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Implementing Language Laboratories in COE Classes: The TPACK Framework Application between Expectation and Realities. The Case of L1 & L2 EFL Students at the University of Ain Temouchent.

An Extended Essay Submitted in Partial Fulfillment of the Requirement for a Master's Degree in Didactics and Applied Languages.

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Abstract

The rapid worldwide advancement of technology has exponentially accelerated, driven by cutting-edge innovations in various fields. Remarkably, a massive technological revolution has significantly transformed the education sector, profoundly impacting teaching and learning, especially language laboratories. These laboratories are designed to provide students with exposure to real-life English language usage. This study aims to measure the extent to which the Technology Pedagogy and Content Knowledge framework is applied in the laboratory in Comprehension and Oral Expression classes and to explore the effectiveness of language laboratories in enhancing students' speaking skills at the University of Ain Temouchent. This study employed both qualitative and quantitative approaches, leading to triangulation of the study in order to increase the credibility and validity of the research findings, including non-participant longitudinal classroom observations, semi-structured in-depth interviews with four Comprehension and Oral Expression teachers and two technicians in addition to a questionnaire that was administered to around 368 EFL students, where only 191 students took part in the study. The analysis of the findings was based on the Technological Pedagogical Content Knowledge (TPACK) framework of Information and Communication Technology integration, which revealed that both teachers and students highly value the implementation of the language laboratory for teaching-learning. However, the laboratories face various challenges, such as outdated equipment, insufficiently trained teachers to operate the devices, limited teaching resources, time constraints, and tight schedules. These factors significantly hinder the quality and effectiveness of the language laboratories. With that, the study at hand suggests a series of principles and procedures aimed at enhancing the implementation of laboratory practices.

Keywords: EFL, Language laboratory, ICT, TPACK, Implementation, Obstacles.

Abstract in Arabic

لقد تسارع التقدم التكنولوجي في جميع أنحاء العالم بشكل كبير ،مدعوما بالابتكارات المتطورة في مختلف المجالات. ومن اللافت للنظر أن الثورة التكنولوجية الهائلة أحدثت تحولًا كبيرًا في قطاع التعليم، مما أثر بشكل عميق على التدريس والتعلم، وخاصة مختبرات اللغة. تم تصميم هذه المختبرات لتزويد الطلاب بالتعرف على استخدام اللغة الإنجليزية في الحياة الواقعية. تهدف هذه الدراسة إلى استكشاف فرص وتحديات استخدام مختبر اللغة في أقسام التعبير الشفهي و الفهم تخصص لغة إنجليزية بجامعة عين تموشنت، بلحاج بوشعيب. استخدمت هذه الدراسة كلا من النهج النوعي والكمي، مما أدى إلى تثليث الدراسة من أجل زيادة مصداقية وصحة نتائج البحث، بما في ذلك الملاحظات الحيادية طويلة المدى لحصص مختبر اللغات ، والمقابلات شبه المنظمة مع أربعة (4) معلمي التعبير الشفهي والفهم و اثنين (2) من الفنيين واستبيان للطلاب تم تطبيقه على حوالي 368 طالبًا، حيث شارك 191 طالبًا فقط في الدراسة. واستند تحليل النتائج إلى إطار TPACK لتكامل تكنولوجيا المعلومات والاتصالات، والذي كشف أن كلا من المعلمين والطلاب يقدرون بشدة تنفيذ مختبر اللغة للتدريس والتعلم. ومع ذلك، تواجه المختبرات تحديات مختلفة، مثل المعدات القديمة، وعدم تدريب المعلمين بشكل كافٍ لتشغيل الأجهزة، ومحدودية موارد التدريس، وضيق الوقت، والجداول الزمنية الضيقة. هذه العوامل تعيق بشكل كبير جودة وفعالية مختبرات اللغة. وبهذا تقترح الدراسة المطروحة سلسلة من المبادئ والإجراءات التي تهدف إلى تعزيز تنفيذ المارسات المخبرية.

الكلمات المفتاحية : اللغة الإنجليزية كلغة أجنبية ،مختبرات اللغة، تكنولوجيا المعلومات والاتصالات ، TPACK ، تنفيذ ، تحديات.

Abstract in French

Les progrès technologiques rapides à l'échelle mondiale se sont accélérés de manière exponentielle, grâce à des innovations de pointe dans divers domaines. Il est remarquable qu'une révolution technologique massive ait considérablement transformé le secteur de l'éducation, impactant profondément l'enseignement et l'apprentissage, en particulier les laboratoires de langues. Ces laboratoires sont conçus pour offrir aux étudiants une exposition à l'utilisation réelle de la langue anglaise. Cette étude vise à explorer les opportunités et les défis liés à l'utilisation d'un laboratoire de langues dans les cours d'expression et de compréhension orales au sein du département de l'anglais de l'Université d'Ain Temouchent, Belhadj Bouchaib. Cette étude a utilisé des approches à la fois qualitatives et quantitatives, conduisant à une triangulation de l'étude afin d'augmenter la crédibilité et la validité des résultats de la recherche, y compris des observations longitudinales en classe non participantes, des entretiens semi-structurés avec quatre (4) enseignants d'expression et de compréhension orales et deux (2) techniciens et un questionnaire étudiant qui a été administré à environ 368 étudiants, dont seulement 191 ont participé à l'étude. L'analyse des résultats s'est basée sur le cadre TPACK d'intégration des TIC, qui a révélé que les enseignants et les étudiants accordent une grande importance à la mise en œuvre du laboratoire de langues pour l'enseignement-apprentissage. Cependant, les laboratoires sont confrontés à divers défis, tels que des équipements obsolètes, des enseignants insuffisamment formés pour faire fonctionner les appareils, des ressources pédagogiques limitées, des contraintes de temps et des horaires serrés. Ces facteurs nuisent considérablement à la qualité et à l'efficacité des laboratoires de langues. Ainsi, l'étude proposée suggère une série de principes et de procédures visant à améliorer la mise en œuvre des pratiques de laboratoire.

Les mots clé : EFL, Laboratoire de langues, TIC, TPACK, Mise en œuvre, Obstacles.

List of Abbreviations and Acronyms

3D: 3 Dimensions.

3G/ 4G: Generation 3, 4.

Apps: Applications.

ASTP: Army Specialized Training Program.

AT: Activity Theory.

CA: Communicative Approach.

CAL: Computer-Assisted Learning.

CALL: Computer-assisted language learning.

CD: Compact Disc.

CHAT: Cultural Historical Activity Theory

CLT: Communicative Language Teaching.

CMC: Computer-mediated competence.

COE: Comprehension and Oral Expression.

CPU: Central Processing Unit.

DVD: Digital Video Disc.

EdTech: Educational Technology.

EFL: English as a Foreign Language.

ELT: English Language Teaching.

FLL: Foreign Language Learning.

ICT: Information and Communication Technologies.

IELTS: International English Language Testing System

IT: Information Technologies.

Lab: Laboratory.

LL: Language Laboratory

MALL: Mobile-assisted language learning.

MOOS: Multi-user Domains Object-Oriented.

NET: Internet.

PC: Personal computer.

PCK: Pedagogical Content Knowledge.

PDAs: Personal Digital Assistants.

PLATO: Programmed Logic for Automated Teaching Operations.

PPT: PowerPoint.

Q: Question.

T: Teacher

TCK: Technological Content Knowledge.

TEFL: Teaching English as a Foreign Language.

TELL: Technology-Enhanced Language Learning.

TL: Target Language.

TOEFL: Test of English as a Foreign Language.

TPK: Technological Pedagogical Knowledge.

UK: United Kingdom.

USA: United States of America.

USB: Universal Serial Bus.

Vs: Versus.

Y/o: years old.

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General Introduction

GENERAL INTRODUCTION

Technology has significantly impacted the world in recent years and brought about rapid societal changes. It has made remarkable strides in various fields, including education. One area where this advancement has been particularly noteworthy is language learning. Technology has transformed where and how learning occurs and the roles of students and educators. Education has undergone changes in instructional approaches, methodologies, and strategies, primarily due to technological advancements.

The increasing importance of English as a global language has led to a shift in the focus on developing this language worldwide. Some specialised facilities, such as language laboratories, started gaining value in the realm of education, which aims to enhance the language learning experience by providing a wide range of tools and resources. Students can actively practice and use the target language through interactive activities like pronunciation drills, listening exercises, and role-play simulations. Additionally, language labs offer access to digital resources such as audio and video materials to enrich the learning process. They also help develop language skills and create an effective learning environment, with a particular emphasis on speaking skills. Speaking skills are considered to be the main skill that most learners want to master and develop, mainly because they are productive skills that need much practice, time, and effort.

The researchers, who were once students themselves, had previously studied oral expression and comprehension in a traditional classroom setting with minimal use of technology. Therefore, the researchers were interested in examining the impact of the new learning environment provided by the language lab. We sought to investigate the effectiveness of the language lab environment in enhancing students' language proficiency, mainly in oral skills. Therefore, our study entitled, "Implementing Language Laboratories in COE Classes: The TPACK Framework Application between Expectation and Realities. The Case of L1 & L2 EFL Students at the University of Ain Temouchent. ", aimed to measure the TPACK application

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in language laboratories and investigate the challenges and benefits they offer in enhancing the speaking skills of English as a Foreign Language (EFL) students.

On the basis of these considerations, three research questions have been formulated for the present study:

➢ **Research question 01:** What are the expectations associated with implementing language laboratories to enhance overall language proficiency, and in which way does it enhance EFL students speaking skills?

➢ **Research question 02:** How does the application of the TPACK framework influence the effectiveness of the language lab?

➢ **Research question 03**: Do the students and teachers face challenges regarding implementing the language laboratory into Oral Expression and Comprehension sessions?

To address these questions, each one suggests a hypothesis to enhance the analysis. The hypotheses are as follows:

➢ **Hypothesis 01:** The language laboratory is expected to improve students' language skills by exposing them to the English language, leading to enhanced speaking proficiency.

➢ **Hypothesis 02:** It is hypothesized that the TPACK framework is effectively applied in the lab, aiming at enhancing the teaching process

➢ **Hypothesis 03:** It is hypothesized that teachers and students are not facing any challenges or barriers regarding the implementation of the lab in oral expression and comprehension sessions.

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In order to effectively answer the research questions relevant to our research study, the researchers decided to triangulate the data collection methods. These methods include attending non-participant longitudinal observation sessions in Oral Expression and Comprehension classes with both First and Second year EFL students at the University of Ain Temouchent, conducting semi-structured in-depth interviews with four Oral Expression and Comprehension teachers, as well as two technicians at the same university, and finally, administering a questionnaire to first and second-year EFL students. Through these methods, we gained valuable insights and perceptions of the problem at hand and ultimately provided an analysis of the research findings. Additionally, the research paper will adhere to the guidelines outlined in the seventh edition of the APA Handbook for writers of research papers. This includes how works are cited, writing methods, and the overall format of the paper to ensure accurate and proper documentation.

The research at hand aims to make a significant contribution to the Algerian research field by addressing the lack of information on the implementation of language laboratories in Algerian higher institutions. Currently, there is an inadequacy of substantial articles and dissertations on this topic, making it an area ripe for exploration. As a result, this study will not only fill this gap but also lay the groundwork for future researchers to delve deeper into this field.

The present research is organised into three connected chapters. The first one concerns the theoretical part of the research work. It is devoted to the literature review related to the topic of language laboratories, which explains the evolution of language laboratories and their significance in improving language skills, particularly speaking skills. It also reviews the main concepts related to CALL, MALL, and CMC. Moreover, the chapter also introduced the main frameworks for integrating technology in language labs, mainly the TPACK model, to provide a comprehensive understanding of how technology can enhance language learning.

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These concepts were explained in detail to better understand how technology can improve language skills and give the reader a general overview of the research topic. Finally, the first chapter explores the field of pedagogy in relation to technology use, taking into account assessment in language labs. This section was particularly important as it provided insights into how technology can be used to assess language skills and track student progress. Overall, the first chapter provided a wide-ranging overview of language laboratories and their significance in improving language skills using technology.

The second chapter of this research study concerns the practical part of the research work. First, it explains the current study's methodology and research design used to collect data, namely a non-participant longitudinal classroom observation was carried out in various Oral Expression and Comprehension classes at the University of Ain Temouchent Belhadj Bouchaib, Department of Letters and English Language. Second, it describes the population and data collection instruments, including semi-structured in-depth interviews were conducted with four teachers of Oral Expression and Comprehension, along with interviews with two technicians from the same university, and to finish with a questionnaire administered to first and second-year EFL students. Third, it elaborates and explains the research instruments' administration and analysis procedures.

The Third chapter thoroughly discusses, presents, and interprets the findings and conclusions derived from the three data collection instruments, emphasising the principles of the TPACK framework of ICT integration. Additionally, this section delves into providing insightful pedagogical recommendations for further research and application.

Chapter One: Conceptual Framework

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1. 1. Introduction

This chapter provides an overview of teaching and learning English as a Foreign Language (EFL) in the age of technological advancements. First, it explores the integration of language labs and their connection to ICT and integration frameworks. Next, it explains pedagogy themes and their relationship to technology. The study then shifts focus to the language laboratory field, considering how assessment is conducted in this setting. Since the study emphasises communication as a crucial skill in English language learning, specifically in Comprehension and Oral Expression classes, it introduces the development of speaking skills in language labs. The chapter offers a comprehensive understanding of the various approaches and techniques used to improve students' speaking skills in a language lab setting. It also highlights the importance of technology in enhancing students' speaking skills and how it can be effectively integrated into language labs to maximise student engagement and learning outcomes.

1. 2. Integration of Information and Communication Technology

The contemporary era is considered the age of technology, and ICT tools considerably impact every element of human existence directly or indirectly. According to Madhavaiah et al. (2013, p. 148), technology has the capability to modernise obsolete educational systems and offer learning opportunities that cater to the demands of 21st-century work, communication, learning, and life. Technology significantly contributes to various fields, such as business, education, entertainment, and the workplace. Accordingly, Anderson (2010) also defines ICT as: "…the many technologies that enable us to receive information and communicate or exchange information with others" (As cited in. Elkhayyat & Mefreh, 2011, p. 9). More so, according to Tinio (2002, p. 4), ICTs are a "diverse set of technological tools and resources used to communicate, create, disseminate, store, and manage information. These technologies

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include computers, the internet, broadcasting technologies (radio and television), and telephony".

In this sense, The most significant aspect of ICT is the growing interconnection of computer-based, multimedia, and communication technologies and the accelerated pace that implies both technologies and their implementation (Clarkson & Toomey, 2001, para.3).

ICT relates to any communication tools or resources that are used to gather, assess, manipulate, and present information. Those tools include Software (e.g. Windows) and hardware devices (e.g. computers).

Over the past two decades, extensive research has been conducted on incorporating information and communication technology (ICT) into language teaching. Numerous studies have shown that ICT can improve learning and teaching experiences, making them more effective and positive. However, when teachers integrate ICT, they are expected to modify and enhance their teaching methods by using various technological tools and resources. This necessitates the development of specific skills, such as proficiency in utilizing educational software, digital media, and other ICT-supported resources to establish an effective learning environment.

