People's Democratic Republic of Algeria
Ministry of Higher Education and Scientific Research
Echahid Cheikh Larbi Tebessi University -Tebessa-
Faculty of Letters and Languages
Department of English Language and Literature

Exploring the Influence of Arabic and French on First-Year Biology Students' English Pronunciation in the Wake of the Englishization of Algerian Higher Education

A Dissertation Submitted to the Department of Letters and English Language in Partial Fulfillment of the Requirements for the Degree of Master in Language Sciences

Candidates:
Rime ATHMANI
Asma HARET

Supervisor:
Dr. Manel MIZAB

Board of Examiners

President: Dr. Nawal KHELALFA	(MCB)	Larbi Tebessi, Tebessa University
Supervisor: Dr. Manel MIZAB	(MCA)	Larbi Tebessi, Tebessa University
Examiner: Mrs. Chaima BRAHAM	(MAA)	Larbi Tebessi, Tebessa University

2024/2025


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Declaration

We hereby declare that this dissertation, entitled:

"***Exploring the Influence of Arabic and French on First-Year Biology Students' English Pronunciation in the Wake of the Englishization of Algerian Higher Education***"

is our own original work and has not been submitted previously for any academic degree or diploma at any university or institution.

All sources and references used in this research have been properly acknowledged. We understand that plagiarism is a serious academic offense, and we confirm that this work complies with the academic integrity guidelines of Echahid Cheikh Larbi Tebessi University.

Students' Names:

Rime ATHMANI

Asma HARET

Supervisor: Dr. Manel MIZAB

University: Echahid Cheikh Larbi Tebessi University – Tebessa

Faculty: Faculty of Letters and Languages

Department: Department of English Language and Literature

Degree: Master 2 – Language and Sciences

Dedication

To the one who planted the first seeds of ambition in my soul and nurtured me with endless affection…

·To my dear father, **Athmani Abdelkrim**, who was never just a parent, but also a teacher, a mentor, and a role model. You taught generations, and to me, you were the greatest teacher of all. You instilled in me a love for knowledge and awakened in my heart the passion for learning. Your silent strength and dignified presence were my pillars throughout this journey

And to my beloved **mother**, the source of endless care and encouragement, who stood by me in every moment, felt my struggles before I spoke, and lifted me whenever I was close to giving up. You stayed awake so I could rest, and gave so I could move forward. This graduation is not mine alone—it is the result of your sacrifices, your patience, and your unconditional love. I thank Allah first, then thank you both, and I pray He allows me to honor you for as long as I live

·To my brothers and sisters, the loyal companions of my journey, who were my home when the world felt foreign — thank you for your laughter that healed me and for your presence that lifted me whenever I stumbled.

·To my true friends, who believed in me when I doubted myself, who were a clear mirror reflecting my worth when it was clouded — thank you for being the beautiful part of this journey.

·To my respected professors and the entire university staff who accompanied me through five years of dedication and pursuit — thank you to everyone who opened the doors of knowledge for me, who patiently answered my questions, and who shared their time and wisdom.

·Special thanks to Dr. Mizab, who was more than a professor — a role model and a true inspiration. Thank you for your guidance, your care, your knowledge, and your generous heart.

·To everyone who lent me a helping hand, even with a single word, and to every fair reader who recognizes the value of a word — I dedicate this humble work as a token of love and gratitude.

·Finally, I pray that Allah accepts this work sincerely for His sake, makes it beneficial for me and others, and grants me continued success and sincerity on my academic and professional path.

·"And say, 'My Lord, increase me in knowledge.'"

Surah Taha, Verse 11

ATHMANI Rime

الإهداء

إلى من غرسا في روحي أولى بذور الطموح... والديّ العزيزين

إلى أمي العزيزة، نبع الحنان، ورفيقة الدرب الطويل، التي كانت الحضن الدافئ وقت الخوف، وكانت الدعاء الصادق في كل فجر وليلة. كلّما تعبت، كنتِ أول من يشعر بي، وكلما هممت بالاستسلام، كنتِ من ترفعني من جديد. أنتِ من دعمني في كل وقت، وشجّعني في كل حين، وسهرت لأرتاح، وضحّيتِ لأكمل الطريق،حروف ماكتبت خلال مسيرتي لن توفيك حقك أبدا .

إلى والدي الغالي، **عثماني عبد الكريم**، الرجل الذي لم يكن يومًا أبًا فقط، بل كان معلّمًا، ومربّيًا، وقدوة. علّمت الأجيال، وكنتَ لي أعظم معلم. غرست في نفسي حبّ المعرفة، وأيقظت في قلبي الشغف للعلم، وكنتَ سندي في صمتك، ودعامة قوتي في حضورك وهيبتك. ومهما كتبت، لن توفيك الكلمات حقّك، فنجاحي هذا ما هو إلا امتداد لرسالتك، وثمرة من ثمارها.

إلى أخواتي وإخوتي، رفاق الدرب والداعمين الأوفياء، الذين كانوا لي وطنًا حين ضاق بي الوطن، شكراً لضحكاتكم التي كانت بلسماً، ولحضوركم الذي كان سنداً كلما تعثّرت.

إلى أصدقائي الحقيقيين، الذين آمنوا بي حين شككت بنفسي، وكانوا لي مرآةً صافيةً أرى فيها وجهي حين غطّاه الغبار، شكرًا لأنكم كنتم الجزء الجميل من هذه الرحلة.

وإلى أساتذتي الكرام، وكل الطاقم الجامعي الذي رافقني طيلة خمس سنوات من الجدّ والسعي، شكراً لكل من فتح لي باب العلم، ولكل من صبر على تساؤلاتي، ولكل من منحني جزءًا من وقته وجهده.

وخصّ بالذكر الدكتورة ميزاب، التي كانت أكثر من أستاذة، بل كانت قدوةً ومصدر إلهام. شكراً لحرصك، لتوجيهاتك، لعلمك، ولقلبك الكبير.

إلى كل من مدّ لي يد العون ولو بكلمة، إلى كل قارئ منصف يُدرك قيمة الحرف، أهدي هذا العمل المتواضع عربون محبة وامتنان.

وأخيرًا، أسأل الله أن يجعل هذا العمل خالصًا لوجهه الكريم، وأن ينفعني به وينفع به غيري، وأن يرزقني الإخلاص فيما تبقّى من دربي العلمي والعملي، وأن يفتح لي أبواب التوفيق من حيث لا أحتسب.

"وَقُل رَّبِّ زِدْنِي عِلْمًا"[سورة طه، الآية 114]

Dedication

·All praise and thanks are due to Allah, the Most Gracious, and the Most Merciful, whose endless blessings, guidance, and mercy have accompanied me throughout.

· Every step of this journey. Without His will and support, none of this would have been possible.

· With a heart full of gratitude and humility, I dedicate this work to those whose love, support, and guidance shaped my path and made this achievement possible.

· My deepest appreciation goes to my beloved mother, who stood by me through every phase of this journey academically and personally. Your unwavering faith in me, your comforting presence, and your heartfelt prayers were my strength through the hardest days and my joy in every small victory. Your sacrifices and your grace gave me the courage and motivation to continue when things were difficult. You were always there to listen, support, and encourage me. Every word in this dissertation carries a trace of your love. I hope I have made you proud, and I pray that I can continue to bring you the happiness and fulfillment you so deeply deserve. This achievement is as much yours as it is mine.

· To the memory of my late grandfather, a man of wisdom and strength who inspired me deeply. I wish he were here today to witness this moment and feel proud of his granddaughter. His encouragement and belief in me remain a guiding light in my life. I dedicate this accomplishment to him with deep love and respect.

· Sincere thanks are extended to Dr. Manel Mizab, my dedicate research supervisor, thank you for your patience, your faith in this work, and the wisdom you generously shared. Your guidance added depth and clarity to this research, and your kindness made the process lighter.

· I am also profoundly grateful to the esteemed professors and respected faculty members of the university, your knowledge, guidance, and commitment have left a lasting mark on my academic journey. Thank you for every lesson, every opportunity, and every word of encouragement.

·This dissertation is a reflection of the collective love, trust, and support I have been blessed with throughout my life. To everyone who has stood beside me, inspired me, or simply believed in me—thank you from the depths of my heart.

·I ask Allah to bless this work and grant me sincerity and success in my academic and professional path. I sincerely pray that it benefits both myself and others.

· “And the last of their call will be, ‘Praise to Allah, Lord of the worlds!’”

[Surah Yunus, 10]

الحمد لله رب العالمين، الرحمن الرحيم، الذي لا تنفد نعمه، ولا تُحصى فضله، الذي هدى وسدد خطاي في كل خطوة في هذه الرحلة. لولا مشيئته وتوفيقه لما تحقق شيء من هذا العمل.

بكل امتنان وتواضع، أهدي هذا العمل إلى من كانت محبتهم ودعمهم وإرشادهم سببًا في تكوين طريقي وتحقيق هذا الإنجاز.

أعمق عبارات التقدير و الإمتنان أوجهها إلى والدتي الحبيبة، التي وقفت إلى جانبي في كل مراحل هذه الرحلة – سواء على الصعيد الأكاديمي أو الشخصي. كان إيمانك بي غير المتزعزع، وحضورك المريح، ودعواتك الصادقة قوتي في أصعب الأوقات وفرحي في كل نجاح صغير. تضحياتك وحنانك منحاني القوة والدافع للاستمرار عندما كانت الأمور صعبة. كنتِ دائمًا مستمعة، وداعمة، ومشجعة. كل كلمة في هذه الرسالة تحمل أثر حبك. أتمنى أن أكون قد جعلتك فَخورة، وأدعو أن أستمر في جلب السعادة والرضا لكِ، الذي تستحقينه بعمق. هذا الإنجاز هو لكِ بقدر ما هو لي.

إلى روح جدي الراحل، الرجل الحكيم والقوي الذي كان مصدر إلهام عميق لي. أتمنى لو كان حاضرًا اليوم ليشهد هذا الإنجاز ويفتخر بحفيدته. لا تزال تشجيعاته وإيمانه بي نورًا يهديني في حياتي. أهدي هذا الإنجاز له بكل حب واحترام.

شكري العميق موجه الي الدكتورة منال ميزاب ،مشرفتي المخلصة شكراً لصبرك وإيمانك بهذا العمل، وللحكمة التي شاركتِها بسخاء. لقد أضاف توجيهك عمقًا ووضوحًا لهذا البحث، وكانت لطفك سببًا في تخفيف ثقل الرحلة

كما أعبر عن إمتناني العميق الأساتذة الكرام وأعضاء هيئة التدريس المحترمين في الجامعة، لقد تركتم بصمة لا تُنسى في رحلتي الأكاديمية بمعرفتكم وإرشادكم والتزامكم. شكرًا لكم على كل درس، وكل فرصة، وكل كلمة تشجيع.

هذه الرسالة هي انعكاس للحب والثقة والدعم الذي حظيت به طوال حياتي. إلى كل من وقف بجانبي، وألهمني، أو آمن بي – شكراً لكم من أعماق قلبي.

أسأل الله أن يبارك هذا العمل، وأن يمنحني الإخلاص والنجاح في مساري الأكاديمي والمهني. وأدعو بصدق أن يكون هذا العمل نافعًا لي وللآخرين على حد سواء

["وَآخِرُ دُعَواهُمْ أَنِ ٱلْحَمْدُ لِلَّهِ رَبِّ ٱلْعَالَمِين"]سورة يونس ،الأية ١٠].

حارث اسماء

Acknowledgments

First and foremost, we would like to express our deepest gratitude to Mrs. Cherine AMRI and her first-year students of Animal Biology for their goodwill cooperation and warm welcome during the classroom observation sessions. Their openness, patience, and cooperation were invaluable to the success of this research.

We would also like to extend our sincere thanks to all the teachers who have taught and guided us throughout these five years of our academic lives. Each of you has left an unforgettable mark on our academic path and personal growth.

Special thanks are awarded to Dr. Mizab, whose unremitting guidance, useful comments, and unwavering encouragement have been a cornerstone in the completion of this dissertation.

Thank you all for being part of the journey.

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List of Abbreviations

EMI	English Medium Instruction
EFL	English as a Foreign Language
ELF	English as a Lingua Franca
CLI	Cross-Linguistic Influence
L1	First Language
L2	Second Language
L3	Third Language
ILF	International Lingua Franca
IPA	International Phonetic Alphabet
LFC	Lingua Franca Core
SLA	Second Language Acquisition
QR Code	Quick Response Cod

EXPLORING THE INFLUENCE OF ARABIC AND FRENCH ON FIRST-YEAR BIOLOGY STUDENTS' ENGLISH PRONUNCIATION IN THE WAKE OF THE ENGLISHIZATION OF ALGERIAN HIGHER EDUCATION

By

RIME ATHMANI
ASMA HARET
Echahid Cheikh Larbi Tebessi University, Tebessa

Supervised by

Dr. MANEL MIZAB

Dissertation Submitted to the Department of English in Candidacy for the Degree of "Master" in Language Sciences.

Department of English Language and Literature

Faculty of Letters and Languages

Echahid Cheikh Larbi Tebessi University

Tebessa, Algeria

INFLUENCE OF ARABIC AND FRENCH ON ENGLISH PRONUNCIATION

Abstract

The study explores the influence of Arabic and French on the English pronunciation in English Medium Instruction (EMI) in Algerian universities. More particularly, it enquires how first-year biology students from Echahid Cheikh Larbi Tebessi University have difficulty with scientific terminology pronunciation during EMI lectures. Drawing on language transfer theory, the study examines the patterns of phonological interference from the students' L1 (Arabic) and L2 (French). A mixed-method design combines four-session class observations with a student questionnaire distributed through QR code. Observation checklists provide for exploration of frequent types of pronunciation errors, including vowel and consonant substitution, stress errors, and syllable reduction. Quantitative findings indicate that most pronunciation difficulties are consistent with predictable transfer from Arabic and French phonetic systems. Qualitative data from classroom interaction and questionnaire responses also indicate students' lack of exposure to English scientific terms and their employment of French equivalents. The dissertation concludes that language transfer is a significant contributor to the pronunciation of EMI classes, with a plea for targeted pronunciation in subject-specific English instruction. The findings have implications for EMI policy implementation, teacher training, and material design in multilingual educational settings.

Keywords. Algerian universities, Arabic influence, English Medium Instruction, French influence, language transfer, phonological interference, pronunciation difficulties, scientific terminology

Chapter One:

General Introduction

Exploring the Influence of Arabic and French on First-Year Biology Students' English Pronunciation in the Wake of the Englishization of Algerian Higher Education

The rise of English as an International Lingua Franca (ILF) has newly set the linguistic landscape of most countries in decades. Because of its colonial history and multilingual situation, Algeria cannot be an exception. The recent use of English in Algerian higher education is marked by the strong tendency of introducing English as a Medium of Instruction (EMI) in scientific and technical fields that lately attracts increasing attention. It attests to the more general dynamics towards globalization and competitiveness within academe. In Algeria, the promotion of multilingualism sees in English certain obstacles, including pronunciation challenges that are difficult to overcome.

Pronunciation, being an integral part of language learning, is important to render communication complete, but as far as Algerian students are concerned, their linguistic background in Arabic and French will contribute greatly to introducing separate phonetic and phonological impediments. Of course, those challenges can more readily be detected in the very first year and are usually immediate in students entering higher education biological studies.

The interaction among Arabic, French, and English in the speeches of Algerian students has also become a widely growing area within the circles of linguistics and education. Comprehension regarding how the L1 and the L2 Influence pronunciation in English should be important when developing specific pedagogical strategy interventions. This, therefore, calls for the investigation into the extent to which Arabic and French can influence the Standard English pronunciation in the first year of Algerian university students of biology.

