is relatively a recent concept and initiative, and it has grown significantly (Qiu and Fang 2022). As per Rose et al.(2022), the use of English as a Medium of Instruction (EMI) is related to the colonial era, when English was adopted as the primary educational language in various parts of the world to promote colonial language and culture. Nevertheless, EMI andragogy' s deliberate development is in fact a more recent phenomenon, which is intimately connected with the rise of globalization and the growing importance of English as a global language in higher education. A range of factors have led to the growth of EMI programs (Corrigan,2014). One important reason concerns graduates who need to hold on strong knowledge of English language for the purpose of competing effectively in global job market.

Moreover, internationalization has resulted in increased flow of international students leading to a high demand for courses taught using English as medium instruction by advanced literacy institutions. Thus, many universities in Algeria as well as higher education institutions worldwide have been encouraged to introduce EMI programs for attracting and accommodating such diverse students (khenioui et al.,2023). Nonetheless, there are concerns that come with the adoption of EMI at the tertiary level (Qiu & Fang,2022). There are those who argue that bringing in English language may marginalize their original languages and cultures. Additionally, people have doubted about the quality of teaching received from EMI programs, which concerns over both students and lecturers' proficiency in the second language (Chatfield, 2022).

## 1.1. EMI Andragogy

### 1.1.1. Definition of EMI

According to Qiu and Fang (2022), EMI andragogy is the teaching of academic material in English to students whose first language is not English. This technique is gaining popularity in universities worldwide, particularly in Algerian Higher Education Institutions (HEIs).

### 1.1.2 The Importance of EMI

In today's interconnected world, English as a Medium of Instruction (EMI) has emerged as a vital tool for universities seeking to prepare students for success in a globalized society. EMI offers students an advantage by granting them expanded access to a diverse range of scholarly resources and information. This is because the majority of cutting-edge research worldwide is published in English. As highlighted by Rose et al (2022), EMI enables students to use this extensive wealth of knowledge, thereby keeping updated about the advancements in their academic disciplines. Additionally, exposure to global knowledge has the potential to broaden students' perspectives and equip them to participate in the global academic sphere.

Furthermore, consistent utilization of English in academic settings greatly enhances students' language abilities. In this context, Kenoi et al. (2023) argued that, participating in English as a Medium of Instruction (EMI) can enhance students' vocabulary and develop their English critical thinking skills. That is, EMI plays a crucial role in developing students' strong English abilities, thereby preparing them to collaborate effectively with colleagues from diverse linguistic backgrounds. Moreover, Lindemann (2002) asserts that participating in EMI academic settings frequently fosters a deeper appreciation for cultural diversity and it improves students' cross-cultural communication skills. Furthermore, EMI helps students improve their problem-solving and critical thinking skills. In this particular context,

Kinsella et al. (2017) state that acquiring academic knowledge in a second language enhances students' ability to assess information, develop convincing points, and come up with creative answers.

### 1.1.3. Principles of EMI Andragogy

Effective EMI andragogy relies on a set of core principles that ensure comprehensibility and promote student learning in both content and language (Qiu & Fang, 2022). Here are some key principles:

**Table 1**

*Principles of EMI Andragogy*

| Principles | Quote | Author |
|---|---|---|
| **Focus on Comprehensible Input** | " Teachers should use language that is clear, concise, and adapted to the students' level of proficiency. This might involve using simpler vocabulary, scaffolding complex concepts, and providing visuals or other supports." | (Sahan et al.2021) |
| **Scaffolding Instruction** | "Scaffolding means providing support and guidance to help students understand new concepts and develop their language skills. This can involve techniques like pre-teaching key vocabulary, using graphic organizers, and providing opportunities for guided practice." | (Qiu&Fang,2022). |
| **Task-Based Learning** | "Task based teaching refers to the process of engaging students in meaningful tasks that require them to use English for communication and learning." | (Nasiba,2022). |

| | | |
|---|---|---|
| **Assessment for Learning** | "Using assessments helps identifying students' strengths and weaknesses and inform instruction. This might involve formative assessments like quizzes or discussions, along with summative assessments to measure learning outcomes." | (Abassi et al. 2017). |
| **Promoting Learner Autonomy** | "Promoting learners autonomy refers to the encouragement of students to take responsibility for their own learning and develop strategies for independent learning .As a result, this can involve teaching them study skills, encouraging self-reflection, and providing opportunities for self-directed learning activities" | (Nasiba,2022). |
| **Collaboration and Peer Interaction** | " By providing opportunities for students to work together and learn from each other which can promote communication skills, collaboration, and a sense of community within the classroom" | (Ingrid,2019). |

### 1.1.4. English as a Medium of Instruction (EMI) in Science and Technical Education

English as a Medium of Instruction (EMI) stands for the use of English as the primary language in educational institutions in various fields, including mathematics, physics, biology, technology, and chemistry. Students are exposed to learning environments in which they are surrounded by English throughout their time at an academic institution, preparing them for a future in which knowing English is increasingly required as a prerequisite for success.

### 1.1.5. Research findings on the impact of EMI on science and technology learning

Studies investigating the effect of EMI on science learning have produced inconsistent findings. A number of investigations reveal enhancements in students' English proficiency and critical thinking abilities (Macaro et al., 2018). Conversely, some studies show that English-as a medium of instruction can limit content comprehension due to inadequate language skills (Cheng et al., 2018). It seems that the success of EMI depends on different variables such as learners' previous linguistic competences, teachers' training background or instructional methods which foster both language and subject-matter acquisition (Benson & Macaro, 2018).

One major argument centers on how much importance should be given to language development subject-specific learning in classrooms where subjects are taught through English. One way is by integrating language support into science lessons through scaffolding approaches like concept definition with use of visuals (Gibbons, 2009).

### 1.1.6. Benefits of EMI in Science and Technology Education

English as a Medium of Instruction (EMI) has several advantages that the student will obtain from the science subject. Here, we go through some of the advantages that accompany EMI programs.

#### 1.1.6.1. Improved English Language Skills

One of the most studied benefits of EMI is the enhancement of the students' English language ability. Being taught science content and terminology in English ensures a continuous engagement of students in language acquisition. This results in attainments such as reading ability, listening skills, and finally, scientific terminology acquisition (Ammon, 2016).

#### 1.1.6.2. Cognitive Development and Deep Learning

Learning science in a second language promotes cognitive development and has the potential for deeper comprehension of scientific content (Lyster, 2007). When deciphering scientific content delivered in English, the students actively engage in critical thinking and metacognitive awareness. They will need to analyze the language, relate to prior knowledge, and actively construct meaning. At an in-depth level of processing, this will lead to a deeper comprehension of the scientific concepts themselves.

#### 1.1.6.3. Preparation for STEM Careers

According to Aiken et al., (2014) strong English language skills are increasingly valued in Science, Technology, Engineering, and Mathematics (STEM) careers (p. 12) Therefore, placing a graduate from an EMI program at such an advantage in today's job market that is competitive in the global sense is also a great benefit for these programs. This means a graduate from EMI can have international career chances, be able to work with colleagues from different ethnicities, and gain a competitive edge in global job markets.

#### 1.1.6.4. Internationalization and Global Citizenship

Through EMI, students get to learn internationality and global citizenship skills (Nguyen, 2019). Through interaction with other international students and scholars in the same training environment through the use of English as a third medium of communication, students become exposed to various perspectives and modes of scientific research. This will help them develop an understanding of global citizenship and prepare them for international cooperation in the field of science (Nguyen, 2019). These benefits indicate that EMI programs have the potential not only to improve language skills but also to enhance cognitive development and career prospects for science education students. However, as explained in the next section, there are challenges related to EMI.

### 1.1.7. Challenges of EMI in Science and Technology Education

Though EMI provides some advantages, there are several issues that should be considered. Several academic inquiries have investigated the challenges experienced by students when it comes to understanding EMI lectures. Chang observed that most students do not find ways of understanding EMI lectures while few totally understand what is happening in such lectures, (Chang, 2010). In the following, we discuss some of the main challenges faced by EMI programs in science and technology education.

#### 1.1.7.1. Limited Range of Vocabulary

The abundance of specialized vocabulary and academic jargon in EMI courses poses a significant problem for the students. This linguistic barrier may lead to alienation and poor comprehension of the course by the students. The unfamiliar and complicated vocabulary used by the students in the EMI settings is overwhelming to students such that they cannot grasp the core concepts and ideas being presented.

The problem comes out worst for students from non-English speaking backgrounds, who might have had very little interaction with the academic language and the discourse used in their particular major. The specialized terminology can act as a huge obstacle and can actually restrict them in their very engagement with the actual content of the lecture and even deter them from active participation in discussions. This latter can be addressed through self-awareness of the needs of students by EMI instructors. Strategies can include the provision of glossaries of key terms, more accessible language, opportunities for clarification, and discussion to reduce the impact of academic jargon on student understanding. In addition, support in the development of academic vocabulary and language skills of the students both before and in the context of EMI courses can better prepare them for the linguistic complexities of the learning environment. By identifying and

addressing the challenges presented in vocabulary and jargon, teachers can provide a more inclusive and effective learning environment for all students in EMI.

#### 1.1.7.2. Language Proficiency Gap

One significant issue about EMI is the possible language proficiency gap that would exist between students (de Oliveira et al., 2020). An instance may arise in the case of a student with low English proficiency not being able to understand complex scientific ideas explained in a second language. This will make a student not able to understand the content and face problems with coursework, assignment, and, eventually, academics as a whole. This brings into perspective the need to assess students' prior language skills before the process of implementing an EMI program or providing necessary support for learners who need it. According to research conducted by Chang (2010), a substantial number of students struggle to fully comprehend EMI lectures because of insufficient English language skills. The lack of proficiency can disallow students to comprehend intricate academic concepts, which, in return, frustrates students and entails poor learning results.

Moreover, poor language skills are a big challenge in EMI classes. Keuk and Tith (2013) stated, students' reading skills appear to be the most challenging task among caused by grammatical differences between their native language and the English language. Besides this, students face a lot of difficulties in the writing assignments when they write in a non-native language (Al-Kahtany, et al., 2012). According to Tomlinson & Moon (2013), teachers can differentiate instruction to cater to students with varying language proficiency levels. This might involve providing tiered assignments, scaffolding activities or offering additional support to students who need it.

#### 1.1.7.3. Balancing the Content and Language

Another challenge lies in the potential trade-off between language development and content mastery (Coyle, 2010). Balancing language acquisition and content mastery is a

challenge in EMI programs. While focusing on language development, the actual grasp of scientific concepts may be overlooked. This imbalance can result in students gaining language skills but facing difficulties with scientific knowledge. Therefore, successful EMI programs need to carefully combine strategies for language development and pedagogical methods that ensure students understand scientific content. This refers to explicit teaching of students' academic language related to the subject matter they are learning and equips them with the vocabulary and terminology they need to understand lectures, discussions, and readings (Yuan & Yang,2023).

#### 1.1.7.4. Teacher Training and Support

According to Wächter & Mainor (2014), the successful integration of EMI is heavily reliant on proficient educators. Science teachers may encounter difficulties transitioning to EMI if they are not well-versed in adjusting their teaching methods and materials for students who are learning a second language (Wächter & mealworm, 2014). Educators require assistance in developing methods to support language acquisition within science education. This involves utilizing tactics such as defining concepts, incorporating visuals, and employing personalized teaching approaches to ensure that all students can comprehend both the subject matter and the language (Gibbons, 2009). Thus, professional development programs that equip teachers with the appropriate expertise and knowledge are necessary to deliver effective EMI instruction (Valcke et al.,2007). Inadequately trained educators in EMI setting may encounter challenges in formulating effective lesson plans, adapting materials, and implementing the suitable teaching strategies.

#### 1.1.7.5. Equity and Inclusion

Flores and Rosa (2015) identified concerns about equity and inclusion in EMI programs. EMI can be more challenging for students from underprivileged backgrounds without good English teaching. This increases inequality between students from different

backgrounds because they will not be able to follow what is being taught in an EMI classroom (Flores & Rosa, 2015). That is, having extra language support initiatives or using teaching approaches suitable for various language skill levels. These challenges highlight the importance of careful planning and implementation when introducing EMI in science education. By acknowledging these obstacles and developing strategies to address them, educators can create EMI programs that foster both language development and scientific understanding for all students.

#### 1.1.7.6. Limited Interaction and Feedback

Effective interaction and communication are crucial prerequisites for successful learning to occur in academic environments. In EMI environments, students also encounter difficulties due to the lack of supportive interaction and feedback from teachers. Lack of opportunities for clarification, discussion, and active participation may prevent students from comprehending and interacting with lecture material. Al-Khatami et al. (2016) strongly highlight that this problem significantly affects students' learning experience. Not being able to ask questions, clarify doubts, or have meaningful concepts.

#### 1.1.7.7. Assessment Challenges

According to Tomlinson and Moon (2013), evaluating both topic knowledge and language skills in EMI setting might be difficult, because traditional examinations may not correctly represent a student's grasp of the subject matter if they have inadequate English ability. Developing fair and effective evaluation systems that take into account both language and topic knowledge is critical (Hultgren,2022).

#### 1.1.7.8. Potential for Increased Student Anxiety

Students using English as a second language might experience anxiety or frustration when faced with academic challenges in EMI classrooms (Tomlinson & Moon,2013). The

pressure to perform well in both content and language can create a stressful learning environment (Lindemann,2002).

## 1.2. Lecture Comprehension

In today's globalized world, effective lecture comprehension has become an indispensable skill for students in various educational settings and particularly in an English as a medium of instruction classroom (Charlton,2006). It encompasses not only understanding the content delivered by instructors but also actively engaging with the material, synthesizing key concepts, and preparing for subsequent academic tasks (Wolff et al.,2015). In other words, this comprehensive skill set is vital for academic success, professional development, and lifelong learning.

### 1.2.1. Historical Background of Lecture Comprehension

The historical background of lecture comprehension can be traced back to ancient times when oral communication was the primary mode of education and knowledge transmission ( Nazareth et al.,2022). In ancient Greece, philosophers such as Socrates and Plato used dialogues and lectures to teach their students (Marshall,2020). The concept of a lecture as a formalized educational method began to develop in medieval Europe, particularly in universities like the University of Bologna and the University of Paris, where scholars delivered lectures on various subjects (Pedersen,1997; Rug, 2004).

During the Renaissance, the lecture format became more structured, with lecturers presenting information to a seated audience. The invention of the printing press in the 15th century further facilitated the dissemination of lecture notes and materials, enhancing lecture comprehension among students (Brooks,2019).

In the 19th and 20th centuries, the lecture format became a prominent method of teaching in universities and schools worldwide (Rugg, 2004). Lectures were often supplemented with textbooks and other written materials to aid students in understanding complex topics (Brooks ,2019; rug, 2004). And within the advent of modern technology,

such as audio recordings, video lectures, and online learning platforms, the lecture format has evolved to accommodate different learning styles and preferences (Dona et al.,2017). Despite these changes, the fundamental principles of lecture comprehension, such as active listening, note-taking, and critical thinking, remain essential for students to succeed academically (Alsaleh,2020).

### 1.2.2. Definition of Lecture Comprehension

A lecture is a verbal presentation and explanation of a subject by a person to an audience with the intention of imparting information (Richards,2008). Lecture comprehension refers to the ability to understand the information presented in a lecture format (Flowerdew,1994). This includes attentive listening, processing information, identifying key points, establishing connections between ideas, and critically evaluating the content(Chatfield,2022). Lecture comprehension refers to the ability to understand the information presented in the lecture. To sum up, this includes not only following the words but also understanding the speaker's main points, arguments, supporting details, and the overall structure of the lecture.

### 1.2.3. Importance of Lecture Comprehension

Lectures are a cornerstone of knowledge transfer in academic settings, effective lecture comprehension skills are essential for students to succeed in their academic pursuits (Richards,2008). By mastering these skills, students can unlock the doors to knowledge and gain a deeper understanding of their subjects, and enabling them to excel in their academic endeavors(Flowerdew,1994). That is, Students with strong lecture comprehension skills can grasp concepts better form comprehensive mental images of the subject, connect information, and creating a cohesive knowledge network (Newton,2011).

Furthermore, it enhances note-taking skills, Shier (2014) stated that, effective lecture comprehension skills allow students to focus on key points, take organized and clear notes, which facilitates efficient review and preparation for exams and assignments.

Meanwhile, by comprehending lectures effectively, students can distinguish essential ideas from supporting details, understand relationships between lecture components, enabling critical analysis and forming their own opinions (Chatfield,2022).

Ultimately, Strong lecture comprehension skills contribute to improved academic performance and increased chances of success in assessments (abasi et al.,2016).

By understanding the material thoroughly, students can connect information and answer questions accurately and clearly (Tremblay et al.,2012). Effective lecture comprehension contributes to several positive academic outcomes, including:

- Increased Confidence: Improved lecture comprehension boosts confidence in learning abilities (Unlock et al.,2013).
- Enhanced Motivation: According to the National Research Council (2003),effective comprehension fosters motivation to learn and engage actively .
- Improved Time Management: Understanding lectures efficiently leads to better time management skills (Seli,2019).
- Greater Enjoyment of Learning: Effective comprehension makes the learning process more enjoyable and rewarding (Seli,2019). As per Tomlinson and Moon (2013) lecture comprehension is crucial for academic success and by mastering these skills, students can unlock their full potential and achieve their educational goals.

### 1.2.4. Benefits of Improving Lecture Comprehension Skills

Beyond academics, improving lecture comprehension skills benefits anyone who consumes lectures or presentations. This includes professionals attending conferences, individuals following online talks, or anyone seeking to learn from experts (King,1991).

#### 1.2.4.1. Transformation into an Engaged and Active Learner

Middleton (2013) claim that enhanced lecture comprehension skills foster active student participation in the learning process. Students who can effectively comprehend

lectures are more likely to actively engage in the learning process by asking questions, participating in discussions, and taking notes. This active engagement leads to a deeper understanding of the material and a more rewarding learning experience.

#### 1.2.4.2. Refined Critical and Analytical Thinking Skills

Lecture comprehension skills empower students to analyze information and assess its validity. By effectively comprehending lectures, students can develop their critical thinking and analytical skills, enabling them to evaluate information objectively, and form their own well-reasoned opinions. These skills are essential for success in both academic and professional settings(Alsaleh,2020).

#### 1.2.4.3. Augmented Ability to Learn New Information Efficiently

As mentioned by Valimont et al.(2007),lecture comprehension skills expedite the grasp of new information. Students who can effectively comprehend lectures can more easily absorb and retain new information, allowing them to learn more efficiently and effectively. This ability is crucial for academic success, as it enables students to master a wide range of subjects and prepare for exams and assignments.

#### 1.2.4.4. Boosted Academic Performance

Clinton-Liesl et al.(2022) assert that lecture comprehension skills directly correlate with achieving better academic outcomes. Studies have consistently shown that students with strong lecture comprehension skills tend to perform better on exams, quizzes, and assignments. This is because they have a deeper understanding of the material and are better able to apply their knowledge to solve problems and answer questions.

### 1.2.5. Factors Affecting Lecture Comprehension Enhancement in an EMI classroom

Several factors can influence a student's ability to comprehend lectures in an EMI Setting. Some are within their control, while others pertain to the lecture itself (Manguilimotan et al.,2024). Schurer et al (2020) argue that the extent of prior knowledge

about the subject "significantly impacts lecture comprehension". The more background knowledge a student possesses, the easier it is to grasp the new information presented in the lecture (Chiang & Dunkel,1992). However, the lecturer's pace, clarity, organization, and use of visual aids can considerably affect lecture comprehension in an EMI classroom. Clear lecture structure and pacing influence the student's ability to understand the information (Schurer et al.,2020).

Put differently, the learning style is also a significant factor, Tremblay et al (2012) posit that some individuals learn best through auditory means, while others may benefit from note-taking or visual aids. Understanding one's own learning style can aid in improving how they approach lectures. Whilst, Wulf and McNevin (2003) argue that external distractions and internal factors such as fatigue can hinder a student's ability to focus and retain information. Another factor worth mentioning, effective note-taking skills contribute to enhanced lecture comprehension and retentions(Yuan & Yang,2023).