Additionally, teachers must adapt their roles to effectively integrate technology into their teaching practices. Teachers need to transform into supporters of learning, encouraging the development of critical thinking and problem-solving abilities while granting students entry to a wider variety of learning opportunities. By doing so, teachers can empower their students to become lifelong learners who can thrive in a rapidly evolving digital world. ICT for education involves creating and using technology to enhance teaching and learning experiences, while "ICTs in education involves the adoption of general components of information and communication technology in the teaching-learning process" (Syed, 2005, p. 02).

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Incorporating Information and Communication Technology (ICT) into the educational system is a challenging task that demands considerable effort and encounters various obstacles. Consequently, educators and policymakers need to understand the reciprocal relationship between technology and education to ensure the successful integration of ICT.

An ICT tool is a technology designed to achieve a specific educational objective. Its level of integration can be influenced by various factors, such as the teacher's proficiency with technology, teaching methodology, past experiences, and ease of using technology. Eventually, To effectively address any challenges that may arise, it is essential first to identify the root cause of the issue. When faced with obstacles, it is crucial to conduct a thorough analysis to determine whether they are due to cultural, environmental, or educational factors.

To effectively integrate technology into teaching, educators must modify their existing pedagogical and content methods of teaching and consider their unique context to improve educational practices. This includes the use of interactive technology and how it can be incorporated into their teaching practices. (As cited in Koehler et al., 2013).

Teachers who advocate using technology for teaching English believe that these tools have removed the limitations of time and space in traditional language instruction. According to Frayer (2005), "Incorporating ICT tools into education can result in improved learning results and more chances for communication". This includes pronunciation training, where students can listen to the repeated practice of sounds, intonation, and rhythm and exposure to multilingual resources through audio and video materials featuring different accents and dialects. Additionally, using ICT tools can help to create real-life situations that enhance communication with cultural awareness.

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1. 2. 1. Computer-Assisted Language Learning (CALL)

Technology integration has emerged as an indispensable tool to facilitate the process of learning a foreign language. Throughout history, teaching and learning a language have always been considered crucial education areas. The starting point of the language laboratories marks the beginning of a new era where technology has brought a new dimension to language education, offering advanced tools and resources to aid learners in their language acquisition journey. Technology has been considered a new panacea for language education, from audio-visual materials to interactive software programs. Technology in language learning has enabled learners to practis.se and improve their language skills in a more engaging, interactive, and convenient manner; at the time when technology started gaining interest computers were the sole technology tool that was highly used for learning purposes As cited in Singh, (2021) "Using computers in language learning dates back to the early 1960s when prestigious universities used mainframe computers for language learning" (; Levy, 1997; Davies et al., 2012; Motteram, 2013, p.5). As technology continues to evolve and advance, it is expected to play an even more significant role in language education, expanding the possibilities for learners to acquire and master new languages. The concept of   Computer-Assisted Language Learning, (CALL), appeared as a modern method of language instruction which leverages computer programs to support students in language acquisition, according to Singh, (2021) "CALL emerged as a distinct field as CALL-themed conferences and professional organisations accompanied the advent of the personal computer in the 1980s when using computers become widespread in America and Europe".

According to Sedik and Mahdi (2020), In the 1970s, the first European CALL (Computer-Assisted Language Learning) projects emerged. The University of Essex pioneered CALL development in Europe, implementing Russian programs. Other universities, such as the University of Hull, the University of Aberdeen, the University of East Anglia, the University

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of Surrey, and the Ealing College of Higher Education followed suit. These institutions were instrumental in developing CALL programs and helped create a foundation for language learning using technology.

However, the most significant CALL project during this period was PLATO (Programmed Logic for Automated Teaching Operations), which was developed at the University of Illinois in the 1980s by Chapelle and Jamieson. Using computer-based instruction, PLATO aimed to provide a more interactive and engaging learning experience for students. It was an ambitious project that paved the way for future innovations in CALL and played a pivotal role in shaping the field of language learning with technology. Programmed Logic for Automatic Teaching Operations PLATO, or Project PLATO, was the first generalized computer-assisted learning system. It is also a revolutionary system that provides various language-learning activities and materials, including drills, exercises, and games.

The system was designed to provide individualized instruction to learners, allowing them to progress at their own pace. Overall, the development of CALL has significantly contributed to language education by providing learners with innovative and practical tools to enhance their language learning experience. Foreign language instructors have utilized computers to offer additional exercises. Recent developments in computer technology have prompted software developers and educators to rethink the use of computers and view them as a crucial aspect of daily foreign language education.

In the past, Computer-Assisted Language Learning (CALL) would have been restricted to basic on-screen written activities with uncomplicated visuals. In CALL interactions, various multimedia elements are often incorporated to enhance the learning experience. These elements may include sounds, animations, videos, and communication over local area networks to facilitate real-time interactions between learners and instructors. Using multimedia elements can help learners understand complex concepts better by providing visual and audio cues.

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Furthermore, incorporating local area networks allows learners to collaborate in real time, fostering a collaborative learning environment that helps improve learning outcomes. The notion of CALL is rooted in two primary factors: the need for enhanced educational practices and technological advancements. The origins of CALL can be traced back to the 1960s when software was developed to run on mainframe computers, providing learners with drills and other language practice. CALL has been implemented because of the development of computer technologies and shifts in language-learning pedagogy. As Garrett (1991, pp. 74-101) posits, computers are not a teaching method but rather a medium or environment that facilitates a range of methods, approaches, and pedagogical philosophies.

Thus, CALL encompasses a variety of activities, such as grammar-translation exercises, audio-lingual drills, cognitive language analysis, and communicative syllabi. Levy (1997) defines CALL as "the search for and study of applications of computers in language teaching and learning" (p.1). In this vein, Egbert (2005) provides the following definition: "CALL means learners learning language in any context with, through, and around computer technologies" (p.4).

It is important to note that CALL can encompass any information and communication technology application to foreign language teaching and learning. Before the early 1980s, Computer-Assisted Language Instruction (CALI) and Computer-Assisted Instruction (CAI) were commonly used instead of CALL. More recent alternative terms, such as Technology-Enhanced Language Learning (TELL), emerged in the early 1990s.

Since then, CALL has included many technologies: laptop computers, personal digital assistants (PDAs), digital audio recorders, modem and cable Internet access, local area networking, and more. It has expanded to include using individual drill software and the internet as a medium to support native and non-native speaker interaction. Reflecting these changes and additions in one definition is an enormous task.

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Therefore, Integrative Computer-Assisted Language Learning (CALL) aims to combine various linguistic abilities (e.g., auditory, verbal, written) and fully incorporate technology into language acquisition. In this approach, students continuously employ a range of technological resources for ongoing language learning and utilisation rather than attending computer labs just once a week for isolated exercises. CALL emphasises language learning facilitated by technology, with words like "enhanced" or "assisted", indicating that technology supports the process rather than being the primary focus.

CALL promotes an educational approach where educators prioritise classroom learning over technology and embrace a learner-centred approach. A more appropriate term for this approach would be "language learning through technology," accurately representing the important role of language in these activities. CALL incorporates the use of computers to enhance language teaching and learning in diverse ways. This includes utilizing software tools designed to facilitate language learning across all language types, skill areas, and content.

1. 2. 2. Computer-Mediated Competence (CMC)

Computer-Assisted Language Learning (CALL) is now widely used for language learning as it can generate an immersive and genuine learning atmosphere. Incorporating visual aids like images, videos, audio, and other types of inputs is a key aspect of CALL. These aids simulate real-life situations, allowing learners to acquire a more profound comprehension of the language and culture they are studying.

CALL places a strong emphasis on Computer-Mediated Communication (CMC), which has become a widely recognized and practised activity within the field. CMC enables complex interactions between participants, combining the permanence of written communication with the speed and dynamism of spoken telephone communication. This approach makes it possible

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for learners to engage in meaningful and authentic interactions with native speakers and other learners, further enhancing the language learning experience.

Unlike other computer-based learning methods, such as computer-assisted learning (CAL), CMC provides endless possibilities for interaction and feedback due to its reliance on the creativity and personal involvement of the participants in online discussions.

Using CMC also enables learners to practice their language skills more naturally and spontaneously, further contributing to their language proficiency. Overall, CMC is a practical and comprehensive approach to language learning that continues to gain popularity due to its ability to create an engaging and immersive learning experience. Furthermore, CMC is a frequent practice in CALL and involves interacting through different platforms such as emails, forums, chat rooms, multi-user domains object-oriented (MOOs), and social media.

CMC has been suggested as an effective tool for enhancing students' oral skills in pronunciation and conversation (Hong, 2006). Computer-Assisted Language Learning (CALL) can create an authentic learning environment by presenting images, videos, audio, and other types of input that simulate real-life situations.

Additionally, CMC involves computer-based discussions, and while it does not necessarily guarantee learning, there are inherent possibilities for learning to occur, especially when discussing significance with native speakers or those who are not fluent in the second language. For example, a teacher of English may ask students to communicate online to collect information about each other, and language learning can occur through clarifications of misunderstandings (Beatty, 2010, p. 69). Furthermore, CMC also includes mobile-assisted language learning, such as mobile learning options such as cell phones and instant messaging (Donaldson & Haggstrom, 2006).

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1. 2. 3. Mobile Assisted Language Learning (MALL)

The Information Age has witnessed the proliferation of technology in almost every sphere of life. This phenomenon has significantly impacted the field of education, expanding its scope through the advent of innovative devices, wireless broadband technology, and application services. These technological advancements have ushered in new ways of accessing and interacting with educational content, allowing students and teachers to engage in more flexible and convenient educational practices**.**

In the past, mobile devices were limited to cassette players, MP3/4 players, and other similar devices with limited functionality and no access to the internet. However, the emergence of advanced mobile devices has made them a viable tool for language learning. With their enhanced features, language learners can access a broad range of language learning materials, such as podcasts, videos, and language learning apps, making mobile devices a valuable asset in language education. In this context, Ogata et al. (2010) make a clear comment as to the borders of Mobile-Assisted Language Learning (MALL) by stating: "Mobile-assisted language learning uses lightweight devices such as personal digital assistant (PDA), cellular mobile phones, and so on" (p. 8). Moreover, integrating Mobile-Assisted Language Learning (MALL) programs can be a valuable asset in Gaining understanding in the area of language curriculum.

Utilizing such programs can enhance the learning process and assist learners in developing a better grasp of the curriculum at hand. It is imperative to acknowledge the potential advantages of incorporating MALL programs, as they can serve as a helpful tool in promoting an effective learning environment. The term MALL is relatively new in the language learning and teaching field and has garnered significant attention from both learners and educators.The use of MALL (Mobile-assisted language learning) is expected to become increasingly popular among English Language Teaching (ELT) researchers in the future.

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Language learners can utilize MALL in a variety of ways to enhance their learning experience, such as listening to podcasts and audiobooks narrated by native speakers to tailor their learning level. Additionally, they can download dictionary apps to expand their vocabulary, while language exchange apps are widely available on mobile devices, enabling learners to communicate with people from different cultures and gain exposure to new languages, perspectives, and customs. It is worth noting that MALL and CALL differ in several ways.

As their names suggest, MALL is primarily focused on the utilization of mobile devices, whereas CALL is intended for use on computer desktops. This distinction makes MALL an ideal platform for mobile-based learning, while CALL is better suited for desktop-based learning. This difference in functionality is crucial to consider when selecting a platform for digital learning, as it can significantly impact the learning experience. If students have access to computer laboratories (using computers) or if learners prefer to study English independently at home, Computer-Assisted Language Learning (CALL) appears to be the more advantageous option. Conversely, Mobile-Assisted Language Learning (MALL) is more practical for other purposes. As such, it is recommended that learners make use of both CALL and MALL opportunities in an eclectic manner. Overall, technology integration in education has revolutionized how we learn and teach, creating new opportunities for growth and development. The continued evolution of technology promises to expand the scope of educational practice further, opening up new vistas of learning and discovery**.**

1. 3. ICT Use vs ICT Integration

Information and Communication Technologies (ICTs) use in education is closely related to integrating ICTs into education, although the two concepts differ in their wording. As stated by the Educational Technology and Mobile Learning Website (2013), integrating

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technology in the classroom involves a planned and highly structured approach to engage students and promote the development of new thinking skills (para. 01)

In contrast, the use of technology (ICT) is not planned or highly structured; it aims to provide students with information to be learned rather than profoundly engaging them with the content ("Using technology vs technology integration-," 2013). Additionally, Rao (2014) has highlighted the difference between the utilization and integration of ICT. The table below outlines the main distinctions between these practices:

Using Technology (ICTs)	Integrating Technology (ICTs)
Use is arbitrary, random & and an afterthought.	Use is planned & and purposeful.
Used sporadically for the sake of using technology in the classroom by the instructor to inform students about the content.	Integrated as a routine part of the classroom environment to support curricula & learning objectives & is used by the students to engage them with content.
Used to complete lower-order thinking tasks, to complete individual activities, which are feasible without the use of technology	Used to encourage higher-order thinking skills, to facilitate collaboration within & outside the classroom on activities difficult to carry out without technology
Used to deliver information & is peripheral to the learning activity.	Used to construct knowledge & is essential to the learning activity.

Table 1. 1*: Using Technology vs Integrating Technology. Adapted from (Rao, 2014)*

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1. 3. 1. The Reciprocal Influence: ICT and Pedagogy

Developments in educational pedagogy have become increasingly intertwined with advances in educational technology. The advent of new information and communication technologies has challenged traditional educational practices, causing many teachers to hesitate to adopt these innovations. However, these technologies can potentially revolutionise the concept of teaching, shifting from teacher-centred instruction to a more student-centred approach that empowers learners to define their objectives and take responsibility for achieving them. This paradigm shift has the potential to fundamentally transform traditional learning pedagogy.

The impact of ICT on educational content is most noticeable when curriculums are expanded to include ICT-related subjects, in order to prevent overcrowding and to introduce new subjects or effectively cover subjects that currently lack sufficient class time. The use of ICT in language teaching varies depending on language learning goals and the significance of personal aspects such as fluency, grammar accuracy, pronunciation, and more. For instance, the emphasis on pronunciation necessitates extensive practice and specific feedback, highlighting the role of the teacher as a coach, while other responsibilities can be fulfilled using ICT tools. Moreover, the internet can help students "search rather than surf" and improve their critical literacy skills, even when the volume of information available through ICT use is overwhelming (Kenning, 2007, pp. 111–132)

1. 3. 1. 1. Pedagogy

The concept of pedagogy extends beyond merely applying educational methods and techniques. It entails a comprehensive philosophy that revolves around the intricate relationship between the teacher, the student, and the knowledge itself. Pedagogy is a way of thinking about learning that transcends the boundaries of conventional teaching practices. It requires a

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thorough comprehension of the mental procedures implicated in gaining knowledge and a recognition of the different elements that can impact the learning process.