The current study explores these dynamics with a view to contributing to a better understanding of Cross-Linguistic Influences (CLI) that may inform teaching practices and policy-making in higher education in Algeria. Growing interest in the topic reflects an imperative need to address the linguistic realities facing students within the increasing dominance of English in their academic and professional lives.

Background of the Research

In the effort to globalize academic discourse in science, English has gained a dominant position in Algeria's higher education system (Echourouk, 2019). However, the imbalance between language dominance and the reality of language transition creates a persistent barrier due to the continued influence of Arabic and French. Arabic -the official language of the country- shapes the students' environment, and French is a colonial legacy that remains present in education and professional settings (Miliani, 2000). This linguistic environment affects students' English learning: On the one hand, Arabic differs significantly from English, and on the other hand, French intonation patterns can negatively affect English pronunciation (Kadi, 2023).

This research highlights that third-language (L3) learners, who already have two languages, are likely to have greater meta-linguistic awareness than second-language (L2) learners (Cenoz & Jessner, 2000). This prior linguistic knowledge, however, is likely to bring about facilitative as well as interfering effects in pronunciation (Cenoz & Hoffmann, 2003). Bouchhioua (n.d.) suggests that Arabic and French phonetic interference is a major challenge for EFL learners, particularly in stress placement and segmental accuracy. Bouchhioua (n.d.) explains that students, in the production of simple English words, will apply the stress patterns of their native language Arabic (e.g., until mispronounced as 'until). In

English-French cognates, however, they apply French stress patterns (e.g., passport mispronounced as pass'port).

Pronunciation in English is a primary challenge for Arab learners in general and Algerian learners in particular, particularly due to linguistic interference from L1 (Arabic) and dissimilarities between the structure of the two languages. Jones (1967), O'Connor (1973), and Kenworthy (1987) believe that accurate pronunciation is the basis of spoken fluency, yet Arab learners are obstructed in both segmental (vowels/consonants) and suprasegmental (word stress) aspects.

Segmental errors are constructed by English-Arabic mismatches of sounds. English sounds /p/, /v/, and /ʒ/ (vision) do not occur in Arabic, having substitutes such as /b/ for /p/ (park → bark) (Lado, 1957; Broselow, 1983). Vowel error arises due to the relatively impoverished Arabic vowel inventory (3 short, 3 long) contrasted with English's 12+ vowels with trouble distinguishing such pairs as /æ/ (cat) and /ɑː/ (cart) (Smith, 1987). In addition, English non-phonetic spelling is also responsible for error; i.e., irregular words such as cough versus through (Heliel, 1972).

Suprasegmental problems concern word stress, with English lexically stressed patterns different from Arabic rule-based stress rules. Arabic marks heavy syllables in a fixed position, while English shifts morphologically (e.g., photo and photography) (Halle & Vergnaud, 1987; Hayes, 1995). This ensuing uncertainty makes students memorize stress patterns and often revert back to Arabic inclinations like end syllable over-stressing (Kingdon, 1958). Its underlying factors are L1 interference, post-L1 habit formation, late acquisition of English, and English stress rules complexity (Jones, 1967; Broselow, 1984).

For compensation against these, pedagogical treatments are advocated. Segmental training is to utilize minimal pair exercises (pat/bat) and direction of articulation in an effort to differentiate between non-present sounds (Kenworthy, 1987). For stress, direct instruction

of differences in word family (record and re'cord) and dictionary reading with stress markers is recommended (Roach, 1983). Contextual practice in listening and awareness of spelling irregularities (colonel → /ˈkɜːrnəl/) can be used to complete gaps (Heliel, 1972).

Cross-linguistic interference creates problems of intelligibility because English and French have different rules of phonology. Additionally, English and French orthographic and lexical cognates produce errors in pronunciation because learners subconsciously use French phonetic structures to pronounce English (Negadi, 2015; Hanafi, 2014). As stress placement is crucial for intelligibility (Derwing, Munro, & Wiebe, 1998), Bouchhioua (n.d.) is of the opinion that French-influenced mispronunciations can impact understanding significantly. However, previous research has predominantly examined suprasegmental characteristics; i.e., stress, and not completely investigated how L2 French interference affects certain consonants and vowels. In order to fill in these gaps of research, more research needs to be conducted to determine the overall phonetic effect of L2 French on L3 English pronunciation and to set up efficient pedagogical strategies.

While research on second-language acquisition has addressed many of the challenges, less has been focused on how such effects are felt by students learning majors like biology. There is a need to understand their challenges so that effective teaching strategies can be crafted in a bid to assist students in addressing their pronunciation issues and meeting their academic goals. This study aims to examine the impact of linguistic transfer on English learning among first-year biology students and how it affects learning performance. Past studies established that linguistic transfer from Arabic and French may contribute to pronunciation issues, particularly in learning settings (Tepich & Akay, 2021; Macaro, 2018). In addition, the students are also confronted with the challenge of acquiring discipline-specific vocabulary as they become competent in English, which also prevents them from achieving academically (Richards & Pun, 2022; Galloway & Ruegg, 2020).

However, interventions such as explicit pronunciation teaching, collaborative learning, and content and language integrated learning have proved to help learners overcome the challenges (Macaro et al., 2017; Lin, 2016). Moreover, teacher scaffolded support and technology application for vocabulary learning purposes can enhance the ability of students to bridge the language gap (Oktaviani, 2019).

Statement of the Problem

The growing importance of English in Algerian higher education has brought linguistic issues to the forefront, particularly regarding pronunciation. While much attention has been given to the role of English as an international academic language, little research has been done on how Algeria's unique multilingual setting affects students' acquisition of English pronunciation. Precisely, how Arabic and French, which dominate the students' linguistic backgrounds, interact with and influence their English pronunciation remains relatively unexplored.

First-year biology students are especially concerned, as they have to get used not only to the general communication in English but also to technical terms and scientific concepts in English. However, most of them cannot reach phonetic accuracy because of the interference from the peculiar consonant system of Arabic and vowel and intonation patterns of French. In spite of these apparent challenges, many studies talk about the general language learning challenges rather than focusing on pronunciation difficulties experienced in technical fields by students. This missed explanation can give a gap for the research to fill by addressing the procedures and the methods that teachers can follow and work with to correct and recover pronunciation issues.

Research Aim and Objectives

This research attempts to figure out the linguistic influence of Arabic and French on English pronunciation of first-year students majoring in biology at Tebessa University in the context of EMI in Algerian higher education.

This study aims specifically

● to spot the common pronunciation challenges faced by first year biology students; and

● to explore the specific phonetic and phonological influences of Arabic and French on students' English pronunciation.

Research Questions

This research attempts to answer the following questions:

● What are the common pronunciation problems first-year students of biology have when using English in an educational setting?

● To what extent does the phonetic and phonological nature of Arabic influence first-year biology students' English pronunciation?

● In what respect does the French linguistic background affect first-year biology students' English pronunciation?

● How are these difficulties reflected in the understanding and pronunciation of technical and scientific terminology in English?

1.5. Research Hypotheses

The current research is exploratory and attempts to investigate the interaction of Arabic and French linguistic influences on English pronunciation. This research aims to test the following hypotheses:

● The phonetic and phonological characteristics of **Arabic** have a significant effect on the pronunciation of English by first-year biology students at Tebessa University.

● The phonetic and phonological characteristics of **French** have a significant effect on the pronunciation of English by the first-year biology students at Tebessa University

Significance of the Study

This research is significant because it is dealing with a very crucial -but not deeply explored- aspect of language acquisition in the multilingual context of Algeria. The study of effects of multilingualism on English pronunciation of first-year biology students at Tebessa University helps reach a wider understanding of CLIs in a country like Algeria, which is currently undergoing Englishization in its educational systems. This will fill a gap in existing research, which often overlooks the challenges faced by Algerian students in scientific fields.

- **Practical Benefits for Students:**

This study helps to identify common pronunciation problems, allowing students to overcome them and to enhance their confidence and success while using the English language in their subject-matter classes.

- **Practical Benefits for Educators:**

This study will provide insights for teachers on how to develop specialized pronunciation teaching strategies that assist students with using the language correctly.

- **Practical Benefits for Curriculum Developers:**

Curriculum designers may, thus, use the results to construct and design language programs based on methods that solve pronunciation challenges, and that affect positively the overall quality of English higher education in Algeria.

- **Broader Impact:**

This research is socially relevant because it justifies Algeria's effort to adopt EMI in universities and enhance competitiveness among students at both professional and academic levels worldwide. Solving pronunciation problems at a wider level empowers students to be improved in how to thrive in a progressively shrinking world.

Generally, this study is worth undertaking since it deals with an urgent matter in Algerian higher education that will benefit students, teachers, and policymakers while contributing to scholarly knowledge in language learning.

Structure of the Dissertation

The dissertation contains five chapters, each representing a different part of the research process. Chapter I is introductory, shedding light on the research problem along with the background and context. This sub-section outlines the main problem of the research, declares the aims and objectives, and provides the research questions and hypotheses. This sub-section also clarifies the significance of the research and provides an overview of the dissertation structure. Chapter II is the literature review of related theories, concepts, and previous studies on language acquisition, CLI, and pronunciation challenges. It looks at the roles of Arabic and French in shaping English pronunciation among Algerian learners and identifies the lacuna in the existing research that this study is going to fill.

Chapter III explains the rationale behind using both quantitative and qualitative methods to study the subject of change in the influence of Arabic and French on the pronunciation of English among multilingual students. This approach helps a lot in gathering valuable and reliable data and understanding the patterns of sounds that may be challenging for them. By recording the sounds they struggle with, engaging them in interviews, and having them fill out surveys, the researchers are able to dissect the differences between the language they mastered and English. Thematic analysis of the interviews helps the

researchers understand the language experiences of these students, and the quantitative data highlight the strong patterns of errors in their pronunciation.

Chapter IV presents the study results and discussion, giving details of the study findings in accordance to the statements of the research questions and hypotheses. The chapter also discusses how Arabic and French influence the pronunciation of English, and what implications these may have for students, educators, and language programs.

Chapter V is the conclusion, summing up the central findings and their significance. It also gives practical recommendations for improving the teaching of English pronunciation at Algerian universities and suggests areas for future research. The chapter concludes by reflecting on the broader impact of the study on education policy, research, theory, and practice.

Chapter Two:

Literature Review

CHAPTER TWO: LITERATURE REVIEW

The present chapter reviews some key literature related to CLI, Arabic and French phonological systems, and multilingual learners' issues while learning the pronunciation of English. Gaps in previous research, specifically in the Algerian context, have also been underlined. By addressing these gaps, this study will add to a better understanding of how Arabic and French influence the English pronunciation produced by Algerian biology students and give recommendations for effective pronunciation instruction in the Englishization of higher education.

Cross-Linguistic Influence and Transfer in Multilingual Contexts

In multilingual contexts, the pronunciation, syntax, and vocabulary of an individual are influenced by CLI. As noted by Odlin (1989), CLI is defined as "one language influencing another because of the learner's prior experience with the languages" (p.118). According to Jarvis and Pavlenko (2008), CLI is characterized as "the unconscious transfer of linguistic rules by learners from one language to another, which can facilitate learning on some occasions, while also causing errors on others" (p. 115). De Angelis (2007) pointed out that CLI appears across different linguistic domains, including influencing pronunciation in multilingual contexts.

Nature of CLI in multilingual settings

Hammarberg (2001) and Cenoz and Gorter (2011) suggested that CLI is not simply a one way language transfer of some trait or element from L1 to L2, but rather a bidirectional interaction of several languages in the individual's repertoire. Ringbom (2007) argues that

"For instance, the leaner may use their existing linguistic system as a scaffolding device, which may facilitate or inhibit the acquisition process" (p. 84). This indicates that CLI can promote positive transfer (when language similarities promote learning) and negative transfer (when language differences result in errors). Kellerman and Sharwood Smith (1986) argue that CLI depends on psycholinguistic factors, such as language distance, cognitive processing, and structural similarities, which can be seen in a speaker's tendency to transfer phonetic features from both their L1 and L2. According to Sánchez (2015), students in multilingual contexts frequently demonstrate transfer from a L2 to a third language, especially when the structure of L2 is similar to the structure of the target language).

CLI of Arabic and French on English in Algeria

CLI in Algeria is observed in how Arabic L1 and French L2 affect the L3 English pronunciation (Shamsi, 2011). Other research explores how the consonant characteristics of Arabic and French influence the pronunciation of English. Algeria represents a unique multilingual environment whereby Arabic (L1) and French (L2) interfere in one another in producing and recognizing the pronunciation of L3 English pronunciation (Shamsi, 2011). Additional research investigates how the consonant characteristics of Arabic and French influence the pronunciation of English.

Interference of Arabic and French on English in Algeria represents a unique multilingual environment, whereby Arabic (L1) and French (L2) exert interferences on each other and on the formation of the pronunciation of English (L3). Chemami (2011) explains that being part of plurilingual settings means a more complex pattern of language transfer takes place, and consequently, a phonological interference is unavoidable. Evidence indicates both Arabic and French phonological features affect Algerian learner's English pronunciation (Benyelles, 2011). Benyelles (2011) states "French phonetics often override Arabic

phonological constraints in English pronunciation" (p. 56). Kang and Kang (2021) also point out that "French L2 plays more of a role in L3 English pronunciation than Arabic L1 according to phonetic similarities" (p. 73). This supports De Angelis (2007) who asserts that "learners will more likely transfer from a language that presents phonetic, lexical, or structural similarities with the target language" (p. 94). For example, a French-influenced Algerian student may transfer French nasal vowel sound to English, while an Arabic-influenced student may struggle with interdental /θ/ and /ð/ sounds (Kheddadi, 2017). In the words of Kheddadi (2017), "Algerian EFL learners tend to substitute English vowels with their closest Arabic or French counterparts, which leads to systematic pronunciation errors" (p. 89).

The influence of CLI in pronunciation and speech rhythm

CLI is a primary driver of phonological transfer, whereby features of a learner's first or second language affect their third language pronunciation. This is especially true of stress-timed languages like English, where mis-stressing alters meaning and speech rhythm. As Celce-Murcia et al. (1996) outline, learners will transfer their native patterns of stress into English, resulting in irregular rhythms and lack of fluency. Furthermore, Kharma and Hajjaj (2011) pointed out that Arab English language learners often substitute vowels that are absent from English with similar sounds from their native language. These characteristics illustrate how CLI can have notable impacts on intelligibility and overall speech production in multilingual settings.

Introduction to Foreign Language Pronunciation in Algerian EMI Settings

The importance of pronunciation in language learning

Pronunciation consists of segmental sounds and supra-segmental features such as stress, rhythm, and intonation that unify to bring forth meaningful and natural speech. Official and academic pronunciation is vital in facilitating the involvement of learners in arguing, presenting, and conveying messages to worldwide colleague. This makes pronunciation vital in Algerian educational settings, where English is a primary language of instruction. In its endeavor to become increasingly engaged globally, Algerian higher education is shifting towards English as the dominant language of teaching, especially in science and technology, even though this presents some challenges in other areas of language learning, such as pronunciation. Shared challenges in motivation, instructional content, and sociocultural contexts have been proved by research to be important in the development of students' speaking skills. According to Soulimane-benhabib (2015), learners' negative attitudes towards the target culture and language and uninspiring instructional materials are challenges to their language learning process. These are also motivation drivers for pronunciation acquisition.