### 1.3.2. Overcoming Lecture Comprehension Challenges in an EMI Classroom

A number of researchers (Yuan & Yang ,2023; Schurer et al.,2020;Mark,2017;Chiang & Dunkel,1992) stress that although lecture comprehension is essential for academic success, students often face challenges in grasping the presented information effectively. These challenges can stem from various factors, including prior knowledge, lecture style, learning style, distractions, and note-taking skills. Despite these obstacles, students can implement strategies to overcome lecture comprehension difficulties and enhance their understanding. Here are some effective approaches:

- **Pre-Lecture Preparation**

Previewing the material and familiarizing students with the topic beforehand to establish a foundation of knowledge and reviewing relevant materials before the lecture can provide a context and make new information easier to comprehend (Kinsella,2017).

- **Active Listening and Note-Taking**

Yuan & Yang(2023) point out that practicing active listening through paying close attention, engaging with the lecture, and taking notes helps to capture key points and concepts effectively. Similarly, they emphasize varying note-taking methods and experiment with different note-taking techniques, such as mind maps, outlines or Cornell notes in order to find the approach that suits students learning style best.

- **Post-Lecture Review and Collaboration**

Regularly reviewing notes and revisiting notes after the lecture assist students to solidify their understanding and identify any gaps that need to be filled within an EMI classroom. In addition to recalling notes, engaging in discussions with classmates about the lecture content and exchanging ideas and perspectives can enhance comprehension (Marshall,2020). Finally, implementing these strategies and seeking help when needed can significantly improve students' ability to grasp complex concepts, enhance their learning experience, and achieve academic success.

## 1.3. Enhancing Lecture Comprehension Using Language Learning Strategies

Marshall (2020) believe that lecture comprehension is a crucial skill for academic success, enabling students to grasp complex concepts, retain information, and excel in their studies. While challenges may arise, various strategies can be employed to effectively enhance lecture comprehension skills (Haynes,2013).

### 1.3.1. Language Learning Strategies

### 1.3.2. Definition of Language Learning Strategies (LLS)

Many researchers and experts have put forward different definitions for Language Learning Strategies (LLS). In Wenden's view (1987), “these strategies fall under the categories of language learning behaviors, cognitive theory and affective perspective” (p. 7-8). The pioneer definition was given by Oxford (1990) who saw learning strategies as

"techniques used by learners to assist in acquiring, storing, recalling and applying information." ( p. 8), Then she broadened it saying that they are also actions done by students for making learning easier, faster or more enjoyable; giving them self-control over what and how they learn; increasing their efficiency at every stage of the process; making everything work better across all situations.

The last point shows that according to Oxford's wording there must be some kind of a necessary adaptation which could not happen without using this tool of teaching even if it did not fit into its current context (Oxford, 1990). That is, while different definitions of LLS exist, they all emphasize these learner actions in facilitating language acquisition and fostering efficient, self-directed learning.

### 1.3.1. Classification of Language Learning Strategies

Acquiring a new language entail employing a range of techniques in order to eventually master it. Different methods of language learning have been proven to speed up the learning process, causing students to actively create meaning rather than simply storing information. Oxford is an expert in language education, playing a crucial role in advancing the field through formalizing strategies.

#### 1.3.3.1. Oxford's (1990) Classification of Language Learning Strategies

Oxford, 1990, developed a classification model where she differentiated the language learning strategies between two broad categories: direct and indirect strategies.

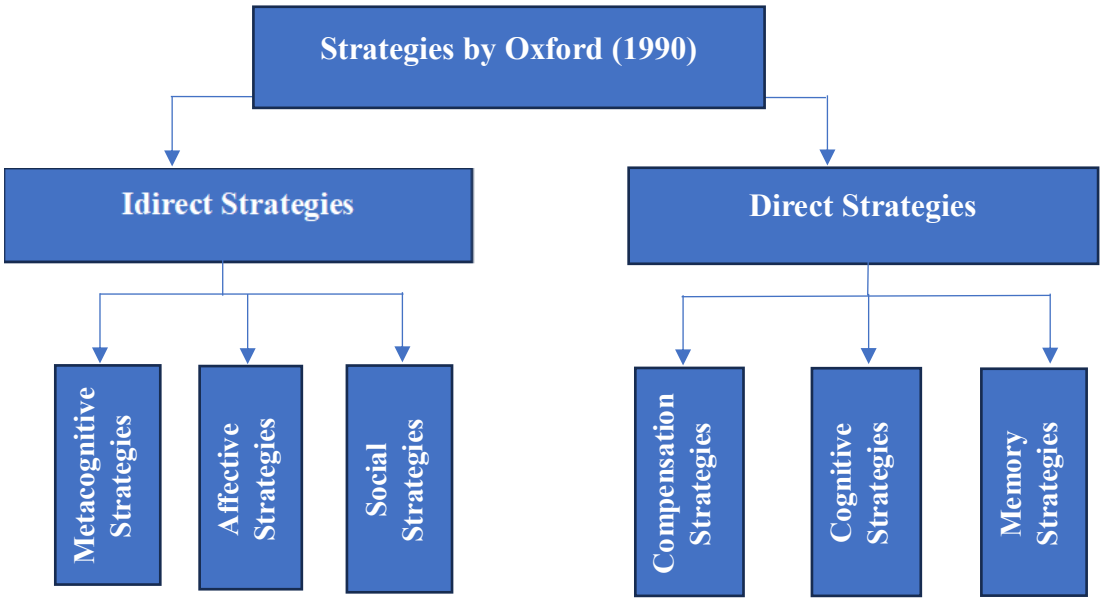
**1.3.3.1.1. Direct Strategies** include the process of direct learning and require mental working on language (Oxford, 1990). These include: ***(1) memory strategies***, which help learners both memorize and retrieve new information through such strategies as chunking, creating mental linkages, using visuals and auditory support, repetition, and taking physical action, and ***(2) cognitive strategies***, which enable learners to become adept at both understanding and producing new language through reasoning, practice, message passing, analysis, and summarizing, and ***(3) compensation strategies***, which allow learners to use

the language for understanding or production despite low knowledge (Oxford, 1990). These are strategies used to compensate for lack of grammar and, especially, in vocabulary. They involve inferring meaning from context or using gestures when the exact phrase is unknown.

**1.3.3.1.2. Indirect Strategies** indirectly support the learning process but are influential in facilitating learning (Oxford, 1990). These include ***(1) metacognitive strategies***, which facilitate the learner's regulation of the learning process through activities such as paying attention, planning, self-assessment, and monitoring of errors or the learning process, ***(2) affective strategies***, which help the learner manage their emotions, motivation, and attitudes, for instance, mitigate anxiety and provide self-rewards, self-encouragement, and ***(3) social strategies,*** in which learner acquisition of language occurs through interaction with native speakers or the target language, such as asking questions, cooperation with the others, and increased culture.

**Figure 1**

*Classification of Language Learning Strategies Adapted from Oxford (1990)*




Oxford's framework stresses the interrelation of these strategies; it underlines the fact that learners may have to combine the approaches of directness and indirection in order to optimize their language learning experience. Learner-centered training, the setting of goals,

and social interaction allow Oxford's classification to take the broadest possible view of learning strategies in the context of a language domain.

### 1.3.4. The Importance of Language Learning Strategies in English Medium Instruction (EMI)

Application of EMI programs means that students have to learn academic content through a language that they may not be fully proficient in. In such a context, LLS can be the most important tools for enhancing lecture comprehension in EMI classes.

#### 1.3.4.1. Enhanced Comprehension

Oxford (1990) points out that “The primary contribution of LLS in EMI is towards the realization of better comprehension. Strategies like summarizing key points, using context clues to pick up the meaning of unknown words, and creating information visuals through mind maps, can help students relate their general language competencies to the demands of academic content that are delivered in English” (p. 5). Hence, effective Language Learning Strategies (LLS) are crucial for success in English Medium Instruction (EMI). By empowering students to bridge the gap between their English skills and academic content, LLS strategies like summarizing and using visuals ultimately lead to deeper subject matter understanding.

#### 1.3.4.2. Improved Learning Efficiency

Enhanced language learning strategies can greatly enhance the effectiveness of learning. Metacognitive strategies, which focus on "reflecting on your own thinking" (Wenden, 1987), enable students to develop greater independence in their learning. They can use self-monitoring to assess their comprehension, pinpoint areas needing more attention, and apply proper tactics to meet those needs. This self-awareness enables students to take full advantage of their learning opportunities in an EMI setting.

#### 1.3.4.3. Increased Confidence and Motivation

LLS are very useful because they motivate and give students confidence in their learning skills. When students are taught strategies for taking control in the learning process, they become empowered (Chamot & O'Malley, 1994). Students will take more control of class discussions, ask questions, and get over the early fears of learning content in a non-native language.

#### 1.3.4.4. Development of Lifelong Learning Skills

Oxford (1990) points out that **"**The ability to strategically approach new information acquisition transcends the boundaries of the EMI classroom. Students who have received excellent LLS will use these essential tools throughout their academic and professional life, making them more adept at autonomous learning and continual knowledge acquisition" (p. 92). That is, LLS enables people to excel not only in EMI settings, but also in their academic and professional lives. LLS are more than just supplemental resources; they are critical to student performance in EMI programs. By providing learners with efficient language learning tools, it enables them to achieve academically while instilling enthusiasm for lifetime learning, overcoming language hurdles, and eventually achieving academic greatness (Macaro, 2018).

### 1.3.5. Variables Affecting Language Learning Strategies used in EMI Classroom

LLS play an important role in fostering student motivation and confidence. Providing students with strategies for actively engaging with the learning process will have students feel empowered. The students will be willing to participate in class discussions, ask questions, and transcend the initial anxieties of learning content in a non-native language (Chamot & O'Malley, 1994). Hence, effective LLS strategies empower students by fostering active learning, leading to increased participation and reduced language learning anxiety.

### 1.3.5.1. Motivation

Motivation plays a crucial role in influencing language learning processes. For instance, students' personal interest in a language can motivate them to participate in language learning tasks, which can ultimately improve their language skills (Cohen & Macaro, 2007). Hence, fostering intrinsic motivation can inspire students to actively engage in language learning strategies, leading to enhancing their overall language learning experience.

### 1.3.5.2. Proficiency Level

The level of expertise of the learner is a very critical factor that determines the application of Language Learning Strategies. During the basic stage of learning the language, the learner engages in studying simple vocabulary and grammar. Basic skills such as drills, flashcards, and exercises that repeat a topic are highly significant in developing a basic structure (Oxford, 1990). Most advanced students have the ability to apply metacognitive strategies. This strategy allows them to reflect on their own cognitive strategies (Wenden, 1987) They effectively apply such strategies in the planning process, monitor their understanding, and analyze their work. They also apply analytical strategies such as comparing and contrasting grammatical structure, analyze sentence structure, and finding synonyms and antonyms (Oxford, 1990). In other words, the choice of LLS evolves with language proficiency. Beginners build a foundation with basic strategies, while advanced learners use more sophisticated strategies for deeper analysis and reflection.

### 1.3.5.3. Learning Styles

Learning styles are the various strategies people apply in storing, translating, and retaining information that is not currently in use. The VARK model, demonstrated by Neil Fleming in 1987, is definitely one of the most popular models that deal with how people prefer learning in an individual way. Fleming and Mills identified four distinct learning styles: visual, auditory, read/write, and kinesthetic. Visual learners prefer to acquire

information with the aid of visual aids, such as pictures, graphs, and charts. That is, teachers can leverage this by incorporating visuals like diagrams and charts to make learning more engaging and improve memory retention. While, auditory learners prefer learning with the help of listening to speeches, lectures, and sound recordings, as well as engaging in group chats, arguments, and other spoken interactions, (Coffield, et.al. 2004).

Consequently, learners who thrive in auditory environments benefit from lectures, discussions, and interactive conversations. Read/write learners tend to prefer learning by reading and composing, making use of reading materials, notes, and written compositions. Therefore, taking notes and actively writing down information strengthens their understanding and memory retention. Whereas, Kinesthetic learners also referred to as the tactile are slanted towards learning by hands-on experiences, tests, and simulations. (Fleming & Mills 1992). Individuals with this learning style very often shine when active participation is involved, such as demonstrations, simulations, and other such activities utilizing the whole body. (Fleming, 2011). In terms of language learning, one finds that activities such as role plays and total physical response exercises are found to have paid off remarkably (Murcia, 2001). Consequently, by incorporating kinesthetic elements, educators can cater to this vital learning style and enhance learning outcomes for all students.

## 1.4 Bloom's Taxonomy: A Framework for Classifying Educational Learning Objectives

Bloom's taxonomy, created in 1956 by Benjamin Bloom and his colleagues, is a widely used framework for classifying educational learning goals into various levels of difficulty. It consists of three primary domains cognitive, affective, and psychomotor (Bloom et al., 1956). The cognitive domain, which is the most widely recognized and frequently utilized, constitutes the primary focus of this investigation.

Bloom's taxonomy serves as the theoretical framework for our investigation, providing a structured approach to understanding and analyzing the different levels of

thinking skills in the cognitive domain. By applying this framework, we aim to gain insights into the effectiveness of teaching strategies and assessment methods in promoting higher-order thinking skills among students.

### 1.4.1. The Cognitive Domain

Bloom's taxonomy (1956) outlined the cognitive domain using a hierarchical structure comprising six levels that progress from the most basic to advanced complex thinking abilities. These levels are:

- **Remembering:** This is the most basic level, where students retrieve information from memory, such as recalling facts or definitions (Bloom et al., 1956). It mainly represents the foundation of knowledge.
- **Understanding:** At this level, students demonstrate comprehension by explaining ideas in their own words or summarizing key points (Bloom et al., 1956). In other words, building their comprehension.
- **Applying:** The applying level involves using learned information to solve problems in new situations (Bloom et al., 1956). This could involve applying a formula to solve a math problem in a practical scenario or using a scientific principle to explain a natural phenomenon students haven't encountered before. Thus, teachers are putting students' knowledge into action.
- **Analyzing:** This level requires students to break down information into its component parts and identify relationships between them (Bloom et al., 1956). Students might analyze, compare and contrast, or identify cause-and-effect in their courses.
- **Evaluating:** At the evaluating level, students make informed judgments about the value of information or ideas based on specific criteria (Bloom et al., 1956). The key aspect of the Evaluating level is that students go beyond just understanding or applying information. They are able to make informed judgments, draw conclusions, and defend their assessments based on clearly defined criteria or standards. This represents a higher-

order thinking skill compared to the lower levels, such as remembering, understanding, and applying.

- **Creating:** The highest level of the cognitive domain, creating, involves generating new ideas or products (Bloom et al., 1956). At this level, learners are expected to use their knowledge and skills to generate new information, ideas, or products. This involves applying critical thinking and problem-solving skills to create something that did not exist before. The focus is on the process of creating something new and original rather than simply recalling or applying existing knowledge.

### 1.4.2. Applications of Bloom's Taxonomy: A Framework for Effective Learning

Bloom's taxonomy is a useful tool for teachers as it presents a systematic method for:

- **Designing Effective Learning Objectives:** Effective learning objectives are crucial for educators to ensure that students achieve their full potential. By considering the different levels of thinking within the cognitive domain, educators can create learning objectives that challenge students and promote deeper learning (Krathwohl, 2002). This approach moves beyond simple memorization and encourages students to engage in higher-order thinking skills such as analysis, evaluation, and even creation of new knowledge.
- **Developing a Variety of Learning Activities:** Bloom's taxonomy provides a valuable framework for educators to develop a diverse range of learning activities that target different levels of thinking (Krathwohl, 2002). By considering the various cognitive levels outlined in the taxonomy, educators can design engaging and challenging learning experiences that foster deeper understanding and critical thinking among students. For instance, while lectures might primarily address remembering

and understanding, problem-solving activities, debates, or research projects can encourage students to apply, analyze, and evaluate information.

- **Assessing Student Learning:** Bloom's taxonomy helps educators design assessments that accurately measure students' achievement of learning objectives at different cognitive levels (Krathwohl, 2002). By aligning assessments with the different levels, educators can gain a more comprehensive understanding of student learning and identify areas where further support might be needed.

### 1.4.3. The Importance of Bloom's Taxonomy

Bloom's Taxonomy is an essential tool for educators as it aids in creating effective learning objectives, diverse learning activities, and evaluating student learning (Anderson & Krathwohl, 2001). By addressing various levels of thinking, educators can establish challenging objectives that encourage profound learning. The taxonomy also influences the development of activities aimed at different cognitive levels, ensuring a comprehensive learning experience (Anderson & Krathwohl, 2001). Furthermore, Bloom's Taxonomy assists educators in crafting assessments that evaluate students' achievement of learning objectives, offering valuable feedback for both students and teachers (Anderson & Krathwohl, 2001). That is, Bloom's taxonomy is a potent framework for designing and assessing learning experiences that foster critical thinking and advanced skills. in other words, educators who grasp and implement the taxonomy's principles can establish more compelling and effective learning environments for their students.

## 1.5.Conclusion

This literature review has explored key aspects of key aspects of EMI andragogy, including definition, principles, research finding on the impact of EMI on scientific and technical fields, it emphasized on the importance and the challenges of EMI in Science and Technology Education. In a later part, this chapter tackled lecture comprehension. It defined lecture comprehension, stated its importance, benefits and highlighted multiple factors and variables affecting lecture comprehension enhancement. It also tackled incorporating strategies that address the challenges and benefits of EMI in science education. Additionally, the review emphasizes the role of Bloom's taxonomy in classifying educational learning objectives into different levels of difficulty, providing a framework for designing effective learning activities and assessments. Ultimately, this review underscores the need for educators to adopt a comprehensive approach to lecture comprehension, incorporating strategies that address the challenges and benefits of EMI in science education. By doing so, educators can create learning environments that foster lecture comprehension for all students, ultimately leading to improved academic outcomes and lifelong learning.

# Chapter Two

## Chapter Two: Methods and Procedures

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## 2.1. Introduction

The second chapter is devoted to the applied methodology adopted in this survey. First and foremost, it tackles the research design and methodology employed for data collection. Moreover, the study seeks to offer an in-depth explanation of the research setting and the participants involved. The data collection instruments, encompassing questionnaires dedicated to both teachers and students besides to classroom observations, are elucidated thoroughly.

Additionally, this chapter offers an in-depth discussion of the methods and procedures employed for data analysis. This investigation took place at Yahia Fares University on the Faculties of Science and Technology which are located in the province of Ouezra in Medea. It targeted first year students and teachers at Science and Technology department. Thus, the main reason for conducting this research is to investigate the strategies used to improve comprehension of lectures delivered in EMI settings.

## 2.2. Research Design

A research design is the fundamental method employed by the writer to bring together the different elements of the study in a rational and cohesive way (Sajjad, et al. 2021). Creswell (2014) similarly states that the purpose of the research design is to explore the correlation between variables using particular tools and to evaluate and explain the gathered data. In order to meet the research aims in this investigation, this study employed a case study research method along with a mixed-method design that incorporates both qualitative and quantitative approaches. Nunan (1992) defines a case study as a thorough description of a specific instance of a phenomenon, involving data collection through observations and interviews, and examining how the instance operates within its context (p.75-76).

The current study was carried out at Yahia Fares University on the Faculties of Science and Technology which are located in the province of Ouezra in Medea. It targeted first year

students and teachers at the Technology and Science department involved in EMI settings. To investigate our case study, the researcher relies on two main research instruments to collect research data: classroom observation and questionnaires. This design enables the researcher to understand data qualitatively and analyze it using numerical statistics. In this regard, according to Creswell (2014), the incorporation of both types of instruments serves to improve the validity and reliability of the study's findings through the triangulation of data from various sources, consequently enhancing the overall credibility of the research outcomes. That is, employing multiple research methods allows researchers to collect a broader scope of information, leading to a more comprehensive comprehension of the research area of study from various viewpoints.

### 2.2.1. Methodology

Research methodology entails the systematic strategies used in research to direct and carry out the research. It assesses, investigates, and appraises methods, their constraints, resources, assumptions, and outcomes, while relating their abilities to unexplored knowledge areas. According to Creswell (2018), research methodology is an essential component of the research process, offering a structured approach to addressing the research problem by integrating study components logically. Similarly, Saunders et al (2019) define research methodology as the theory of how research is to be carried out, taking into account the philosophical assumptions and implications for the methods used, guided by research objectives, questions, and the researcher's fundamental philosophical standpoint.