Pedagogy is a multifaceted approach that aims to facilitate effective teaching and learning by fostering a dynamic and mutually beneficial relationship between teachers and students.

Loveless and Ellis (2001) provided insight into the intricate nature of pedagogy. They pointed out that the extensive utilization of ICT by educators offers an opportunity to examine teachers' actions and rationales. Furthermore, they offered a summary of contemporary pedagogical viewpoints and introduced a practical framework for examination.

Pedagogy was defined by (Bhowmik, Banerjee, & Banerjee, 2013) as "the art and science of teaching" (as cited in Seddir, 2019) or by (Lusted, 1986. Lather, 1991) "the transformation of consciousness that takes place in the intersection of three agencies—the teacher, the learner, and the knowledge they together produce". (as cited in Loveless & Ellis, 2001, p. 64).

As per academia, pedagogy involves various elements in which educators and students collaborate to build knowledge. These elements encompass diverse teaching methods, the learning environment, students', professionals', and policymakers' perspectives on learning, and the goals of education. Despite contextual influences, the teacher's teaching approach, understanding of the subject matter, content expertise, organization, and management abilities collectively impact the learning community (Loveless & Ellis, 2001, p. 64).

1. 3. 1. 2. Techno-Pedagogy

Information and Communication Technology (ICT) has become indispensable to modern-day life. It has permeated almost every aspect of human existence, including leisure

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and free time activities. Integrating technology into education requires meticulously considering various factors, such as teacher's digital competence, students' needs, curriculum, and pedagogy. In the field of techno-pedagogy, three critical areas of knowledge are essential for effective teaching and learning. These areas include content, pedagogy, and technology. A study by Koehler and Mishra (2005) highlighted that incorporating technology into teaching involves more than just incorporating it into the educational environment. It necessitates a thorough comprehension of the intricate and interactive connection between technology, teaching methods, subject matter, and knowledge. the study further revealed that incorporating technology can lead to the representation of new concepts, which, in turn, necessitates the development of sensitivity towards the interplay between content, pedagogy, and technology.

The goal of techno-pedagogical knowledge is to improve the effectiveness of professional development by incorporating technology to enhance the learning and teaching process. (Archambault & Crippen, 2009; Cox & Graham, 2009). For technology to be used effectively in education, it is crucial to consider and attend to each of these elements with great care. Hence, it is necessary to develop a thorough plan that maximizes the utilization of technology to improve students' educational experiences.

Teachers must stay updated on the most recent developments in education and consistently adjust their teaching approaches to align with the changing requirements of their students. In this context, Gutierrez, Palacios, & and Torrego, (2010) stated that: "the teacher must be updated on the technological aspects, web applications, and having high digital abilities, because even regular users of new technologies ignore the didactic potential and the possible ways of including these in the curriculums of obligatory learning" (as cited in Zarabanda. 2019).

To enhance pedagogical practices, educators need to reconsider curriculum design. Instead of solely focusing on information transmission, they should strive to move beyond

content delivery by creating learning experiences that promote the construction of knowledge through exploration, inquiry, and problem-solving.

Additionally, educators should aim to foster interdisciplinary connections through the use of technology, which allows the presentation of interdisciplinary projects and simulations. Furthermore, encouraging personalized learning can empower students to explore and experiment with technology, granting them autonomy and ownership in their learning journey. The integration of adaptive learning platforms can be instrumental in adopting each student's strengths and weaknesses.

This strategy can support tailored instruction while significantly increasing the efficacy of the learning process. By utilizing such innovative technologies, educational institutions can provide students with a more comprehensive and personalized educational experience. Furthermore, implementing this approach can improve engagement, motivation, and retention rates. Lastly, redefining the educator's role as a facilitator rather than solely a knowledge provider by closely monitoring students' performance is vital.

1. 4. Frameworks of ICT Integration in Education

In the realm of education, the seamless integration of technology plays a pivotal role in enhancing the effectiveness of teaching methodologies and facilitating efficient learning processes. In this context, educators and policymakers established a set of models before integrating technology into education.

The frameworks of integrating technology into education refer to the various ways instructors use technology to enhance different aspects of the course content, such as course delivery, assessment, and communication. The use of Information and Communication Technology (ICT) in education is primarily intended to help achieve the course objectives and meet the learners' needs more efficiently and effectively. However, the successful integration

of technology in education is contingent upon several critical factors that need to be carefully considered. These factors include the instructor's knowledge about the technology to be used, how it aligns with the learning objectives, and the pedagogical approach that needs to be adopted for its successful integration.

Therefore, it is essential to have a sound understanding of the pedagogical principles that underpin technology integration to ensure that technology is used appropriately and in a way that enhances the teaching and learning process.

Various scholars have conducted extensive analyses of the various models for integrating Information and Communication Technology (ICT) at several levels, to achieve optimal outcomes in the teaching and learning process. These analyses have yielded valuable insights into the effective use of ICT tools in education. Accordingly, these models or frameworks for integrating technology in education have been a subject of research for several decades.

1. 4. 1. Technological Pedagogical Content Knowledge (TPACK)

To enhance technology integration in classrooms, experts have been striving to better grasp the knowledge and abilities educators require to effectively utilise technology as an instructional tool. The result of these efforts is the development of a framework known as Technological Pedagogical Content Knowledge (TPACK). This framework rests on the premise that the successful use of technology in education necessitates a comprehensive understanding of the subject matter, the instructional methods for teaching that subject matter, and the technological resources essential for enriching the learning process.

The TPACK framework extends the idea of Pedagogical Content Knowledge (PCK), which previously concentrated only on the convergence of content and teaching methods. This convergence is represented by PCK (pedagogical content knowledge), TCK (technological

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content knowledge), and TPK (technological pedagogical knowledge). With the addition of technology to the mix, TPACK (technology, pedagogy, and content knowledge) provides a more comprehensive framework for understanding the complex combination of the following
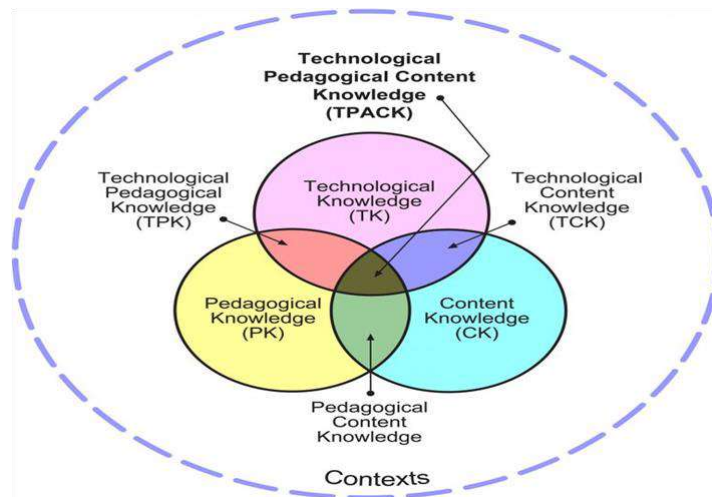
Graph 1. 1: The TPACK Framework by tpack.org (Educational Technology 2012)

three concepts: technological materials, pedagogical procedures, and content knowledge in education (Figure 1) Given the increasing importance of technology in education, the TPACK model has become a valuable tool for educators and educational researchers alike, as it helps to promote effective technology integration in classrooms worldwide.

The TPACK model is a theoretical system that highlights the interaction between three key components: technological knowledge, pedagogical knowledge, and content knowledge. Mishra and Koehler (2013) highlighted the interactions between and among these knowledge domains, which are represented as PCK (pedagogical content knowledge), TCK (technological content knowledge), TPK (technological pedagogical knowledge), and TPACK (technology, pedagogy, and content knowledge). Firstly, technological knowledge involves the teacher's understanding of both traditional and new technology that can be incorporated into the curriculum and the ability to use it to enhance teaching and learning. This includes knowledge of specific technological tools such as hardware, software, applications, and related information literacy practices. Secondly, Pedagogical knowledge involves understanding teaching strategies

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and effective instructional practices. Lastly, content knowledge refers to understanding the subject matter being taught. In this context, Shulman (1986) noted that this knowledge encompasses established procedures and methods for creating it, in addition to concepts, theories, ideas, conceptual frameworks, proof, and evidence. The TPACK model suggests that to effectively teach and mentor students towards a deeper, more comprehensive understanding of the subject matter, it is necessary to integrate these three forms of knowledge.

Furthermore, Educators who possess TPACK can effectively integrate technology into their teaching practices, resulting in enhanced student learning outcomes. Introducing technology in education may not ensure effective technology integration; instead, how teachers utilize technology holds the potential to transform education. It is crucial to comprehend that Implementing technology in education requires a carefully planned and strategic approach to ensure that technology enhances the learning experience instead of obstructing it. As such, the role of teachers in effectively integrating technology within the classroom cannot be overstated. They must have the necessary knowledge and skills to leverage technology effectively in order to enhance the learning experience and ultimately improve educational outcomes.

To sum up, the TPACK framework is just one of the frameworks created to explain how technology is used in education. There are other approaches, and it is widely recognised that teachers must gain the knowledge needed to connect the capabilities and limitations of technology with the transformation of content and teaching methods in light of technological advancements. Koehler et al. (2013) emphasized the importance of this knowledge for teachers to effectively integrate technology in the classroom.

1. 4. 1. 1. The Need for Integrating the TPACK Model in Education

The TPACK framework is an effective tool for integrating technology into classroom instruction. Mishra and Koehler (2006) developed this framework, drawing from Shulman's

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(1986) pedagogical (PK), content (CK), and pedagogical content (PCK) knowledge. The framework illustrates the interaction of different knowledge domains to create technological pedagogical knowledge (TPK), which involves using various technologies for teaching and learning. It also encompasses technological knowledge of content (TCK), which focuses on creating new representations for specific topics using technology. When all these knowledge domains are integrated, they form technological and pedagogical knowledge of content (TPACK), empowering teachers to support student learning through ICT (Cabero et al., 2017).

The primary objective of the TPACK framework is to assist educators in integrating educational technology into their classrooms and to foster a deeper comprehension of how technology can enhance teaching practices and enrich students' learning experiences. It empowers educators to build their understanding of the subject matter, technology, and pedagogy in a unified and mutually beneficial manner, enabling them to utilize their existing knowledge to encourage and improve learning results (Lee & Kim, 2014). This holistic approach offers flexibility in implementing TPACK across diverse educational environments. Additionally, the framework surpasses merely instructing teachers on using technology in educational settings; it educates them on using it effectively to bolster students' learning and align it with their program's educational goals and subject matter (Lee & Kim, 2014). Consequently, the TPACK model underscores the interconnectedness of technology and pedagogy, a correlation that some educators may approach cautiously. The framework is adaptable to different situations, considering elements such as grade level, educator/learner characteristics, and subject matter. It is an extremely adaptable method for integrating educational technology while considering context-specific condition

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1. 4. 1. 2. TPACK and Classroom Practice

The process of providing supportive learning environments for students is highly important in the classroom (Shulman, 1986). Olatoye, Nleya, and Batane (2013) argue that an effective classroom teacher should assist students in developing a curiosity for learning by using various hands-on materials promoting the use of activity-based strategies rather than traditional teacher-centred methods such as lectures. Teachers often rely on pedagogical reasoning to create meaningful learning experiences for their students. By using their understanding of how students learn in combination with their knowledge of the subject matter, they can develop learning environments that meet the specific needs of their students, which can be quite demanding (Maor, 2003). Successfully applying the TPACK framework involves deeply understanding how to effectively integrate the three essential components: technology, pedagogy, and content.

TPACK acknowledges that each classroom setting is distinct due to variations in professional development, school atmosphere, and accessible resources. The framework underscores the significance of commencing with content and pedagogy prior to integrating technology. On occasion, educators might become overly focused on new technology and construct a lesson exclusively around a specific tool, losing sight of their aims and objectives for student learning. TPACK serves as a reminder that technology is merely one component of effective teaching; the integration of content, pedagogy, and technology fosters innovative teaching and learning.

Niess (2011) emphasizes the importance of the dynamic framework outlined by Technological Pedagogical and Content Knowledge (TPACK) in the development, execution, and assessment of curriculum and instruction involving technology. Strategic TPACK thinking involves grasping the appropriate timing, location, and manner in which to utilize domain-

specific knowledge and tactics to facilitate students' learning using suitable Information And Communication Technologies (Niess, 2011).

Different forms of visual and verbal illustrations have been employed to explain and enhance teachers' TPACK, reflecting the changing viewpoints of teacher educators and educational researchers as they confront new obstacles. This all-encompassing summary integrates the historical recognition of pedagogical content knowledge (PCK) with the developing perspectives and obstacles of TPACK. A review of the empirical advancements in the exploration of TPACK offers valuable insights and challenges that can guide future academic applications. Its aim is to trace a teacher's progression in acquiring a more robust and refined TPACK, which will support them in effectively instructing with present and future technologies.

1. 4. 1. 3. Challenges of Integrating TPACK

As stated by Jang & Chen (2010), the TPACK model is the "total package required for integrating technology, pedagogy, and content knowledge in the design of curriculum and instruction" (p. 555). Shulman (1986) contends that subject matter knowledge and pedagogical knowledge should not be viewed as separate entities but rather as interconnected. Mishra and Koehler (2006) argue that technological knowledge encompasses the development of an integrated skill set referred to as "Technological Pedagogical Content Knowledge" (p. 1017). Additionally, TPACK serves as a model for integration, highlighting the vital connections between subject knowledge, teaching strategies, and technological proficiency, and their essential role in facilitating effective learning.

The existing version of TPACK, which stems from Shulman's initial model PCK, underscores the intricate interaction of these three sets of skills and knowledge domains, as well

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as the necessity for educators to incorporate technology as a fundamental resource for learning in any specific field or subject. (Jang & Chen, 2010). Furthermore, integrating TPACK into courses is challenging to some extent. For example, Cacayan (2018) found that teachers encountered challenges in implementing TPACK, such as inadequate knowledge of integrating technology and computer applications, inappropriate communication between teachers and students, weak time management skills, and students' insufficient technological skills.

Within the educational context, there is evidence to suggest that a number of educators do not possess the necessary training to effectively incorporate technology into their teaching practices. This lack of training manifests in the challenges teachers face when utilizing technology to deliver lessons. Merely incorporating technological tools in isolated instances is insufficient; technology should be seamlessly integrated into all pedagogical aspects of the educational process (Barroso et al., 2019; Cejas-León & Navío, 2018).

A successful lesson delivery requires the active participation of both teachers and students. While teachers may encounter challenges, students also face difficulties, especially when they are not well-versed with the technological tools utilized in the learning process. This lack of proficiency can impede their ability to effectively engage with the content, ultimately impacting their level of interest and involvement. Therefore, it is essential to consider the comfort and proficiency of both teachers and students with the technological tools to ensure optimal engagement.