Motivation plays a key role in language acquisition because it influences learners' engagement and persistence to exert effort in doing the difficult aspects of pronunciation. Learners who do not care about the English-speaking world would be less likely to exert effort in enhancing their pronunciation and would rather focus more on test scores than on actual communication. Besides, research conducted by Chelli (2013) and Torki (2013) brought into the forefront that poor reading and writing habits and scarce resources can result in poor pronunciation skill. Reading aloud, for instance, might solidify the relationship between sound and letter, but not reading or suppression of reading amongst learners might deprive them of this valuable chance. Equally significant is the part played by technology, as it has been conceptualized by Ladaci (2017) and Kondos (2018). Computer programs and

computer pronunciation software have the ability to give instant feedback and can facilitate independent learning by students, but most classrooms still rely on traditional methods, which may restrict exposure of students to varied English accents and pronunciation patterns. Besides, Hamadouche (2013) also pointed out further that Algerian EFL learners struggle to learn sociolinguistic rules because they are not being provided with sufficient exposure to genuine contact with the language. Specifically, this applies to pronunciation because pragmatic use of intonation, stress, and connected speech is best learned under exposure to native speakers or authentic situations — something Algerian learners cannot expect. Despite these constraints, increasing English prevalence in Algerian universities presents the opportunity to reassess and invigorate language pedagogy. Through resisting motivational limitations, reusing material, adding pronunciation technology, and offering more interactive speaking opportunities, universities have the ability to impart pronunciation skills on students that will enable them to perform at high levels within international higher education and work settings.

Theoretical models

Several models have sought to account for how and why pronunciation is acquired and how it is usually hard for learners. Theory can promote teaching by providing an understanding of learners' social, linguistic, and cognitive processes in pronunciation

Morley's communicative approach:

This approach revolves around pronunciation as communicative competence. She is convinced that she prepares the students not only for the ability of producing intelligible speech but also for the skill in developing self-monitoring and speech modification in order to obtain successful real-life communication. Functional intelligibility – being understandable to others in actual communication – is prioritized over native-like purity.

Best's (1995) Theory:

Best's Perceptual Assimilation Model (PAM) (1995) is a theory that explains how learners perceive and categorize new sounds in the target language based on their native phonetic system. According to PAM, when confronted with new speech sounds, learners will assimilate them into the categories they possess. The model outlines a number of patterns of assimilation:

1. Two-Category Assimilation (TC): If a foreign learner hears two foreign sounds as two distinct categories in their native language, it will be simple for them to distinguish between the two.

2. Single-Category Assimilation (SC): If two foreign sounds are heard as a variation of a single native phoneme, foreign learners find it difficult to distinguish between them.

3. Category-Goodness Difference (CGD): When a foreign sound is placed in the category of a familiar phoneme but is judged as a worse or different one of it. This can lead to pronunciation errors.

4. Non-Assimilable Sounds: When a foreign sound does not belong to any of the categories in the learner's native language, it may be perceived as some unfamiliar noise or a completely new phoneme and, thus, be difficult to acquire.

PAM is also helpful in teaching pronunciation because it helps one grasp the reasons for some sounds to be more difficult for learners in accordance with their first language (L1). On the basis of these perceptive difficulties, teachers can frame targeted phonetic practice to make learners improve the ability to identify and use novel phonemes.

Jenkins's (2000) Lingua Franca Core:

Jenkins' Lingua Franca Core (LFC) formalizes a collection of phonetic features necessary for international communication intelligibility. She argues that not all native speakers one does to communicate well, especially where there is the use of English as a Lingua Franca (ELF) involved. This is the case for Algerian students, where the determining criterion is usually that one ought to be heard and comprehended most of the time in adjunct commerce or scholarship situations more than in native speech.

Overall, these models provide general insight into FL learners' pronunciation issues and allow teachers to design improved, evidence-based pedagogies. Although English is increasingly engaged in Algerian higher education, pronunciation is a heavily under-taught aspect of English teaching. There is empirical evidence that supports the fact that explicit pronunciation teaching has the potential to make a valuable contribution to students' intelligibility, communication confidence, and overall language competence. In reality, pronunciation teaching enables learners to cross the English phonological chasm and turn the English language into more accurate and proficient employable within and beyond classroom and workplaces. The ancillary services for students, higher education pronunciation teaching can embrace the following:

In language studies, for example, ·

- Phonic instruction: explicit instruction concerning English sound generation. ·
- Attunement towards prosody: bridging sensibilities in the students to English stress, rhythm, and pattern of intonation. ·
- Repetition and practice in listening: scaffolding to facilitate students' practice in developing listening discrimination and self-correction skill for.
- Digital tools: application and software tools used to give students instant pronunciation feedback.

Such a kind of instruction can benefit students who can live in English-speaking communities, debate, and be given access to international opportunities. Pronunciation aids in the acquisition of foreign language, and it influences communicative competence, understanding of the other, and academic and career achievement of the learners. Increasingly important as a world key to cooperation and research in Algeria, the teaching of pronunciation must provide learners with the ability to cope with international communication issues. Though students will be tested to beat English pronunciation challenges, pedagogy that is instructionally-guided — such as in Morley's communicative method, best's PAM, and Jenkins' LFC— will lead them to functional intelligibility. Standardizing pronunciation in English language teaching will provide Algerian universities with the confidence to prepare their students with necessary proficiency to position themselves in the global professional and academic space with confidence.

The phonological systems of Arabic and French language

Arabic is a Semitic language with a phonological system that is quite different to the phonological system of English. Algeria's linguistic context is even more complicated due to the presence of French, which has a powerful presence next to Arabic. Thus, such linguistic exchanges shape the way Algerians pronounce English. This research explores Arabic and French phonology and its impact on the English pronunciation of Algerian Biology students at Tebessa University.

The Arabic Phonological System

Emphatic Consonants

Arabic uses pharyngealization to articulate emphatic consonants such as /ṭ/, /ḍ/, /ṣ/, and /ẓ/. Algerians struggle to suppress certain sounds that do not exist in English.

Watson (2002) states: “there is a particularly interesting interaction between emphasis and vowel backing in Arabic phonology, with effects on the overall prosody of speech” (p. 54). Watson highlights how the emphatic consonants of Arabic influence surrounding vowels, leading to distinct pronunciation patterns. This phonetic habit can carry over into English among Algerian learners, producing heavier, deeper articulation of certain sounds — most notably /t/ and /d/, in words such as “table” and “dog,” making them sound slightly over-pronounced. This phenomenon is less common among learners whose first language is not a Semitic, typically such phenomenonis rarely observed.

Gruttural Sounds

Arabic features guttural sounds absent in English, such as /ʔ/ (glottal stop), /ʕ/ (voiced pharyngeal fricative), and /ħ/ (voiceless pharyngeal fricative). These sounds are crucial in Arabic but can be challenging for Algerian learners when speaking English (Al-Ani, 1970). Indeed, Algerian students may struggle to alter their pronunciation when speaking English. For example, the glottal stop /ʔ/ in Arabic frequently influences the pronunciation of English /h/, causing words like "hello" to sound like "ʔello." This may lead to intelligibility concerns for natural English speakers. Al-Ani's (1970) remark is insightful, but further research is needed to determine whether bilingual Algerians who speak French experience similar pronunciation difficulties.

The Arabic vowel system is simpler than English, with three short vowels (/a/, /i/, /u/) and their corresponding long forms (/ā/, /ī/, /ū/). In contrast, English has a more complex vowel system, where vowel quality is important as vowel length.

Krashen argues that first language interference has a unique role in Second Language Acquisition (SLA) research and practice. Previously, it was assumed that syntactic errors in adult L2 performance were solely caused by performer's L1 (Lado, 1957), and a large amount of material preparation was done keeping this assumption in mind (Banathy et al.,

1966). The subsequent empirical studies of errors made by L2 students led to the discovery that many errors are not traceable to the structure of L1, but are common to both language performers with diverse linguistic backgrounds (e.g. Buteau, 1970; Richards, 1971). Several scholars have questioned the value of contrastive analysis following these findings. The first language vowel inventory of the learner plays a major role in second-language phonological acquisition, leading to misidentification and substitution in pronunciation

Algerian learners frequently tend to apply Arabic vowel length distinctions directly to English. As a result, they may struggle with vowel quality when given minimal pairs such as “eye” versus “aye” or “pen” versus “pin.” This mispronunciation occurs because they rely on vowel length rather than vowel quality to distinguish words. Although Krashen’s theory is valuable, further empirical research is necessary to explore whether exposure to English helps Algerian learners better perceive vowel differences.

Syllables structure And Sound Patterns

According to Lado (1964), Arabic favors simpler syllable structure (CV, CVC), but English allows more complex consonant clusters (CCVCC, CCCV).

In order to break up consonant clusters, learners frequently introduce vowels, which leads to pronunciations such as "iskool" instead of "school" or "sitreet" instead of "street." Lado (1964) argues that systematic errors are caused by phonotactic limits. However, because French's phonotactics allow for more complex syllable patterns than Arabic's, its influence could reduce this effect.

Sound Substitution

Due to the phoneme gaps between Arabic and English, Algerian learners may replace certain English sounds with their closest Arabic equivalents. For instance, Because of phoneme distinctions between Arabic and English, Algerian students may substitute some English sounds for their closest Arabic equivalents, leading to pronunciation variations. For

example, some Algerian Arabic dialects lack the English /θ/sound (as in think); therefore, learners may substitute /t/ and pronounce think as tink.

2.2.3.1.5. Stress Misplacement

Arabic stress patterns are more predictable than those of English, causing Algerian English learners to misplace stress in some words. According to Watson (2002), Arabic stress placement follows stable patterns, whereas English stress assignment can be irregular and lexically dependent. According to Odlin (1989), second-language pronunciation is influenced by both native phonetic tendencies and exposure to the second language. This explains why some Algerian learners emphasize sounds more heavily than necessary making them sound unnatural to native English speakers.

To wrap up, the influence of the Arabic phonology on Algerian learners' English pronunciation manifests in several ways: sound substitution, vowel misidentification, phonotactic constraints, and stress misplacement. Studies by Watson, Al-Ani, Krashen, Lado, Major, and Odlin provide valuable insights into these challenges, but further research is necessary to understand and overcome the challenges learners face

The Phonological System of French

As a Romance language, French has a distinct phonological system that includes nasalized vowels, liaison, and specific consonantal genres. Due to historical and pedagogical settings, the French presence in Algeria has a significant impact on Algerian learners' English pronunciation (Cogné et al., 2016). The following are phonological aspects of the French language and their impact on Algerian learners' English pronunciation, based on several research sources.

Mostari and Andry's (2023) study on CLI and pronunciation issues in Algerian EFL learners identifies three distinct pronunciation features: Nasalisation, word stress, and schwa production.

Nasal Vowels

French has nasalized vowels such as /ɑ̃/, /ɛ̃/, /œ̃/, and /ɔ̃/, which are produced by the lowering of the soft palate allowing air to flow through the nasal cavity. These vowels are phonemically different from the oral vowels. This phenomena is discussed in Tranel's The Sounds of French Nasal Vowels, which are contrastive and important in the French phonetic system. Since English lacks nasalized vowels, Algerian learners are likely to mistakenly apply nazalization to English vowel sounds leading to mispronunciations. For instance, they may nasalize vowels in words where nazalization does not occur in English.

Word Stress Assignment

French stress is usually placed on the final syllable of a word, but English stress patterns vary. Algerian French language learners have a tendency to overgeneralize French stress patterns into English, resulting in improper pronunciation and emphasis placement in English words in an awkward manner. Stress is one of the features of pronunciation that may result in poor intelligibility in English communication; thus, it is critical that students acquire the correct stress patterns of the language they are learning

Sound substitution

According to Major (2001), adults learning a second or foreign language frequently make errors or nonnative substitutes, such as a foreign accent and nonnative grammatical utterances (for example, an English speaker who struggles to master the Spanish trill and subjunctive verb forms). Although a learner's substitutes are frequently incorrect because they are not native-like, they are representative of an underlying system, much as a kid

learning a first language has an underlying linguistic system, although one that differs from that of adult native speakers. An adult French learner of English may place the adjective after the noun ("I like that car green") but not randomly elsewhere (*"I green like that car" *"I like green that car"). An adult second language learner's linguistic system is known as the Interlanguage (IL), or simply the language of a nonnative speaker.

Liaison and Elision

Liaison and elision are phonological processes in French which affect pronunciation by linking word ending consonants to the following or omitting certain sounds in French, resulting in evident phonetic shifts, particularly at the beginning or end of syllables. Walker (2001) describes liaison and elision as twin phonological processes controlled by syntactic patterns. For instance, a French speaker might pronounce "big apple" as biggapple, connecting the last /g/ with the next vowel, so reflecting French liaison. Elision may lead to sound loss, as in when a student drops the /h/ in "hotel" and pronounce it as otel, under the influence of the silent “h” in French words like hôtel. These patterns might cause pronunciation challenges when speaking English.

Algerian learners of English may transfer these patterns, causing pronunciation errors such as unexpected sound insertions or omissions that disrupt English phonetic structures.

Consonantal Features

One instance where the consonantal systems of French and English differ is in how the "r" sound is pronounced. English utilizes an alveolar approximate /ɹ/, while French uses a uvular fricative /ʁ/ (Dell, 1985). Additionally, the dental fricatives /θ/ and /ð/, which correspond to the English "th" sounds, may be difficult for French speakers learning English to pronounce (Dell, 1985).

Influence of Cognates

French-English cognates can contribute to pronunciation errors when learners apply French phonological rules on English words. For instance, the French schwa ('e' caduc) can be pronounced in a variety of ways or skipped entirely. Algerian students frequently include or delete the schwa sound from English words, which alters their pronunciation. According to research on French's influence on Algerian EFL students' pronunciation of English at the University of Médéa, the instance of cognates was chosen due to its importance in phonological studies. Preventing errors and improving pronunciation accuracy among Algerian students requires a thorough understanding and separation of English schwa sounds.

When students apply French phonological norms to English words, they may make mistakes in pronouncing them. For example, learners may pronounce the French word 'nation' as /nɑsjɔ̃/ rather than the English word /ˈneɪʃən/, following French pronunciation patterns with a nasalized vowel. According to a study conducted by Belkhir & Boukhedami (2022) at the University of Tiaret on how French phonology affects Algerian middle school pupils' pronunciation of English, the significant portion of the English lexis is derived from the French language. Although French cognates contribute to English comprehension and vocabulary acquisition, they can also reinforce a strong French accent if not addressed correctly.

Consonantal substitution

Algerian students typically struggle to distinguish /v/ from /b/ in English due to French phonology, resulting in substitutions such as speaking "very" as "bery". A study at the University of Bejaia study by Souhila Djerada on French Interference in English Pronunciation of the Letters [I] and [E] highlights the primary phonological problems associated with consonant replacement. It also mentions that some people substitute some

English sounds with sounds from their native language. This replacement is the result of French impact on English pronunciation, which requires explicit phonetic training to develop the accurate pronunciation.

The Englishization of Algerian Higher Education

The transition of higher education in Algeria to EMI is threatened by the widespread power of Arabic and French. Those students who have Arabic as their mother tongue and French as their first foreign language are likely to be confronted by pronunciation and language interference when learning in English.

From Arabization to Englishization

Algerian Language Planning and Policy (LPP) in education has also undergone revolutionary transformation. Education before colonization was based on the study of Arabic and Islam. However, during French rule (1830–1962), France occupied the center stage in administration and education, replacing Arabic (Benyelles, 2011). After independence, the Arabization policy was implemented with the objective of reinstating Arabic, relegating French to the classroom context (Chemami, 2011). French, however, prevailed in scientific and university education (Grandguillaume, 2004).