Quantitative approaches encompass specific features such as the gathering and analysis of numerical data, the use of visual aids like charts and graphs to facilitate data organization comprehension, as well as the application of statistical measures like percentages and frequencies for data evaluation. These tools include short answer questions, dichotomous questions, multiple choice answers, check boxes, linear scale, and multiple-

choice grids( Trigueros et al.,2017). The quantitative aspect of this research involves the statistical analysis of the results obtained from students and teachers' questionnaires.

Conversely, qualitative methodologies focus on obtaining data through various qualitative research techniques such as observational methods and face-to-face interviews. They also prioritize understanding opinions, experiences, and verbal expressions over numerical data and use open-ended questions instead of closed-ended queries (Creswell, 2014). The qualitative aspect of the current research entails analyzing data collected from classroom observations and multiple open-ended questions.

## 2.3. Population and Sampling

### 2.3.1. Population

According to Creswell (2012), a population indicates the collection of individuals who share a common characteristic. Likewise, Lodico et al. (2006) stress that the population is the large group that a researcher aims to generalize their study results on. Thus, the target population of this study is students and teachers at the Technology and Science department of Yahia Fares University of Medea in the province of Ouezra.

### 2.3.2. Sampling

Sampling is a vital process in research methodology, which involves selecting a subset of individuals taken from a broader population to draw conclusions about the whole group based on the data gathered from the selected subset (Kumar, 2019). Sampling allows the researcher to study a large group by making use of a small portion of the population, and the sampling method depends on what type of analysis is being used (Bryman, 2016). Therefore, the population of the current study is students and teachers at the Technology and Science department of Yahia Fares University of Medea in the province of Ouezra and the sampling is first year students.

### 2.3.3. Participants' Profile

#### 2.3.3.1. Students' Profile

The informants involved in this study were first year students at the Technology and Science department of Yahia Fares University of Medea in Ouezra's province. The respondents age ranged between eighteen and twenty-four years old. The Sample was made up of forty-six (46) students; twenty-nine (29) females and seventeen (17) males. Twenty (20) students who answered the questionnaire are from the faculty of Technology and twenty-six (26) are from the faculty of science. The researchers have employed random participant selection to produce reliable outcomes, and to ensure generalizability.

#### 2.3.3.2. Teachers' Profile

The participants were teachers from both the faculties of Technology and Science at Medea University. They were seventeen (17) teachers, nine (09) females and eight (08) males. Nine (09) are from the faculty of Technology and eight (08) are from the faculty of science. The respondents age ranged between twenty-five (25) and fifty-six (56) years old. They have different degrees and taught different modules. Six (06) teachers who answered the questionnaire have two (02) to five (05) years of teaching experiences, and six (06) teachers have ten (10) to nineteen (19) years of teaching experiences, while only five (05) teachers have twenty (20) to thirty (30) years of teaching experience.

## 2.4. Data Collection Instruments

Smith (2018) declares that "Data collection instruments are tools or methods used to gather data, such as surveys, questionnaires, interviews, or observations."( p. 25). These instruments are critical in conducting scientific research, as they allow researchers to collect information systematically and accurately (Jones & Brown, 2019). In this regard, two data collection instruments were utilized: two questionnaires directed to both teachers and students and multiple classroom observations.

### 2.4.1. Questionnaire

A questionnaire is a research instrument consisting of a series of questions or other prompts for the purpose of gathering insights from respondents (Smith, 2018). It is a commonly used tool in survey research to collect quantitative and/or qualitative data about attitudes, experiences, or opinions (Jones & Brown, 2019). Therefore, the researchers used two questionnaires destined to both lecturers and students so that to collect concrete information or views from the respondents whose cooperation can facilitate data collection and get more accurate results.

#### 2.4.1.1. Students' Questionnaire

This questionnaire is used to gather insights from first year Scientific and Technical students of Medea University in the academic year 2023-2024. This study aimed at providing insights about how students and lecturers deal with challenges in comprehending lectures delivered in English-medium instruction (EMI). Meanwhile, discovering and categorizing the various strategies used by both teachers and students to improve lecture comprehension within the EMI setting alongside with understanding its effectiveness. The students' questionnaire contains twenty-one (21) questions. The questionnaire was split into three sections: section one is a set of four (04) questions dedicated to the demographic information. The following section is a set of three (03) questions concerned with exploring students lecture comprehension. The last section is focused at exploring the strategies used during lectures and it consists of fourteen (14) questions. This questionnaire used closed and open format questions.

#### 2.4.1.2. Teachers' Questionnaires

The second questionnaire was administered to first year teachers of Medea university at the Science and Technology departments. It consists of twenty-two (22) questions, it was divided to three parts: part one is a set of seven(07) questions dedicated to

the demographic information. The second part is a set of seven (07) questions to gather insights about lecturers' perspectives on students lecture comprehension. The third part aimed at gaining in-depth information about the strategies used during lectures and it consists of eight (08) questions. This questionnaire used closed and open format questions.

### 2.4.2. Observation

Observation serves as a research instrument utilized for obtaining qualitative data, it is "the systematic depiction of events, behaviors, and artifacts within the selected social environment for study" (Marshall and Rossman, 1989, p. 79 as cited in Kawulich, 2005). This tool is pivotal in our research as it allows for a profound examination of the situation, facilitating the collection of essential data regarding the use of strategies in lectures delivered in EMI setting.

In the present study, the researchers obtained classroom observations as a data collection instrument. This observation took place at the university of Medea in the province of Ouezra, and involved departments of science and technology. The researchers attended five (05) lectures of different modules; namely computer science, methodology, animal biology, mathematics, and physics. Fifty- eight (58) participants of first year technical and scientific students were involved in the study, they were evaluated through direct observation. Throughout the observation, the researchers aimed at scrutinizing and exploring lecturers and students' use of the learning strategies during the lecture being delivered. Yet, the observation offered spontaneous and genuine state of participants during the teaching learning process.

## 2.5. Conclusion

This chapter explained the research design of the current study, we provided detailed description and explanation of the research methodology components. Including, research design and methodology, population and sampling. Furthermore, it discussed in detail participants' profile. Eventually, two (02) data collection instruments have been explained, and showed that the tools utilized were questionnaires directed to both teachers and students and classroom observations. Thus, this investigation portrayed that the current survey is a case study that employed both quantitative and qualitative methods , and was carried out at Yahia Fares University of Medea in the faculty of science and technology. As for the following chapter, it will delve into the analyses, interpretations, and discussion of the main findings.

# Chapter Three

## Chapter Three: Results and Discussion

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## 3.1. Introduction

This chapter explores how lecturers and students utilize learning strategies during lectures delivered in EMI settings. Moreover, this chapter delves into the practical part which was devoted to answer the research question. For our investigation, the data is gathered via various means questionnaires were distributed to both teachers and students, with the use of classroom observations that were conducted to gain a firsthand perspective on learning strategies in action at Yahia Fares University. Both lecturers and students 'views and comments are helpful to accomplish this study.

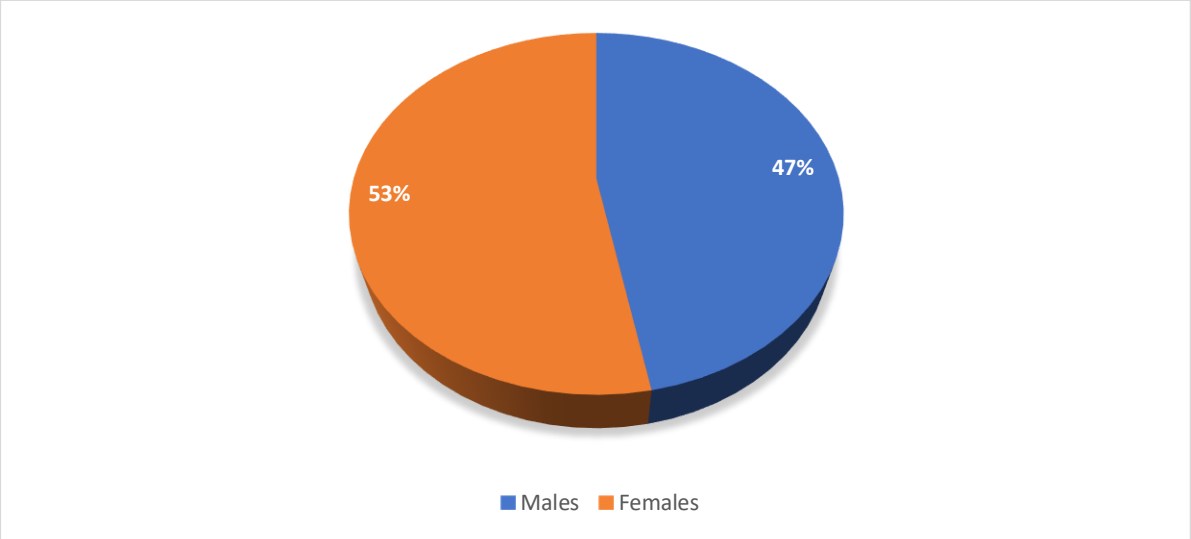
## 3.2 Presentation of the Results of Teachers' Questionnaire

### Section One: Demographic Information

**Q1-** Teacher's Gender.

**Figure 2**

*Teachers' Gender*



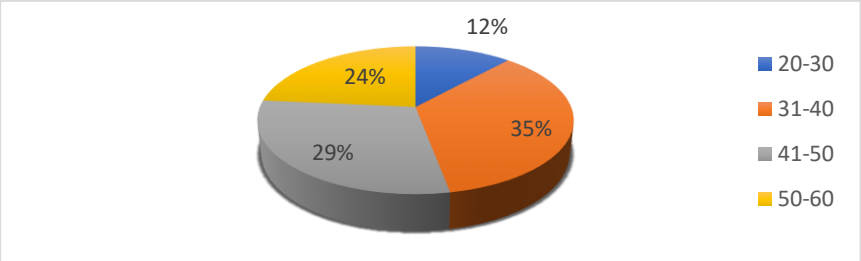

*Note.* The majority of respondents are Females.

Analyzing the data obtained shows that a percentage of (53%) female teachers answered the questionnaire, whereas solely (47%) males answered it.

**Q2-** Teacher's Age.

**Figure 3**

*Teachers' Age*



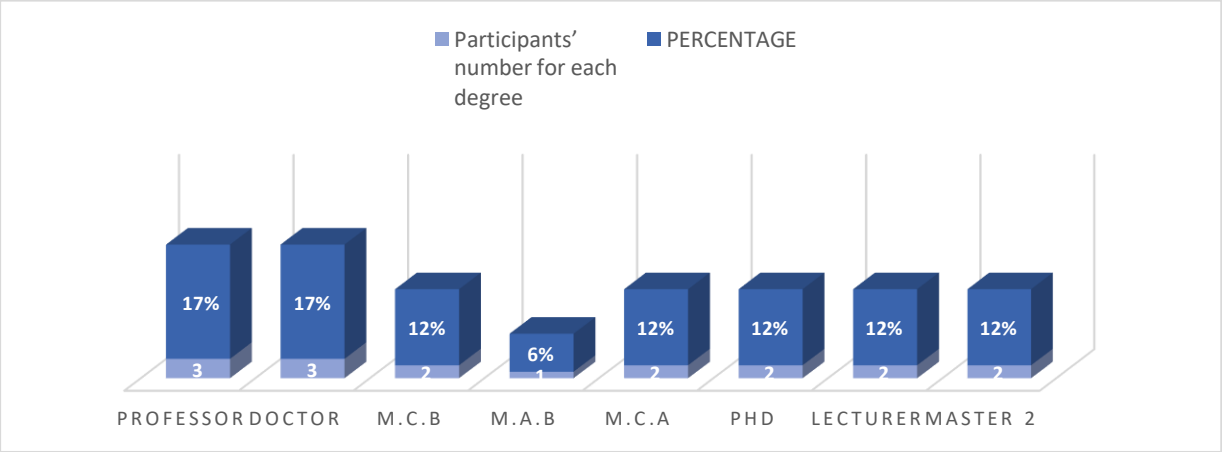

*Note.* The largest population aged between thirty-one to forty years old.

From the collected data of the pie-chart, it is found that the largest age group of teachers (35%) falls between thirty-one (31) and forty (40) years old, whilst, (29%) are ranging in the age from forty-one(41) to fifty (50), and (24%) are ranging in the age between fifty (50) to sixty (60). However, solely (12%) of teachers are ranging between twenty (20) to thirty (30) years old which represents the smallest proportion of the research respondents.

**Q3-** Teachers' Degree.

**Figure 4**

*Teachers' Degree*



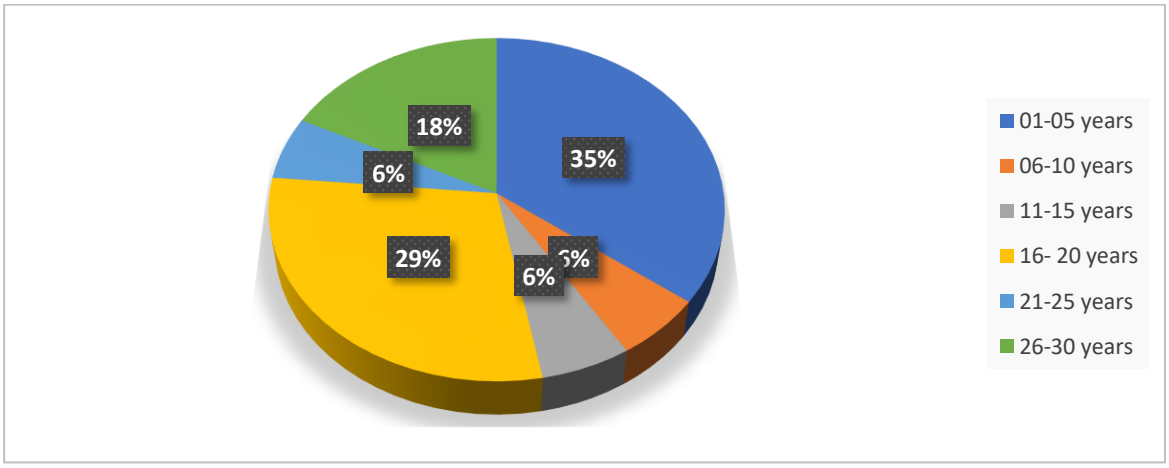
*Note.* Most teachers hold Professor or Doctor degree.

The clustered column illustrates that a substantial portion (17%) of teachers hold Doctor's and professor's degree. It is also followed by a group of degrees, including M.C.B, M.C.A, PhD., each constituting (12%) of the teachers. Similarly, lecturer and Master's degree hold an equal share of (12%). Eventually, only a percentage of (6%) hold M.A.B degree.

**Q4-** Years of teaching experience.

**Figure 5**

*Teachers' Years of Teaching Experience*




*Note.* The vast majority of instructors have taught between one (01) to five (05) years.

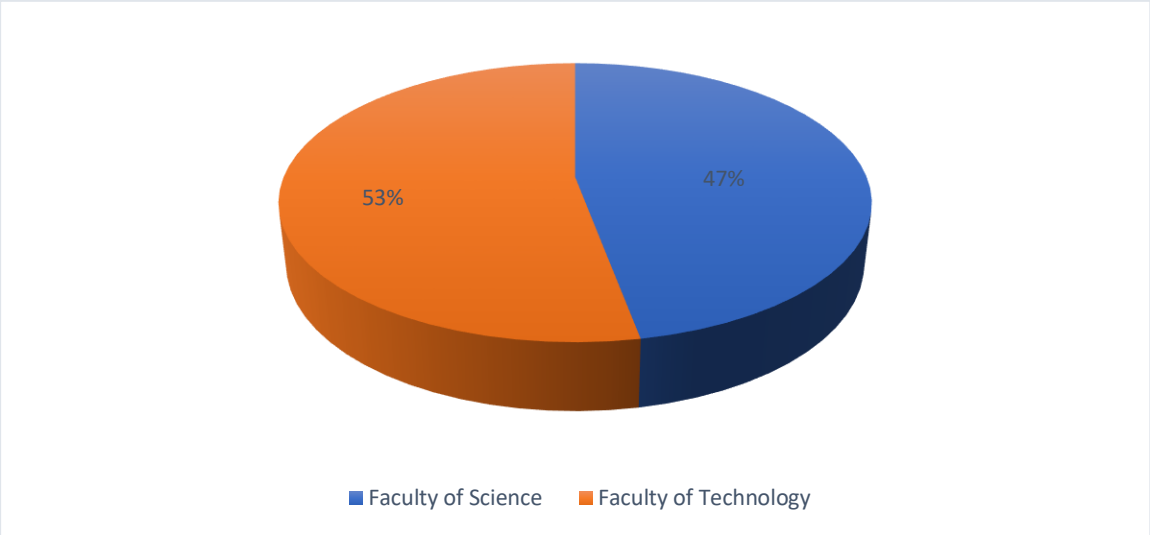
The results demonstrate that the participants have varying levels of teaching experience. A larger proportion (35%) of the respondents have taught between one (01) to five (05) years, while, (29%) of the participants have between sixteen (16) to twenty (20) years of teaching experience. Similarly, a percentage of (18%) have taught for twenty-six (26) to thirty (30) years, and a portion of (6%) have taught from twenty-one (21) to twenty-five (25) years. Meanwhile, an equal percentage of (6%) of the respondents have between eleven (11) to fifteen (15) years of teaching experience. Eventually, the remaining percentage of (6%) of teachers have between six (06) to ten (10) years of experience. This diverse range

of experience implies that teachers are likely to have a good understanding of their students' comprehension capabilities, enabling them to adjust their lessons accordingly.

**Q5-** What are the fields you are concerned with?

**Figure 6**

*Teachers' Fields of Study*




*Note.* Teachers of the faculty of Technology represents the majority of respondents.

The data collected displays that (53%) of teachers are from the faculty of technology, whilst, (47%) are from the faculty of science. This indicates that the majority of the teachers belongs to the faculty of technology.

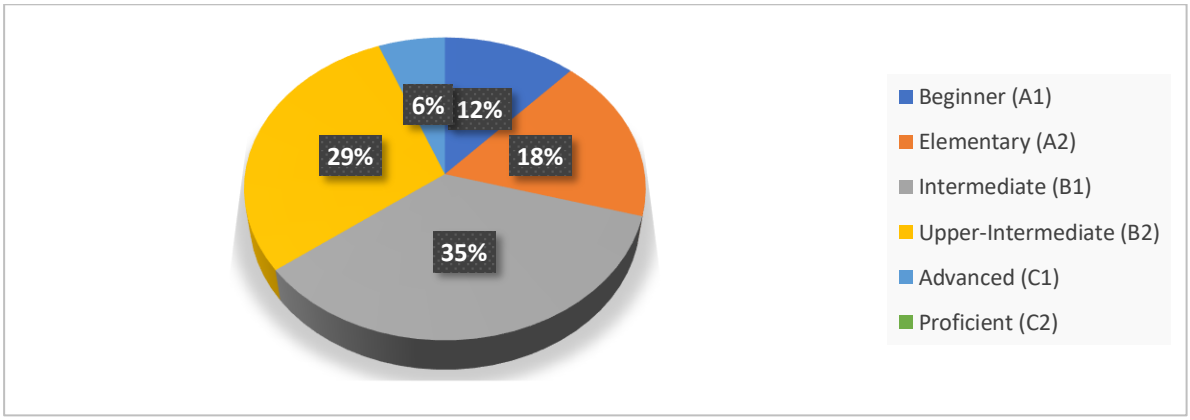
**Q6-** Modules taught.

This inquiry pertains to the modules delivered by the educators who have taken part in this questionnaire. The responses consist of twenty-three (23) answers, which include a variety of modules, including Chemistry, Microbiology, Mathematics, Physics, Programming Tools for Mathematics, Pharmaceutical Chemistry and Pharmacology, Algebra, General Relativity, Special Relativity, Data Analysis, Cosmology, Electromagnetism, Vibration and Waves, Electricity, Particle Physics, Computer Science.

**Q7-** What is your Level of English Proficiency?

**Figure 7**

*Teachers' Level of English*




*Note.* The majority of teachers have Intermediate (B1) level and the minority have advanced (C1).