1. 4. 2. SAMR Framework

Education has become heavily reliant on technology, and it is widely recognised that technology can be a valuable tool for educators and students in teaching and learning. However, in order to ensure effective integration of technology, it is necessary to adhere to specific standards and principles. These standards and principles provide guidelines for properly using

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technology, ultimately enhancing the overall learning experience. Educators have presented various models and frameworks for incorporating technology into the field of education. The SAMR model is one of these frameworks, which classifies the utilization of technology in education into four stages: Substitution, Augmentation, Modification, and Redefinition. The SAMR model has been used as a framework to help determine a teacher's level of technology integration for instruction in the classroom (Geer et al., 2015). It was first introduced by Puentedura in 2006 with the aim of measuring the extent to which technology is integrated into the teaching and learning process. The model enables teachers to reflect on their technology pedagogy and assess how technology is used to enhance students' learning experience.

As illustrated in Figure 1.2, the SAMR model consists of four main stages. The first level is the substitution level, during which educators employ technology to substitute traditional tools and techniques (Puentedura, 2006). For example, instead of writing on paper, teachers may have students type text on computers. The second level is the augmentation level, where technology serves as a means for enhancement over traditional methods, without completely changing them. For instance, students may use online dictionaries to look up new vocabulary. The next level is the modification level, where technology begins to redesign how
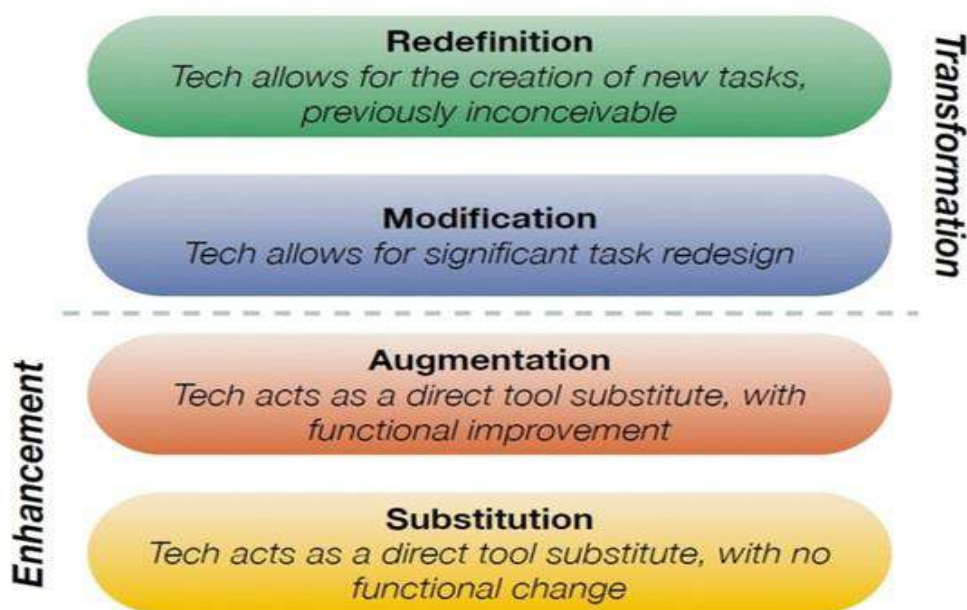
Graph 1. 2: Puentedura' SAMR Model (2006)

tasks are completed, and learning starts to be transformed. For example, students may start using multimedia elements in their presentations. The final stage is redefinition, where technology is transformative in the classroom and creates new tasks that were previously inconceivable (Boonmoh & Kulavichian, 2023). For instance, technology can be used for collaboration on a global scale, such as communicating with English speakers.

1. 4. 3. Activity Theory Framework

The concept of activity theory (AT) provides a comprehensive framework for analysing the intricate process of integrating information and communication technology (ICT) in diverse contexts, including education models. Leont'ev first formulated this theory in the 20th century while in the former Soviet Union (Leont'ev, 1978; Leont'ev, 1981a, 1981b); it has since evolved to become a fundamental concept in psychology and education.
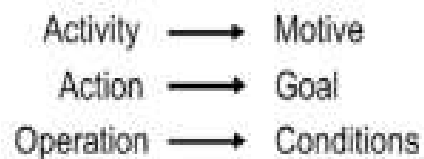
Graph 1. 3: The Structure of Human Activity. (Karasavvidis, 2009)

Leont'ev identified three critical components that drive human actions: motive, goal, and condition. As Figure 1.3 proposes, the motive is the primary driving force that propels our actions. However, it is often not consciously acknowledged by individuals. The goal, on the other hand, represents the current objective that we are pursuing as part of a specific action. Finally, conditions refer to the circumstances or environmental factors that affect the realisation of an activity.

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According to activity theory, any activity is triggered by a motive, such as a need or a drive. The activity consists of one or more actions, which, when completed, satisfy the initial motive. In addition, activities and their component actions always occur in specific contexts that largely determine the conditions under which the actions can be carried out and the initial motive can be fulfilled. For example, the presence of tools is a crucial factor that affects the realization of an activity.

In the past two decades, Cultural-Historical Activity Theory (CHAT) has become known as a theoretical framework that expands Leont'ev's concept of activity, which was further advanced by Engeström (1987, 1999), and merges it with Vygotsky's theory (Cole, 1996; Cole & Engeström, 1993). As Figure 1.4 represents, the framework extends the traditional subject-mediational means-object relationship triangle by including additional components such as rules, community, and division of labour. In the context of education, the teacher functions as the subject, while the student is the object of the instructor's educational activity system. Mediating means, such as textbooks, teaching methodologies, and audio-visual aids, facilitate this relationship. The regulations that oversee this system encompass laws related to education, the national curriculum, school guidelines, classroom and teaching protocols, and timetables. The educational community comprises students, educators, the parent-teacher association, and the school management, and the allocation of work involves teachers, school subjects, different departments, facilitating tools, and work methods.

According to Asabere et al. (2017), in this model, the implementation process can be seen as an activity system. In a study by Nyvang 2007, the implementation activity consisted of three main processes, as illustrated in Figure 1.4. The first process involves selecting appropriate information and communication technology (ICT). The second process involves the adaptation of the selected ICT to the specific needs and requirements of the organisation. Finally, the third process involves changing existing practices and procedures to accommodate

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the new ICT system. This comprehensive approach to implementation is essential for ensuring an organisation's successful adoption and integration of new technology.

Activity Theory (AT) is a theoretical framework that provides a comprehensive approach to analysing and understanding communication. It goes beyond the mere exchange of information and delves into the complexities of communication as an activity. In AT, communication is a purposeful activity with subjects (participants), objects (goals or intended outcomes), and mediating tools (such as language and technology). By analysing communication as an activity, AT offers a unique perspective that can be applied in various contexts. For example, it can help bridge the understanding of differences in cultural norms, values, and communication styles, leading to enhanced cross-cultural interactions. Moreover, by examining the context and needs of participants, AT can uncover their motivations and help us understand why they communicate and what they aim to achieve.

In summary, AT is a powerful tool for analysing communication, shedding light on the nuanced aspects of communication as an activity. It can be applied in diverse settings to enhance cross-cultural interactions, understand motivations, and identify communication's underlying goals and intended outcomes.
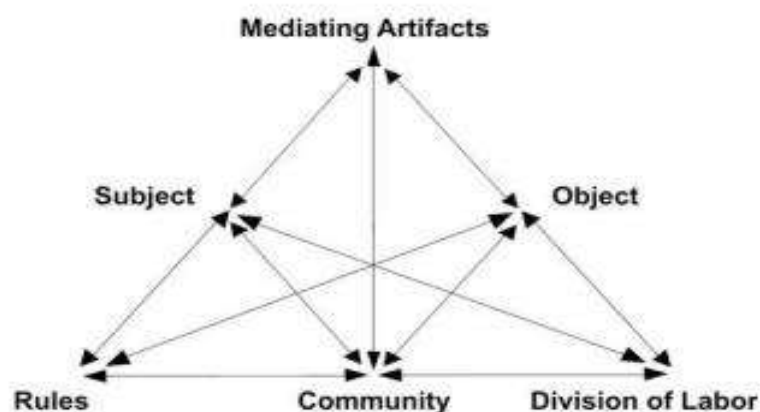
Graph 1. 4: Triangular Model of an Activity (Nyvang, 2007)

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To conclude, the activity theory offers a theoretical framework that presents a thorough and perceptive viewpoint for examining the complex and diverse dynamics of human behaviour, particularly in the integration of information and communication technologies (ICT) into education. This theoretical perspective emphasises the interrelatedness and interdependence of various factors that influence human actions, including the individual's motives, goals, and the societal and cultural conditions in which they operate. By examining these factors, the activity theory offers a valuable framework for understanding how the integration of ICT in education can impact student motivation, engagement, and learning outcomes. The activity theory also highlights the importance of considering the social and cultural context of education, as this can shape the ways in which ICT is integrated and used in educational settings.

1. 4. 4. The Generic Model of ICT Integration

The Generic model comprises three primary components: pedagogy, social interaction, and technology. Within an educational system, these components intertwine to form a blend of pedagogical, social, and technological compositions, as illustrated in Figure 1.5. Pedagogy design is an ongoing process that cannot be concluded before a lesson.
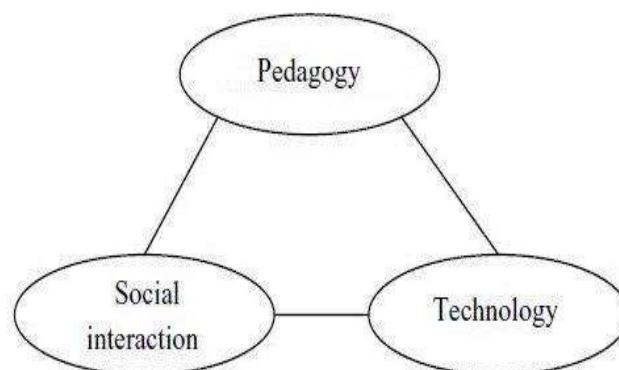
Graph 1. 5: Key Components of the Generic Model (Wang, 2008, p. 414)

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It requires careful consideration of appropriate content and activities, as well as the effective utilisation of resources for efficient student learning.

A good pedagogical design should also consider students' backgrounds and needs and create an environment that fosters their learning intentions. Furthermore, it should also include a variety of learning materials and activities that help students learn and make teachers' jobs easier. (Chen, 2003; Kirschner et al. 2004. as cited in Wang, 2008, p. 412). Engaging in social activities is an important part of everyday life. Individuals often reside and work in different communities where they look for support from others when facing challenges. (Jonassen, Peck, & Wilson, 1999; Wilson & Lowry, 2000). Students frequently utilize individual computers that limit their access to integrated learning materials. The advancement of computer-mediated communication (CMC) has linked computers globally, enhancing the convenience and flexibility of social activities (Khine, Yeap & Tan, 2003). Students continue to utilize computers on an individual basis, however, computer-mediated communication enables them to cooperate, such as when solving problems. The use of computer-supported collaborative learning has had a positive impact on students' ability to solve problems (Uribe, Klein, & Sullivan, 2003).

The learning environment's social structure should create a secure and inviting space where learners can freely share information and engage with others. In a learning environment affected by technology where it plays a noticeably important role. Many of the learning tasks and activities are now made easier with the help of computer systems. A successful technological learning environment needs to be available 24/7 and offer convenient and fast access (Salmon, 2004). Availability and easy access are crucial for a successful technology learning atmosphere. Furthermore, the design of the human-computer interface is vital in determining how usable a technology-based learning environment is. The interface design of a computer program should focus on making learning and use effortless and on aesthetics (Wang & Cheung, 2003). While beginners need to learn smoothly, ease of use becomes more crucial

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as users gain experience over time. Additionally, the relationship should be visually appealing to motivate and engage learners.

To sum up, integrating pedagogy, social interaction, and technology are fundamental components of a technology-enhanced learning environment. The effective integration of ICT is more likely to occur when technology is available as a fundamental condition. The design of pedagogy and social interaction depends on the availability of technological support. The absence of sufficient technological support would make implementing various pedagogical and social design activities, such as 3D simulations and asynchronous online discussions, difficult. However, the primary factor that determines the effectiveness of learning is not the availability of technology but the design of pedagogy and social interaction (Mandell, Sorge, & Russell, 2002). Additionally, Constructivist learning theories support the aforementioned model. The basic tenet of constructivism is that learners are the ones who are actively responsible for constructing knowledge rather than receiving it from the teacher. Learners are regarded as active knowledge constructors rather than passive information receivers (Jonassen, 1991). Cognitivism and social constructivism are the two main representative kinds of knowledge, although they have minor distinctions (Hirumi, 2002; Liaw, 2004). Cognitive constructivists assert that learners form an understanding by linking past experiences with new information. Knowledge results from the accurate assimilation and reinterpretation of external reality.
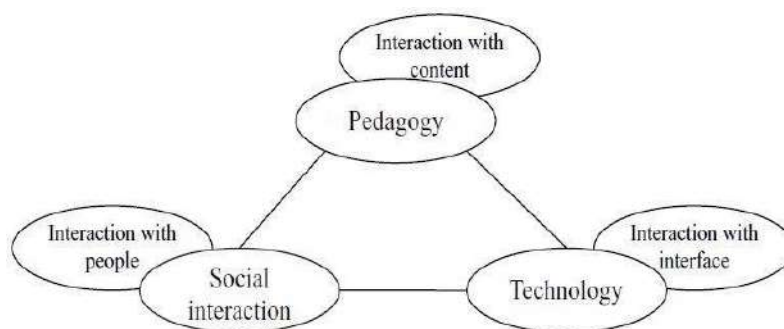
Graph 1. 6: Relationship between the Generic Model Components & Interaction (Wang, 2008, p. 414)

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Social constructivists argue that knowledge is shaped through collaborative efforts within a socio-cultural context influenced by communication. Learning is facilitated through interactive processes that involve sharing information, negotiation, and discussion, as demonstrated in Figure 1.6. Both cognitive and social constructivist theories strongly endorse the design of pedagogical and social activities, respectively.

In this context, The theory of cognitive constructivism recognizes that each individual is unique and capable of constructing distinct knowledge in the same circumstances. According to cognitive constructivism, educational planning should cater to individual learners' needs and objectives, necessitating a variety of learning materials and activities. Moreover, in a constructivist learning environment, where teachers act as facilitators, the pedagogical design should empower teachers to provide support to students throughout the learning process. Conversely, Advocates of social constructivism argue that collaborative learning is essential, highlighting that students can gain valuable and accurate knowledge through mutual learning. According to social constructivist learning theories, the layout of an online learning environment should create a secure and comfortable space where learners feel comfortable sharing information. Moreover, the learning environment should offer specific resources that facilitate accessible communication and collaboration among students. Evidently, cognitive and social constructive learning theorists offer strong support for designing pedagogical approaches and promoting social interaction, respectively.