The 1990s saw English becoming the language of world economic and academic ties (Bellalem, 2008). English teaching at the elementary level was initiated in 1993 but was unsuccessful as an experiment. The 2000s reforms solidified teaching English at the secondary and tertiary levels, and EMI took deep roots. A national English thrust was initiated by Minister Tayeb Bouzid in 2020 at Algerian universities with French being eliminated from official content. Training EMI teachers became evident in 2022 as the first step towards Englishizing Algerian higher education (Mizab, 2024).

French-English Competition

Although Arabic is the national language of Algeria, French has been the second language, particularly in education (Mizab, 2024). The majority of scientific fields were taught in French earlier, creating a language gap in higher education. In 2021, Algeria and France experienced political tensions that led to the French language being prohibited in government and educational institutions (Aljazeera, 2022 as cited in Mizab, 2024)).

This encouraged the use of English as a substitute for French. This is not, however, easy-peddling — shifts in teaching and learning in EMI are not French-friendly. Because French and English share linguistic characteristics, such as Latin-derived lexicon, most of the students mix French phonetics, syntax, and pronunciation into their English speech, resulting in cross-linguistic interference (Mizab, 2024).

EMI in the Algerian Classroom: Teacher and Student Perception

Issues faced by EMI Teachers

The transition of higher education in Algeria to EMI has been considerably contested. University teachers, mostly trained in French, face a cultural challenge of integrating EMI. Some stick to French terminology when teaching in English, maintaining linguistic interference. Khenioui and Boulkroun (2023) state that there are challenges encountered by both the students and instructors due to reduced language skills, inadequate resources, and reduced exposure to the English language usage.

Additionally, instructors observe that students are also reluctant to engage in group discussions due to their mispronunciations as a result of French or Arabic interference. Their performance is also affected by reluctance, particularly in oral presentation and research reports. Ouarniki (2023) identifies the requirement of an incremental and adaptive approach

to implementing EMI, for example, language assistance and training teachers and students to reduce such issues and improve more effectively at using this language in a better way.

Student Experiences

In Algerian higher education, using EMI is a crucial pedagogical and linguistic reform. While intended to promote internationalization and academic competitiveness, it raises a variety of issues related to institutional readiness, teacher competence, and student adaptation (Naimi, 2025).

Classroom observations in universities indicate that:

- Most lecturers are trained in French and do not fully change to English; they code-switch between the two (Touahmia & Bakar, 2024).
- There are lecturers who even incorporate French terms when lecturing in English, thereby causing linguistic interference instead of providing a seamless flow (Naimi, 2025).
- Students also do not desire to participate in discussions fearing mispronunciation and interference by French and Arabic (Ouarniki, 2023).

This shift in language has far-reaching academic consequences. Despite the increasing trend of adopting English in sciences and technology, learners and teachers themselves are at a loss in the sense that they are unable to adapt to the shift because of inadequate linguistic training and inadequate teaching resources (Khenioui & Boulkroun, 2023). Despite being aware of the beneficial outcomes that EMI has on subsequent mobility, professional as well as academic, students lack the ability to process and understand information when lecturers are also restricted by the language (Naimi, 2025).

According to Ouarniki (2023), proper implementation of EMI demands structural institutional support which speaks from all directions, including careful preparation of teachers, curriculum reform, and language training programs for both students and

employees. Several studies, like Touahmia and Bakar (2024), show that generational demands play an important role in practicing any innovation. The new students are ready to adopt the new system, the older generation's instructors lament the innovation, which is why the practice becomes even more difficult.

Despite these challenges, EMI continues to expand in Algerian universities as an indication of the nation's bid to conform to global academic practices. Scholars believe that for EMI to work, it must be imposed through a well-designed approach that takes the linguistic conditions and pedagogical constraints of the Algerian context into consideration (Hamane, 2023; Naimi, 2025).

How to Get Around Language Problems in EMI

Arabic and French involvement must be minimized if EMI is to flourish at Algerian universities. Here's how:

1. Giving priority to comprehensible and clear English

2. Putting intelligibility ahead of native speaker status. For bilingual learners who are exposed to both Arabic and French, pronunciation training needs to be modified. (Jenkins, 2000, emphasizes that intelligibility not native-like pronunciation should be the primary goal in international English settings.)

3. Preparing instructors to resist language influence to assist students in overcoming their pronunciation and grammar issues. EMI teachers require hands-on techniques.

4. Organizing workshops on English phonology, sentence structure, and pronunciation techniques will improve teaching quality.

3. Using Technology to Support Language Learning. Phonetics exercises need to be included in the syllabus to allow students to improve their spoken English.

By following these steps, Algerian universities are able to implement a move to EMI without students having to grapple with language interference and acquire fluency and confidence in English.

Algerian Englishization of tertiary education is reshaping academic discourse, but the language legacy of Arabic and French still impacts EMI learners. This study identifies how phonetics and cognitive transfer from Arabic and French shape students' English pronunciation.

While EMI is gaining ground, French-English rivalry and Arabic-French interference are ongoing concerns. A planned language transition program -including teacher training, pronunciation models, and curriculum reforms- must be implemented to render English learning effective in Algerian universities

Gaps in the Literature

Despite research into language transfer and foreign language learning pronunciation problems in the past, significant areas of unawareness exist for how these occurrences need to be explained when dealing with Algeria. Most that has been written has addressed the influence of either Arabic or French on English pronunciation, without ever considering seriously the multilingual environment in which Algerian learners learn English. The specific challenges of students in technical disciplines, where pronunciation matters most, have also not been extensively researched. In addition, while previous research has opined on the shift to the use of English as the dominant language of teaching at universities, few studies have been directed towards understanding how this shift impacts pronunciation in Algerian universities.

Multilingual influence on pronunciation.

The majority of the research done on Algerian pronunciation has dealt with the influence of Arabic and French separately, without addressing their intersubjective influence.

A study conducted by Belkhir and Boukhedami (2022) at Tiaret University indicates that Algerian students experience pronunciation challenges due to phonetic interference from the two languages, particularly in the production of vowels and stress. The study finds English phoneme articulation in most cases being controlled by Algerian Arabic and French, hence mispronunciation to levels of proficiency in language.

Technical Fields Pronunciation Difficulties

Issues related to pronunciation are especially relevant to technical and scientific environments, in which mispronunciations could cause misunderstandings in professional as well as scholarly environments. Not a lot has been studied related to pronunciation problems in Algerian STEM disciplines as of yet. Future researchers should explore combining phonetic exercises with technical English classes in order to make better use of spoken communication.

How EMI influences pronunciation

The shift to English as the predominant language of university instruction in Algeria has brought new challenges with pronunciation. Whereas research such as Macaro et al. (2018) has explored EMI within an international context, research exclusively dedicated to Algeria has been limited.

According to Ghanouaneb (2021), in one case study conducted at Saïda university, EMI students struggle to acquire correct pronunciation because they lack exposure to natural

English input. The research posits that incorporating phonetic instruction into English language teaching programs would improve students' speaking skills greatly.

Instructional strategies for accent instruction.

Although pronunciation is identified as a key component of language learning, explicit teaching of pronunciation is not a significant part of language classrooms, even in Algeria. Despite the reality that Ghanouaneb's (2021) study laid immense emphasis on incorporating phonetics into the Algerian EFL curriculum, phonetics is not taught systematically at all—even in English-major courses on university level. Ghanouaneb's study also advises the application of electronic aids and pronunciation software in order to provide instant feedback to students.

Quoting precedence in favor of intelligibility over native speaker accuracy because the support has a correspondence with Algerian learners whose objectives prefer functional communication over perfect accent imitation.

The influence of local accents can affect learners' speech acquisition. The existence of area-specific dialectal variation makes it more challenging to learn English pronunciation. Students of various regions in Algeria, as a study by Belkhir and Boukhedami (2022) shows, produce differential pronunciation mistakes according to their regional dialect. This feature implies that there can be no single teaching approach for pronunciation, and personalized phonetic training should be taken into account.

Identified Research Gaps

Although L2 pronunciation and cross-linguistic influence (CLI) have been under increasing investigation for the last few decades, several issues in the Algerian context remain under-explored.

Firstly, although many studies so far have concentrated on either Arabic or French influence on English pronunciation, surprisingly little work has examined the combined or overlapping impact of both languages on Algerian learners. With the country's bilingual environment, whereby the majority of students spend childhood moving between Arabic and French prior to acquiring English, there is a need to reflect on how the simultaneous presence of both systems influences the production of English sound by learners. Existing studies tend to isolate the effect of each language instead of examining how they interact to influence learners' phonology output. This is a theoretical and pedagogical void, especially regarding the knowledge of compound transfer effects.

Secondly, scientific and technical vocabulary, the bulk of which is EMI in biology, chemistry, and engineering, have not been thoroughly examined under the study of pronunciation. Students in such disciplines have difficulty pronouncing words that not only possess a rich pronunciation but also a tight and foreign written form. Such difficulty is not only linguistic but also cognitive since students have to learn content simultaneously and be right with the pronunciation. The scarcity of literature in this area limits the development of subject-based pronunciation training, which is sorely needed for successful communication in EMI classrooms.

Third, while there is adoption of EMI in Algeria, to date, the pronunciation issues it presents have not been explored in much detail. The majority of studies that have been published on EMI look at content instruction or student opinions without leaving out very critical inquiry into how language of instruction contributes to spoken accuracy. An urgent need is to explore how EMI students learn pronunciation under the dual influence of Arabic-French bilingualism and technical content mastery in English.

Finally, while technology-enhanced learning has become more widely available, its potential to support improved English pronunciation among Algerian university students is even less well researched. Such technology as speech recognition, interactive phonetics software, and virtual labs for pronunciation can be of immense value in supporting students, especially where access to native or near-native models is not readily available. Yet such technology is barely represented in Algerian EFL courses, and their impact has never been quantitatively assessed in this context.

By filling these gaps, further research can provide more sophisticated reports on the facts of pronunciation learning for multilingual EMI settings, and aid more effective teaching practice in Algerian tertiary education.

Conclusion :

The present chapter reviews some key literature related to Arabic and French phonological systems, CLI, and multilingual learners' issues while learning the pronunciation of English. Some gaps in previous research, particularly in the Algerian context, have also been identified. In contributing to a better understanding of how the English pronunciation produced by Algerian biology students is influenced by Arabic and French, this study addresses some of these gaps and suggests recommendations for effective pronunciation instruction in the Englishization of higher education.

CHAPTER THREE: PRACTICAL PART

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Research Methodology Design

This section describes the research method used in this research that analyzed the influence of Arabic and French on first-year biology students' pronunciation at the University of Tebessa. Specifically, the section discusses the research design, participants and sampling procedure, data collection tools, data analysis, ethical considerations, and limitations of the study. The use of mixed-methods design provides a thorough method for the investigation of pronunciation problems by multilingual learners in science learning.

Research Design

This study adopts an exploratory sequential design, which is a form of mixed-methods research design that merges quantitative and qualitative methods of inquiry to gain a deeper insight into the research problem. The quantitative strand deploys a structured pronunciation checklist in observing and categorizing phonological errors during observation classes. The qualitative section is comprised of open-ended notes on observations and a questionnaire for obtaining further insights regarding learners' language histories and self-perception regarding their own pronunciation issues.

This design is chosen to capture the complexity of pronunciation interference resulting from the interaction of Arabic and French in English foreign language acquisition. It allows the researchers to quantify observable patterns of pronunciation and at the same time explore the sociolinguistic and pedagogic conditions that produce such patterns.

Participants and Sampling

Participants of this research are 31 first-year undergraduate students majoring at the Department of Biology at the University of Tebessa in the academic year 2024–2025. Students are selected on the basis of enrollment in an EMI-module, i.e., in Animal Biology, being a scientific main subject involving expertise both in terms of subject-matter and in language.

Sample selection followed a purposive sampling strategy to ensure coverage of EMI course-related students directly exposed to the settings and representative of Algeria's multi-lingual linguistic environment. This allows the researchers to select a sample with the highest probabilities of language transfer phenomena from Arabic and French to English. All participants who are students have previously learned mostly in French and/or Arabic, only finding English as a foreign language (FL) being experienced at the secondary school stage and once more underscored through use in science higher education courses.

The sample consists of both female and male students whose age ranges between 18 and 21 and varied according to their degree of exposure to English as well as to varied regional dialectic influence. This variation enables the researchers to observe a range of pronunciation issues, based on both individual linguistic backgrounds and national phonological models. Moreover, the students' educational backgrounds differ slightly: Some attended French-medium schools, and others attended Arabic-medium schools. Thus, their English pronunciation errors could be different and helpful to contrast.

In addition to observing the students' performance, the teacher, Ms. Cherine AMRI, who implemented the classes, is observed across four individual teaching sessions. This gave the researchers a chance to observe not only the students' pronunciation mistakes, but also the language input of the teacher, the frequency of corrective feedback, and general patterns of interaction in the EMI classroom. These observations gave us important insights into the

pedagogical dynamics of an EMI setting in which English is used as a facilitator for knowledge transfer but is neither teacher's nor students' native or second language.

The selection of this sample is particularly relevant given the increased tendency towards internationalization in Algerian higher education, where English is increasingly playing center stage in the fields of STEM.

The intersection of students' multilingualism and use of English in a technical field like biology created fertile ground for investigation into pronunciation mistakes; i.e., those influenced by first language (L1) and second language (L2) phonological transfer.

Data Collection Tools

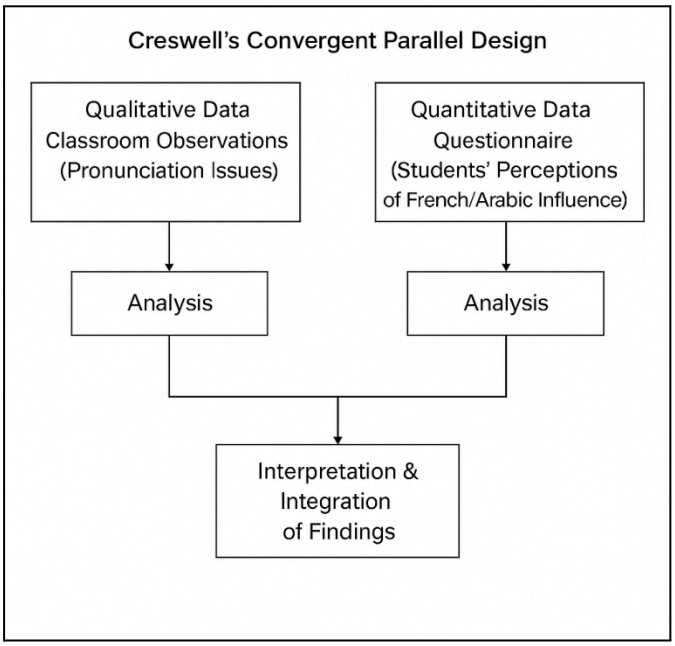
For collecting huge and credible data about how Arabic and French impact the pronunciation of English among first-year students of biology at the University of Tebessa, the research employs two divergent but complementary tools: (1) a formal observation list for classroom observations and (2) quantitative students' questionnaires.

These tools are selected to produce triangulated evidence concerning learners' actual pronunciation trends in genuine classrooms and also their own attitudes, experiences, and perceptions of English pronunciation.