In regards to the seventh question, it scrutinizes the English proficiency level of teachers. The results shown above indicate that (35%) of participants claim to have intermediate level (B1) in English, while (29%) consider their level to be upper-intermediate (B2), and (18%) assert that they have elementary level (A2). Additionally, (12%) of respondents selected beginner level (A1). The remaining (6%) of respondents opted for advanced level (C1).

## Section Two: Exploring Students Lecture Comprehension

**Q8.** What language do you primarily use during lectures?

**Table 2**

*Languages that Teachers Use during Lectures*

| Options | Teachers' Answers | Percentage |
|---|---|---|
| English | 01 | 6% |
| French or Arabic | 04 | 23% |
| It varies depending on the subject/topic | 03 | 18% |
| The lecture is mainly taught in English, but there are occasional translations/explanations in another language | 09 | 53% |
| Total | 17 | 100% |

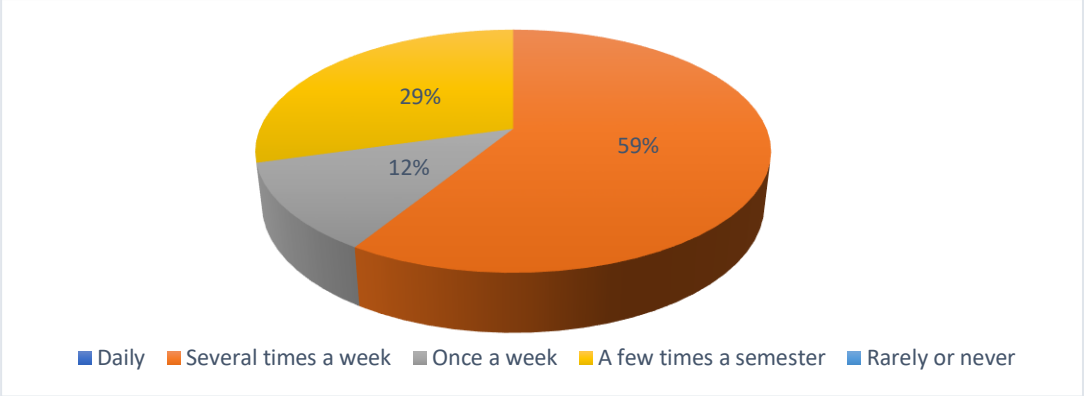
*Note.* Most teachers use English in their lectures and give explanation in another language.

The eighth question pertains to the languages that teachers use during lectures, it is represented that (53%) of respondents say that the lecture is mainly taught in English, but there are occasional translations/explanations in another language, whereas (23%) of the sample used both French and Arabic in their lectures and (18%) of them state that their use of languages varies depending on the subject/topic. Meanwhile, the smallest proportion (06%) used only English.

**Q9.** How often do you teach lectures in English?

**Figure 8**

*Frequency of Teachers' Lecture Delivery in English*



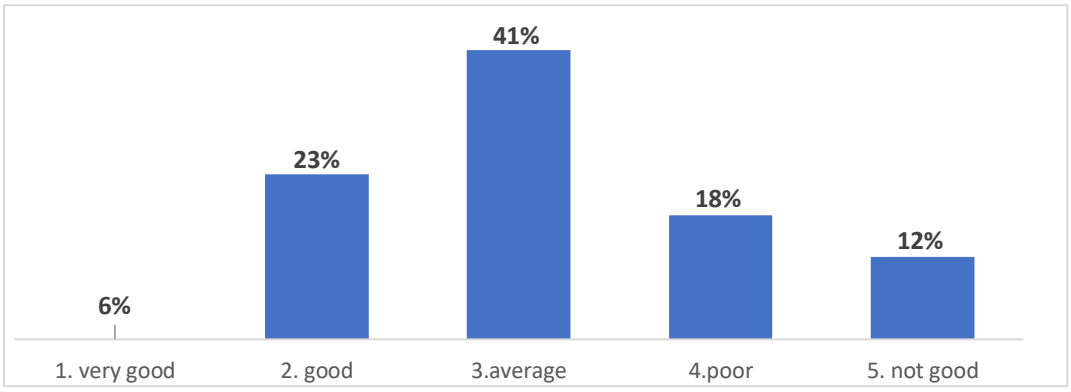

*Note.* A large number of teachers asserts that they teach lectures in English several times a week.

Regarding teachers' lecture delivery in English frequency, (59%) of participants claimed that they teach lectures in English 'several times a week', (29%) claimed they teach lectures in English 'a few times a semester', and (12%) of teachers asserts that they teach lectures in English 'once a week'. While no teacher claimed a daily or a rarely lectures taught in English.

**Q10.** On a scale of 1-5, how do you rate your students' English comprehension during lectures?

**Figure 9**

*Teachers' Rating of Students English Comprehension during Lectures*



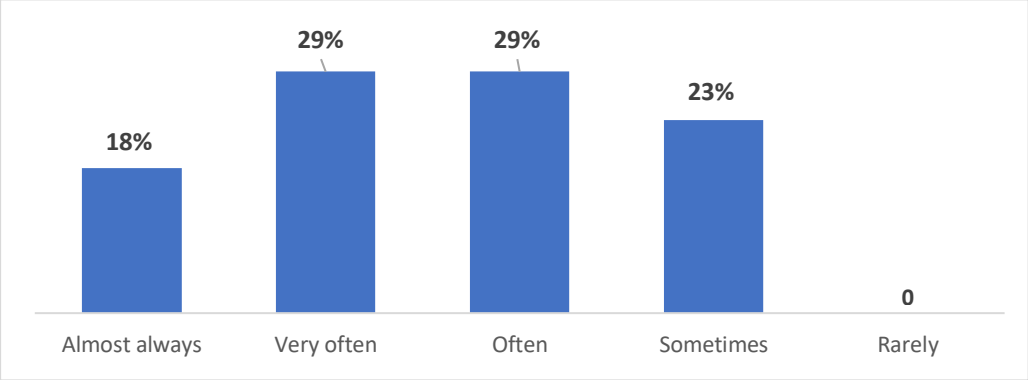

*Note.* The collected data reveals that the majority of the participants (41%) rated students' comprehension as average.

The above figure depicts teachers' rating of lecture comprehension among students, taking into consideration that number one (01) refers to 'very good' and number five (05) refers to 'not good'. The collected data reveals that the majority of the participants (41%) rated comprehension as average (3), and a sample of (23%) rated it as good (2). While (18%) of teachers rated it as poor (4), similarly, (12%) rated it as not good (5). However, solely (06%) rated their lecture comprehension as very good (1).

**Q11.** How often do your students struggle with understanding lectures delivered in English?

***Figure 10***

*Frequency of Students' Struggle with Understanding Lectures Delivered in English According to Teachers*



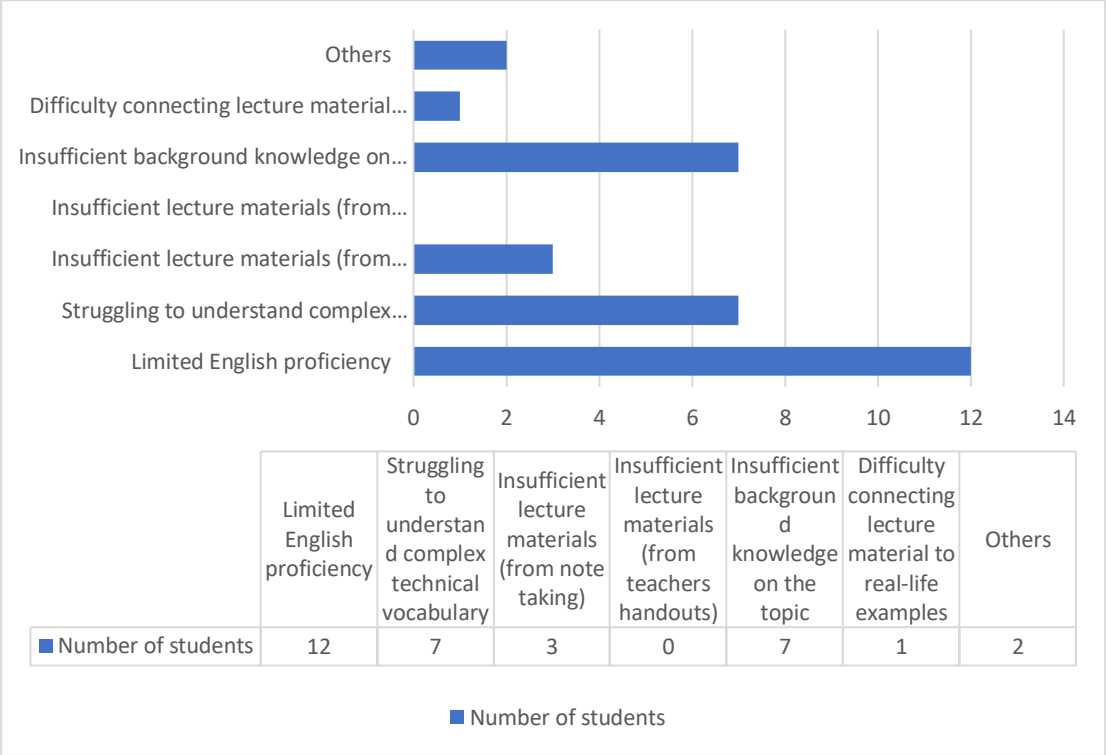

*Note.* 29% of teachers assumed that students often struggle with understanding lectures delivered in English, while other 29% stated that they struggle very often.

The data obtained shows that (29%) of teachers agreed that their students 'often' struggle understanding lectures delivered in EMI settings. Similarly, an equal percentage of (29%) claimed that they struggle 'very often', and a percentage of (23%) selected 'sometimes. However, (18%) of teachers reported that their students are "almost always" struggling. These results suggest that instructors might benefit from revisiting their lecture delivery strategies to enhance clarity and ensure a stronger grasp of the material by their students.

**Q12.** In your experience, what are the challenges your students face when it comes to comprehending lectures delivered in English?

**Figure 11**

*Teachers' Opinion about Students' Challenges*



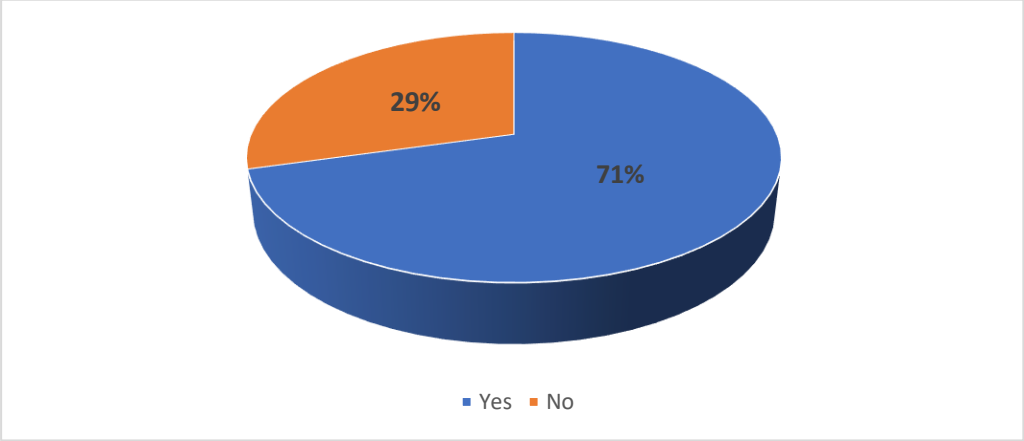

*Note.* The challenges students face in lectures delivered in EMI settings are mainly related to limited English proficiency.

In the twelfth question teachers were given the freedom to tick more than one box. As a result, twelve (12) teachers who represented the majority demonstrated that the challenges students face in lectures delivered in EMI settings are related to limited English proficiency. Meanwhile, seven (07) teachers highlighted that students are struggling to understand complex technical vocabulary, and an equal share of seven (07) teachers said that students have insufficient background knowledge about the topic. Furthermore, three (03) teachers believed that insufficient lecture materials (from note taking) as an important factor affecting students lecture comprehension, and only one (01) teacher answered with the difficulty connecting lecture material to real-life examples. While, no teacher selected insufficient lecture materials (from teachers' handouts) and two respondents selected other challenges.

**Q13.** Do you feel that your own English proficiency has an impact on your students' comprehension of lectures?

**Figure 12**

*Teachers' Opinion about their English Proficiency Impact on Students' Lecture Comprehension*




*Note.* Teachers' English proficiency impact students' lecture comprehension.

Asking teachers whether they believe that their own English proficiency has an impact on students' comprehension of lectures or not, resulted in the approval of the majority (71%) of teachers, and solely (29%) of the informants answered with no.

**Q14.** Why?

In an attempt to investigate the reasons why teachers' own English proficiency impact students' comprehension of lectures or not. Two (02) instructors reported that poor expression of information, regardless of the language used, can lead to poor student understanding, suggesting that the issue is not necessarily fluency in the language of instruction, but the ability to effectively communicate the content. That is to say, if the lecture itself is not clear and well-organized, students will have difficulty understanding it and even if they are very proficient in English.

In contrast, two (02) teachers stated that subjects like Mathematics are relatively independent of the language of instruction due to their symbolic nature, Additionally, four

(04) teachers claimed that better language skills enable better explanations, leading to improved student understanding, and that mastering the language of instruction can also boost the teacher's confidence and subject matter expertise. This implies that clear and concise English makes it easier for students to understand the lecture content.

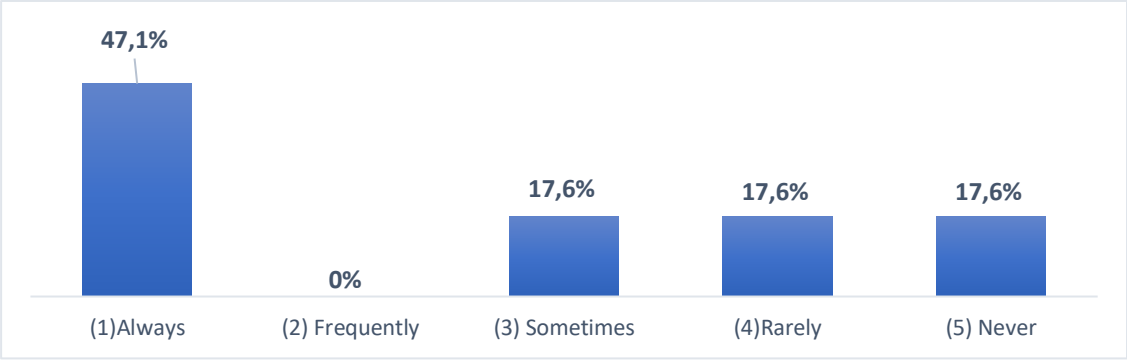
However, two (02) teachers noted that students tend to follow instructors who demonstrate expertise in both the subject and the language of instruction, and another teacher said that language mastery can positively motivate learners. Conversely, the remaining seven teachers highlighted the influence of Arabic and French on students' lecture comprehension, which can hinder the use of English as the language of instruction.

**Exploring The Strategies Used During Lectures**

**Q15.** On a scale of 1-5, how often do you ask your students check-up questions (e.g. Is it clear? Do you have any questions?) to assess their comprehension during lectures?

**Figure 13**

*Frequency of Using Check-up Questions by Teachers*




*Note.* Teachers always use check-up questions.

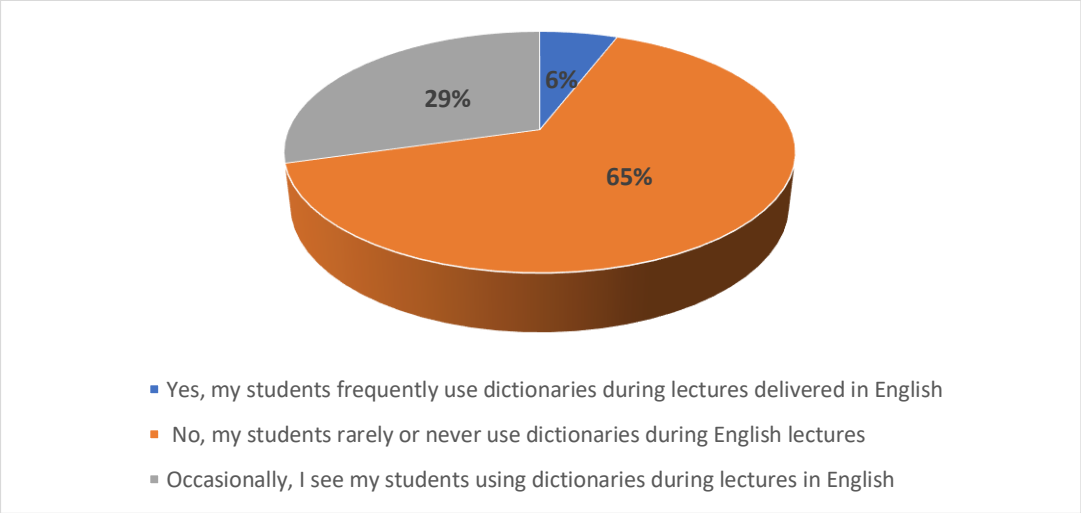
The histogram depicts instructors' usage of comprehension check-up questions during lectures. It shows that most lecturers (47%) always use comprehension check-up questions during their lectures. Whilst, (17%) of respondents agreed that they sometimes use check-up questions, similarly, a percentage of (17%) answered that they rarely use this type of questions. However, another equal percentage of (17%) of informants stated that they never use the check-up questions. Thus, the collected data suggests that there is a

variation in how often instructors use comprehension check-up questions during EMI settings.

**Q16.** From your observations, do you notice your students using dictionaries during lectures delivered in English?

**Figure 14**

*Teachers' Opinion on Students Use of Dictionaries during Lectures*



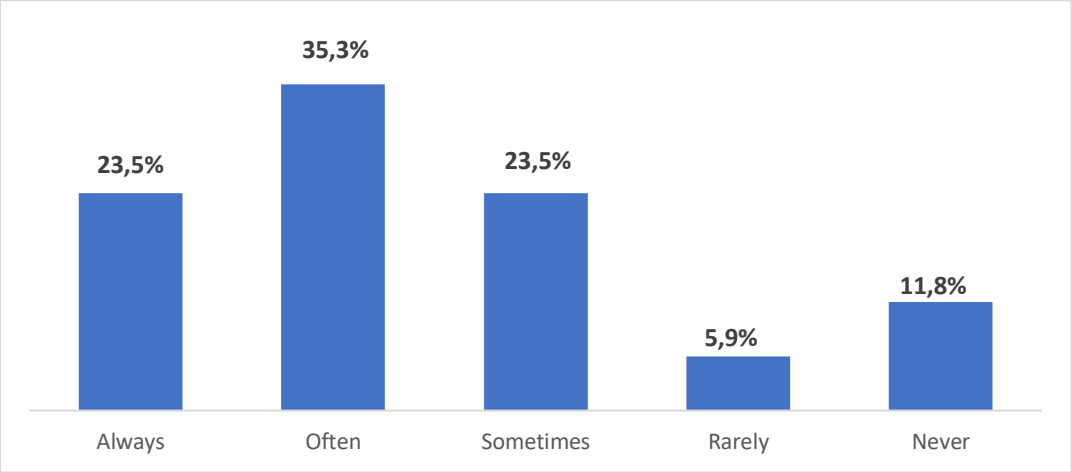

*Note*. 65% of teachers stated that their students rarely or never use dictionaries

The pie chart illustrated that the majority of instructors (65%) stated that their students rarely or never use dictionaries, and a smaller percentage (29%) said that they occasionally see their students using dictionaries. Eventually, a very small percentage (6%) mentioned that their students frequently use dictionaries during English lectures.

**Q17.** How often do you incorporate activities and strategies to help improve comprehension during your lectures?

**Figure 15**

*Frequency of Using Activities and Strategies by Teachers to Improve comprehension*




*Note.* The majority of teachers often use activities and strategies to improve comprehension.

The collected data reveal that a significant portion, (35%) of instructors reported that they are always using activities and strategies to enhance students' comprehension. Additionally, a substantial percentage (23,5%) indicated they often use these methods. In contrast, a smaller proportion, (23,5%), said that they sometimes use them, and (12%) assume that they never use comprehension strategies. While a minimal number (6%) states that they rarely utilize them.

**Q18.** What are the activities and the strategies you incorporate to help your students improve comprehension during your lectures?