1. 5. The Need for Language Laboratories

Repeating and imitating was commonly believed to be the foundation of developing speaking skills. However, with advancements in the field of education, a more practical approach has emerged. This approach involves constructing students' knowledge and communication skills by allowing them to learn uniquely. By allowing learners to develop their

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learning style, they can better comprehend the material and retain the information more effectively. This approach has proven to be successful in helping students better understand the subject matter and develop advanced communication skills. Accordingly, constructivist and cognitivist scholars posit that language learning involves a combination of different skills: reading, listening, speaking, and writing with cognitive skills. Thus, listening and speaking often precede reading and writing. In this way, learners acquire language by processing and producing the target language in various contexts.

Both constructivism and cognitivism highlight the significance of enriching the learning process and improving the teaching quality. To address these concerns, language labs were created to offer students chances to enhance their language abilities in a supervised and encouraging new setting. These labs typically incorporate audio and visual resources, interactive software, and other tools to enhance the language learning experience and promote more effective communication.

Language laboratories have been widely recognized as effective in modern education to enhance students' language learning experiences and skills. The purpose of incorporating language laboratories in educational institutions is to accommodate students with a comprehensive studying environment that fosters their language proficiency. The laboratories offer a multitude of resources, including audio-visual materials, interactive learning software, and online resources, that enable learners to practice and improve their language competencies. The ultimate goal of these laboratories is to shape a student's path toward fluency and mastery of a language, which in turn opens up endless opportunities for personal and professional growth.

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1. 5. 1. The Evolution of Language Laboratories

Language learning has been of great importance to individuals and societies since ancient times. With time, the methods and tools used for language learning have evolved significantly. One of the most notable developments in this regard is the Language Laboratory. Although language laboratory originated in the USA, it gained popularity in the UK during the 1960s. The prior views of learning a language mainly focused on mastering grammatical competence. However, Language Laboratories were introduced to help students gain auditory exposure to the target foreign language.

The University of Grenoble established the first recorded language lab in 1908. As (Warren, B.Roby. 2004,p.524) stated, "Frank Chalfant brought the concept to the United States by establishing a 'phonetics lab' at Washington State University in 1911 or 1912. These early language labs used phonographs to deliver audio and were not yet divided into individual booths". The term 'laboratory' originated in the late 15th Century, referring to a specific structure or a room for mixing chemicals and preparing medicines by science experts.

Today, The particular needs of disciplines and advancements in technology have transformed the design of laboratories. Over time, language learning moved away from memorizing dialogues and performing drills under the teacher's control to processes such as interaction and negotiation from pair work activities, role plays, group work activities, and project work. During the 1920s and 1930s, language laboratories primarily focused on improving learners' pronunciation and auditory comprehension. The methodology employed during that period relied heavily on drills and recording.

The popularity of the Army method, also known as the Audio-lingual method, developed by linguists working for the USA Army Specialized Training Program (ASTP), led to the surge in popularity of language laboratories following the Second World War. Its primary

goal was to develop effective communication and interaction skills, which were achieved through the extensive use of drills, repetition, and dialogues. As Sedik & Mahdi (2020) stated, "By 1958, there were over 300 language labs in the US, with the majority in colleges and universities. This led to the rapid creation of new language labs… by the mid-1960s, there were an estimated 10,000 secondary-level and 4,000 post-secondary language labs in the United States".

The old setting language labs, where a teacher arranged the listening practice allowed with hard-wired analogue tape deck-based systems with 'sound booths' in fixed locations, are outdated. The traditional CALL, used in the early 1980s, was a computer-based material for language teaching. The CALL lab is still used today, where students can learn languages through interactive computer-based materials.

1. 5. 2. Types of Language Laboratory

Since 1948, there has been a significant increase in the use of technological tools for language teaching. During this time, the term "language laboratory" became widely adopted. Language laboratories have played a crucial role in helping educators deliver foreign language instruction and have undergone various stages of development. These labs have evolved to incorporate the latest technological innovations, such as digital audio and video recordings, interactive whiteboards, and language software. As a result, they now provide a more immersive and engaging learning experience, allowing students to practice listening, speaking, and pronunciation skills in a controlled and supportive environment. Language labs also offer teachers a powerful tool for monitoring students' progress, evaluating their performance, and providing personalized feedback. Various language labs have distinct characteristics and capabilities. Some of these types include computer-based labs, digital language labs, multimedia language labs, mobile language labs, traditional laboratories, language phone

laboratories, and more. In this section focuses on three specific types that are relevant to our study: the Audio-lingual lab, Multimedia lab, and CALL lab.

1. 5. 2. 1. Multimedia Language Laboratory

In recent years, information and communication technologies have led to the development of a new kind of language lab: the multimedia language lab. These labs are designed to support language learners by providing them with cutting-edge tools that make learning a new language more efficient and effective.

The multimedia language lab offers students a variety of tools to help them practice their language skills. These tools include audio and video recording equipment, interactive software programs, and online resources. With these tools, students can perform their speaking, listening, reading, and writing skills in a variety of contexts, all with the guidance of experienced language teachers. Mark Warschauer explains that multimedia technology, such as CD-ROMs, allows for the integration of different media types (passages, diagrams, sounds, animation, and video) on a single device. The combination of multimedia and hypermedia makes multimedia even stronger. Hypermedia connects all multimedia elements, allowing users to navigate by directing and clicking on the mouse(Abdulla & Ajay Kumar S, 2017). One of the main advantages of the multimedia language lab is that it enables students to work at their own pace and level. They can choose from a range of activities and exercises tailored to their specific needs and preferences and receive immediate feedback on their performance. This personalized approach to language learning has proven to be highly effective, as it helps students build confidence and motivation, ultimately leading to greater success in their language studies.

In conclusion, the multimedia language lab is a valuable resource for anyone learning a new language. Its advanced technologies and personalized approach offer a unique and highly

effective way to improve language skills, develop cultural competence, and achieve personal and professional goals.

1. 5. 2. 2. Computer-Assisted Language Learning Laboratory

Computer-assisted language learning (CALL) labs are specialized facilities designed to assist language learners improve their skills. These labs are equipped with various hardware and software resources, including headphones, microphones, a projector, and networked computers with internet access and language software. The central objective of CALL labs is to employ modern technology to facilitate effective language acquisition. The software installed in these labs offers learners multimedia resources, such as audio and video recordings, that they can interact with while practising their language skills. The software provides a range of applications for different learning purposes, such as building vocabulary, practising grammar, and engaging in conversations. One significant advantage of CALL labs is that they provide an immersive language learning experience that is engaging and effective. The software is created to provide a customized and engaging learning opportunity that caters to the individual needs of each learner. CALL labs offer a controlled environment where learners can engage with authentic language materials, such as news broadcasts, movies, and songs, which can enhance their language abilities. CALL labs are designed to meet the diverse needs of language learners, making language learning more accessible and enjoyable. They offer a large number of interactive tasks and resources specifically designed to help learners acquire a new language effectively. As a result, CALL labs are gaining popularity worldwide due to their ability to provide learners with an effective and engaging language learning experience.

1. 5. 2. 3. The Audio-Lingual Language Laboratory

The audio-lingual language lab is a highly effective language-learning method emphasising developing oral skills. It achieves this by using pattern drills and repetition

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exercises that encourage the learners to practice and memorize the language. The approach believes that intensive listening and speaking practice is the best way to learn a new language. Therefore, it strongly emphasises pronunciation, intonation, and rhythm and encourages learners to use the language in context as much as possible. As Rivers (1970) noted,

> For many decades, the audio-language laboratory remained one of the most important audio materials ever built. Since its invention, it has suffered a series of modifications in order for students and language instructors to seize all its capabilities such as the opportunity to record the material that is used during the lab sessions (as cited in Mostafa Sedik, 2020).

Accordingly, the audio-lingual lab is specifically designed to help students improve their listening skills in the target language. To achieve this, the lab is equipped with a range of materials, including tape recorders, headphones, and microphones. The headphones permit students to focus on the sounds of the language without any external distractions. The lab also empowers students with a variety of recordings in the target language, including audio recordings, videos, and conversations between native speakers. This enables them to listen to the language in different contexts, which is essential for developing their listening skills. One of the key benefits of the audio-lingual lab is that it allows students to record their own voices and listen to them. This provides a valuable feedback tool for practice and correction, as students can hear their own pronunciation, intonation, and rhythm and compare it to that of native speakers. This helps them to identify areas where they need to improve and enables them to make rapid progress in their language learning.

Overall, the audio-lingual lab is an indispensable resource for students learning a new language. It provides a safe and supportive environment in which they can develop their listening skills and gain confidence in using the language. With its emphasis on intensive

listening and speaking practice, it is a highly effective method of language learning that can help students achieve their language goals quickly and efficiently.

1. 5. 3. Importance of Language Laboratory

The language lab's significance has greatly impacted the field of communication, particularly in language education. Our current era is characterized by a diverse and multicultural population, and technology has brought about a revolution. In this context, a language lab is extremely beneficial for acclimating to technology and effectively assists educators in facilitating online classes and sharing educational materials and videos. This allows students to become comfortable with online assessments. Furthermore, language labs can be used to administer competitive exams such as IELTS, TOEFL and other international exams.

Language labs act as tools for shaping and creating students to become skilled learners. It can also improve vocabulary, speaking and presentation skills. In addition, software available in the language lab assists learners in acquiring and improvising oral and written proficiency, whereby the grammar elements considered the most significant part of sentence construction can be learnt concurrently. Numerous types of laboratories are utilized to aid students in various areas. Conversation labs, Linguaphone, computer-assisted language labs, and multimedia high-tech language labs are the most prevalent kinds of language labs. Through the language lab, learners have access to broadcasting, web-assisted materials, and videotaped off-air recordings in their target language. Consequently, language labs have become essential in language education. They are not exclusively for English but for acquiring proficiency in any language.

Hmoud (2014, pp. 84-94) proposes that language labs allow students to interact with native speakers, thereby enhancing their language learning. For students who intend to pursue higher education abroad, a language lab can be particularly advantageous as it enables them to

study the language of the country in which they plan to study (for instance, EFL students who have plans to study in English-speaking countries are required to pass TOEFL/IELTS exams). Therefore, it is crucial that the design of the lab promotes effective communication and facilitates the monitoring of learners. Since powerful communicative abilities are vital in almost all professional fields, a language lab can assist students in developing communication skills.

1. 5. 4. Language Laboratory and Language Skills

Language laboratories were implemented to aid in the improvement of language abilities. Incorporating technology to support education has long been a widely accepted method that has helped progress teaching and learning.

The primary objective of laboratory facilities is to enhance students' oral communication skills through a structured curriculum that emphasizes listening and speaking. According to Mostafa Sedik and Mostafa Mahdi (2020), "the language lab provides learners with facilities for audio and video recordings, which can help them improve their communicative skills as well as their body language." To achieve this goal, students are provided with various audio resources that simulate real-world scenarios, enabling them to develop the necessary skills to communicate effectively in diverse settings.

Language Labs play a crucial role in providing learners with a valuable opportunity to enhance and polish their language abilities. These labs provide an effective and productive way to support the teaching and learning journey, allowing educators to present lessons in innovative ways and fostering increased participation and collaboration among learners in their sessions. Bera (2017) mentioned that the language lab has the capacity to offer additional materials, which can assist teachers in completing their responsibilities more efficiently. This includes

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preparing lessons in a shorter amount of time and supplying a larger variety of interactive resources.

In addition, the lab allows for productive communication between teachers and their students, as well as among the students themselves, through a range of interactive exercises. These exercises involve using headphones to hear audio or videos, participating in discussions, and using computer monitors. Also, the language lab offers several possible benefits for language learners, including listening, writing, speaking, and mimicking the native speech mode. Furthermore, they promote the acquisition of foreign language skills, which is essential for learners to understand the language mentally and gain practice. The language laboratory is a dedicated space for acquiring foreign language skills and typically contains various electronic tools utilized for language learning (Marzuki, 2014). It has emerged as a valuable instructional tool in numerous nations, especially for teaching foreign languages. The language lab is basically a tool for self-directed learning that allows students to listen to recorded speech in the target language and then practice speaking in the same way. The lab places its focus on developing listening and speaking skills, while the enhancement of reading and writing skills is postponed for later stages. The speaking exercises are designed to improve proper pronunciation, intonation, accent, and the correct usage of words, idioms, and phrases. Ultimately, it assists learners in effectively expressing their ideas in the language. The lab enables approximately 20 learners to utilize the same materials concurrently.

In addition, language labs foster communication in the classroom by promoting deep conversations between students and teachers as well as among students through language activities and providing exercises essential to oral communication. Language labs provide various tools for communication, such as headphones, chatting, and messages on the computer screen.

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1. 5. 5. Traditional Classroom and Language Laboratories

Recent technological advancements have profoundly impacted the realm of education, particularly concerning language teaching. Consequently, the approach to language impartation has significantly changed due to the introduction of new technologies. These developments have, in turn, also affected language teaching as a domain of study in and of itself.

When comparing traditional classrooms to technological laboratories, it is evident that the former is characterized by a teacher-centred approach, whereby the teacher assumes the role of leader and controller of the class. The teacher's primary objective is to impart knowledge and manage course content to fulfil students' needs and the course's objectives. The position of the teacher in the learning process is of paramount importance, as they are entrusted with the tasks of producing lectures, developing resources, and designing course content.

In essence, the teachers are the source of information, meaning that they are productive of the knowledge as well as are considered to be a valuable resource, capable of demonstrating knowledge in areas where materials may be lacking through Choosing texts, activities, and resources that align with learning objectives and fulfil student interests. In addition to providing targeted support through prompts, questions, and feedback and creating opportunities for students to use English in real-life contexts,

In traditional classrooms, students receive guidance and direction from their instructor. Knowledge is shared with students through handouts and instructions, and students assume the role of receptive learners. Despite this, students also play an active role in the teaching-learning process by contributing their thoughts and ideas. One can think of students as plants requiring nourishment and care. A fruitful learning environment can be created through the teacher's guidance and students' participation.

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The landscape of education has undergone significant changes recently, with students now playing a crucial role in the teaching and learning process. Within this context, Maja Veljković et al. (2019) asserted, "Learners have emerged as actively engaged participants and accountable leaders in the teaching and learning process." In the current educational setting, students are encouraged to participate actively in the educational process with the use of digital tools like the Internet and computers. The incorporation of these tools into the learning process has allowed students to access extensive information and materials, ultimately improving their overall learning journey. In this context, the responsibility of educators has changed from being the only source of knowledge to becoming facilitators who lead and assist learners in their pursuit of knowledge. As such, digital technologies have transformed traditional learning approaches, making them more interactive, collaborative, and learner-centred. The overall goal is to transform traditional teaching settings into a newly developed environment that has shifted away from being teacher-centred to student-centred.

Both approaches have their own unique merits and demerits. On the one hand, traditional classroom learning has been the primary mode of education for centuries and offers a structured, teacher-led approach that fosters a sense of community and allows for face-to-face interaction and discussion. On the other hand, the modern technological laboratory approach leverages the benefits of technology to offer a more immersive and interactive learning experience tailored to each student's individual needs and allows for self-paced learning. While both approaches have their strengths and weaknesses, the choice of the approach largely depends on students' specific learning goals, preferences, and circumstances.