The study utilizes Creswell's (2014) showed in figure 1 Convergent Parallel Design, a rigorous mixed-method design in which the qualitative and quantitative data are collected in parallel, analyzed independently, and merged on interpretation. This is particularly appropriate for the study in question, which investigates the influence of Arabic and French on EMI in Algerian universities. The research issue requires an investigation of students' observable pronunciation challenges in real EMI classrooms (qualitative data gathered from classroom observations) and their own self-reported language transfer attitudes and perceptions (quantitative data gathered from questionnaires). By merging both data sets, the

research is triangulated; and the validity, credibility, and reliability of the research findings are increased. Further, the design is cross-validated as results of one set act to support or supplement the other. It is also methodologically sound because language interference complexity and multidimensionality cannot be caught by a sole method. It is efficient and time-saving in that both sources of data are collected within the same academic context and over the same period. It allows for a fair treatment of both numerical trends and contextualized realities in the classroom, offering a higher level of understanding of the roles that Arabic and French can play in EMI delivery. Second, the model is consistent with the mixed-method research questions pursued in the study, focusing on both language behavior and learner perception, making Creswell's framework not only appropriate but indispensable organizing, analyzing, and interpreting the research systematically and meaningfully.

Figure 1 Creswell's Convergent Parallel Design



Note. Adapted from Research design: Qualitative, quantitative, and mixed methods approaches (4th ed.) by J. W. Creswell, 2014, SAGE Publications.

Class Observation

Between April 14th and May 5th, 2025, four systematic observations of Animal Biology classes that were delivered in EMI were conducted. All the classes were taught by Ms. Cherine AMRI, and the two observers, Rime ATHMANI and Asma HARET, observed the classes unobtrusively without disrupting the normal teaching procedure. The aim of the observation is to identify pronunciation mistakes and phonological patterns that arise due to first-language transfer from Arabic and French.

The observation checklist is included in Appendix A, both blank and filled samples are provided. It covers 9 types of errors which are:

1. Substitution of English phonemes with Arabic/French sounds, for example, /v/ with /f/, or /p/ with /b/.

2. Voicing errors: voicing confusion between voiced and voiceless sounds, for example, /θ/ (in think) with /s/ or /t/.

3. Vowel quality and length errors: failure to distinguish between short and long vowels, for example, ship and sheep.

4. Insertion or deletion of syllables: insertion or deletion of syllables by the learners due to Arabic/French syllable structure.

5. Faulty or even stress in words: a pattern of stress trespassing on the realm of intelligibility.

6. Faulty intonation: monotone, unnatural rising or falling intonation disrupting the intelligibility of speech.

7. Faulty pronunciation of technical terms: *Blastula*, *zygote*, *cleavage*, or nourishment were distorted uniformly.

8. Interference with filler/code-switching: using Arabic/French speech markers "*safi*," "*bon*," or "*wesh*" to *speak*.

9. Interference of regional dialect: e.g., glottal or uvular fricatives characteristic of Algerian dialects affecting English phonemes.

General comments also mentioned tendencies like repetition of fossilized errors, habitual hesitation to pronounce scientific vocabulary, or copying by students what their teacher's pronunciation is correct or otherwise.

This tool offers real-time feedback about the attainment of pronunciation issues in EMI settings and allows the researchers to get spontaneous performance over self-reporting.

Student Questionnaire

To collect quantitative data, a standard questionnaire is administered to first-year biology majors enrolled in EMI courses. The questionnaire attempts to explore the students' attitudes towards the impact of Arabic and French on their usage and understanding of English in learning contexts. To supplement the observation data, a structured questionnaire is administered in one of the observation sessions through a QR code to facilitate immediate access and improved response rates. 31 students filled in the questionnaire.

The questionnaire comprises multiple-choice and Likert-scale items on language background, difficulty of pronunciation, and attitude towards EMI instruction (Appendix B). Its sections include:

- Self-Assessment of English Pronunciation Skills

Focus: Students' own evaluation of their pronunciation and speaking confidence.

- Influence of Arabic and French on English Pronunciation

Focus: How Arabic and French affect students' English pronunciation.

- Difficulties with Specific English Sounds and Features

Focus: Challenges with English sounds, stress, and intonation.

- Frequency of Pronunciation Challenges and Instruction Received

Focus: How often students struggle with pronunciation and the instruction they received.

- Motivation and Need for Further Pronunciation Support

Focus: Students' interest in more pronunciation practice and fear of mispronunciation.

Justification of Tools

The tools are chosen as a result of their reliability, effectiveness, and correspondence to the aims of the study. Observation provides naturalistic performance data, while the questionnaire accesses internal experience and linguistic sensitivity. Together, they guarantee data triangulation, validate interpretations, and allow for diagnostic as well as pedagogical inferences. In addition, both tools are ethical in research practice, with respect for confidentiality, informed consent, and voluntary participation. There are no audio or video recordings; the notes are anonymized; and the questionnaire responses are stored safely.

Data Analysis Procedures

To give responses to the research questions and significance to the data collected through both class observation and the questionnaire, this research follows systematic and well-established procedures of analysis that align with the mixed-method design. It seeks to determine pronunciation issues encountered by EMI students in a multilingual setting and to interpret them from the cross-linguistic interference perspective.

Quantitative Analysis of Questionnaire Data

Answers to the questionnaire are screened for completeness before being coded and analyzed using descriptive statistical techniques, such as percentages and frequency counts using Microsoft Excel since the sample size is small and data are descriptive. Quantitative

results are presented in tables and bar charts to aid visualization of significant trends in terms of students' awareness of pronunciation problems, their history of exposure to language, and their opinions regarding teacher support. Light qualitative coding is used for the closed-ended responses close-ended questions, including multiple-choice items and Likert-scale statements,to aid in the interpretation of the statistical results.

Triangulation and Integration of Results

For reliability purposes and enhanced richness of interpretation, data triangulation is employed in this research. Observational data are cross-compared with self-report data in the questionnaire to identify overlaps and contradictions. An example is the comparison of phoneme errors incurred in class with student awareness of the same errors in the questionnaire responses. This enabled the study to validate patterns, reinforce findings, and identify main gaps between learner perception and classroom reality.

Ethical Reflections and Moral Implications

Prior to participation in this study, all student participants are appropriately informed about the research's objectives, methodology, and participant rights. All participants are given informed consent, which ensures that their participation is voluntary and that they understand the research. Their right to withdraw from the research at any moment without penalty or obligation is explicitly communicated to the participants.

Throughout the research process, every ethical precaution is taken to ensure anonymity and confidentiality. No identifiable personal information is ever collected. All the data are coded strictly and kept secure so that it would not be accessible to unauthorized people. The research is conducted fully in accordance with ethical standards prescribed by the supervising academic staff and the respective departmental authorities. Permission to collect data is given by the Biology Department Head (Appendix C) and the course instructor

whose written approval for classroom observation is in Appendix D. All procedures are carried out under the auspices of the researchers' academic supervisor.

Analysis and Intrpretation of Results

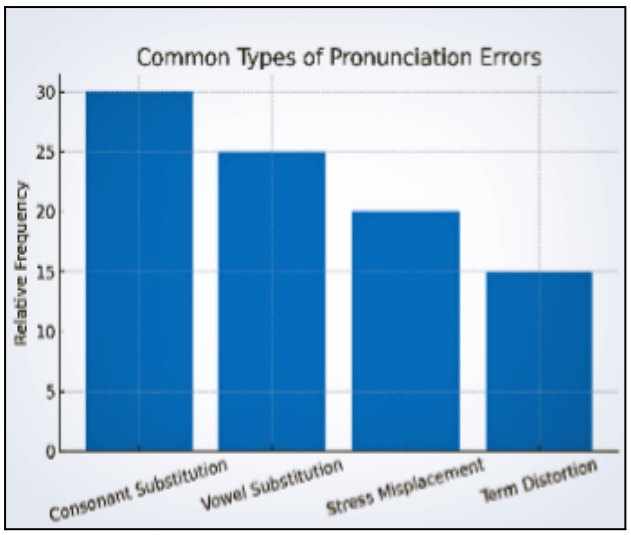
This section presents the data interpretation and analysis collected from class observations and students' questionnaires. The purpose is to answer the research questions and determine the influence of Arabic and French on students' pronunciation of scientific terms in EMI biology classes. The analysis merges both quantitative data (from observation checklists) and qualitative data (from open-ended questionnaire items) to provide a more comprehensive picture of the learners' linguistic issues.

Analysis of quantitative data

The most prevalent pronunciation error is consonant substitution with strong evidence of L1 influence on phonology.These substitutions often involve phonetically similar consonants that are not fully distinguished in learners' native languages.

Such substitutions make speech partially understandable, but they can also significantly modify or obscure meaning. Vowel substitution is the second most common error, indicating learners' failure to distinguish between tense and lax vowels or diphthongs. Lack of appropriate stress placement on words like metabolism, photosynthesis, or cellular respiration also detracted from clarity. Though less common, distortion of terms—typically involving intrusive vowels or segment alteration in longer or multi-part words like phylum—also resulted in pronunciation difficulty.

Figure 2 Common Types of Pronunciation Errors



This bar chart (Figure 2) illustrates the quantity of significant pronunciation errors. Most frequent is consonant substitution, followed by vowel substitution. Stress placement mistake and term distortion are less frequent but still impacted comprehensibility.

Figure 3 L1/L2 Substitution Patterns

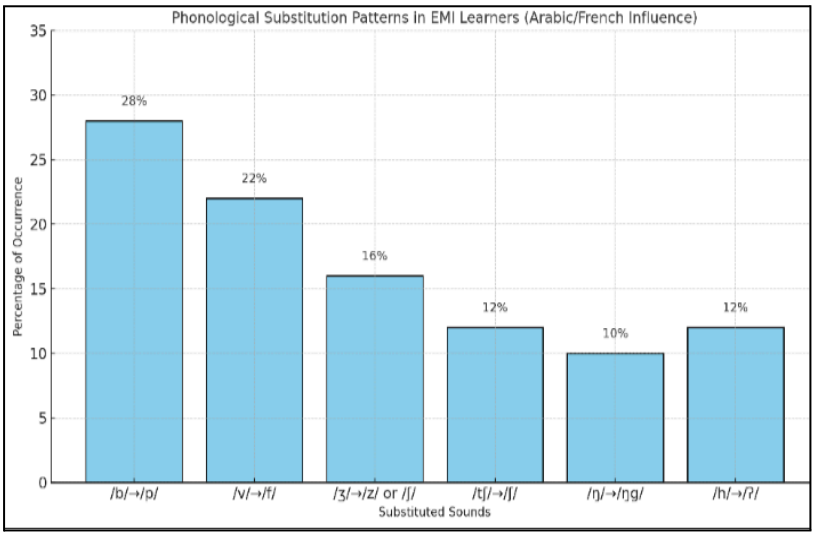


Figure 3 presents English consonant substitution according to learners' L1 (Arabic) and/or L2 (French). Most common is the hypercorrection of /b/ to /p/ in science Latin-derived words, for instance, bastula /ˈpæstjʊlə/, likely due to the extremely high frequency of /p/ in scientific terms as well as learners' overgeneralization.

Similarly, the voiced labiodental fricative /v/ is typically replaced by the voiceless /f/, because neither Arabic nor French integrates this phoneme into spontaneous speech.

This was especially true for words containing /v/, such as “vertebrate,” where transfer from Arabic/French phonology was evident.

Common substitutions included fricatives, affricates, and velar sounds, where native phonological systems lacked the English equivalent, leading to frequent deviations in words related to biology content.

Together, these findings identify strict patterns of phonological substitution and transfer that are produced by both Arabic and French linguistic influence and illustrate the importance of explicit phonetic teaching in EMI settings, particularly in scientific fields such as animal biology.

Figure 4 Student Self-reported Pronunciation Confidence

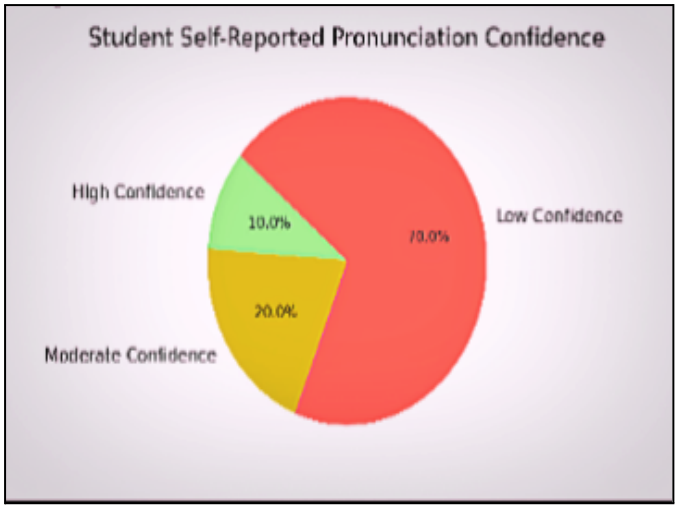


Figure 4 shows students' own belief level in their own English pronunciation skill in the use of scientific communication. It shows a clear majority (70%) low belief, and only 20% medium belief, and a mere 10% high belief.

These figures suggest that as a cohort, students are anxious about their spoken English .Especially technical vocabulary central to biology instruction.

This would most likely be because of a mix of reasons: lack of spoken academic English practice, low incidence of corrective feedback, and greater fear of mispronunciation

by peers or teachers. This is in line with affective filter theory (Krashen, 1982), under the hypothesis that anxiety will suppress language learning and speech production.

Low pronunciation confidence can also have a direct influence on classroom interaction and student participation in EMI classrooms. They are aware that they are being judged negatively or questioned whether they can be understood or not will be less active in engaging in arguments, questioning, or making oral presentations—skills required to excel academically in higher education.

These findings emphasize the need to include explicit pronunciation practice and enhancing intervention within EMI courses, such as peer-practice in pronunciation, positive feedback, oral presentations, and focused pronunciation courses.

Figure 5 Perceived Need for Pronunciation Instruction

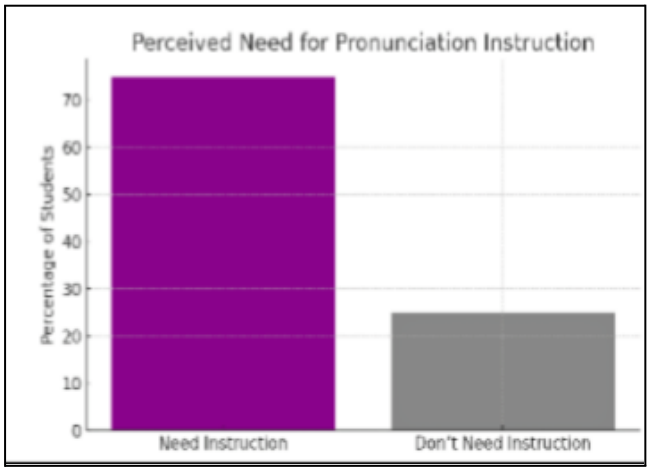


Figure 5 illustrates student opinions about whether or not direct pronunciation instruction should be taught in their classroom English classes. A full 75% reported that they thought so, and a mere 25% reported that they did not.

These results reflect a clear pedagogical shortfall in current EMI practice. Students not only know they have their own pronunciation problems but are actively seeking well-organized support, particularly for the learning of specialist vocabulary such as photosynthesis, ecosystem, or amino acids. Such student awareness proves an acute feeling

of students' educational needs and reflects the pragmatic value of the inclusion of pronunciation-focused teaching in subject-matter instruction.

In addition, the frequency of students requesting personalized pronunciation practice reflects mismatch between curriculum-learner difficulties. In the majority of EMI courses, content instruction dominates language development, and pronunciation is not necessarily addressed. However, students' feedback emphasizes the significance of pronunciation as a skill—priority in improving oral clarity, class participation, and academic performance.