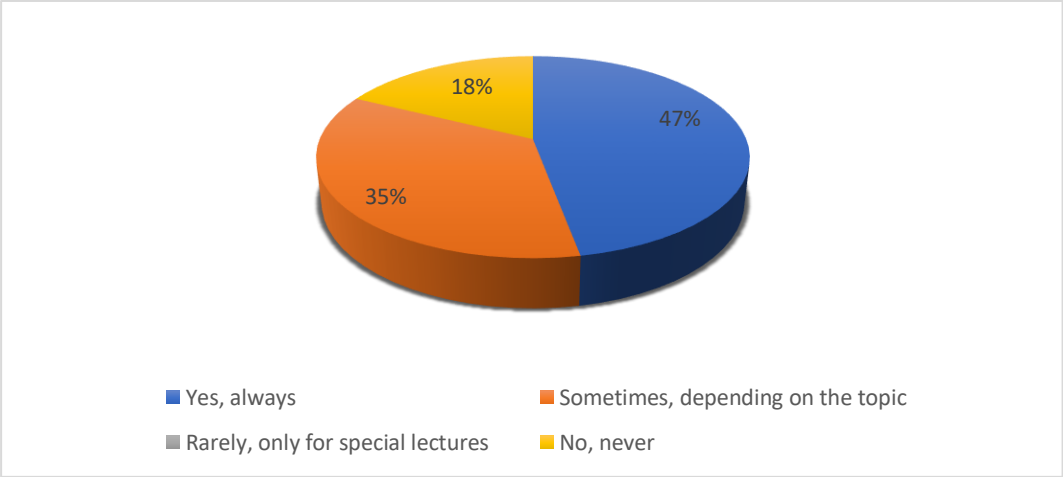
This data reveals a diverse range of teaching methodologies employed by these educators. While four (04) teachers rely on exercises, interactive activities, and multiple-choice questions, five (05) others favor demonstrations, visual aids, and audio-visual materials. Interestingly, three (03) teachers prioritize collaborative learning through teamwork and discussions, suggesting a focus on student interaction. Notably, only two (02) teachers explicitly encourage the development of general English skills, while just one (01) emphasizes summarizing and repetition. A single educator utilizes a modeling strategy to

illustrate concepts, highlighting the potential of personalized examples. However, two teachers claimed that they don't use activities because students are unmotivated for any activity. Overall, the data suggests teachers focus on various methods, including making information relatable, teaching practical skills, and incorporating activities, all while adhering to the curriculum. This diversity reflects the understanding that different learners respond best to different teaching styles.

**Q19.** Do you provide your students with materials (such as handouts) before the lectures delivered in English?

***Figure 16***

*Teachers' Usage of Materials before Lectures*




*Note.* 47% of teachers provide their students with materials before lectures.

Asking teachers whether they provide their students with materials (such as handouts) before the lectures delivered in English, resulted that a percentage of (47%) of teachers approved that they always use materials before lectures, whilst, (35%) claimed that they sometimes use materials and stressed that it depends on the topic. Whereas, only (18%) answered that they never use any material before the lecture.

**Q20.** In your opinion, what would be the most beneficial approach to enhancing comprehension of English lectures for your students?

In the twentieth question teachers were given the freedom to tick more than one box. As a result, a number of thirteen (13) answers fell for the use of visual aids and multimedia resources to supplement the lecture material (the use of handouts and power point presentations), ten (10) answers stand for encouraging students to actively take notes during lectures, nine (09) answers represent incorporating interactive activities and group discussions during lectures.

While providing pre-reading activities or materials to familiarize students with the lecture topic was selected by ten (10) teachers, similarly, an equal number of ten (10) answers stands for the use of real-life examples and practical applications to illustrate the concepts taught in the lecture, another ten (10) responses showed that teachers prefer to create a supportive classroom environment where students feel comfortable asking questions and seeking clarification. However, solely eight (08) answers showed that asking students to make presentations would be the most beneficial approach to enhancing comprehension of English lectures, and the least number of responses (06) highlighted the use of French or the mother tongue to explain the content.

**Q21.** Have you received any training or professional development on teaching lectures in English? If so, how has it impacted your teaching?

To answer this question, the majority of teachers (59%) agreed that they have received trainings and they are taking classes at private schools and academies. Two respondents who selected “yes” stated that their training and professional development on teaching lectures in English have sharpened their teaching skills remarkably, and mentioned that the learning of a language is a lengthy process to yield results in pedagogy. That is, language should be taken into account from a young age and not after the age of 50. On the other hand, only (41%) of teachers disagreed.

**Q22**. Do you have any suggestions or recommendations to improve lectures presented in English for better comprehension?

As a concluding question, teachers were asked if they would give any suggestions or recommendations to improve lectures presented in English for better comprehension. The minority of teachers (18%) preferred not to give any suggestions or recommendations, (82%) of respondents stated that while mastering English is always beneficial, for technical sciences like math, physics, and technology, student motivation seems to be the key factor in comprehension. That is, the complexity of the subject matter itself often presents a greater hurdle than the language used. Hence, unmotivated students, even when taught in their native Arabic language they struggle with grasping technical concepts. Conversely, motivated students can overcome language barriers to understand the core knowledge, even with limited English proficiency.

Another point worth noting, is that delivering English lectures in technical fields, with incorporating clear examples, visual aids, and effective pacing can significantly enhance comprehension. Additionally, simplifying complex concepts, engaging the audience through interactive activities, and providing opportunities for questions and clarification further improve the learning experience. Seemingly, a multi-pronged approach is recommended. We can encourage students to learn more languages, offer online training for teachers and students, and gradually prepare students for English in technical studies throughout their schooling. Finally, gathering feedback through evaluations or surveys allows instructors to identify areas for improvement and ensure their lectures are effective for all students.

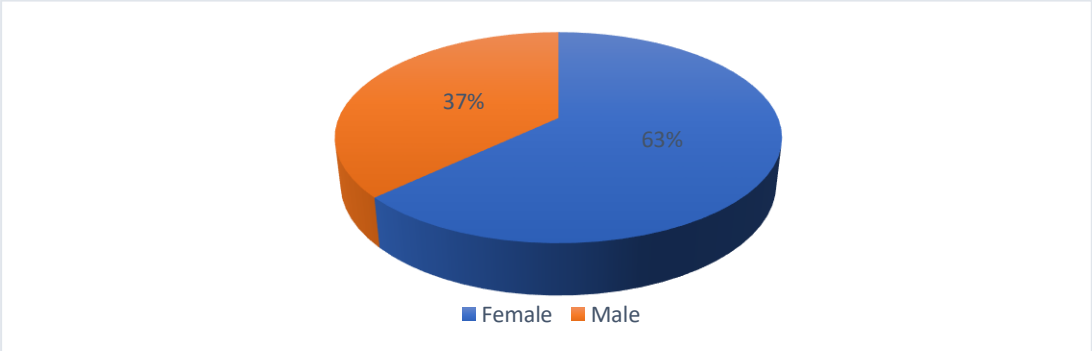
### 3.3. Presentation of the Results of Students' Questionnaire

### Section One: Demographic Information

**Q1.** What is your gender?

***Figure 17***

*Students' Gender*



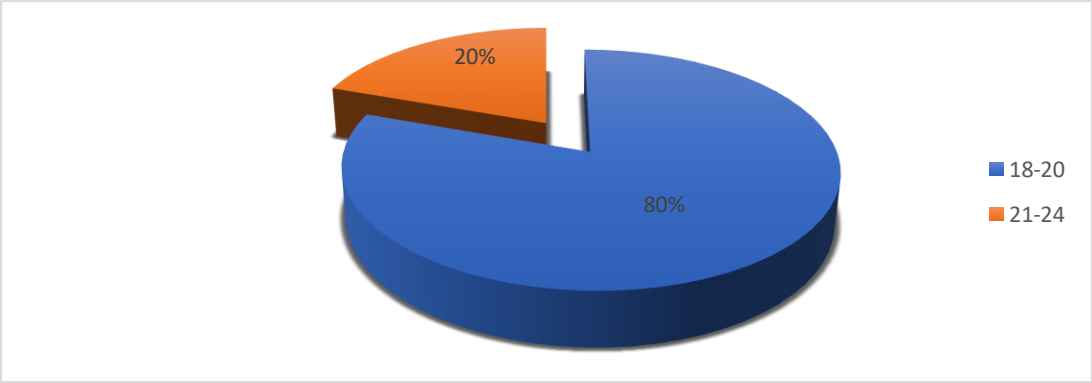

*Note.* The majority of respondents are females.

According to the obtained results, (37%) of participants are males, whilst, (63%) are females. This implies that the majority of First year students at the faculty of Science and Technology are females.

**Q2.** What is your age?

**Figure 18**

*Students' Age*



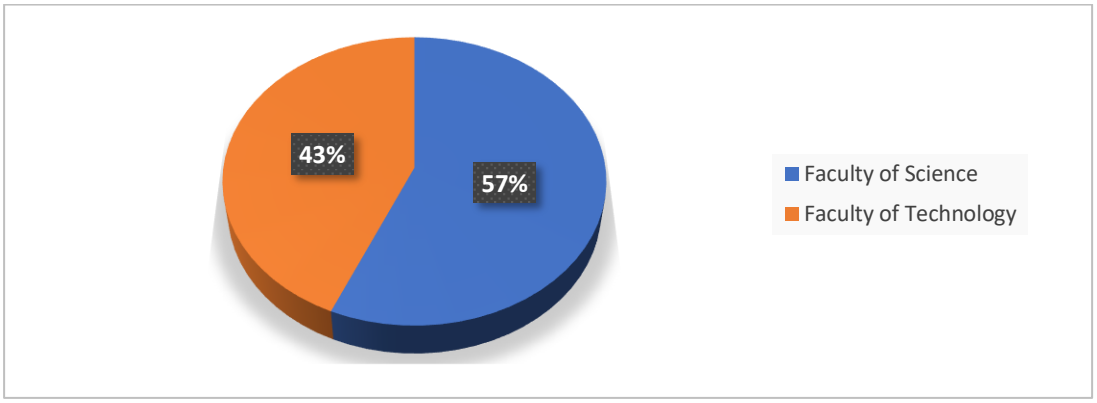

*Note.* 80% of students age ranges between eighteen (18) and twenty (20) years old, while 20% between (21) and (24) years old.

When asking students about their age, it seems that (80%) of the informants are between eighteen (18) to twenty (20). However, solely (20%) of students are ranging between twenty-one (21) to twenty-four (24).

**Q3.** In which faculty do you study?

**Figure 19**

*Students' Fields of Study*



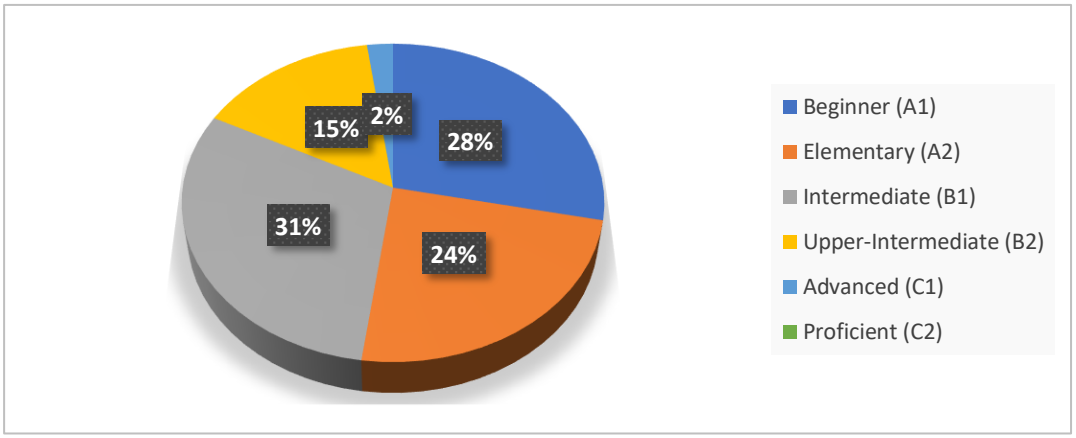

*Note.* The majority of students are from the faculty of science.

As shown above, (43%) of informants belong to the Faculty of Technology and (57%) belong to the faculty of science. This disparity suggests that the Faculty of Science has a significantly larger proportion of informants in comparison to the Faculty of Technology.

**Q4.** What is your Level of English Proficiency?

**Figure 20**

*Students' Level of English*




*Note.* Most students have Intermediate (B1) level.

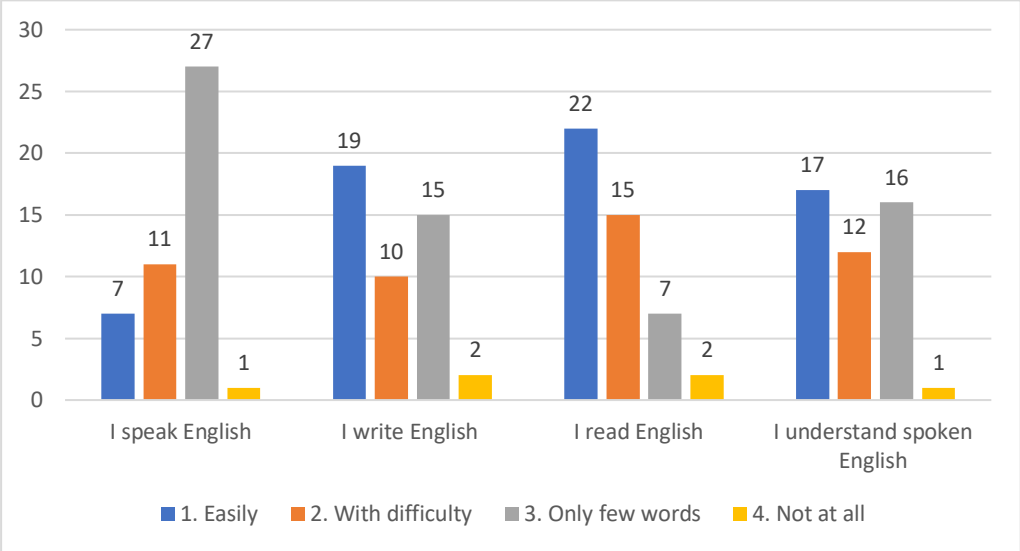
The figure above illustrates the students' level of English proficiency. It shows that the largest percentage of students (31%) Intermediate (B1), followed by (28%) of informants who are Beginners (A1). (24%) of students are Elementary (A2), while (15%) are Upper-Intermediate (B2) and (2%) are Advanced (C1).

## Section Two: Exploring Students Lecture Comprehension

**Q5.** How do you evaluate your English skills according to the options below?

**Figure 21**

*Students' Evaluation of Their English Skills*




*Note.* Most students speak only few words in English, read and write easily, and understand spoken English easily.

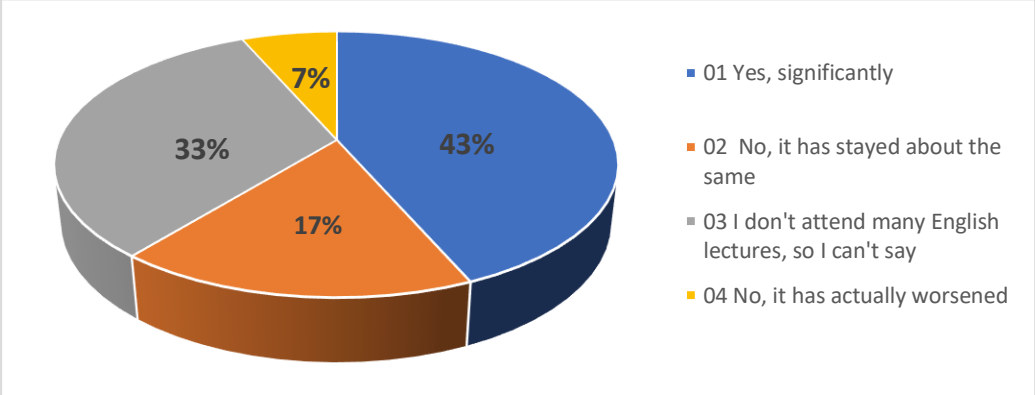
The graph portrays students' evaluation of their English skills, including their speaking, writing, reading, and speaking. The first statement evaluated their speaking skill, which resulted in a majority of (27) student who claimed that they only speak few words, (11) claimed that they speak English with difficulty, (07) participants stated that they speak English easily, while only one student highlighted that they don't speak English at all. Moreover, the second statement evaluated students' writing skills which resulted of a majority of (19) students who mentioned that they write English easily, (15) students stated that they only write few words, (10) student mentioned that they write English with

difficulty. Meanwhile, the lowest number of (02) students. Additionally, students' evaluation of their reading skills, resulted in a large number of (22) students reading English easily, (15) students with difficulty, (07) only few words, and the minority of (02) students they don't read English at all. Ultimately, the evaluation of their listening and understanding of spoken English, (17) students selected that they listen attentively, (16) stated that they understand only few words through listening, (12) understand spoken words with difficulty. However, only one student doesn't understand spoken English at all.

**Q6.** Do you feel that your comprehension of lectures delivered in English has improved over time?

**Figure 22**

*Students' Opinion about their Comprehension of Lectures delivered in English Improvement*




*Note*. Students' comprehension of lectures delivered in English has improved significantly.

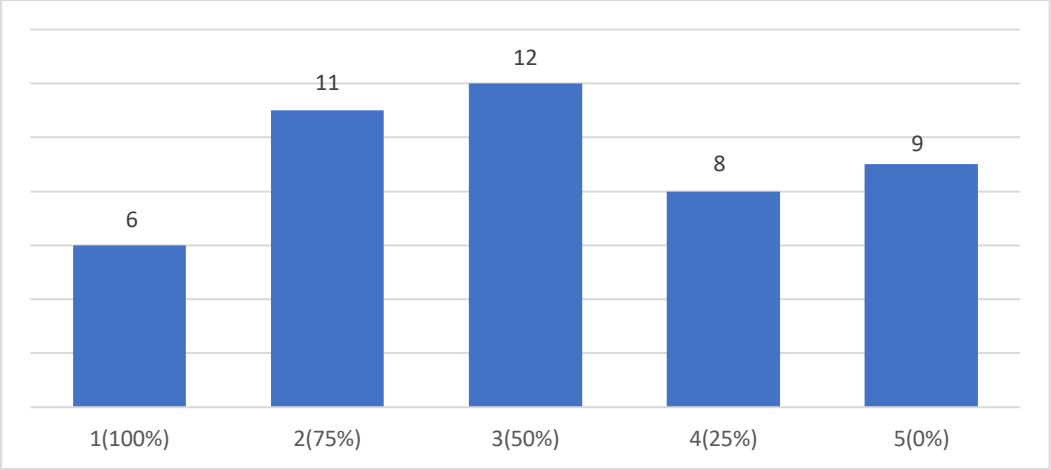
According to the results in the pie chart above, (43%) of the participants believe that their comprehension has improved significantly and (33%) of the informants said that they don't attend many English lectures and so can't say. However, (17%) of the respondents argue that their comprehension has stayed about the same. Nonetheless, only (7%) of the participants feel that their comprehension has actually worsened. This implies that students' comprehension of lectures delivered in English has improved over time due to a number of

factors, such as improved English language skills or changes in the way that lectures are delivered.

**Q7.** To what extent do you understand the content of lectures in English?

**Figure 23**

*Students' Understanding of the Content of Lectures in English*




*Note.* The majority of students understand 50% of the content of lectures in English**.**

This table aimed at investigating to what extent students understand the content of lectures in English, the majority of (12) students stated that they understand (50%) lectures, (11) students responded that they understand (75%). While, (06) students responded that they don't understand the content of lectures delivered in English at all, and (08) respondents claimed that they understand solely (25%) of the lectures. However, the minority representing (06) students stated that they understand (100%) of the lectures.