1. 6. Technology in Assessment

The assessment practice has significantly transformed from a paper-based approach traditionally conducted in physical settings to a technology-driven method in language labs.

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This shift in focus has become a noteworthy pedagogical practice in contemporary academic and/or corporate environments.

Using technology in assessment has enabled educators and professionals to assess learners' abilities and skills more accurately and efficiently than before. As a result, this pedagogical innovation has gained significant attention and has been adopted by various institutions and organizations to enhance their assessment practices.

In the realm of education, evaluating students' comprehension levels of instructional materials is of paramount importance to ensure their efficacy. This practice facilitates teachers' adaptation of their teaching methods and provides parents and students with an accurate representation of their overall progress, which is a crucial determinant of their future success. In this context, (Dylan, 2013) emphasized that "Assessment is the bridge between teaching and learning," underscoring the pivotal role of evaluation in the educational process.

Assessment refers to the systematic approach of collecting and documenting data about an individual's skills, knowledge, attitudes, and beliefs. Typically, this data is quantifiable, enabling the assessment of an individual's performance against predefined metrics.

Assessment is crucial for both businesses and academic institutions since it allows them to assess and enhance the productivity of their staff and students, respectively. Additionally, assessment assists in pinpointing areas for advancement, which helps in creating tailored learning plans and training programs. It is common knowledge that a variety of evaluation methods can be employed in the field of education. This includes assessment of learning (summative), assessment for learning (formative), peer assessment, self-assessment, and E-assessment.

In this context, Stiggins (2005) made a distinction between summative and formative assessment. He mentioned that there is a difference between assessments used to grade and hold

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individuals accountable for their learning outcomes (summative assessment) and assessments used to diagnose and adjust the conditions of learning and instruction (formative assessment).

Additionally, the advent of technology-enabled assessments has enabled educators to engage in assessments with greater ease while simultaneously reducing the time, resources, and disruption associated with traditional assessment methods.

Moreover, these assessments are capable of providing a more comprehensive and personalized account of students' needs, interests, and abilities than traditional assessments. As a result, technology-enabled assessments have emerged as a reliable and effective means of evaluating student performance and tailoring instruction to meet their unique needs. Therefore, technology contributes to a broader view of the process of teaching and learning experiences. Teachers must remain up-to-date with technological advancements and the latest pedagogical practices to ensure effective technology integration. In doing so, they can assess their learners while taking into account their level of competence and knowledge of the language and subsequently match technology with pedagogical practices.

Teachers can utilize this method to maximize the advantages of technology within the classroom. However, it is important to note that technology should not be viewed as a replacement for sound pedagogical principles and objectives but rather as a supportive instrument. Moreover, Effective assessment still requires a thorough understanding of these fundamental principles and a clear alignment with learning objectives. Consequently, while technology can be an invaluable asset in the classroom, it must be used with the guiding principles of education.

On the other hand, to provide a holistic view of student learning, it is recommended to integrate technology-based assessments with traditional methods. This approach offers a balanced perspective and ensures that all aspects of student learning are evaluated. Using technology-based solutions alongside traditional assessments can help educators gain a more

thorough and accurate understanding of their students' strengths and weaknesses. This approach allows for a deeper analysis of student performance, leading to better instructional decisions. This approach paves the way for tailored interventions that effectively target specific areas of improvement. Therefore, It is crucial to combine both approaches to improve the general quality of education and support student achievement. Prioritizing fairness and inclusivity in the field of education, especially in terms of students' access to technology and their ability to use it proficiently for evaluating purposes, is vital.

Every student needs to have access to the necessary resources and skills, regardless of their background or situation, so they can use them effectively and productively. To achieve this, the information provided must be tailored to meet the specific needs of the audience. Information should be structured logically, with the most important details presented first, and sentences kept brief and clear to avoid diluting the main point. It's essential to use familiar, everyday language and steer clear of acronyms, jargon, and legal terminology. Utilizing the active voice and the verb form of the word can also enhance clarity. By doing so, we can establish a more fair and inclusive learning environment that promotes academic success for all students.

1. 6. 1. Benefits of Technology in Assessment

Incorporating technology in the classroom has been a subject of extensive debate, with many experts suggesting that it can significantly impact students by providing them with a wide range of opportunities to explore their interests and address learning gaps. Integrating technology into assessment methods has proven to be a beneficial approach for teachers and students. Utilizing information and communication technologies enables the digital creation and storage of data assessments in an item bank, providing greater security and less interference compared to traditional exam papers. This approach ensures that data is stored safely and less susceptible to tampering or loss, boosting overall confidence in the assessment process.

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As the pace of education continues to accelerate, such tools have become an integral part of the academic landscape and are widely adopted by educators seeking to streamline their assessment processes. Also, digital tools have the potential to provide prompt and accurate feedback on performance, enabling students to fine-tune their learning strategies and customize their educational journey. By leveraging these tools, students can have access to real-time data that can aid in identifying areas that require improvement and facilitate the development of personalized learning plans. This approach can foster a more efficient and effective learning experience and provide educators with valuable insights into student progress. As such, using digital tools in education can be powerful in enhancing the educational experience for students and educators alike.

Including technology in the assessment process has allowed educators to thoroughly scrutinize and evaluate a substantial quantity of information within a short period. This has led to a significant increase in the efficiency and accuracy of the assessment process. By utilizing technology, educators can now analyze data meticulously, thus enabling them to identify patterns, trends, and insights that would have otherwise been overlooked. This not only saves time but also promotes objectivity and consistency in the assessment process. Consequently, integrating technology in assessment has become an indispensable tool for educational institutions seeking to enhance the quality of their evaluation processes.

Furthermore, implementing technology in the assessment process has the potential to foster trust and understanding among students, parents, and educators. With its ability to reduce potential bias and promote fairness in evaluation, technology can contribute significantly towards creating a level playing field for all students. By leveraging advanced algorithms and data analytics, educators can gain valuable insights into each student's unique learning needs and tailor their approach accordingly. Furthermore, using technology in assessments can help streamline the evaluation process, reduce administrative burden, and improve the accuracy of

results. Overall, technology-enabled assessments can transform the way we evaluate student performance, improving outcomes and promoting equity in education. Subsequently, technological assessment plays a crucial role in ensuring authenticity in businesses and academic institutions, which can effectively evaluate the credibility and accuracy of various technological solutions.

Most importantly, incorporating technology into the assessment process allows educators to make use of various assessment techniques, thereby improving the quality of assessment and enabling the use of different assessment formats. Hence, through technology, teachers can effectively evaluate student outcomes and progress. This means that educators can optimize their assessment practices, promote student engagement, and foster a more effective and efficient learning environment.

For this reason, It is important to note that experienced professionals should conduct a thorough technological assessment with a deep understanding of the relevant technologies and industry-specific requirements to ensure the assessment is comprehensive, accurate, and actionable. Overall, technological assessment is a critical component of any successful technology implementation strategy.

While traditional methods have served us well for generations, the digital age presents opportunities to enhance the efficiency of assessment, saving precious time for educators and students alike. Today, we delve into the transformative ways technology revolutionises assessment practices, making them faster, more insightful, and, ultimately, more impactful for learning. The advantages of integrating technology into assessment are summarised in the diagram below (see Figure 1.7).
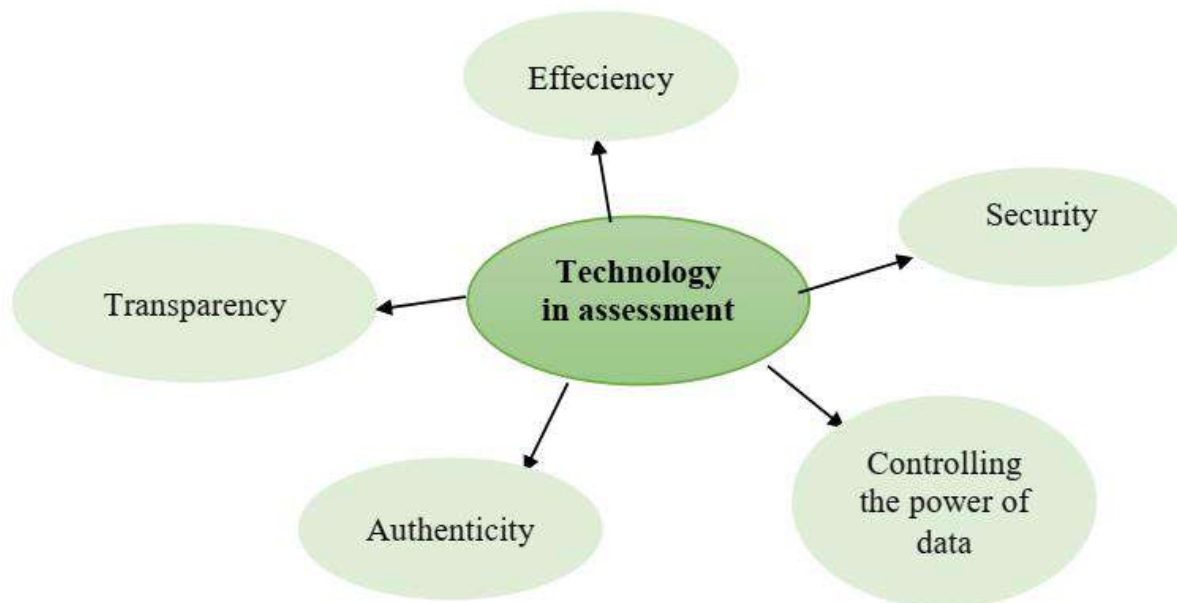
Graph 1. 7: Benefits of Technology in Assessment

1. 7. Communicative Approach

Communicative language teaching (CLT) is commonly known as the communicative approach (CA). The Communicative Approach (CA) has become increasingly popular as a new way of teaching English as a Foreign Language (TEFL), emphasizing the importance of communication skills over traditional memorization. The communicative approach is centred on the idea that successful language learning requires real-life integration and communication.

The CA is based on language theories that highlight the significance of communication as the primary objective of learning a language and the transition from a structural to a functional understanding of language. Furthermore, as suggested by Hymes (1972) and his idea of communicative competence, this viewpoint serves as the foundation of the CA, which surpasses mere grammatical correctness to encompass sociolinguistic and discourse abilities. Besides, this teaching method has demonstrated a highly advantageous impact, as it reminds educators that language acquisition is not solely about gaining knowledge but rather about the

effectiveness of communicating in the target language. By exposing students to various language structures, directing their attention to stylistic and appropriate language usage, and, most importantly, providing them with opportunities to employ real-world language use in a classroom setting, the educational experience becomes more personalized and less rigidly structured.

The CA acknowledges the importance of using language as a tool for communication in various contexts, emphasizing the necessity of learners engaging in authentic communication where they feel comfortable producing language flexibly. The CA emphasizes enhancing students' language proficiency through interactive activities like debate, role play, and open discussions, viewing language as a medium for expressing ideas, opinions, and feelings. Consequently, language learning is seen as a social activity where learners interact to communicate authentically and meaningfully.

1. 7. 1. Speaking as a Skill

In recent decades, instructors and students of English have focused on fostering their speaking skills, which is an essential macro-skill. Good speech requires fluency and accuracy; students must strive to enhance these competently. Speaking is a crucial component of language learning, and students develop their language skills by acquiring four fundamental skills: listening, speaking, reading, and writing. Specifically, speaking skills aim to develop the ability to produce oral discourse, and their meanings may differ depending on the teacher's or author's perspective.

According to Bygate's (1987) definition, oral expression encompasses proficiently utilizing language forms, adhering to the appropriate sequence, emulating native speakers' intonation, and conveying accurate meanings that the listener can comprehend. In this vein, Bygate contends that speaking is a fundamental aptitude that individuals use when

communicating with others and that it is the primary skill that learners must acquire to achieve fluency in an academic environment.

Hedge (2000, p. 261) states that speaking is a skill that people are evaluated on when first impressions are formed, in addition to the definitions mentioned earlier. Therefore, speaking is a vital skill, especially in foreign languages, as it reflects people's thoughts and opinions.

1. 7. 2. Speaking as Part of Communication

Effective communication is the foundation of our society, allowing us to build relationships, influence decisions, and inspire change. Strong communication skills are essential for success in all fields in today's global world. Language is our primary communication tool, with English as the lingua franca - the international language spoken worldwide. Its widespread use in scientific research, education, business, travel and tourism, media, technology, and more makes it a crucial language for international communication. As speaking skills are vital in effective communication, many people strive to learn English to connect with communities worldwide.

English is spoken by a large number of people around the world and is important for forming connections between individuals worldwide. In order to communicate effectively, individuals need to enhance their communication abilities. The acquisition of communication skills is essential for individuals to accomplish their goals, even if they are unable to achieve success. In language learning, speaking and writing skills are commonly considered productive skills, while listening and reading are seen as receptive skills that are specific to a particular language (Richards et al., 2002, p.293). Harmer (2001, p.154) stressed the importance of developing both productive and receptive skills as a key objective in language learning.This suggests that all language skills are complementary and that learning a language requires more than one skill.

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Although speaking is often considered the most challenging activity and is infrequently assessed in an educational setting, many educators and assessors believe that speaking skills should be fostered in students, as Luoma (2004) advocates. Additionally, speaking is a highly complex and ever-changing capability that requires harmonizing several interconnected processes, such as cognitive, physical, and socio-cultural factors. Speakers must promptly utilize their knowledge and abilities in real time to convey messages effectively. Speaking and communication are often used interchangeably but are pretty distinct. Speaking refers solely to producing verbal words, whereas communication involves delivering a message and ensuring that it is comprehended and received by the other party. It is the successful exchange of information, ideas, and emotions between two or more individuals. Good speaking skills are the act of generating words that listeners can understand.