Satisfying this need can involve adding pronunciation modules, offering pronunciation workshops, or integrating oral practice exercises into science education. This would not only render students more understandable but also lead to increased active engagement and self-confidence in EMI contexts.

Analysis of Qualitative Data

Qualitative data from four class observations provided rich insight into the nature and scope of the students' pronunciation issues in employing EMI in a biology context. Each session revealed enduring patterns of phonological interference, hesitation, and communication breakdown that quantitative measures are only partially able to capture. These results are topically organized and supplemented by original classroom talk, phonetic transcription, and interpretive commentary.

Segmental Errors and Sound Substitution

One of the general tendencies during sessions is substitution of English consonants with their closest equivalent in learners' L2 (French) or influenced by overall speech habits, leaning towards deforming scientific vocabulary. For example, blastula was pronounced as plastula (/ˈblæs.tjʊ.lə/ → /ˈplæs.tjʊ.lə/), indicating substitution of /b/ with /p/. The /h/ sound was usually omitted or glottalized, producing hindlimb as /ʔindlim/ or /indlim/ instead of

/ˈhaɪndlɪm/, under French influence, in which /h/ at the beginning is weak or absent. The voiced fricative /v/ was replaced with /f/, hence ovary became /ˈəʊfəri/ instead of /ˈəʊvəri/. Students also replaced /tʃ/ with /ʃ/, producing hatchling as /ˈhæʃlɪŋ/ instead of /ˈhætʃlɪŋ/. Similarly, the voiced postalveolar fricative /ʒ/ was reduced to /z/, so invasion became /ɪnˈveɪzən/ or /ɪnˈveɪʃən/. Finally, the velar nasal /ŋ/ hypercorrected to /ŋg/, such as in larva molting mispronounced as /ˈmɒltɪŋg/. These substitutions demonstrate how phonological awareness needs to be incorporated in EMI instruction to avoid scientific communication failure.

Suprasegmental Issues: Stress and Intonation

Students consistently abused stress in scientific terms of more than one syllable, with a tendency to stress the wrong syllable or adopt flat, monotonous intonation. This affected the prosody of their speech and rendered certain statements ambiguous, even when the vocabulary was accurate.

Example 1: "cleavage" pronounced /kleˈvɪdʒ/ when it needs to be /ˈkliː.vɪdʒ/

Example 2: "gastrulation" /ˈgæstrʊˌleɪʃən/ rather than /ˌgæs.truˈleɪ.ʃən/

Example 3: Students read words such as "zygote, blastula, gastrula" in flat pitch, with built-in rising/falling intonation.

Monotonic delivery also drained the communicative function of spoken English, resulting in disengagement and requiring teacher rephrasing or repetition.

Hesitation and Lexical Avoidance

Avoidance behavior is considerable with anxiety towards pronunciation, especially when students are presented with challenging scientific terms. Some attempted to mumble or avoid words, while others employed visual support or gestures instead of verbal answers.

Observation: A student wouldn't utter "somatic cell" and gestured towards the board instead.

Observation: A student reading out loud replaced "oogenesis" with "this process…," not uttering the term at all.

Dialogue Example:

Student A: "The bunction of. I mean function."

Student B: "What is bunction?"

→ This immediate correction reflects both phonetic error (/f/ → /b/) and peer understanding failure.

Code-Switching and Arabic/French Discourse Marker Use

Among the most salient features in all lesson observations was the bidirectional recourse to Arabic and French interjections and discourse markers to enable meaning negotiation, clarify instructions, or be sure of understanding. Teachers and students code-switched at intervals to Arabic (L1) or French (L2) as part of an instruction strategy in EMI teaching.

Examples from Observed Dialogues

Student: "This process… nourishes the embryo, bon?"

Teacher: "Wesh fahmin? Did you understand?"

Student: "Okay, so this is the morula stage, wla la?"

Teacher: "Voilà, c'est comme ça. It forms the zygote."

Student: "C'est complexe mais okay, I'll try."

These examples show pragmatic applications of code-switching in the classroom, including:

Checking understanding: "Bon?", "Wesh fahmin?"

Simplifying or explaining biology material in familiar terms

Facilitating rapport-building and communication apprehension

Lexical or phonological fill, especially where specialized language was difficult to articulate or remember in English

While this L1 and L2 use per se is not phonological or even problematic, it occurred most often when students were blocked or avoiding difficult English words, particularly on the basis of difficulties of pronunciation. It is thus in these aspects a survival strategy for linguistically difficult environments. While ensuring quick comprehension, however, extensive use of non-English fill-ins could threaten the immersion goals of EMI and restrict valuable exposure to English models of pronunciation**.**

L1 Interference and French Intonation

Language transfer from each of the two languages was always observed not only at the phonemic but also in rhythm, stress patterns, and terminal consonant articulation. Example: "blastomeres" was pronounced with French melodic intonation, ending on a rising tone as a question.

Such features imply that learners, having no systematic pronunciation training, fall back on familiar L1 sound systems, which are in disagreement with English biological vocabulary.

Requests for Clarification and Teacher Intervention

During all sessions, learners tended to ask for teacher clarification or pronunciation modeling. Teacher scaffolding was essential to facilitate meaning and reduce anxiety. Observation: The teacher repeated "nourishment," "ovum," and "morula" repeatedly after students struggled.

Dialogue Example:

Student: "DNA is part of the TNA…"

Teacher: "You mean DNA, not TNA. Listen: /ˌdiː.enˈeɪ/."

→ This correction prevented content confusion and established lexical borders.

Summary of Observed Pattern:

Table 1 Summary of Pronunciation Patterns Observed During Classroom Sessions

Observed Challenge	Example	Phonetic Form	Source of Error
/p/ → /b/ substitution	plastula → blastula	ˈplæs.tjʊ.lə/ → /ˈblæs.tjʊ.lə/	Arabic lacks /p/
Stress misplacement	cleavage	/kleˈvɪdʒ/	Stress unawareness
Intonation flatness	Scientific lists	Monotone	Prosodic weakness
Avoidance	Skipped “somatic cell”	Silent (unspoken)	Anxiety / lexical uncertainty
Mother tongue intonation	blastomeres	French melodic pattern	L1 prosodic transfer
Clarification request	ovary	Repetition and pauses	Need for modeling and scaffolding

Patterns of common pronunciation issues among first-year biology students are observed in class, with most being characterized by L1 interference (Arabic), lack of knowledge of stress and intonation, and performance anxiety. The most obvious issues are:

- Segmental mistakes such as substitution /p/ → /b/ (for instance, plastula erroneously pronounced as *blastula*) owing to the fact that Arabic lacks /p/.
- Suprasegmental problems, including misstressing (e.g., cleavage pronounced /kleˈvɪdʒ/ instead of /ˈkliː.vɪdʒ/), flat intonation when reciting scientific terminology, and application of French rhythmic patterns in speech.

- Behavioral routines, including word deletions during speaking (e.g., deleting "somatic cell") and repeated requests for clarification (e.g., vagueness with regards to ovary), which were also reflective of both linguistic lacunae and insecurity.

The patterns identified across both quantitative and qualitative analyses reveal the extent to which French and Arabic phonological systems influence learners' performance in EMI contexts. The following section discusses how these findings align with or diverge from existing literature.

General Implications

During all the observed sessions, students' difficulties are accounted for by:

- Lack of exposure to native English phonology in scientific environments;
- Over-reliance on French or Arabic phonological systems;
- Lack of targeted pronunciation practice in EMI settings;
- Anxiety caused by pronunciation influencing participation and fluency.

These qualitative findings converge with those of the questionnaire, affirm that pronunciation challenges not only undermine classroom communication but also affect students' confidence and class participation. These highlight the need for systematic phonological training, teacher modeling, and corrective feedback.

Discussion of Findings

In this section, the analysis integrates the classroom observation and findings through the lens of language transfer theory (Odlin, 1989), phonological pedagogy (Celce-Murcia et al., 2010), as well as the concerns of EMI in multilingual contexts (Kadi, 2021). The emphasis is on highlighting the impact of Arabic (L1) and French (L2) on the English

pronunciation skills of biology students at Tebessa University, addressing some of the gaps in scientific discourse pronunciation instruction.

Problems with Pronunciation in English as a Medium of Instruction (EMI) Settings

Data collected from April 14 to May 5, 2025, showed a consistent problem with the segmental and suprasegmental features of scientific English. The most problematic areas were:

- Consonants substitution: /p/ → /b/ (brotein), /v/ → /f/ (fitamin), confirming the results of Tepich & Akay (2018) with Arabic EFL learners.
- Lexical transfer: French cognates *clivage* for cleavage were borrowed; a tendency documented in Kadi's study (2021) on Algerian EMI contexts.
- Misplacement of primary stress: NUcleus (stressed first syllable) instead of nuCLEus. This underscores the role of Jenkins' (2000) claim that stress supports intelligibility.

These mistakes confirm the observation by Celce-Murcia et al. (2010); comprehensive English phonology identifies gaps in the instruction of basic phonology that are prone to L1/L2 influences in regards to academic lexicon in English.

Cross-linguistic influences: French and Arabic

The integration of French and Arabic effects is consistent with Odlin's (1989) theory of language transfer whereby knowledge of previous languages influences learning at the third language stage.

Arabic (L1) Influence

Whereas previous research (e.g., Tepich & Akay, 2018) has explained /p/→/b/ substitution in Arabic as a result of the non-availability of /p/ in Arabic, the Algerian context over-simplifies this. The majority of students have been exposed to French — which has /p/ — since they were children, and yet substitution persists. This shows that Arabic supremacy in phonology may still affect learners, especially in spoken production, where they will resort to more convenient L1 patterns.

French (L2) Lexical Borrowing and Code Preference

The most fascinating result of questionnaire returns and observation in class was the recurrence of French synonyms or equivalents rather than English scientific vocabulary. For example, rather than using English vocabulary division or separation, several students utilized on a continual basis the term *clivage*, a French term widely used within scientific vocabulary. This was not the only case; other cases included the replacement of *cellule* with cell, and *systèmenerveux* with nervous system, especially when explaining in class or when answering open questions in English.

These substitutions confirm that the majority of the students employ French as a linguistic crutch, especially where there is unfamiliarity with English terms or remembering them becomes difficult. This behavior strongly supports Kadi's (2021) thesis that French serves as a "bridge language" in Algerian EMI contexts. It appears that students, having been educated in French as the primary language of science for many years, still instinctively revert to French vocabulary when communicating scientific content, even within EMI settings. Instead of suggesting lack of comprehension, such lexical selections document a borrowing of familiarity and convenience from French to English.

Besides, the trend complicates the pronunciation process because French-accented pronunciations of scientific terms usually have clear-cut phonological patterns that differ

from those in English and Arabic. For example, when students failed to use the English variant /ˈklɪ.vɪdʒ/ pronouncing *clivage* but preferred to pronounce /kli.vaʒ/, they not only avoided the English variant, but they were also opting for non-native stress and phoneme structure, which affects comprehension.

This practice of borrowing is evidence of the resilience of French preeminence of scientific mental representation even when faced with institutional pressure to use English. It is evidence of a subtle CLI where Arabic is making an impression on root pronunciation, while French continues to dominate scientific nomenclature, posing a two-language issue for EMI instruction.

Jenkins (2000) also points out that Arab students are prone to struggle with English suprasegmental features—particularly stress placement and rhythmic variation—causing their speech to be flat and even sometimes unintelligible. All of these results in the present study are the same as those observations made earlier. During class observations, learners would mispronounce scientific terms with incorrect stress syllables. For example, the word photosynthesis was often by able speakers pronounced as /ˌfə.təʊˈsɪn.θəs.ɪs/, but many students used /ˌfɒ.tə.sɪnˈθɛ.sɪs/ or /ˌfoː.toːˈsɪ.θɪs/, with the stress misplaced or deleted. Similarly, in the word metamorphosis, students stressed the first syllable instead of the third (e.g., /ˈme.tə.mɔː.fə.sɪs/ instead of /ˌme.təˈmɔː.fə.sɪs/), which changed the rhythm of the sentence. In polysyllabic words such as vertebrate classification or respiratory system, speech rhythm was syllable-timed rather than stress-timed, resulting in unnatural rhythms and reduced intelligibility. The results demonstrate that suprasegmental interference—presumably resulting from Arabic's more regularized patterns of stress—is a serious obstacle in EMI, especially with the use of specialized scientific vocabulary

Learner Awareness and Strategic Gaps

Based on questionnaire responses, 68% of the students confirmed L1/L2 influence on their pronunciation, but only 22% reported using strategies (e.g., listening practice) to prevent errors. This reflects Derwing and Munro's (2015) "awareness-action gap" in that learners are aware of the problems, but do not have corrective mechanisms.

- Low confidence: Remarkably, 73% considered their pronunciation to be "weak" or "average" which is in line with hesitance in classroom presentations.
- Suprasegmental neglect: 81% found stress and intonation "difficult" to use, as a confirmatory evidence for Celce-Murcia et al.'s (2010) criticism of segmental-focused instruction in EFL contexts.

Conclusion

In this chapter, I discussed the research methodology I employed to answer how Arabic and French phonological interference impacted English pronunciation among Algerian EMI students. I used a mixed-methods perception study of students on pronunciation skills, using classroom observations and a questionnaire, in order to seek qualitative data in multiple ways. In general, classroom observations focussed on pronunciation errors resulting from L1 and L2 interference whereas in-depth questionnaire elicited data would assess how they perceived their own pronunciation skills.

The research design has been set up to have reliability and validity, allowing me to have full confidence in making meaning from the challenges students faced. The qualitative data presented in this chapter will inform some analyses in chapters four and five and will also develop recommendations to improve pronunciation instruction in Algerian higher education.

CHAPTER FOUR

General Conclusion

CHAPTER FOUR: CONCLUSION AND RECOMMENDATIONS

This study was set out to examine how Arabic and French impact the pronunciation of English among first-year biology students at the University of Tebessa, in an EMI context. Carried out through mixed methods design alternating between classroom observations and student questionnaires, it sought to expose significant pronunciation difficulties and uncover how multilingual background impacts learners' production of spoken English. The findings revealed not only differentiated pronunciation errors, but also more basic comprehension of learner awareness, pedagogical gaps, and language origin effects.This final chapter presents a summary of the key findings, answers the research questions, and examines the theoretical, practical, research, and policy outcomes of the study. It also outlines vital recommendations, presents limitations of the study, and concludes with suggestions for future research.

Summary of Key Findings

The data revealed explicit and entrenched pronunciation issues, a great number of them traceable to Arabic and French phonetic patterns. Consonant substitution e.g., /p/ for /b/ or /v/ for /f/ and difficulty with vowel quality and quantity are the most common. Suprasegmental features of stress, rhythm, and intonation proved difficult for students as well. Stress and flat intonation are consistently committed, making their speech less comprehensible. These errors were not random but showed predictable patterns of language transfer, bearing witness to the strong effect of both L1 and L2 phonology on the pronunciation of EMI learners.

Answering the Research Questions

The research managed to address its core questions, illustrating how first-language interference, in this case from French and Arabic, manifests in typical pronunciation

behaviors. Real-time phoneme substitutions and speech rhythm interferences are observed in class, and questionnaires yielded data regarding students' perception, difficulties, and minimal levels of corrective intervention provision. The context where Arabic was dominant and French acted as a transition language presented a complex linguistic environment for learning English. The results clearly supported the hypothesis that both French and Arabic influence English speech in systematic and predictable ways, in accordance with CLI theory (Odlin, 1989). Perhaps most importantly, a gap was found between what the students perceive their pronunciation issues to be and the poor teaching support they receive.