## Exploring The Strategies Used During Lectures

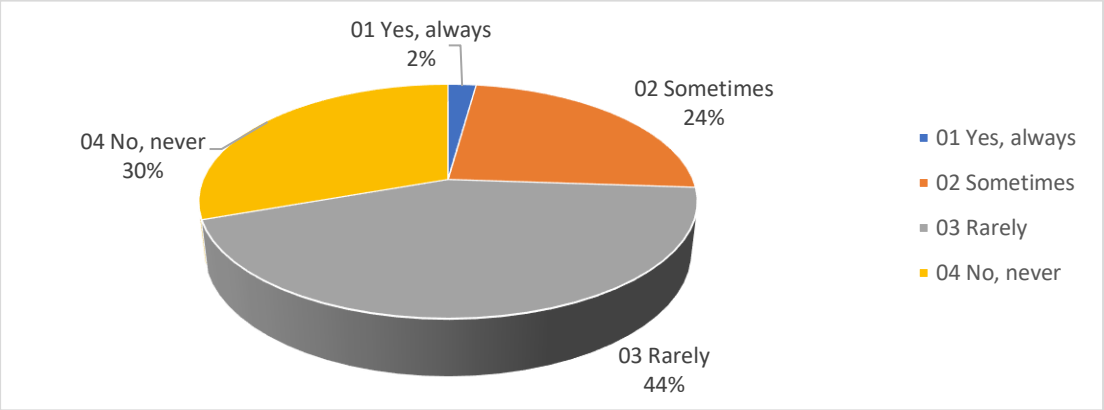
**Q8.** Do you usually prepare your lessons before attending lectures?

Figure 24 aims at determining how frequently students prepare for lectures beforehand. It displays that the majority of students (44%) rarely or never prepare for lectures before attending them. Moreover, (30%) of the informants said that they never prepare, and (24%) of them assert that they sometimes prepare. Besides, solely (2%) of the respondents said

that they prepare for lectures all the time. Eventually, this indicates that most students do not engage in significant preparation for lectures, and instead rely primarily on the lecture itself to learn the material.

**Figure 24**

*Frequency of Students' Preparation of Lessons before Attending Lectures*

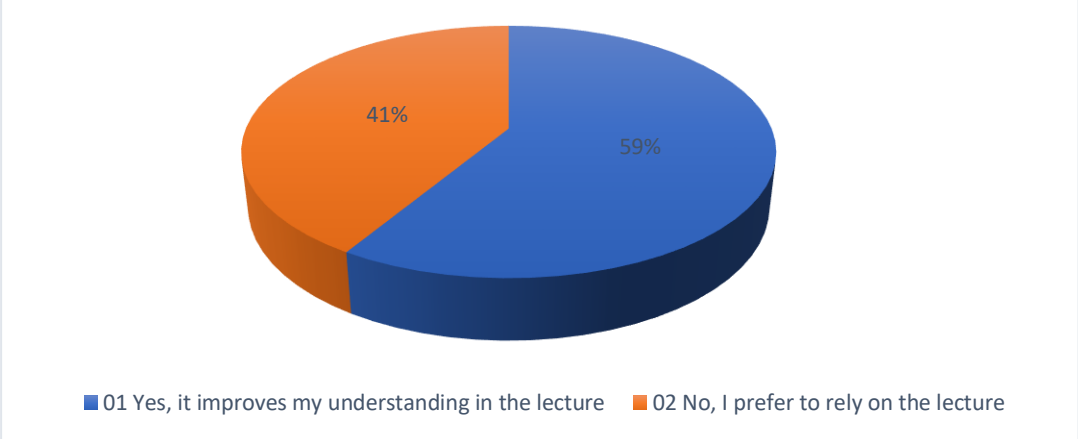



*Note.* The majority of students rarely or never prepare for lectures before attending them.

**Q9.** Do you find it helpful to read course materials before attending a lecture in English?

**Figure 25**

*Students' View about Reading Course Materials before Attending a Lecture in English*




*Note.* Reading course materials before attending a lecture in English improves students understanding.

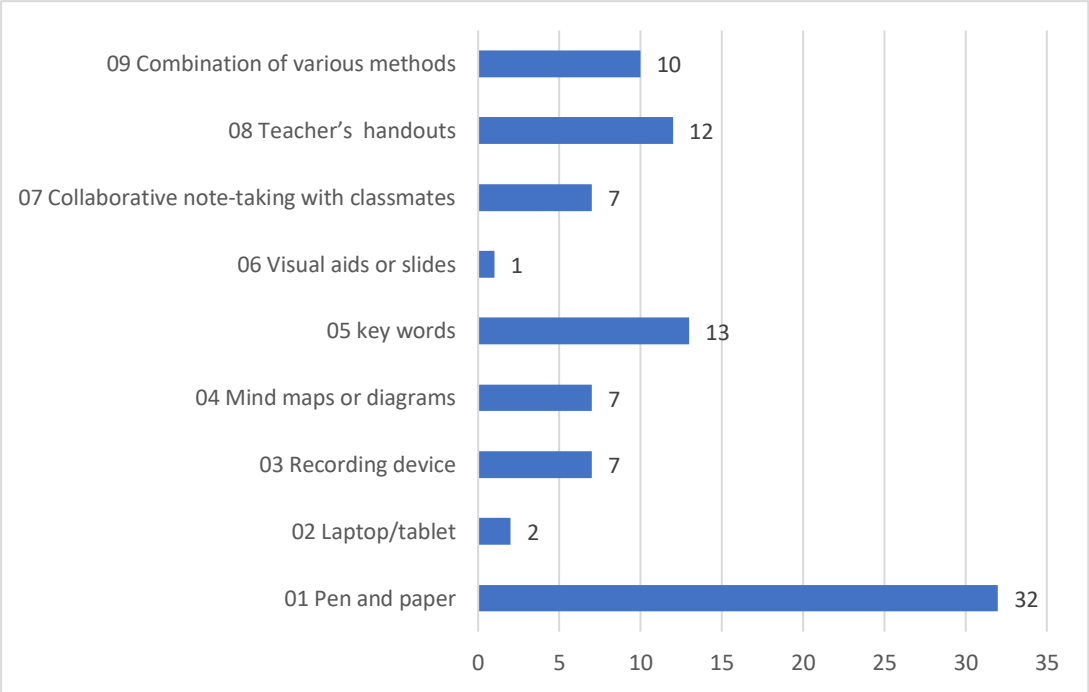
According to the obtained results, it appears that (41%) of informants prefer to rely solely on the lecture without any additional preparation or reading. However, (59%) find it

helpful to read course materials before attending them as it improves their understanding and comprehension of the delivered lectures. This suggests that a significant proportion of students recognize the value of autonomous pre-reading in enhancing their learning experience.

**Q10.** How do you typically take notes during lectures delivered in English?

**Figure 26**

*Students' Note Taking Strategies during Lectures Delivered in English*



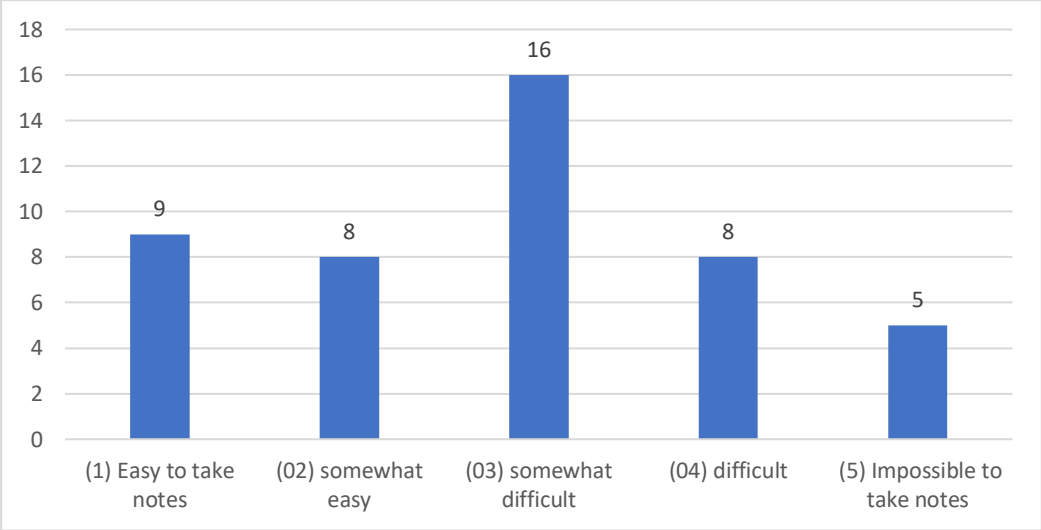

*Note.* Students mostly use pen and paper, writing key words, use teachers' handouts to take notes during lectures.

In the tenth question students were given the freedom to tick more than one box. As a result, this data reveals a diverse range of note taking strategies employed by these students. While (32) answers showed that they use pen and paper, (13) answers showed that students used key words while taking notes. (12) answers revealed that they use teachers' handouts. (10) answers showed that they employ a combination of various methos. While, (21) responses demonstrated that students use recording devices, mind maps or diagrams, and collaborative note- taking with classmates. Notably, the strategies including the use of Laptop and visual aids or slides were only selected by three students.

**Q11.** How difficult do you find taking notes during lectures delivered in English?

**Figure 27**

*Students' Perception of Note Taking Difficulty during Lectures delivered in English*




*Note.* Note taking in lectures delivered in English is somewhat difficult.

The results obtained from this graph, concerning students' perception of note-taking difficulty during lectures delivered in English. The majority of informants representing sixteen (16) students mentioned that note taking during lectures delivered in English is somewhat difficult. (09) students selected that it is easy to take notes, eight (08) students perceived it to be somewhat easy, and equal share of eight (08) students claimed that it is difficult, While the minority representing (05) students stated that it is impossible to take notes.

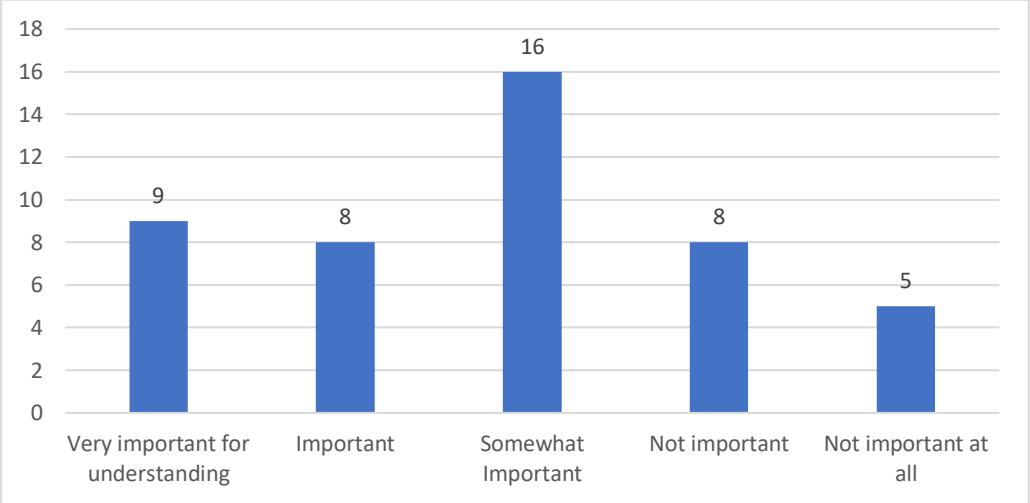
**Q12.** How important are the lecturer's transparencies or PowerPoint slides for your understanding of EMI lectures?

According to the results obtained from figure 28, concerning students' opinion about the importance of lecturer's transparencies or PowerPoint slides. The majority of student informants representing sixteen (16) students mentioned that lecture transparencies are somewhat important. Nine (09) students selected that it is very important for understanding, eight (08) students perceived it to be important, and equal share of eight (08) students

claimed that it is not important, While the minority representing (05) students highlighted that it is not important at all.

**Figure 28**

*Students' Opinion about the Importance of Lecturers' Transparencies or PowerPoint Slides*

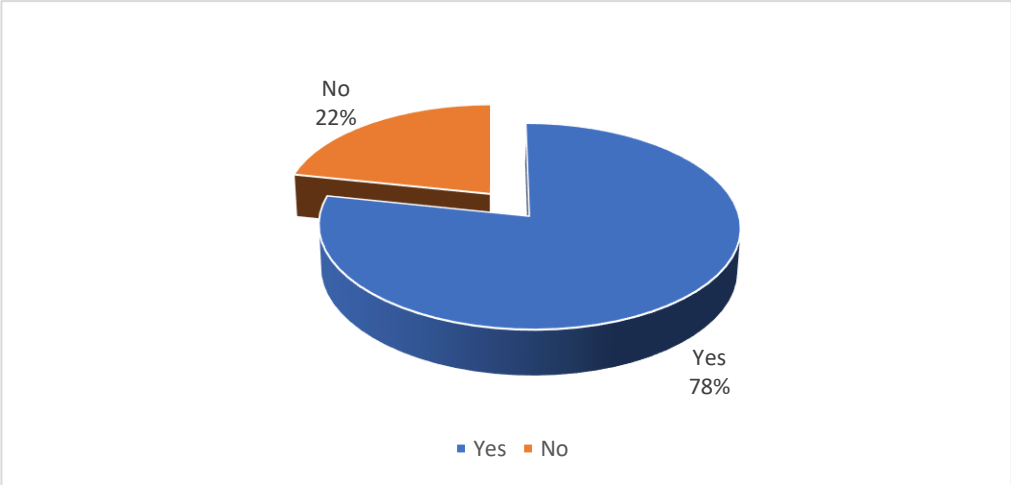



*Note.* Lecturers' transparencies or PowerPoint slides are somewhat important.

**Q13.** Have you ever utilized study aids or resources to help you better understand lectures delivered in English?

**Figure 29**

*Students' Usage of Study Aids or Resources*




*Note.* The majority of students use study aids and resources.

Regarding the informants' usage of study aids or resources, (22%) of the student population responded affirmatively "yes". While, (78%) of the respondents said no. Put differently, the majority of them did not make use of such study aids or resources to better improve their understanding of English lectures. This indicates that most students were not taking advantage of available study aids or resources that could potentially enhance their comprehension of the delivered lectures.

**Q14.** If yes, which aid do you use?

**Table 3**

*The Study Aids Used by Students*

| Options | Students' Answers | Percentage |
|---|---|---|
| Yes, I have used online resources like videos or study guides to supplement my understanding of lectures delivered in English. | 29 | 63% |
| Yes, I have used study groups or tutoring sessions to improve my comprehension of lectures delivered in English. | 6 | 13% |
| No, I prefer to solely rely on the lecture material and my own note-taking for understanding lectures delivered in English. | 15 | 33% |
| **Other Opinions** | **Students' Answers** | **Percentage** |
| I understand English lessons just from the teacher and my linguistic acquisitions. | 1 | 2% |
| No need, because I can understand. | 1 | 2% |

*Note.* Students use mostly online resources like videos and study groups to improve their comprehension of lectures delivered in English.

In the fourteenth question students were given the freedom to tick more than one box. As a result, twelve (29) students who represented the majority agreed and demonstrated that they have used online resources like videos or study guides to supplement their understanding of English lectures delivered in English. Meanwhile, (15) students disagreed and mentioned that they prefer to solely rely on the lecture material and their own note-taking for understanding lectures delivered in English.

Moreover, the minority (06) said that they have used study groups or tutoring sessions to improve their comprehension of lectures delivered in English. However, two other students gave their personal opinion highlighting that they understand English lessons just from the teacher and my linguistic acquisitions.

**Q15.** Please read each statement carefully and indicate the extent to which you agree or disagree with each statement based on your strategies used during lecture within EMI implementation.

**Table 4**

*The Strategies Used by Students during Lectures*

| **Options** | **1.Always** | **2.Often** | **3.Sometimes** | **4.Rarely** | **5.Never** |
|---|---|---|---|---|---|
| I first skim an English passage on the handouts (read over the passage quickly) then go back and read carefully. | 6 | 10 | 16 | 9 | 5 |
| Teachers use visual support to make you understand the lecture's content. | 10 | 13 | 17 | 4 | 2 |
| I Ask questions to lecturer and ask for repetition. | 7 | 12 | 11 | 9 | 7 |

| | | | | | |
|---|---|---|---|---|---|
| I use French or my mother tongue to discuss about the content. | 23 | 11 | 9 | 0 | 3 |
| I Essentially rely on lecture notes to prepare for exams. | 18 | 8 | 13 | 5 | 2 |
| I make presentations to improve my English. | 6 | 3 | 18 | 11 | 8 |

*Note.* Students always use French or the mother tongue and rely on lecture notes, often ask for repetition and questions, sometimes use skimming, visual support, and make presentations.

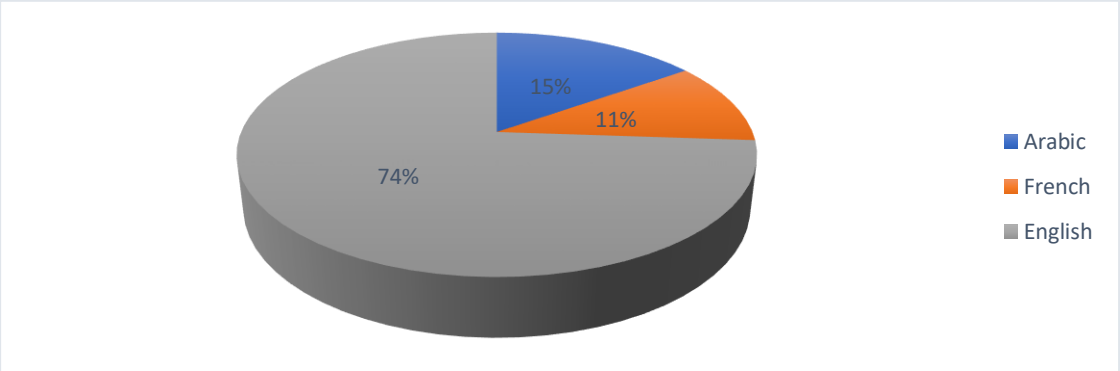
This table indicates the strategies used by students during lectures and intends to gather insight about the frequency of each statement, Statement 1: "I first skim an English passage on the handouts (read over the passage quickly) then go back and read carefully" is used by (16) students sometimes, (10) students often, (6) students always, (9) students rarely, and (5) students never used this strategy. Statement 2: "Teachers use visual support to make you understand the lecture's content." This statement is not about a student strategy, but rather instructors use of visual support as power point presentation in English. This strategy is used by (17) teachers sometimes, (13) teachers often used it, (10) teachers always, (4) teachers rarely and (2) teachers never. Statement 3: "I Ask questions to the lecturer and ask for repetition" This strategy is used by (11) students sometimes, (12) students often, (7) students always, (9) students rarely, and (9) students never. Statement 4: "I use French or my mother tongue to discuss about the content", this strategy is always used by (23) students, often used by (11) student, while it is sometimes by (9) students, and solely 5 said rarely, and the minority (2) said never. Statement 5: "I essentially rely on lecture notes to prepare for exams." This strategy is used by (13) students sometimes, (8) students often, (18) students always, (5) students rarely, and (2) students never. Statement 6: "I make presentations to improve my English", this strategy is used by (18) students sometimes, (11) students often, (3) students always, (8) students rarely, and (15) students never. Overall, the

majority of students rely most on skimming texts and then reading carefully, using note taking and making presentations.

**Q16.** Which language did you use for written examination/papers in your English language lectures?

**Figure 30**

*The Language Used for Written Examination and Papers*




*Note.* Written examinations and papers are written in English.

The obtained results in the figure above reveal that the majority (74%) of respondents reported using English for written examinations and papers, while (15%) stated using Arabic, and solely (11%) affirmed using French. Ultimately, this suggests a strong possibility of English being the primary language of instruction (EMI) in the informants' educational background.