Communication is a complicated procedure that encompasses various components, including verbal communication, spoken language, and nonverbal signals, such as body movements, facial expressions, and gestures. Communication is facilitated through speaking, but it is not the sole means of communication, and its use does not guarantee the successful transmission of messages. To become a truly effective communicator, one must proficiently master the mechanics of speaking and develop a keen sense of listening, interpreting nonverbal cues, and skillfully adapting messages to suit different contexts. The diagram below (Figure 1.8) summarises the components of communication.
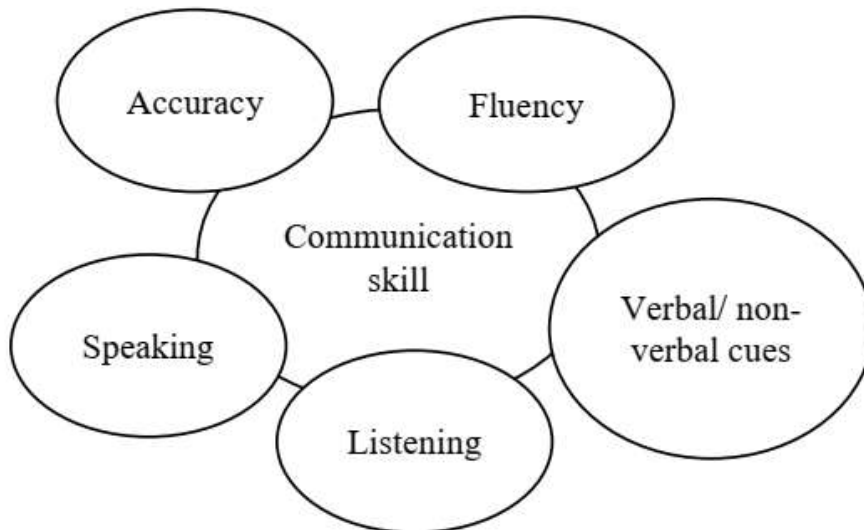
Graph 1. 8: Components of Communication

1. 7. 3. The Development of Speaking Skills in Language Laboratories

A language lab is a place where students can practice their listening and speaking skills together. It is designed to serve as a practice field for acquiring a foreign language. It operates on the principle that understanding and speaking are essential in language learning. Since we learn by doing, it is necessary to engage in extensive and systematic practice in learning and speaking (Fadiran, 2007). A key advantage of using the language laboratory is that it provides opportunities for practising speaking. Unlike a regular classroom, the language laboratory can achieve this; Mambo (2004) affirmed that:

> Language laboratories are environments designed to enhance foreign language learners' skills. Generally equipped with analogue and digital hardware, and software (tape recorders, videocassette recorders, or computers), they provide practices in listening comprehension, and speaking (listen and repeat), with the goal to reinforce the grammar, vocabulary, and functions (grammatical structures) presented in class. (p.2)

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Along the same line, language laboratory enhances students' performance in the target language, which is a common objective among students. Additionally, the availability of teaching materials and the learner's readiness are crucial; just having a functional language lab and using different teaching methods are not enough to effectively incorporate a language laboratory. The students' eagerness to learn, practice, and improve also plays a role in creating a better learning environment in the language laboratory. This focuses on spoken English as opposed to written English. Therefore, the primary requirement for spoken English is that students can communicate in English while learning, participate in discussions on various topics, and converse about daily subjects in English (Okolo, 2013). Furthermore, they should be capable of delivering brief presentations on familiar topics with clear and accurate pronunciation and intonation, with some preparation while listening to the teacher or model.

The Multimedia software includes a tool for recording their voices with a microphone. This allows students to evaluate their spoken skills by comparing their recorded sounds with those of the teacher or model. For instance, students practice their pronunciation to understand the difference between the sounds /ʧ/ and /ʤ/, as in "church" and "judge,". However, the equipment available in the lab allows students to study and practise by providing a variety of tasks, including speech recognition, pronunciation detector, articulation, and spelling corrector apps/webs, until they have mastered them. Therefore, having adequate teaching facilities in the laboratory helps to enhance and encourage students in their language learning tasks. The extent to which teachers utilize the language laboratory depends largely on the availability of useful and up-to-date resource materials, such as tape recorders, in the LL. Suitable materials lead to good outcomes. In this line, students have the option to work alone or in pairs, in small groups, or as a whole class. Teachers can listen, observe, and interact with their students. Consequently, the availability of appropriate facilities for teaching and learning English can positively impact students' performance (Lieberman, 2004).

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1. 8. Research Contribution

Language laboratories gained significant attention from scholars worldwide and became a global trend. Numerous articles were written on the subject such as the article of Warren B. Roby entitled Technology in the Service of Foreign Language Learning: The Case of Language Laboratory in 2004, and the dissertation of Mostafa Sedik & Mostafa Mahdi, 2020 entitled *Language Laboratories in Iraq*, as well as the book of Krishna D. entitled *Importance of Language Laboratory in Developing Language Skills* and the article of Sabudu et al. entitled *The Management of Language Laboratory in Improving Students Arabic Competence*. However, interest in this field diminished afterwards, leading to a need for updated literature.

This lack of recent research is particularly notable in the Algerian context. Research on the implementation of language laboratories for English language learning in Algeria is lacking, if not limited to a certain degree. As a matter of fact, Western research works on language labs were available to an extent, yet this subject of implementing a language lab in Algeria remained absent in the Algerian research field. Therefore, the researchers have made efforts to gather reliable insights into the language laboratory. After searching different websites such as ProQuest, ERIC, Academia, and Thèse Algerie, The only available resource seems to be a dissertation entitled "*Improving Students' Listening Skill Through the Language Laboratory: A Case Study of Third-Year Students at the Department of English, Bouzareah University*." This dissertation delved into the language laboratory's role in enhancing listening skills, and it was used as a template work for the present research study. Additionally, to prove the efficiency of the ICT integration process, it is crucial to avoid random implementation and instead adhere to a fundamental set of principles. This structured process guarantees a successful and impactful implementation of laboratory resources, elevating them to a beneficial means for enhancing language teaching and learning.

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Consequently, conducting additional research to investigate effective strategies for leveraging language lab resources to enhance students' speaking proficiency within the Algerian education system is of paramount importance. This situation has piqued the interest of researchers, prompting them to delve into this subject and address the existing gap in the Algerian context concerning the implementation of language labs.

Research within the language laboratory domain in higher education is notably important due to the considerable investments in financial resources, material equipment, and human resources. The present study sheds light on the practical implementation of language labs, bridging the gap between expectations and actual outcomes. It investigates the impact and effectiveness of language laboratories in enhancing oral language abilities, especially communication skills, as an essential skill students strive to achieve.

The Ministry of Higher Education has put in considerable work to supply the educational field with new technology to improve curricula and ensure fair access to technology-based learning. Therefore, by grasping the importance of language laboratories, teachers can maximise their utilisation, boost students' spoken language abilities, and adjust appropriate approaches for successful teaching in language laboratories. The results of this present research aim to aid educators, learners, technical staff, and decision-makers in making progress towards enhancing the quality of teaching and learning in the language lab, this is important due to its crucial value in enhancing students' speaking skills. Thus, this study will respectfully contribute to :

- To address the challenges of implementing language laboratories, stakeholders should prioritise investments in technologically advanced and well-equipped materials. These materials should be highly qualified to ensure that students have access to the most

effective language learning tools, which will ultimately enhance their language proficiency.

- Support the language labs with updated programs that contribute to the improvement of students' communicative abilities.

- Pave the way for future studies and investigations in the Algerian context, where future research works investigation into the field of language laboratories should not be limited.

1. 9. Conclusion

This theoretical chapter aims to offer a comprehensive explanation of some of the methods utilised in the technology and verbal communication fields, specifically in terms of their effectiveness in improving communication abilities. It also introduces the ideas of integrating ICT and its importance and summarises the existing literature on the primary integration patterns. Afterwards, the literature review explores the development of labs and their crucial function in the education sector. The chapter discusses the reciprocal relationship between different fields, leading to the discussion of pedagogical applications such as Computer Assisted Language Learning (CALL). It also covers significant concepts like Computer-Mediated Communication (CMC) and Mobile-Assisted Language Learning (MALL). Finally, the chapter concludes by providing insight into one of the bridging fields between pedagogical practices and ICTs, including assessment.

Chapter Two: Research Design & Methodology

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2. 1. Introduction

The educational system of Algeria has been the subject of various studies aimed at identifying effective methods for improving students' oral skills and communication abilities. EFL teachers in Algeria frequently raise the question of why the majority of their students struggle with communicating and producing English accurately. In light of the issue, this chapter delves into the significance of language labs in augmenting and cultivating students' communicative proficiency. Additionally, it addresses the challenges encountered by educators in the laboratory. The chapter's objective is to present the study's methodology, research design, and data collection procedures. The collected data focuses on utilising language labs as a novel setting and resource tool for English language learning, along with educators' perspectives on integrating these tools as instructional aids. The chapter explores the research design, methods, investigative context, and sample description, as well as elucidating the data collection instruments and procedures implemented by the researchers.

2. 2. The Research Design

The present research was performed using a case study research design. Before delving into the case study, it is important to note that Mouton (2001) summarised the entire process as follows: "To satisfy the information needs of any study or research project, an appropriate methodology has to be selected, and suitable tools for data collection and analysis have to be chosen" (p. 133). Research is a methodological approach that collects and analyses data, and any research design contains the theoretical section and the application of the theory, which is the practical section that includes a given investigation. Moreover, Data collection is an essential component of conducting research. It is generally known as a complicated and challenging task, and this is why O'Leary (2004) remarks that :

collecting reliable data is a hard task, and it is worth remembering that one method is not inherently better than another. This is why whatever data collection method to be used would depend upon the research goals and the advantages and disadvantages of each method. (p. 150).

It is well known that qualitative research takes into account narrative or experiential data, whereas quantitative research collects and analyses numerical data (Hayes et al., 2013). To make the present work reliable and valid, the present study employed a mixed method research, which refers to collecting, analysing, and combining quantitative and qualitative elements of research in a single research work and study (Dornyei, 2007; Creswell, 2020), as it integrates qualitative and quantitative research methods to address a research problem using different data collection instruments (Leavy, 2017; Ngulube, 2020). The selection of this approach was deliberate.

The goal of utilizing both approaches is that, in one respect, qualitative data can assist in conducting a comprehensive analysis of the "why" behind the numerical results, leading to a deeper understanding of approaching the research problem from different perspectives, specifically, how the respondents view it. The qualitative process allows researchers to engage directly with the sample in an impartial manner and helps them capture the inherent quality of the data, particularly the four instructors of the Comprehension and Oral Expression module and the lab technicians. On the other hand, the quantitative approach enables the researchers to objectively and impartially examine the research issue. The current research aimed to produce numerical statistical information that facilitates replication and the generalization of findings. As a result, these discrepancies between the quantitative and qualitative data may sometimes reveal new areas for exploration or aid in refining the research question.

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The study at hand is based on three data collection tools. This triangulation in data collection was adopted, as well as a questionnaire for students of two different levels, a semi-structured in-depth interview for four teachers and two technicians, and non-participant longitudinal classroom observation.

The current study aims to measure the extent to which TPACK principles are applied in the lab in Comprehension and Oral Expression classes as well as to explore the effectiveness of language lab in enhancing students' speaking skills by revealing challenges and barriers related to it within the department of letters English Language at the University of Ain Temouchent, Belhadj Bouchaib. By analysing the available data, this study seeks to provide a comprehensive and insightful understanding of the effectiveness of language laboratories in promoting students' communicative skills.

2. 2. 1. Case Study

In this study, the researchers selected a case study that analysed students' performance in a language lab. The study focuses on first and second-year EFL students at the Department of Letters and English Language at the University of Ain Temouchent Belhadj Bouchaib. Many researchers often describe a case study as a tool for research and a method that enables the researcher to delve deeply into and examine a current phenomenon within its real-world setting and from the viewpoints of the participants (Yin, 1993; Nunan, 1997; Anderson, 1998; Gall et al., 2003; Duff, 2008). In this research, the researchers decided to use a case study due to the limited availability of relevant sources on the topic of language labs in the Algerian context, particularly at the University of Ain Temouchent Belhadj Bouchaib. The study shed light on L1 and L2 students who are using the language lab for the first time. Many researchers and scholars argue that a case study is a way to actively investigate a particular phenomenon, allowing for the testing and examination of insights and cases related to various entities such

as objects, ideas, events, people, conditions, and more. Basically, a case study involves examining a particular situation, phenomenon, issue, or sample. Consequently, this study seeks to address specific research inquiries, select the case to be studied, gather required data, and establish the analytical methods to be employed.

2. 2. 2. Population and Sampling

In the field of research, the selection of a suitable sample is crucial, just as the choice of research approach. According to Cohen et al. (2018), the quality of research is not solely determined by the selection of research methods or instruments; it also heavily relies on the appropriateness of the chosen sample. According to Alvi (2016), A sample can be defined as a group of relatively small people selected from a population for investigation purposes. In other words, a sample is a smaller group of individuals selected from a larger population to be studied or analyzed. It is important to choose the sample carefully to ensure the results can be applied to the entire population.

After integrating the language lab into Oral Expression classes, the researchers endeavoured to explore the subject of utilising the language lab as a novel setting for teaching and learning the Comprehension and Oral expression module. The researchers employed purposive sampling to select participants based on their familiarity and experience with the language lab, specifically teachers, technicians, and students. As a result, the diversity in the participant pool contributes valuable and diverse data to enhance the research with various perspectives. The sample was evaluated using three distinct tools: a structured in-depth interview for the teachers, a questionnaire for the students, and observations for both teachers and students.

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The students were chosen using random sampling, and the population was selected using purposive sampling. Out of 368 students in the population, only 191 participated in the research through a questionnaire. The questionnaire was administered to students in two different academic levels, L1 and L2, with various groups. L1 consists of 5 groups, each with approximately 40 to 45 students, and each group has a subgroup with around 20 to 23 students. L2 consists of 4 groups, with each group containing 37 to 41 students, and each group also has a subgroup with around 18 to 21 students.

Four teachers of EFL Comprehension and Oral Expression from the Department of Letters and English Language at Ain Temouchent University Belhadj Bouachaib, who teach first and second-year students, were interviewed. In addition, two technicians responsible for the language laboratory at the University of Ain Temouchent were also interviewed. The decision to include the technicians in the interviews was based on their experience with previous equipment. Therefore, in order to gain deeper insights into the lab and its impact on communication skills, the research aimed to involve the technicians to enrich the study.

Additionally, as the current research focuses on the language laboratory and its functionalities, it serves as a new setting for the Comprehension and Oral Expression module. It has a seating capacity of 24, with each seat being furnished with a computer consisting of a screen, keyboard, central processing unit (CPU), mouse, and inverter. These computers are connected to the teacher's desk, which is equipped with two computers that supervise and administer the students' computers from the teacher's desk. The teacher can lock and unlock the students' screens, communicate with individual students using the computer, as well as utilise headphones and projectors.

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2. 2. 3. Data Collection and Instruments

Based on Dörnyei and Zoltán's (2011) findings, the effectiveness of any research study relies heavily on the data collection instruments employed. In light of this, the present study utilised a range of tools, including student questionnaires, semi-structured in-depth interviews with teachers and technicians, and non-participant longitudinal classroom observations. These instruments depend on the nature of the research problem of the study and its objectives.

Due to the absence of prior research specifically addressing language labs worldwide, particularly in the Algerian context, the researchers chose to employ three data collection tools to gather comprehensive information and diverse perspectives on the research issue. It is worth noting that semi-structured in-depth interviews and the non-participant longitudinal classroom observation were carried out face-to-face in the presence of the researchers. The questionnaire was mostly conducted inside the classroom, and only a few students requested to answer at home; thus, a link was sent to them.

To ensure that the details about the sample and the instruments used are clear, researchers summarised the sample in a table. This table includes information about the participants - teachers, students, and technicians - such as their total number, age, and gender. Therefore, the table contains all the necessary information about the participants.