Implications

In brief, the current study provides an overview of Arabic and French impact on English pronunciation in an EMI environment. It highlights the importance of pronunciation-oriented teaching, better teacher training, and learner support in Algerian scientific training. Though from the University of Tebessa, implications are broadened to include EMI programs in Algeria and similar multilingual settings. By identifying and remediating cross-linguistic interference, instructors and policy makers are able to empower students to express English more accurately, confidently, and effectively in educational and workplace settings.

Overall, the implications of this research extend beyond the classroom to bear on theory, practice, research, and policy. All four aspects are connected with each other, each informing and reinforcing the others. Together, they provide a more complete picture of what needs to be done to prepare multilingual learners in EMI contexts like Algeria's.

Theoretical Implications

This research adds insightful depth to SLA, yet within multilingual contexts. It illustrates how learners of more than one language have intersecting phonologies that condition their English pronunciation. The research supports the argument that SLA theories need to fully account for multilingual realities in which a greater than an L1 interacts with English acquisition. It also upholds the tenets of Jenkins' (2000) LFC, which aims to put native norms secondary to intelligibility in international communication contexts. Furthermore, the findings also support the role of CLI on SLA, and they confirm Odlin's (1989) hypothesis that both L1 as well as L2 background contributes to new language acquisition, specifically pronunciation. This study is an important contribution to the growing body of research on EMI in multilingual contexts, and more specifically in the Algerian university higher education context. The focused examination of the phonological influence that first (L1) Arabic and second language (L2) French have on Algerian students' English pronunciation reveals a linguistic problem often underestimated in the implementation of EMI. This study identified common problems with pronunciation that can impede a students' intelligibility and communicative competence in English through student questionnaires and classroom observation.

Practical Implications

In practice, the results confirm the need for pedagogical change. Pronunciation is not an amenity but a necessary ability in EMI learning. Educators should get special instruction on how to find and rectify common patterns of interference, most importantly those originating from Arabic and French. Proficient classroom practice constituting purposeful phoneme work, exercises of intonation, and audiovisual models of pronunciation has considerable potential for boosting learners' spoken performance. This would shift practice

in such a way that instruction would move alongside learners' real needs. In an attempt to advocate for inclusive, intelligible instruction that prepares Algerian students to communicate effectively and confidently in academic and professional situations, this study emphasizes that pronunciation should no longer be an overlooked aspect of EMI .As English increasingly relies on science teaching, pronunciation remains an afterthought resulting in students who cannot speak clearly. Yet curricula remain obsessed with native-like accuracy at the expense of ease of understanding. This study points to a shift in focus: away from approaching native perfection and towards producing clear, confident, and comprehensible English speech.

Research Implications

Though this research took place within a single university and discipline, the implications open doors to future work. Future large-scale or longitudinal studies may look into changes over time in, or within other academic subjects' contexts. Research across regional or national regions would confirm if identical trends operate elsewhere within other multilingual contexts. More studies are also called for regarding the influence of specific pedagogic materials mobile applications, peer activity, curriculum update—on the development of multilingual pronunciation.

Policy implications

The findings have implications for practitioners, curriculum developers, and policy-makers concerning the relevance of EMI initiatives with pronunciation instruction. Pronunciation is a fundamental element in language education, particularly in EMI environments. Structural changes at the curriculum and policy level are necessary alongside classroom teaching. In current Algerian university programs, pronunciation is often sidelined, seen as a supplementary skill instead of an essential means of communication. As

stated in Belkhir and Boukhedami's (2022) thesis, students often begin college without having had proper training in pronunciation. This study identifies a significant gap in Algeria's higher education strategy. Pronunciation training remains rare. By relating theoretical models of language interference to actual classroom situations, the study highlights the necessity of providing specialised phonological support catered to the linguistic profiles of Algerian learners. These revelations offer a strong basis for future curriculum planning, teacher education, and EMI pedagogical reforms.

To address these challenges, curriculum planners must rethink the placement of pronunciation in EMI and EFL courses. Rather than being secondary in nature, pronunciation must be incorporated in the core of language and content instruction. This can be achieved by developing specialized modules calibrated to students' areas of study—particularly in science and technology, where correct articulation aids comprehension and knowledge transfer. Such modules must be founded upon diagnostic needs assessment that considers the diverse linguistic backgrounds of the Algerian learners. The curriculum will thus not only reflect the communicative needs of EMI settings but also learners' real linguistic needs, to equip them with the ability to engage fully and confidently in classroom discussion as well as in professional environments.

Recommendations

To address the limitations identified in this study, the following recommendations and strategies are proposed:

1. Contrastive Training: Gradually work on common and recurrent pronunciation errors such as /p/ and /b/ for instance by practicing minimal pair exercises, such as Celce-Murcia et al. (2010) recommend. Also, take note of bringing awareness of French-English "false friends", which are such words as they are alike in both French and English in terms of spelling, but in

either of these languages they have different meanings or usage, for example, French "clivage" and English "*cleavage*" (Kadi 2021).

2. Instruction Emphasizing Stress Patterns: It is recommended to include focused teaching of word stress for scientific terminology (e.g., deoxyribonucleic acid) in biology lectures based on Jenkins' (2000) LFC model. This refers to focusing students' attention on the proper pronunciation and stress of key terms in order to improve their comprehension and ability to communicate in scientific situations.

3. Audio-Visual Support: Use recordings of academic lectures as a means of instruction to demonstrate proper stress patterns and intonation. In this way, the approach targets the limitations in pronunciation teaching identified by Derwing and Munro (2015) and makes learners able to get authentic models for work on their prosodic features.

The teaching challenges observed in Algerian EMI classrooms highlight the pressing requirement for effective and tailored methods in instructing English pronunciation. Research conducted by Mesrouk (2021) and Belkhir and Boukhedami (2022) illustrates how the phonological systems of Arabic and French affect English pronunciation. Specifically in the enunciation of vowels, consonant clusters, and rhythm .Recommended strategies for classroom include: Diagnostic Evaluations: Educators need to offer explicit guidelines on assessing students' phonological abilities and challenges using diagnostic pronunciation resources tailored for Arabic- and French-speaking learners at the beginning of classes. Highlighting issues such as the /p/–/b/ distinction, vowel duration, and syllable emphasis, educators focus on the phonological differences between English and Arabic/French. Students ought to obtain immediate feedback and the ability to track their performance through applications such as ELSA Speak, Speechling, or customized pronunciation tools. Additionally, educators should promote peer and self-reflection feedback among students. Through these methods, teachers can cultivate a linguistic awareness and motivate students

to encounter various pronunciation styles, gradually enhancing their clarity in communication.

Limitations of the study

Although this study provides some insight into the phonological difficulties experienced by Algerian EMI students, it has a number of limitations. First, the findings are applicable to first year biology students in one university, which makes it difficult to generalize to other disciplines or educational contexts. Second, because of institutional constraints, the choice of the participants was constrained, and it was possible to observe only one biology teacher using EMI—the lack of diversity of the instructional styles and possible phonological input. Third, the use of classroom observation and self-reported questionnaire data is problematic in that students may have exaggerated or underplayed their pronunciation problems. Lastly, the study addressed only the pronunciation part of the scientific terminology ignoring the wider spectrum of the oral proficiency (e.g., fluency, coherence). Time constraints also hindered longitudinal follow-up, which would have helped determine the development of learners' pronunciation awareness over time.

Future Research Contribution

Current research provides valuable results, raises important questions, and suggests potential future research areas. The following recommendations are targeted towards increasing our knowledge of multilingual pronunciation problems and improving teaching methods under the umbrella of EMI:

Longitudinal research

Longitudinal follow-up studies can track students' improvement in pronunciation over a couple of semesters. This would determine the long-term effect of EMI exposure and whether certain pedagogical approaches lead to long-term benefits.

Comparative Research

Comparative research in the future can also investigate how students from different locations, departments, or universities react to the same (or other) pronunciation issues. Cross-country comparisons with other multilingual groups would also enrich the findings. Previous studies provide valuable results, raise important questions, and show potential lines for future study. The below suggestions are meant to improve our comprehension of multilingual pronunciation problems and improve pedagogy under the EMI flag.

Focus on Suprasegmental Features

Although this research brushed on both suprasegmental and segmental aspects, the latter stress, rhythm, and intonation can be given more focus in future research. These are extremely crucial for intelligibility and typically overlooked in traditional teaching

Evaluation of instructional interventions

Experimental studies will examine the impact of certain teaching materials or teaching methods - i.e. workshops, language learning apps, peer tutoring, and multimedia materials. The aim is to present evidence of good pronunciation instruction in EMI classrooms.

Learner identity and motivation study

How do student own accents, language characteristics, and self-assurance affect students' motivation to practice pronunciation? Studies of such sociolinguistic factors may guide more student-centered and compassionate teaching.

Studies into other EMI issues

Since the research was conducted with biology students, research could also be conducted with other fields of EMI such as engineering, medicine, or computer science, researching problems of pronunciation. Every field carries specific language requirements and challenges.

With the advent of AI-powered tools and smartphones, future studies could explore how technology-mediated pronunciation practice affects learning outcomes. Investigating the applicatio ofstudent interaction with tools like ELSA Speak or Speechling could transform pronunciation pedagogy..

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Appendices

Appendix A: Classroom Observation Checklist – Pronunciation Challenges

A.1. Template

A. Class Information

Date of Observation: _____

Class Subject/Topic: _____

Instructor Name: _____

Total Number of Students: _____

B. Pronunciation Challenges Observed

Challenge Type	Observed (✓)	Notes / Examples
Confusion between similar sounds (e.g., /p/ and /b/)		
Incorrect word stress		
Monotone intonation (lack of rising/falling tones)		
Difficulty pronouncing long or unfamiliar words		
Difficulty of pronouncing biology terminology		
Overuse of mother tongue patterns (Arabic/French)		
Avoidance of speaking due to pronunciation fears		
Miscommunication due to unclear pronunciation		
Students ask teacher to clarify his/her pronunciation		

C. General Comments

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A.2. Filled Classroom Observation Checklist – Pronunciation Challenges

Session 1

A. Class Information

Date of Observation: 14/04/2025

Class Subject/Topic: Animal Biology

Instructor Name: Dr. Cherine AMRI

Total Number of Students: 31

B. Pronunciation Challenges Observed

Challenge Type	Observed (✓)	Notes / Examples
Consonant substitution (e.g., /p/ and /b/)	✓	‘blastula’ mispronounced as ‘plastula’ (/ˈblæs.tjʊ.lə/). Correct pronunciation: Chatter /ˈtʃætər/ Incorrect he: Chatter pronounced as /ˈʃætər/ (pronouncing the initial /tʃ/ as /ʃ/)
Incorrect word stress	✓	‘cleavage’ pronounced as /kleˈvɪdʒ/ instead of /ˈkliː.vɪdʒ/.
Monotone intonation (lack of rising/falling tones)	✓	Student read ‘zygote forms blastomeres’ flatly, lacking pitch variation.
Difficulty pronouncing long or unfamiliar words	✓	‘megalecithal’ mispronounced as /ˈmegəˌliːsɪθəl/ instead of /ˌmɛgəˈlɛsɪθəl/.
Difficulty of pronouncing biology terminology	✓	‘cytoplasm’ mispronounced as ‘citoplasm’ /ˈsaɪtəˌplæzəm/.
Overuse of mother tongue patterns (Arabic/French)	✓	‘blastomeres’ pronounced with French intonation.
Avoidance of speaking due to pronunciation fears	✓	A student refused to say ‘somatic cell’ aloud.
Miscommunication due to unclear pronunciation	✓	‘unicellular’ misunderstood as ‘nuclear’.
Students ask teacher to clarify his/her pronunciation	✓	Teacher repeated ‘nourishment’ several times.

C. General Comments

Students showed hesitancy and confusion when pronouncing terms. Many had difficulty distinguishing vowel sounds. Peer correction was rarely observed.

Session 2

A. Class Information

Date of Observation: 21/04/2025

Class Subject/Topic: Animal Biology

Instructor Name: Dr. Cherine AMRI

Total Number of Students: 30

B. Pronunciation Challenges Observed

Challenge Type	Observed (✓)	Notes / Examples
Consonant substitution (e.g., /p/ and /p/)	✓	/b/ → /p/ (Hypercorrection) Incorrect: embryo → [ˈɛmpriʊ] Correct: [ˈɛmbriʊ] Correct: division → /dɪˈvɪʒən/ Incorrect: division → /dɪˈvɪzən/
Incorrect word stress	✓	‘holoblastic’ stressed on the second syllable instead of the third.
Monotone intonation (lack of rising/falling tones)	✓	Reading of ‘the embryo divides repeatedly’ lacked natural rhythm.
Difficulty pronouncing long or unfamiliar words	✓	‘microtubules’ mispronounced as /ˌmɪkrəˈtʌbjʊlz/.
Difficulty of pronouncing biology terminology	✓	‘fibres’ pronounced as ‘fiebers’.
Overuse of mother tongue patterns (Arabic/French)	✓	French 'r' used in ‘nuclear’.
Avoidance of speaking due to pronunciation fears	✓	One student whispered all terminology.
Miscommunication due to unclear pronunciation	✓	‘egg’ confused with ‘ag’.
Students ask teacher to clarify his/her pronunciation	✓	Clarification of ‘ovum’ requested.

C. General Comments:

French phonological influence was strongly present. Stress and syllable errors were frequent.

Students understood content better when teacher modeled correct pronunciation

Session 3

A. Class Information

Date of Observation: 28/04/2025

Class Subject/Topic: Animal Biology

Instructor Name: Dr. Cherine AMRI

Total Number of Students: 31

B. Pronunciation Challenges Observed

Challenge Type	Observed (✓)	Notes / Examples
Consonant substitution (e.g., /p/ and /b/)	✓	Correct: vertebrate → /ˈvɜːrtɪbreɪt/ Incorrect: vertebrate → /ˈfɜːrtɪbreɪt/
Incorrect word stress	✓	‘gastrulation’ stressed incorrectly as /ˈgæstrʊˌleɪʃən/.
Monotone intonation (lack of rising/falling tones)	✓	Lack of pitch on complex sentences like ‘the zygote divides into morula’.
Difficulty pronouncing long or unfamiliar words	✓	‘ectoderm’ and ‘mesoderm’ were difficult for students.
Difficulty of pronouncing biology terminology	✓	‘blastocoel’ was mispronounced as ‘blastoquel’.
Overuse of mother tongue patterns (Arabic/French)	✓	Student added schwa /ə/ after most consonants.
Avoidance of speaking due to pronunciation fears	✓	Two students skipped technical terms when reading.
Miscommunication due to unclear pronunciation	✓	‘embryo’ heard as ‘embrea’.
Students ask teacher to clarify his/her pronunciation	✓	‘morula’ had to be repeated.

C. General Comments

French interference appeared at the segmental level. Students struggled with complex terms, often simplifying them. Teacher support was essential.