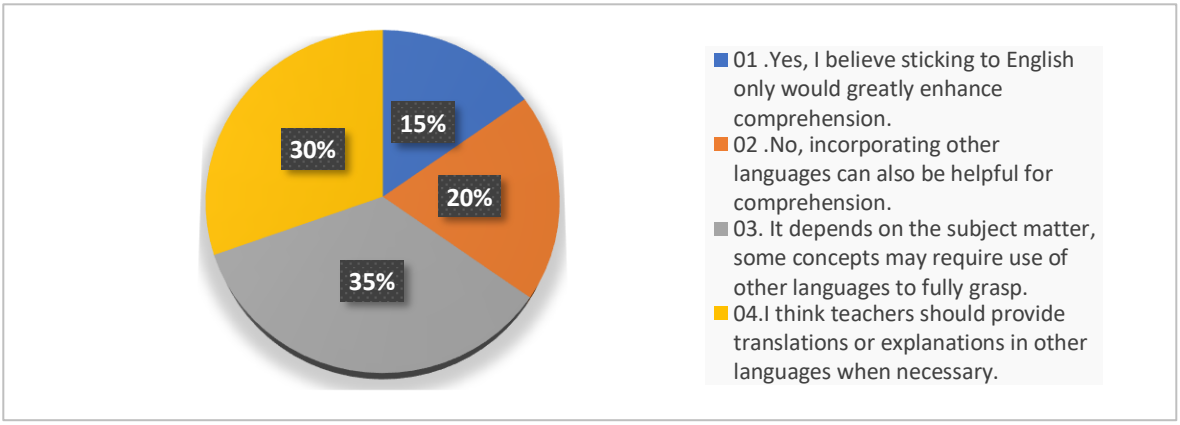
**Q17.** Do you feel that teachers should stick to English only during lectures to improve overall comprehension?

Figure 31 below revealed a diverse range of opinions regarding the use of English language during lectures. A significant proportion (35%) of the respondents posit that it depends on the subject matter. In other words, they felt that English might be sufficient for certain subjects, but not necessarily for others. This shows the participants' need for flexible language use, as some concepts may require the use of other languages to fully grasp and comprehend. While, (30%) of students believed that teachers should provide translations or

explanations in other languages when necessary, indicating that they consider the use of native languages as a valuable tool for grasping complex concepts. This suggests that these informants recognized the importance of linguistic familiarity in facilitating understanding. In contrast, (20%) of the students disagreed with the statement, suggesting that they believed that incorporating other languages could also enhance comprehension, suggesting that the respondents believe that allowing the use of other languages might improve overall understanding. Eventually, ( 15%) of students strongly advocated for sticking to English only, believing that this approach would greatly enhance comprehension. This denotes using only English during lectures would be the most effective way for students to learn.

**Figure 31**

*Students' View about the Use of English Only during Lectures*




*Note.* The use of English only during lectures mostly depends on the subject matter.

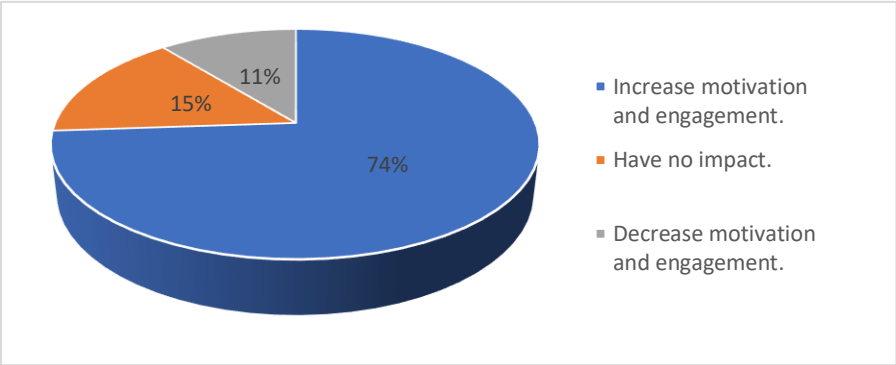
**Q18.** How do you think the teacher's strategies impact your motivation and engagement during EMI lectures?

As shown in figure 32, (74%) of the participants agreed that their teacher's strategies increase their motivation and engagement. That is, students who chose this answer are more likely to find their teacher's instructional strategies to be effective at boosting their motivation and engagement during lectures. In contrast, (15%) of the respondents believe that the strategies have no impact, while a small minority (11%) of the informants argued

that the strategies used by instructors decrease their motivation and engagement during lectures. This latter suggests that there are some areas where teaching methods could be enhanced to better support the learning process and address the learners' wants, needs, and lacks.

**Figure 32**

*Students' View about Teachers' Strategies Impact on their Motivation and Engagement*




*Note.* Teachers' strategies increase their motivation and engagement.

**Q19.** What challenges have you faced during lectures delivered in English?

**Table 5**

*The Challenges Faced by Students during Lectures*

| **Options** | **Students' Answers** | **Percentage** |
|---|---|---|
| Language barriers | 17 | 37% |
| Lack of familiarity with the topic | 12 | 26% |
| Distractions | 9 | 20% |
| Lack of preparation | 2 | 4% |
| **Other Opinions** | **Students' Answers** | **Percentage** |
| Teachers' limited linguistic proficiency. | 6 | 13% |

*Note. Language barriers, lack of familiarity with the topic are the main Challenges Faced by Students during Lectures.*

The table above provides valuable insights into the challenges faced by students during lectures delivered in English. It reveals that 17 informants claim that language barrier

is the primary challenge in reporting difficulties due to the use of English as the medium of instruction. This implies that a significant portion of the student population (37%) struggles to comprehend the content effectively when it is not presented in their native language. The second major issue, reported by 12 of the students (26%), was a lack of familiarity with the topic being discussed. This indicates that the content may not be well-aligned with the students' prior knowledge or educational background, making it challenging for them to engage with the material. In contrast, distractions in the classroom were considered as another main challenge by 09 of the respondents (20%) suggesting that the learning environment may not be conducive to focused learning. Besides, only 02 of the informants (4%)felt that a lack of preparation for the lectures was a significant issue, implying that the respondents were well-prepared for the lectures and did not experience significant difficulties due to a lack of preparation. Interestingly, 06 of the respondents (13%) claim that the lecturers themselves had limitations with their English proficiency which added another feature to the language comprehension challenges. This suggests that the quality of instruction and the ability of the lecturers to effectively present the content in English may also play a vital role in the students' learning experience.

**Q20. What do you like the best about your lectures in English?**

Students stated that they enjoy lectures delivered in English for a variety of reasons. Some students appreciate the opportunity to learn new terminology related to their specialty. Others value the ability to access foreign references that can provide additional information or new perspectives on their field of study. Additionally, some students find that lectures in EMI settings can help them improve their English language skills. However, some students also find that lectures in EMI settings can be challenging, especially for those who have weak levels in English native. Students illustrated that the pace of the lecture, and the complexity of the material can make it difficult for some students to understand. Moreover, one respondent said "The professors are teaching in English for the first time, so their

pronunciation is slow, which gives me time to understand well. Unlike teaching in French, where the professors speak quickly, which caused me to fail. That is, many students find that lectures delivered in English can be a valuable learning experience as it increases their knowledge and linguistic level after the lecture.

**Q21. Do you have any suggestions or recommendations for instructors to improve their lectures delivered in English for better comprehension?**

As a concluding question, students were asked if they would suggest or give recommendations for instructors to improve their lectures delivered in English for better comprehension, students offered a variety of recommendations to improve the comprehension of English lectures. These included translating key vocabulary into Arabic, utilizing technology and clear explanations to simplify information, and employing engaging methods like audio-visual aids. Additionally, accurate pronunciation, summaries, and a condensed study period were all seen as beneficial for creating a more inclusive and effective learning environment. For students facing language challenges, summer bridge programs and a multi-lingual approach were viewed as valuable support. Whilst the minority of students preferred not to give any recommendation. Ultimately, by focusing on utilizing various resources, and acknowledging the diverse needs of their students, instructors can create lectures delivered in English that are both informative and accessible.

## 3.4. Presentation of the Results of Observation

The researchers utilized a non-participant (direct) observation in order to investigate the enhancement of lecture comprehension in EMI classrooms. Hence, the following observations were obtained:

– Teachers are making a concerted effort to use English as the primary language of instruction which demonstrates their commitment to the EMI approach. However, most teachers are also strategically using code-switching (alternating between English and the

students' native languages, French or Arabic) when necessary to ensure comprehension of complex concepts and terminology.

– Only a few students who are actively engaged in English lectures and participated constantly in class discussions.

– Students are seeking help from their peers when needed which fosters a collaborative learning environment.

– This peer-to-peer interaction allows students to clarify concepts, practice using English, and develop their language skills in a supportive setting.

– Teachers are incorporating visual aids, such as PowerPoint presentations in order to enhance the delivery of lectures and support students' learning.

– Most teachers provide students with lecture materials before class.

– Teachers are using English terminology and concepts, and then explaining them in the students' native languages to ensure comprehension.

– One teacher wrote exercises in English on the board before the students arrived, and then used PowerPoint slides which are in English to explain the content, while providing Arabic explanations and clarification for each slide, and this might demonstrate a well-structured and organized lesson plan.

– Students are presenting in English in front of their peers.

– Students are taking notes, indicating their active engagement in the learning process.

– Students appear to be motivated to use English with their teachers which is a positive sign for the effectiveness of the EMI approach. It also suggests that students recognize the importance of developing their English language skills for academic and professional success.

– It was also clear that most teachers and students have language anxiety as they hesitate to read texts or pronounce words in English.

Eventually, the classroom observations highlight the various strategies employed by teachers and students to explore the EMI setting effectively. The use of translanguaging, code-switching, collaborative learning, visual aids, and well-structured lesson plans contribute to creating a supportive and engaging learning environment that fosters language development and content mastery.

### 3.5. Triangulation of the Results

This study employed a mixed-method approach, combining classroom observations with questionnaires for both teachers and students. this triangulation strategy presents a more comprehensive picture than just accumulating data. It aimed to enhance the research's reliability and validity by mitigating the limitations inherent in each individual method.

First and foremost, questionnaires are effective instruments for gathering vast amounts of teachers and students self-reported data, However, they are frequently affected by social desirability bias, which causes the participants to respond the questionnaire by employing "ideal" strategies rather than their real practices. Thus, questionnaires may not capture the various nuances of real-world comprehending behaviors and strategies during the lectures delivered in English.

On the other hand, classroom observations, provide a firsthand view of students' and teachers' genuine use of strategies during lectures delivered in English to improve lecture comprehension. However, they are constrained by a small sample size and may be influenced by the observer effect, which occurs when pupils change their behavior as a result of being observed. Hence, this multi-method approach considerably improved our understanding and interpretation of the findings. In other words, the research use of questionnaires and observations, the research could not

only identify the strategies students report using but also verify them with their actual behaviors in the classroom, meanwhile it provided a full scope of students and lecturers use of learning strategies. This holistic strategy led to the discovery of key factors that contribute to efficient lecture comprehension, such as prior knowledge, learning style, language proficiency, and note-taking abilities. Furthermore, triangulation decreased the limits of each method, resulting in more reliable and generalizable findings for various scenarios.

In conclusion, the mixed-methods strategy used in this study resulted in generating comprehensive insights of students' and instructors' lecture comprehension strategies.

### 3.6. Conclusion

This chapter discussed and interpreted the obtained results. It revealed teachers and students' perspectives on how they deal with lecture comprehension issues in English-medium instruction (EMI) classes. Besides, recognizing and categorizing the various lecture comprehension strategies used by students in EMI classes. Furthermore, it shed light on the variety of strategies used by EMI lecturers to increase lecture comprehension for students with varied levels of English proficiency. Finaly, it provided some recommendations and suggestions.

# Chapter Four

## Chapter Four: Discussion of Main Findings, Limitations, Implication and Recommendations.

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## 4.1. Introduction

To begin with, it seems vital to discuss and interpret all the main findings of the above-mentioned research instruments. The discussion is structured around the two research questions raised at the beginning of this study.

**Q1.** What are the strategies that EMI teachers utilize to promote lecture comprehension for students in scientific and technical disciplines?

**Q2.** What lecture comprehension strategies do learners in EMI classrooms use to improve their lecture comprehension?

To reach an answer to the above questions, the researchers relied on a questionnaire for both students and teachers while making use of classroom observation.

## 4.2. Discussion of Main Findings

### 4.2.1. Discussion of Teachers' Questionnaire

The data gathered through the questionnaire posed to the teachers, contained answers and responses of the research question itself, by turning the data from being raw data to final results of discussion, several points were cleared and confirmed concerning the existence of the strategies used by EMI lecturers to increase lecture comprehension for students.

The first section focused on gathering personal information about teachers from the faculty of science and technology. Based on the participants' responses, it was observed that the majority are females mostly from the technology department, aging from 25 to 58 years old. Regarding their experience in teaching, most of the teachers had between 01 to 05 years of teaching experience, beside they have intermediate level.

The second section of the teachers' questionnaire identifies their opinion about students' lecture comprehension. Based on the feedback from the teachers, it is evident that they use occasional translations/explanations in another language to support the lecture delivered in English. Additionally, they revealed that students' comprehension is average, and they often struggle with understanding lectures, mainly due to their limited English proficiency, struggling to understand complex technical vocabulary, having insufficient background knowledge about the topic, and insufficient lecture materials. Further, the majority of respondents denoted that Teachers' English proficiency impact students' lecture comprehension.

The third section of the study is devoted to scrutinize the strategies used by teachers during lectures as a response to research question number 1, it revealed that the majority of teachers often use activities and strategies to improve comprehension including the use of check-up questions, interactive activities, and multiple-choice questions, demonstrations, visual aids, and audio-visual materials, collaborative learning through teamwork and discussions, providing their students with materials before lectures, summarizing and repetition, asking their students to make presentations, the use of translanguaging, and provide real-life examples and practical applications to illustrate the concepts taught in the lecture. Ultimately, using these strategies is recommended by most teachers and seeking feedback through evaluations or surveys which allows instructors to identify areas for improvement and ensure their lectures are effective for all students.

### 4.2.2. Discussion of Students' Questionnaire

The results of students' questionnaire revealed a gap between students' self-reported English language proficiency and their comprehension of EMI lectures. While a majority of informants acknowledged limitations in speaking and writing, reading and listening, comprehension was marginally higher. However, despite these limitations, a significant portion (43%) indicated improvement in comprehension over time. This suggests potential

adaptation by students or improvements in teaching methods that might enhance understanding.

In regards to note-taking strategies, students employed a variety of methods, including using pen and paper, key words, teachers' handouts, and a combination of approaches. Notably, a significant proportion of students used recording devices, mind maps, and collaborative note-taking with classmates, highlighting the importance of adapting to individual learning styles and preferences. Moreover, the majority of students reported that note-taking during lectures delivered in English is somewhat difficult, suggesting a need for targeted strategies and support to address the challenges students face in capturing key information in EMI lectures.

Additionally, the data shows a disconnect between lecture preparation and comprehension. Although most students reported limited English language skills, the majority rarely or never prepared for lectures beforehand. This lack of preparation likely contributes to the finding that only half the students grasped more than (50%) of the lecture content. Interestingly, a significant portion of students (41%) preferred relying solely on lectures for understanding, without engaging in pre-reading or other preparatory activities. This indicates a need for promoting effective preparatory strategies to bridge the comprehension gap.

Regarding language use in EMI lectures and students' engagement, the primary language used for exams and papers was English, suggesting EMI as the dominant mode of instruction. However, student opinions on the use of English during lectures were diverse, with a significant portion (35%) believing it depended on the subject matter, and (30%) expressing a desire for translations or explanations in their native language for challenging concepts. This highlights the potential value of incorporating elements of multilingualism to support comprehension, while also considering the benefits of focused English language development in enhancing lectures comprehension.

The study also investigated the impact of instructors' strategies on student engagement, finding that while most students agreed that their teachers' methods increased motivation and engagement, a minority felt that these strategies had no impact or even decreased engagement. This implies that teachers should continuously assess and adjust their teaching methods to effectively meet the students' needs and learning styles.

Ultimately, the language barrier emerged as the most significant challenge for many students (37%), underlining the importance of implementing effective EMI strategies that aims at addressing the disparity between students' native language and the language of instruction. Moreover, a lack of familiarity with the topic (26%) and classroom distractions (20%) were identified as hurdles to comprehension. This highlights the need for instructors to present clear and well-organized lectures, ensuring that the content aligns with students' prior knowledge and creating a focused learning. Besides that, students offered recommendations to better improve the comprehension of EMI lectures, including accurate pronunciation, translating key vocabulary into Arabic, utilizing technology and clear explanations. They also underscored considering pre-semester programs or a multi-lingual approach for students facing language barriers, and employing engaging methods like audio-visual aids and artifacts. Thus, these suggestions highlight the importance of adapting to individual learning styles and preferences while providing targeted support and scaffolding to students.

### 4.2.3. Discussion of Observation

This study investigated how teachers and students navigate EMI (English as a Medium of Instruction) classrooms to improve lecture comprehension. The obtained results from the observation revealed a strong commitment to the EMI approach, with teachers primarily utilizing English for instruction. However, a crucial strategy involves the strategic use of code-switching (between English and Arabic/French). This student-centered

approach ensures comprehension of complex concepts without abandoning the target language. Importantly, the observation highlights the creation of a collaborative learning environment through peer-to-peer interaction. This allows students to clarify concepts, practice English, and develop language skills in a supportive setting. Additionally, the use of visual aids like PowerPoint presentations and providing pre-class materials to enhance content delivery and support students' understanding. Notably, some teachers effectively employed a dual-language approach, explaining English terms in students' native languages for better comprehension. This highlights a well-structured and organized approach to EMI, fostering both language development and content mastery. Moreover, students appeared motivated and took notes to strengthen their lecture material. While the observed strategies demonstrate a positive approach, some challenges arise. The observation suggests a need for broader student participation in class discussions. This could indicate apprehension or a lack of confidence in using English. Furthermore, the observed hesitation towards reading texts and pronouncing words in English points towards the presence of language anxiety among both teachers and students. Addressing this anxiety through targeted strategies could significantly enhance their confidence in using English effectively. Overall, the observations suggest that a combination of strategies like translanguaging, collaboration, and well-structured lessons can create a supportive environment for both language development and content learning in EMI classrooms.

## 4.3. Pedagogical Implications

The following list of pedagogical implications is derived from the findings of this study. These implications aim at raising teachers and students' awareness about the key major strategies used to enhance lecture comprehension within the implementation of EMI.

– Teachers should focus on incorporating diverse learning styles to cater to the varying needs of students. This entails using multimedia resources, such as videos,

educational games, and interactive simulations in order to engage students with different learning. Accordingly, gamification techniques such as points, badges, leaderboards, and timers can add an element of fun to EMI lectures.

– Instructors should also employ scaffolding techniques to support students in developing their critical thinking and problem-solving skills. This can involve breaking down complex topics into manageable chunks and providing guided practices to help students build confidence and overcome language anxieties within EMI lectures.

– Visual aids, such as diagrams, flowcharts, slides, and infographics, should be used extensively to facilitate comprehension. These visual aids can help students to better understand complex concepts and relationships between ideas.

– Lecturers should also incorporate artifacts and task-based learning to provide students with practical applications of theoretical concepts. This can include assigning projects that require students to apply what they have learned to real-world situations.

– Instructors can introduce Pecha Kucha presentations as a way for students to present their ideas in a concise and engaging manner. This format can help students to develop their communication skills and build confidence in presenting their work.

– Teachers should also provide pre-lecture materials, such as reading assignments or video lectures, to help students prepare for the lecture and engage more actively during lectures. This can entail online quizzes, and assigning pre-lecture tasks that require students to analyze and reflect on the topic before the lecture.

– Translanguaging, or the use of multiple languages in the classroom, should be employed by lecturers to facilitate communication and comprehension. This involves using students' native languages to explain complex concepts or providing glossaries and dictionaries to help students understand technical terms.

– Students should actively engage with the course materials beforehand to build the necessary background knowledge and context for a deeper understanding of the lecture

content. This will enable them to follow the lecture more effectively, grasp important concepts and connections, and move beyond passive learning.

- Teachers should encourage collaborations and peer interaction to foster a sense of community and promote active learning. This necessitates assigning group projects or peer review activities that require students to work together and share their ideas.

- Teachers should combine clear EMI practices with well-designed Bloom's Taxonomy questions to achieve several benefits. By using lower-order questions in clear English, teachers can make complex concepts accessible, building a foundation before diving into higher-order thinking. Higher-order questions in EMI can then encourage deeper understanding by prompting students to analyze, synthesize, and evaluate information in English, fostering a deeper grasp of the subject matter. Furthermore, this approach can help students developing their critical thinking skills.