Session 4

A. Class Information

Date of Observation: 05/05/2025

Class Subject/Topic: Animal Biology

Instructor Name: Dr. Cherine AMRI

Total Number of Students: 31

B. Pronunciation Challenges Observed

Challenge Type	Observed (✓)	Notes / Examples
consonant substitution (e.g., /p/ and /b/)	✓	Correct: cheetah → [ˈtʃiːtə] Incorrect: cheetah → [ˈʃiːtə]
Incorrect word stress	✓	‘fertilization’ stress misplaced on second syllable.
Monotone intonation (lack of rising/falling tones)		Incorrect (monotone intonation): photosynthesis (spoken flatly, without emphasis) Correct (natural intonation): ˌfəʊtəʊˈsɪnθəsɪs (with rising intonation on the stressed syllable “ˈsɪn”)
Difficulty pronouncing long or unfamiliar words	✓	‘oogenesis’ mispronounced /ˌoʊəˈgɛnəsɪs/ instead of /ˌoʊ.əˈdʒɛn.ə.sɪs/.
Difficulty of pronouncing biology terminology	✓	‘spermatogenesis’ broken as ‘sper-mato-genesis’.
Overuse of mother tongue patterns (Arabic/French)	✓	Final /s/ deleted in plural nouns like ‘cells’.
Avoidance of speaking due to pronunciation fears	✓	One student relied entirely on gestures.
Miscommunication due to unclear pronunciation	✓	‘DNA’ was misunderstood as ‘TNA’.
Students ask teacher to clarify his/her pronunciation	✓	‘ovary’ required clarification.

C. General Comments:

Some students depended on visual aids to avoid speaking. Pronunciation errors stemmed mainly from unfamiliar scientific terms and interference from L1.

Appendix B: Questionnaire on Pronunciation Issues

Section A: Personal Pronunciation Experience – تجربتك مع النطق

This section explores your general experience with English pronunciation, including how often you face challenges and which specific aspects you find most difficult.

يستكشف هذا القسم تجربتك العامة مع نطق اللغة الإنجليزية، بما في ذلك مدى تكرار الصعوبات التي تواجهها والجوانب التي تجدها أكثر صعوبة.

- How often do you face difficulty in pronouncing English words?

  كم مرة تواجه صعوبة في نطق الكلمات الإنجليزية؟

  - Always / دائماً
  - Often / غالباً
  - Sometimes / أحياناً
  - Rarely / نادراً
  - Never / أبداً

- Which English sounds are hardest for you to pronounce?

  ما هي الأصوات الإنجليزية التي تجد صعوبة في نطقها؟

  - Vowels / الحروف المتحركة
  - Consonants / الحروف الساكنة
  - Both / كلاهما

- None of the above / لا شيء

- Which pronunciation feature do you struggle with the most?

  ما هو أكثر جانب تجد صعوبة فيه من النطق؟

  - Stress / النبرة
  - Intonation / التنغيم
  - Sound accuracy / دقة الأصوات
  - All of the above / كل ما سبق

- Have you received enough instruction in pronunciation?

  هل تلقيت تعليمًا كافيًا في النطق؟

  - Yes / نعم
  - Some / إلى حد ما
  - No / لا
  - Not sure / لست متأكداً

- Would you like more classes focused on pronunciation?

  هل ترغب في دروس أكثر تركيزاً على النطق؟

  - Yes / نعم
  - Maybe / ربما
  - No / لا

- How often do you avoid speaking English because you're afraid of mispronouncing words?

  كم مرة تتجنب التحدث بالإنجليزية بسبب الخوف من نُطق الكلمات بشكل خاطئ؟

  - 1 = Never / أبدًا

- 2
- 3
- 4
- 5 = Always / دائمًا

Section B: Linguistic Influence & Confidence – تأثير اللغة والثقة بالنطق

This section focuses on how your native languages (Arabic and French) may influence your English pronunciation. It also examines your confidence in speaking and producing accurate sounds.

يركّز هذا القسم على تأثير لغتك الأم (العربية والفرنسية) على نُطقك للغة الإنجليزية، كما يتناول مدى ثقتك في التحدث وإنتاج الأصوات بدقة.

- How would you rate your overall English pronunciation?

  كيف تُقيّم نُطقك العام للغة الإنجليزية؟

  - Very Poor / ضعيف جدًا
  - Poor / ضعيف
  - Average / متوسط
  - Good / جيد
  - Excellent / ممتاز

- How much do you think Arabic affects your English pronunciation?

  إلى أي درجة تعتقد أن اللغة العربية تؤثر على نُطقك للإنجليزية؟

  - Not at all / لا تؤثر إطلاقًا
  - Slightly / قليلاً
  - Moderately / بشكل متوسط

- Strongly / بشكل قوي
- Very strongly / تؤثر بشكل كبير

- How much do you think French affects your English pronunciation?

  إلى أي درجة تعتقد أن اللغة الفرنسية تؤثر على نُطقك للإنجليزية؟

  - Not at all / لا تؤثر إطلاقًا
  - Slightly / قليلاً
  - Moderately / بشكل متوسط
  - Strongly / بشكل قوي
  - Very strongly / تؤثر بشكل كبير

- How often do you mix Arabic/French sounds when speaking English?

  كم مرة تخلط بين أصوات العربية أو الفرنسية عند التحدث بالإنجليزية؟

  - Never / أبدًا
  - Rarely / نادرًا
  - Occasionally / أحيانًا
  - Often / غالبًا
  - Always / دائمًا

- How difficult is it for you to pronounce these English sounds: /p/, /v/, /θ/, /ð/, /ʒ/, /ʧ/?

  ما مدى صعوبة نُطقك لهذه الأصوات؟

  - Not difficult at all / ليست صعبة إطلاقًا
  - Slightly difficult / صعبة قليلاً
  - Moderately difficult / صعبة بشكل متوسط
  - Difficult / صعبة

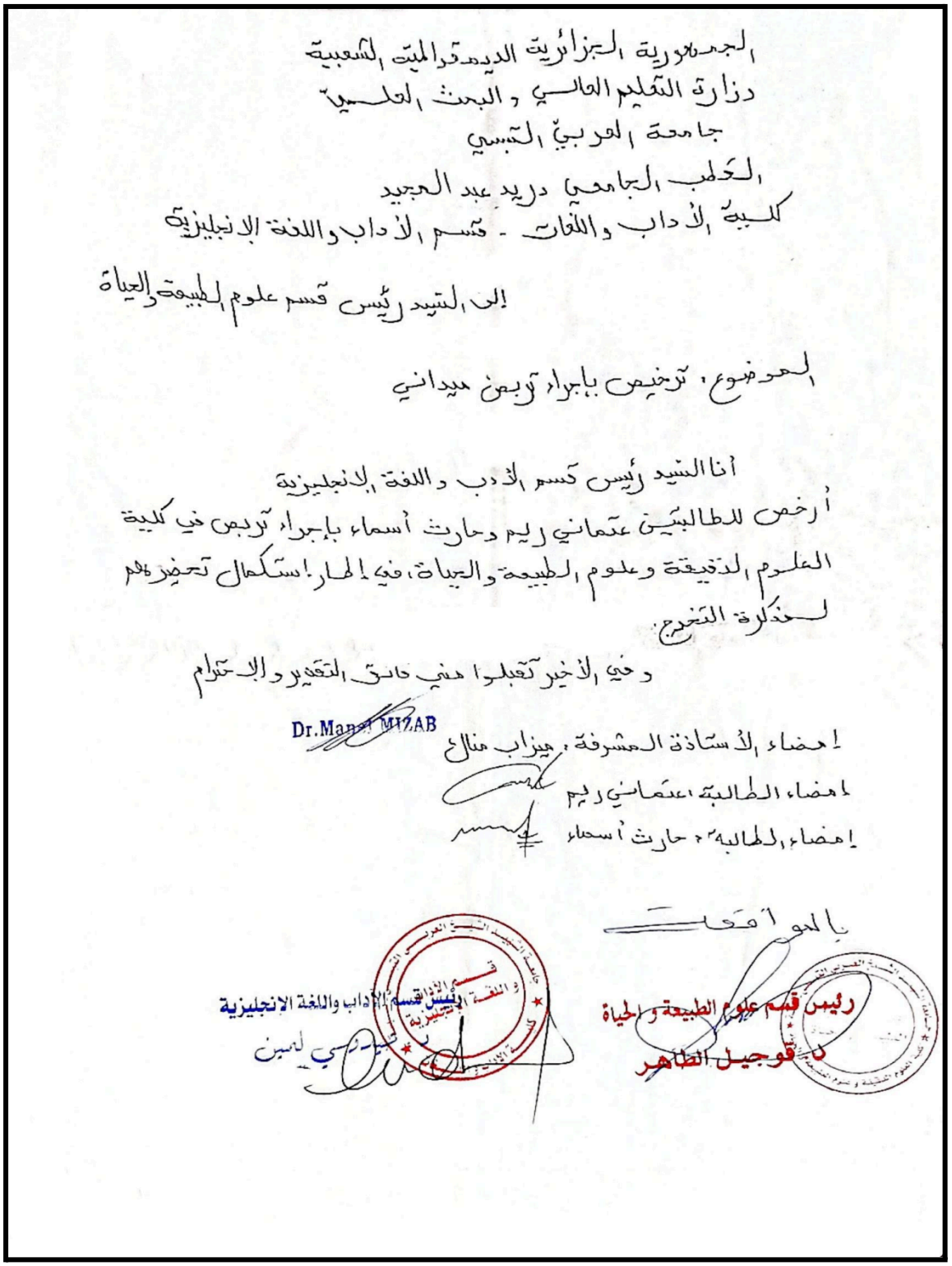
- Extremely difficult / صعبة للغاية

- How confident are you in using correct word stress, intonation, and fluency when speaking English?

  ما مدى ثقتك في استخدام التشديد، والتنغيم، والطلاقة؟

  - Not confident at all / غير واثق إطلاقًا
  - Slightly confident / واثق قليلاً
  - Moderately confident / واثق بشكل متوسط
  - Confident / واثق
  - Completely confident / واثق تمامًا

Appendix C: Approval of the Head of the Department of Natural and Life Sciences, the Head of the Department of English Language and Literature, and the signature of the supervisor



الجمهورية الجزائرية الديمقراطية الشعبية
وزارة التعليم العالي و البحث العلمي
جامعة العربي التبسي
تلمسان الجامعي دريد عبد المجيد
كلية الآداب واللغات - قسم الآداب واللغة الانجليزية

إلى السيد رئيس قسم علوم الطبيعة والحياة

الموضوع: ترخيص بإجراء تربص ميداني

أنا السيد رئيس قسم الأدب واللغة الإنجليزية
أرخص للطالبتين عثماني ريم وحارث أسماء بإجراء تربص في كلية العلوم الدقيقة وعلوم الطبيعة والحياة، في إطار استكمال تحضيرهم لمذكرة التخرج.

وفي الأخير تقبلوا مني فائق التقدير والاحترام

Dr. Manel MIZAB

إمضاء الأستاذة المشرفة: ميزاب منال
إمضاء الطالبة: عثماني ريم
إمضاء الطالبة: حارث أسماء

بالموافقة

رئيس قسم علوم الطبيعة والحياة
د. قوجيل الطاهر

رئيس قسم الآداب واللغة الانجليزية

Appendix D: Instructor's Consent for Classroom Observation

Dr. AMRI Cherine.
Email: cherine.amri@univ-tebessa.dz
Mobile: 07 97 35 24 58

Faculty of Exact Sciences and Natural and Life Sciences

Department of Natural and Life Sciences, Tebessa

Larbi Tebessi University

Object: Consent for Observation

Dear Dr. AMRI Cherine,

We, the undersigned Athmani Rime and Haret Asma, Master 2 students of Language Sciences at the Department of English, Laarbi Tebessi University, and with the approval of our supervisor, Dr. Manel MIZAB, would like to conduct 4 observation sessions of your first year Natural and Life Sciences students.

This observation aims to examine the influence of French and Arabic on English pronunciation.

Your approval to be observed is compulsory for our research ethics.

Kind regards,

Session	Date
S1	14/04/2025
S2	21/04/2025
S3	28/04/2025
S4	05/05/2025

Master Students

- Athmani Rime :
- Haret Asma :

Supervisor

Dr. Manel MIZAB

Teacher Observed

CamScanner

الملخص

تستقصي هذه الدراسة تأثير اللغتين العربية والفرنسية على نطق اللغة الإنجليزية في سياق التعليم باللغة الإنجليزية في الجامعات الجزائرية. وتركّز بشكل خاص على كيفية تعرّض طلاب السنة الأولى في كلية علوم الطبيعة والحياة بجامعة الشهيد الشيخ العربي التبسي تبسة صعوبات في نطق المصطلحات العلمية خلال محاضرات تلقى باللغة الانجليزية وانطلاقًا من نظرية نقل اللغة، تحلل الدراسة أنماط التداخل الصوتي الناتجة عن لغتهم الأم (العربية) ولغتهم الثانية (الفرنسية). يعتمد تصميم البحث على منهج مختلط يجمع بين ملاحظات صفية تمتد عبر أربع حصص دراسية، واستبيان وُزِّع على الطلبة باستخدام رمز الاستجابة السريعة. وقد استُخدمت قوائم تحقق ميدانية لرصد أنواع الأخطاء الشائعة في النطق، بما في ذلك استبدال الأصوات الصامتة والمتحركة، وأخطاء في التشديد، واختزال المقاطع الصوتية. كشفت النتائج الكمية أن أغلب صعوبات النطق تتماشى مع أشكال النقل الصوتي المتوقعة من النظامين الصوتيين العربي والفرنسي. كما أظهرت البيانات النوعية المستخلصة من التفاعل الصفي ومن إجابات الاستبيان أن الطلبة يفتقرون إلى التعرض الكافي للمصطلحات العلمية باللغة الإنجليزية، وغالبًا ما يعوّضونها بما يشابهها في اللغة الفرنسية. خلصت الدراسة إلى أن نقل اللغة يُعد عاملًا رئيسيًا في تشكيل النطق داخل بيئات متعددة اللغات، ما يستدعي إدراج مكوّن نطقي موجّه في تدريس الإنجليزية ضمن التخصصات العلمية. وتوصي النتائج بإعادة النظر في سياسة تطبيق EMI، وتكثيف برامج تدريب الأساتذة، وتطوير مواد تعليمية تراعي الخصوصية اللسانية للمتعلمين في السياقات الجزائرية متعدّدة اللغات.

.الكلمات المفتاحية: التعليم باللغة الإنجليزية، صعوبات النطق، النقل اللغوي، تأثير الفرنسية، تأثير العربية، المصطلحات العلمية، الجامعات الجزائرية، التداخل الصوتي، البحث المختلط

Résumé

Cette étude vise à explorer l'impact sociolinguistique de l'arabe et du français sur la prononciation de l'anglais dans le contexte de l'enseignement en anglais (EMI) dans une université algérienne. Plus précisément, elle s'intéresse aux difficultés des étudiants de première année de la Faculté des Sciences de la Nature et de la Vie de l'Université Echahid Cheikh Larbi Tebessi à prononcer correctement les lexèmes scientifiques lors des cours dispensés en anglais. Cette recherche s'inscrit dans le cadre théorique du transfert linguistique et examine les schémas d'interférence phonologique entre la langue maternelle (L1, l'arabe) et la langue cible (L2, le français) de la L1 à la L2. À cette fin, une approche mixte a été utilisée, combinant quatre séances d'observation en classe et un questionnaire rempli par les étudiants via un QR code. Des grilles d'observation ont été utilisées afin d'identifier les prononciations les plus courantes, telles que le remplacement des voyelles et des consonnes, les faux accents, et la syllabe réduction. Les résultats quantitatifs montrent que la majorité de la difficulté de prononciation correspond à ce qui a été prédit sur le transfert phonétique à partir des systèmes arabes et français. Parallel to this, qualitative data through the summers of exchange in class and the questionnaires recently asked bring to light a limited exposure of the students to the scientific terms in English sometimes substituted by their own French translations

Mots-clés: enseignement en anglais, difficultés de prononciation, transfert linguistique, influence du français, influence de l’arabe, terminologie scientifique, universités algériennes, interférences phonologiques, recherche mixte