## 4.4. Research Limitations

It is crucial to acknowledge that every research study has its inherent limitations, and this study is no exception. The researchers of this study encountered some limitations which ought to be taken into account in doing future contributions. This comprises limited time duration, because the present study was conducted through the use of the triangulation technique of both quantitative and qualitative data. The findings were obtained from both of the students' and teachers' questionnaires and classroom observation. Likewise, concerning the classroom observation, the researcher attended five (05) sessions only. More classroom observation would have led to more reliable data on lecture comprehension enhancement within the implementation of EMI. Moreover, longer time would be effective and helpful for the researchers to utilize various research tools such as interviews that would strengthen the study findings.

Another limitation in the current study worth mentioning, can be the low rate of the students' response; taking into account that first year students for the faculty of science and

technology are included in the study, however only 46 answers were received. As for the teachers, although the questionnaire was sent from the dean of the faculty of science, the dean of the faculty of technology, and by the researchers only 17 answers were received from the teachers. Nevertheless, it would be better if the setting included a larger number of students to gain more valuable insights.

Furthermore, in the process of data gathering, we encountered challenges with the platforms utilized for sending out surveys to the participants, particularly email and Google Forms. While this approach has gained popularity for being simple and convenient, it has its disadvantages. For example, email invitations for participation could be flagged as spam or ignored by participants, resulting in a decreased response rate.

Additionally, it is important to mention that this study did not directly assess the feasibility of implementing all the identified strategies in real-world classrooms. This leaves a gap regarding the practicality and effectiveness of these strategies within the specific constraints faced by teachers, such as curriculum requirements, class size, and available resources. Accordingly, future research could explore this aspect through studies or interventions that test the practicality of implementing these strategies that aims at enhancing lecture comprehension within the implementation of EMI.

## 4.5. Recommendations

Based on the earlier findings, it seems of paramount importance to explore some recommendations and considers the limitations of the present study. With the findings of the current study in mind, a number of recommendations can be suggested for the sake of effective lecture comprehension enhancement in the EMI settings, which requires careful planning and consideration of various factors. Here is a breakdown of the key steps that are recommended:

➢ Needs Assessment

– Student Language Proficiency: Evaluating students' current level of English proficiency helps determine the level of language support needed and the complexity of content that can be introduced.

– Subject Matter & Learning Objectives: Teachers should clearly define the academic content they want to teach and the learning objectives that they are aiming to achieve by Considering how these objectives can be integrated with language development goals.

– Resources & Teacher Training: This refers to assessing available resources like textbooks, multimedia materials, and technology by evaluating teachers' training needs to ensure that educators are equipped with EMI andragogy skills. In other words, providing ongoing training and support for teachers to develop their EMI skills. This could involve workshops, seminars, or online resources on effective EMI andragogy.

– Student Training, the researchers suggest organizing training Courses mainly tailored to students within these faculties of Science and Technology.

➢ Curriculum Development

– Content Selection: Choosing content and materials that are comprehensible for students' language level and proficiency by adapting materials if necessary, and provide clear glossaries or explanations of new terminologies.

– Task Design: Designing tasks and activities that promote both content learning and language development. Activities should be engaging and encourage students to use English for communication, collaboration, and critical thinking.

– Scaffolding Strategies: Integrating scaffolding strategies to support student understanding, this could involve providing graphic organizers, sentence starters, or outlines for assignments.

➢ Instructional Delivery

– Clear & Concise Language: The use of clear, concise, and well-organized language during instruction. Teachers and instructors should speak at an appropriate pace and avoid complex sentence structures or overly technical vocabulary for better understanding.

– Interaction & Collaboration: An EMI instructor should ensure that each student gets the opportunity to contribute their best by providing opportunities for student to interact and collaborate through discussions, group work, or presentations. Consequently, this allows them to practice using English in a meaningful context.

– Formative Assessment: It is compulsory to integrate formative assessments throughout lessons to monitor student progress and identify areas where they might need additional support. This allows teachers to adjust their instruction when needed.

➢ Assessment and Evaluation

– Variety of Assessment Tools: Using a variety of assessment tools to measure both students' content knowledge and their English language skills. This could include essays, presentations, projects, or standardized tests.

– Feedback for Improvement: Provide constructive feedback to students on both their content knowledge and their use of English. This feedback should be specific, actionable, and focused on helping them improve their learning.

Last but not least, the recommendations suggested are by no means exhaustive due to the small size of the populations in the current study, and the results cannot be representative enough since this research covers a particular case of a small number of students in two (02) major departments among many other departments of Science and Technology in Algeria.

## 4.6. Conclusion

The present chapter was devoted to the discussion of the data analysis main findings. It aimed at answering the questions posed in this research through the use of three instruments in collecting data. Upon analyzing the responses, the study revealed various lecture comprehension strategies used by students and lecturers to deal with lecture comprehension issues in EMI classes. These strategies included the use of check-up questions, interactive activities, visual aids, and audio-visual materials, collaborative learning through teamwork and discussions, the use of translanguaging, note-taking strategies, mind maps, and code-switching (between English and Arabic/French). That is, the main findings of this study called for highlighting distinct pedagogical implementations. Finally, it stated the limitations faced during the process of conducting this research, and suggested several recommendations that can be taken into consideration to meet the objective of this research.

# General Conclusion

## General Conclusion

The objective of this investigation is to shed light on how students and teachers deal with lecture comprehension challenges in English-medium instruction (EMI) classes. It highlights various strategies employed by EMI teachers to improve lecture understanding for students. Furthermore, this work identifies several lecture comprehension strategies employed by students in EMI classes. In addition, it sheds light on other effective lecture comprehension strategies that can be implemented in order to improve learners' comprehension and assist them in overcoming learning barriers.

The study was conducted at Yahia Fares University of Medea at the faculty of science and technology with first year LMD students in order to achieve our objectives. Hence, this research was divided into four main chapter, the first part highlighted the literature review that looked at key aspects of EMI andragogy, such as definitions, principles, and research findings on the impact of EMI on technical and scientific domains. It underlined the importance and challenges associated with EMI in science and technology education. This chapter's later section focused on lecture comprehension. It defined lecture comprehension, explained its importance and benefits, and identified numerous aspects and variables that influence lecture comprehension enhancement. It also discussed incorporating strategies to address the problems and benefits of EMI in science teaching. Furthermore, the paper underlines the function of Bloom's taxonomy theory in categorizing educational learning objectives into distinct levels of difficulty, thus, offering a framework for developing successful learning activities and assessments.

The second chapter deals with the methodology that is used in this study, it includes the population and sampling, research design, research setting, and the instruments of data collection which are questionnaire and observations.

Moving to the next part, which is the third chapter that discussed and interpreted the acquired findings. It highlighted how instructors and learners approach lecture comprehension challenges in English-medium instruction (EMI) classes. In addition, recognize and categorize the various lecture comprehension strategies utilized by students in EMI classrooms. Furthermore, it sheds light on numerous strategies employed by EMI lecturers to improve lecture understanding for students of varying levels of English ability.

The last chapter discusses data analysis findings from a study on lecture comprehension strategies in EMI classes. It reveals various methods used by students and lecturers, including check-up questions, interactive activities, visual aids, collaborative learning, translanguaging, note-taking, mind maps, and code-switching. The study also discusses limitations and suggests recommendations for improvement.

The overall findings of the current research emphasized the existence and the use of the learning strategies among both students and teachers to ameliorate lecture comprehension to deal with the issues faced during lectures, such as limited English proficiency, struggling to understand complex technical vocabulary insufficient background knowledge about the topic. The findings obtained from the questionnaires and the observations revealed that the majority of teachers often use activities and strategies to improve comprehension including the use of check-up questions, visual aids, audio-visual materials, collaborative learning through teamwork and discussions, and the use of translanguaging, among others. Learners, however, tend to use multiple strategies, such as, recording the lectures, collaborative note-taking with classmates, and translating key vocabulary into Arabic.

In conclusion, this work holds practical implications for educators, informing andragogical approaches that enhance student learning outcomes and offering evidence-based recommendations to improve instructional practices. Additionally, insights from this study can inform curriculum developers and policymakers about effective strategies to

address the challenges students face in EMI classrooms, ultimately leading to improved learning experiences and outcomes.

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# Appendices

## Appendix 1

الجمهورية الجزائرية الديمقراطية الشعبية
وزارة التعليم العالي والبحث العلمي
People's Democratic Republic of Algeria
Ministry of Higher Education and Scientific Research

تاريخ مجيد وعهد جديد

الديوان
خلية الاعلام والاتصال

الجزائر، 02 اكتوبر 2022

## تعزيز استعمال اللغة الإنجليزية
## في التعليم والتكوين العاليين

وجهت وزارة التعليم العالي والبحث العلمي مراسلة إلى السادة رؤساء الندوات الجهوية للجامعات ، لتعميمها على السيدات والسادة مديري مؤسسات التعليم العالي، بخصوص تعزيز استعمال اللغة الإنجليزية في التعليم والتكوين العاليين.

ومن أجل توفير مورد بشري مؤهل لتعليمية اللغة الإنجليزية في مؤسسات التعليم العالي ، جرى ضبط طريقة تدريس محكمة تقضي لتكوين الأساتذة الباحثين في اللغة الإنجليزية.

وتنص المراسلة على ضرورة تجنيد كل مؤسسة جامعية لطاقاتها التأطيرية، وإمكاناتها المتاحة وتسطير برنامج لتدريس أساتذتها اللغة الانجليزية، على مستوى مراكز التعليم المكثف للغات، مما يسمح لاحقا للأساتذة من تدريس كل الوحدات التعليمية تدريجيا باللغة الإنجليزية، وهذا من خلال حصول الأساتذة على تكوين يوافق مستوىB2 أو C1 ، أو تسجيل الأساتذة الباحثين للحصول على شهادة اللغة الإنجليزية حسب إمكانيات كل مؤسسة جامعية.

كما أن المسعى الآخر من هذا الإجراء هو التمكين من مرئية مؤسسات التعليم العالي الجزائرية، ومقروئية منتجاتها العلمية والبيداغوجية، لتحسين ترتيبها وتصنيفها على المستوى العالمي.

**Appendix 2**

الجمهورية الجزائرية الديمقراطية الشعبية

وزارة التّعليم العالي والبحث العلمي

الأمين العام

رقم 1433/ا.ع/2022

بالجزائر، في 28 2022

السّادة رؤساء النّدوات الجهوية للجامعات،

بالاتّصال مع السيّدات والسّادة مديري مؤسسات التعليم العالي

**الموضوع:** بخصوص تعزيز استعمال اللغة الإنجليزية في التعليم والتكوين العاليين.

في إطار مسعى القطاع الرامي إلى تعزيز تفتُّح مؤسسات التعليم والتكوين العاليين وتحسين مرئيّتها على المستوى الدّولي، أبلغكم أنّه تمّ ضبط مقاربة تقضي بتعزيز استعمال اللغة الإنجليزية في التعليم والتكوين، والتي لا يمكن تجسيدها فعليًا دون توفّر مورد بشري مؤهّل.

يتعلّق الأمر بتكوين الأساتذة الباحثين في اللّغة الإنجليزية بمستوًى يسمح لهم، لاحقًا، بضمان تدريس مختلف الوحدات التعليمية، تدريجيًا، بهذه اللغة.

وفي هذا الشّأن، يتعيّن على كلّ مؤسسة جامعية، حسب إمكاناتها المتاحة، وكمرحلة أولى، تسطير برنامج لتكوين أساتذتها في اللغة الإنجليزية ابتداءً من السنة الجامعية 2022-2023، مع استهداف مستوى تعلُّم يوافق درجة (B2) أو (C1) على الأقل، على نحو English for specific purposes على مستوى مراكز التعليم المكثّف للّغات (CEIL)، أو التسجيل في شهادة ليسانس حسب الإمكانات المتاحة لكلّ مؤسّسة.

تحياتي.

الأمين العام بالنيابة

عبد الحكيم بن تلمسان

نسخةً مرسلة إلى السيد الوزير (على سبيل عرض الحال).

وزارة التعليم العالي والبحث العلمي – الأمانة العامة

11 طريق دودو مختار، بن عكنون، الجزائر.

**Appendix 3**

## Teachers' Questionnaire

Dear fellow teachers,

As part of a Master's research investigation aimed at improving comprehension of lectures delivered in English as a Medium of Instruction (EMI), we have crafted an anonymous questionnaire. Your participation is kindly requested. Please take five minutes of your valuable time to contribute to this project by completing the survey based on your experience.

**Section One : Demographic Information :**

1.Teacher's gender

- Male ☐
- Female ☐

2. Teacher's age

……..

3. Teacher's degree?

……..

4.Years of teaching experience:

……..

5. What are the fields you are concerned with? (teachers of which departments)

- Faculty of Science ☐
- Faculty of Technology ☐
- Other ☐

6. Modules taught

……..

7. What is your Level of English Proficiency?

- Beginner (A1) ☐
- Elementary (A2) ☐
- Intermediate (B1) ☐
- Upper-Intermediate (B2) ☐
- Advanced (C1) ☐
- Proficient (C2) ☐

**Section Two: Exploring Students Lecture Comprehension**

8. What language do you primarily use during lectures?

☐

- English
- French or Arabic ☐
- It varies depending on the subject/topic ☐
- The lecture is mainly taught in English, but there are occasional translations/explanations in another language ☐

9. How often do you teach lectures in English?

- Daily ☐
- Several times a week ☐
- Once a week ☐
- A few times a semester ☐
- Rarely or never ☐

10. On a scale of 1-5, how do you rate your students' English comprehension during lectures?

1= Very Good 5= Not Good

○ ○ ○ ○ ○

1 2 3 4 5

11. How often do your students struggle with understanding lectures delivered in English?

- Rarely ☐
- Sometimes ☐
- Often ☐
- Very often ☐
- Almost always ☐

12. In your experience, what are the challenges your students face when it comes to comprehending English lectures?

- Limited English proficiency ☐
- Struggling to understand complex technical vocabulary ☐
- Insufficient lecture materials (from note taking) ☐
- Insufficient lecture materials (from teachers' handouts) ☐
- Insufficient background knowledge on the topic ☐
- Difficulty connecting lecture material to real-life examples ☐

13. Do you feel that your own English proficiency has an impact on your students' comprehension of lectures?

Yes ☐ No ☐

14. Why?

……

**Section Three: Exploring The Strategies Used During Lectures**

15. On a scale of 1-5, how often do you ask your students check-up questions (e.g. Is it clear? Do you have any questions?) to assess their comprehension during lectures?

1= Always 5= never

○ ○ ○ ○ ○

1 2 3 4 5

16. From your observations, do you notice your students using dictionaries during lectures delivered in English?

- Yes, my students frequently use dictionaries during lectures delivered in English ☐
- Occasionally, I see my students using dictionaries during lectures in English ☐
- No, my students rarely or never use dictionaries during English lectures ☐

17. How often do you incorporate activities and strategies to help improve comprehension during your lectures?

- Always ☐
- Often ☐
- Sometimes ☐
- Rarely ☐
- Never ☐

18. What are the activities and the strategies you incorporate to help your students improve comprehension during your lectures?

……

……

19. Do you provide your students with materials (such as handouts) before the lectures delivered in English ?

- Yes, always ☐
- Sometimes, depending on the topic ☐
- Rarely, only for special lectures ☐
- No, never ☐

20. In your opinion, what would be the most beneficial approach to enhancing comprehension of English lectures for your students?

☐ Use visual aids and multimedia resources to supplement the lecture material ( handouts and use power point presentations)

☐ Encourage students to actively take notes during lectures

☐ Incorporate interactive activities and group discussions during lectures

☐ Provide pre-reading activities or materials to familiarize students with the lecture topic

☐ Use real-life examples and practical applications to illustrate the concepts taught in the lecture

☐ Create a supportive classroom environment where students feel comfortable asking questions and seeking clarification

☐ I ask my students to make presentations

☐ I use French or my mother tongue to explain the content

21. Have you received any training or professional development on teaching lectures in English? If so, how has it impacted your teaching?

……
….

22. Do you have any suggestions or recommendations to improve lectures presented in English for better comprehension?

……
….

## Appendix 4

**Students' Questionnaire**

Dear Fellow students,

As part of a Master's research investigation aimed at improving comprehension of lectures delivered in English as a Medium of Instruction (EMI), we have crafted an

**Section One: Demographic Information:**

1.What is your gender?

- Male ☐
- Female ☐

2. What is your age?

…….

3. In which faculty do you study?

- Faculty of science ☐
- Faculty of technology ☐

4. What is your Level of English Proficiency?

- Beginner (A1) ☐
- Elementary (A2) ☐
- Intermediate (B1) ☐
- Upper-Intermediate (B2) ☐
- Advanced (C1) ☐
- Proficient (C2) ☐

**Section Two: Exploring Students Lecture Comprehension**

5. How do you evaluate your English skills according to the options below:

| options | 1. fluently/ easily | 2. With difficulty | 3. Only few words | 4. Not at all |
|---|---|---|---|---|
| I speak English | | | | |
| I write English | | | | |
| I read English | | | | |
| I understand spoken English | | | | |

6. Do you feel that your comprehension of lectures delivered in English has improved over time?

- Yes, significantly ☐
☐

- No, it has stayed about the same
- I don't attend many English lectures, so I can't say ☐
- No, it has actually worsened ☐

7. To what extent do you understand the content of lectures in English?

1=100%  5=0%

○ ○ ○ ○ ○

1 2 3 4 5

**Section Three: Exploring The Strategies Used During Lectures**

8. Do you usually prepare your lessons before attending lectures ?

- Yes, always ☐
- Sometimes ☐
- Rarely ☐
- No, never ☐

9. Do you find it helpful to read course materials before attending a lecture in English?

- Yes, it improves my understanding in the lecture ☐
- No, I prefer to rely on the lecture ☐

10. How do you typically take notes during lectures delivered in English?

- Pen and paper ☐
- Laptop/tablet ☐
- Make Recordings ☐
- Mind maps or diagrams ☐
- key words ☐
- Visual aids or slides ☐
- Collaborative note-taking with classmates ☐
- Teacher's handouts ☐
- Combination of various methods ☐

11. How difficult do you find taking notes during lectures delivered in English?

1=Easy to take notes  5= Impossible to take notes

○ ○ ○ ○ ○

1 2 3 4 5

12. How important are the lecturer's transparencies or powerpoint slides for your understanding of EMI lectures ?

1= Very important for understanding  2= Not important

○ ○ ○ ○ ○

1 2 3 4 5

13. Have you ever utilized study aids or resources to help you better understand English lectures?

- Yes ☐
- No ☐

14. If yes, which aid do you use?

☐ Yes, I have used online resources like videos or study guides to supplement my understanding of English lectures

☐ Yes, I have used study groups or tutoring sessions to improve my comprehension of English lectures

☐ No, I prefer to solely rely on the lecture material and my own note-taking for understanding English lectures.

- If no, say why?

15. Please read each statement carefully and indicate the extent to which you agree or disagree with each statement based on your strategies used during lecture within EMI implementation.

| Options | 1.Always | 2.Often | 3.Sometimes | 4.Rarely | 5.Never |
|---|---|---|---|---|---|
| I first skim an English passage on the handouts (read over the passage quickly) then go back and read carefully | | | | | |
| use visual support to make you understand the lecture's content | | | | | |
| I Ask questions to lecturer and ask for repetition. | | | | | |
| I use French or my mother tongue to discuss about the content. | | | | | |
| I Essentially rely on lecture notes to prepare for exams | | | | | |
| I make presentations to improve my English | | | | | |

16. Which language did you use for written examination/papers in your English language lectures?

- Arabic ☐

- French ☐
- English ☐

17. Do you feel that teachers should stick to English only during lectures to improve overall comprehension?

☐ Yes, I believe sticking to English only would greatly enhance comprehension

☐ No, incorporating other languages can also be helpful for comprehension

☐ It depends on the subject matter, some concepts may require use of other languages to fully grasp

☐ I think teachers should provide translations or explanations in other languages when necessary

18. How do you think the teacher's strategies impact your motivation and engagement during EMI lectures?

- Increase motivation and engagement ☐
- Have no impact ☐
- Decrease motivation and engagement ☐

19. What challenges have you faced during lectures delivered in English?

- Language barriers ☐
- Lack of familiarity with the topic. ☐
- Distractions ☐
- Lack of preparation. ☐
- others( describe) ☐

20. What do you like the best about lectures delivered in English?

……

21. Do you have any suggestions or recommendations for instructors to improve their lectures delivered in English for better comprehension?

……