Teachers (participants)	Total number Age Way of participating Teaching level	● 4 Teachers ● From 25 to 45 y/o ● Semi-structured in-depth interview ● (L1/ L2)
Students (participants)	Total number Age Academic year Way of participating	● 191 students ● From 18 to 26 y/o ● 2023-2024 ● Questionnaire
Technicians(participants)	Total number Age Way of participating	● 2 Technicians ● From 35 to 45 ● Semi-structured in-depth interview

Table 2. 2: Information about Sample and Instruments

2. 2. 3. 1. Observation

Adding "classroom observation" to our research as another way to collect data was necessary to strengthen and validate our use of different research tools and explore potential areas of interest. Observation is considered one of the essential scientific tools and instruments used to gather qualitative data. It involves systematically observing people, events, behaviours, and practices to address a research question (Cohen et al., 2018). In simple terms, Classroom observation allows researchers to directly observe and record classroom dynamics, providing insights into the complex realities that questionnaires or interviews may not fully capture. In this study, we conducted a structured classroom observation where the observers predetermined the issues and objectives related to the research problem to be observed, serving the overall research study.

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The researchers took part in numerous observation sessions that spanned an extended duration, commencing from the initial semester in October and continuing until the end of the second semester in May. This observational approach is referred to as a longitudinal study, which Caruana et al. (2015) describe as a method for gaining a comprehensive understanding of the extent and trajectory of change over time. The researchers focused on observing the same sample to track the progression of the lab atmosphere including teachers' use of technology and the development of student's communication skills over time and their attitude.

The researchers developed the grid of classroom observation (Appendix 1) which contains most of the elements that need to be checked to observe how the four EFL oral expression teachers are effectively implementing lab into their courses and explore the challenges they faced while delivering the lesson as well as to evaluate the students' attitude, interest, engagement toward using technology to improve their communicative abilities. Moreover, the Four (4) teachers willingly agreed to allow the researchers to attend and observe their classes. Before the observation process, they were fully informed about its purpose, as the researchers aimed for validity, reliability, and authenticity. The teachers gave their permission to use the gathered information to accomplish the observation process throughout the academic year. In order to avoid any sort of disturbance, we opted to sit in the back and observe all the activities during each session.

The classroom observation aims to provide enough information about the effectiveness of implementing a lab in Comprehension and Oral Expression sessions and its impact on overall communication skills. It also aims to thoroughly measure the extent to which the TPACK model is effectively integrated into the language laboratory to help teachers improve their students' communication skills and how teachers utilise the three key components of the TPACK (Technological Pedagogical Content Knowledge) model - Technological Knowledge,

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Pedagogical Knowledge, and Content Knowledge - in a balanced manner according to specific criteria.

The laboratory activities involved the use of various technological tools, which allowed for detailed observations that emphasized the importance of the Technological Pedagogical Content Knowledge (TPACK) model. This model is recognized as a framework that promotes the successful integration of technology into the learning and teaching process. In line with this, the TPACK (Technological Pedagogical Content Knowledge) model is an educational framework emphasising integrating technology, pedagogy, and content knowledge in the teaching and learning process. According to this model, effective teaching involves a balanced consideration of three key elements: content knowledge, pedagogical knowledge, and technological knowledge. The TPACK model recognises the interdependence of these three knowledge areas and emphasises the importance of balancing them in order to achieve effective teaching and learning outcomes. It is essential to understand that teaching in a lab is a complex skill, where teachers need to acquire three key skills to ensure that they meet the learners' needs. These skills are the foundation of the TPACK model, which outlines what teachers should know to incorporate technology into their courses effectively.

The following table summarises the classroom observation, including the observation's date, timing, number of students enrolled in the lab sessions, and academic level (L1/ L2).

Dates	Timing	Number of the students	Academic level
October 14	10.00- 11.30	23 students	L1
October 16	10-11.30	23 students	L1

October 28	11.30-13	22 students	L1
November 04	8.30-10	20 students	L2
Novermber 06	8.30-10	22 students	L1
November 08	11.30-13	20 students	L2
November 22	10-11.30	21 students	L2
November 27	13-14.30	18 students	L2
December 6	10-11	21 students	L2
February 26	11.30-13	22 students	L2
March 02	8.30- 10	24 students	L1

Table 2. 3: Classroom Observation dates, timing, and levels.

2. 2. 3. 2. Interview

Interviews are considered a controlled interaction between a researcher and an individual, primarily aimed at gathering available data. (Seliger &Shohamy, 1989). Interviews serve as an invaluable tool for gathering data and obtaining insights from individuals. They provide a personalised and detailed understanding of a particular topic or situation, allowing researchers to capture rich details, nuanced experiences, and personal perspectives from participants. Additionally, by observing body language and gestures, interviews enable the researcher to obtain additional valuable insights.

The researchers conducted semi-structured, in-depth interviews with both EFL teachers and technicians. They initially prepared a set of questions to be asked during the interviews. However, during the interviews, they adapted and added questions based on the responses of

the participants. In order to conduct a successful interview, it is essential for the interviewers to create a welcoming and comfortable environment for the interviewee. When the interviewee feels at ease, they are more likely to freely express their thoughts and provide insightful responses. Building a friendly atmosphere fosters open communication and allows for a more productive exchange during the interview process. Accordingly, Mason (2002) emphasises the spectrum of tasks involved in interviewing, stating that the researcher needs to listen to what is being said, understand it, assess its relevance to the research questions, and decide how to phrase the next question at any given time. Therefore, the careful consideration of each detail provided by the participant is crucial for capturing meaningful and valuable responses. Additionally, it is crucial to mention that certain questions were excluded during the interviews because the researchers determined that they were either unnecessary or had already been addressed by the participants when answering previous questions.

2.   2 .3. 2. 1. Teachers' Interview

For this study, a semi-structured interview was chosen due to the limited number of participants - only four EFL teachers were involved. As Richards (2001), this method is suitable for smaller groups. The semi-structured, in-depth format allows for mutual interaction between the interviewer and the interviewee, providing the interviewer with the flexibility to modify the sequence or wording of the questions based on the answers provided by the interviewee. Moreover, it enables the interviewee to express their ideas freely without any restrictions. This interview technique is considered to be highly beneficial for the investigator. The selected participants for this study are EFL teachers from the University of Ain Temouchent Belhadj Bouchaib, who were purposefully sampled as they are the sole Oral expression teachers in the Department of Letters and English Language. The research aims to investigate the effectiveness of language laboratory sessions through the application of

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TPACK, specifically in improving EFL students' Comprehension and Oral Expression skills and enhancing their overall speaking abilities.

The interviewee received an email with an information sheet that included the study's contents, the title, and a contact list with the supervisor and researchers' names, email addresses, and phone numbers. Before the interview began, the researchers gave the teachers a code of ethics to sign after the researchers, which outlines our intentions for the information they provided, as well as an information sheet. It also ensures that the interviewee's identity will remain anonymous and that the confidential data they supply will not be shared with outside parties. Additionally, the teachers have the option to withdraw from the study within 15 days.

The interview (Appendix 3) was divided into different sections to make asking the questions more organised. The first part focused on the professional background of teachers. Its purpose was to evaluate the teaching experience of university instructors, specifically in oral expression. The second part thoroughly examined the teachers' opinions and responses to integrating language labs in oral expression classes. It delves into the challenges teachers encounter when teaching English through language laboratories, including the specific programs used during their lessons, with the aim of identifying and understanding the various challenges and obstacles they face in this setting. The third part revealed the strategies and techniques used by EFL instructors in teaching Comprehension and Oral Expression. It sought to gauge their students' enthusiasm and level of engagement in incorporating technology. The subsequent section addressed assessment, exploring how much teachers incorporate assessment into their teaching, how they assess their students, how they give feedback, and which technological tools they use. In the following section, a separate area was designated for teachers to discuss their perspectives and expectations regarding the language laboratory and related aspects such as the future development of the labs. Lastly, the teachers were given the

opportunity to offer advice, suggestions, and feedback about the use of the language lab, sharing their thoughts freely, each from their own unique perspective.

2.   2. 3. 2. 2. Technicians Interview

The interview, a qualitative research method, is recognised for its ability to yield valuable data. It acts as a complementary tool for gathering information from individuals, allowing them to provide detailed insights and express their opinions on different scenarios. Consequently, the researchers conducted interviews with technicians (Appendix 4) to delve further into the current study and explore various perspectives to understand better the root cause of the issues faced by the laboratories. Before starting the interview, the researchers summarised the content of the information sheet in Modern Standard Arabic (MSA), which contains the main objective behind conducting the research study. Then, the participants were given a consent form to sign. They agreed to sign the consent form before starting the interview. The researchers asked the participants if they preferred conducting the interview in Arabic or French. They chose Arabic, so the interview was translated into the standard Arabic MSA language. No recording was made because the participants refused to be recorded. Consequently, the researchers mainly resorted to note-taking.

2. 2. 3. 3. Questionnaire

In the field of foreign language research, questionnaires are widely used to gather data. The primary aim of scientific research is to obtain systematic answers to questions, and questionnaires can be a highly effective tool for achieving this goal. When well-structured, questionnaires can facilitate the collection of reliable and reasonably valid data easily and cost-effectively. Through carefully designed questions and response options, researchers can gain insights into a range of topics, such as language proficiency, learning strategies, and attitudes and beliefs about language use. A questionnaire is defined as "a document containing questions

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and other types of items designed to solicit information appropriate for analysis" (Babbie, 1990).

The questionnaire's primary objective was to evaluate the language laboratory's effectiveness in enhancing students' communication skills. The questions were created to address various subjects that could potentially influence students' communication abilities, such as the quality of teaching, access to resources, and the overall learning environment. The outcome of this questionnaire is anticipated to offer valuable insights that can be utilised to enhance the language laboratory and improve the students' learning experience. It is worth noting that the majority of the questions feature a five-point Likert scale to facilitate quick and easy data analysis for researchers and enable comparison of responses. The remaining questions offer alternative choices, taking into consideration the specific question.

The researchers utilised Google Forms to create the questionnaire, and the supervisor was included as a collaborator to review and modify the questions before they were given to the students. The questionnaire underwent a pilot test to ensure its clarity and comprehensibility for the students. The questionnaire was randomly administered to different groups of first- and second-year students at the Department of Letters and English Language. The researchers provided the students with a QR code to scan and a 4G wireless Wi-Fi router for those without internet access to facilitate accessibility and smooth operation. In order to reach the desired number of participants, the researchers shared the questionnaire with students via Messenger, teachers' Google Classroom, and sent it to some EFL teachers at the University of Ain Temouchent's Department of Letters and English Language via Email.

The questionnaire aimed to collect insights from students regarding the language laboratory. It consisted of two parts. The initial part contained a consent form that offered a short summary of the research specifics and requested the students' consent to participate, with

the choices of "Yes" or "No". The second part involved fifteen questions covering various aspects of the language laboratory. Certain inquiries utilised a Likert Scale for responses, while others provided multiple-choice options.

The initial question was asked to gauge students' academic proficiency and determine which level benefited most from the laboratory. The subsequent question was employed to evaluate students' language proficiency and language skills. Question three was intended to assess students' proficiency in using technology and their engagement with technology for academic purposes. Question four aimed to assess students' comfort level, willingness to embrace technology, and familiarity with various digital tools to improve their communication skills. Question five was aimed at determining if students benefited from the lab in terms of enhancing their communication skills, including speaking. Question six sought to gather information about the resources that teachers utilise during the COE sessions and allowed participants to select multiple options. The reason for asking the seventh question was to assess the extent to which the language laboratory has supported the enhancement of students' language skills. This particular question consisted of four criteria representing an individual's language skills, including speaking, listening, pronunciation, vocabulary, and grammar. Each criterion offered respondents the opportunity to rate their skills on a scale of 1 to 5. The eighth question was included to understand learners' personal opinions on whether their experience with language labs has helped them enhance their confidence in communicating in English.

Furthermore, the purpose of asking the ninth question was to gain a deeper understanding of how learners perceive the impact of language lab sessions on their overall communication skills compared to traditional classroom interaction. Question ten aimed to evaluate how students perceive the effectiveness of their teacher's teaching methods and strategies in language labs for enhancing their communication abilities. Moreover, the eleventh question is intended to understand how teachers make use of language lab facilities to assess

their students. The twelfth question aims to gain a deeper understanding of how feedback is used in Comprehension and Oral Expression sessions. Besides, question thirteen is designed to evaluate the extent to which the feedback given to students is applied outside of the laboratory setting. Lastly, question fourteen seeks to obtain valuable insights into students' preferences for language lab sessions to improve our understanding of their satisfaction levels. Finally, question 15 aims to gather students' views on the future development of language labs in Oral Expression classes.

After conducting observations and interviews, the researchers decided to use the questionnaire as the final step in collecting data. This sequence was intentional to ensure that all previous study aspects, such as data collection protocols and procedures, were followed thoroughly before gathering participants' feedback about the language lab. Since the lab was a new environment for them, we were interested in understanding their perception after two semesters of study, where they could discover new things and face challenges and issues. This approach was implemented to maintain the overall quality and integrity of the study.

2.   2. 3. 3. 1. Piloting the Questionnaire

Performing a good research study with appropriate experimental design and precise performance is essential to achieve high-quality results. Assessing its feasibility before conducting the primary study can be highly advantageous. The first measure of the entire research protocol is a pilot study. Hence, in social science research, the term pilot study is used in two distinct ways. One way refers to feasibility studies, which are "small scale version[s], or trial run[s], done in preparation for the major study" (Polit et al., 2001: 467). However," it can also be the pre-testing or 'trying out' of a particular research instrument" (Baker 1994: 182-3).

Conducting pre-testing can serve as a crucial initial step in a research study, as it can provide valuable insights into potential pitfalls or issues that may arise during the main research

project. This process can help identify potential flaws in the proposed methods or instruments, allowing researchers to make necessary adjustments to ensure the project's success. As stated by De Vaus (1993: 54), "Don't take the risk, pilot test first" - piloting research can have numerous benefits, such as developing and testing the adequacy of research instruments, establishing the effectiveness of the sampling frame and technique, and assessing whether the research protocol is realistic and workable.

To validate the clarity and comprehensibility of the questionnaire before administering it to the sample, the interactive nature of exploratory research made it easier to pilot the research tools. A pilot questionnaire was conducted with 32 EFL students at the Department of Letters and English Language, University of Ain Temouchent Belhadj Bouchaib, First year (L1) of group 1, to examine the clarity and feasibility of the research questions. The two main objectives of this pilot study are to test the validity of the research question and to examine students' feedback and perceptions about the effectiveness of language labs. The pilot questionnaire was divided into two sections; the first section involved a summary of the study's main details, including a contact list of both researchers and the supervisor, followed by informed consent where they choose to participate in the research as anonymous participants. The questionnaire involved 16 questions and was piloted online in the form of Google Forms, yet the researchers were present in the class with the sample to answer and provide help when needed.

Throughout this process, the researchers provided the students with a quick response code(QR) to be scanned and a wireless wifi router (4G) in case they did not have internet in order to facilitate accessibility and to work at ease. Before administrating the pilot to the sample, the supervisor made some remarks regarding question reformulation, the use of simple vocabulary, and the objective of each question. In line with these questions, Some questions and instructions were modified due to the ambiguity that appeared during the process of piloting

the study, where the participants required further explanation of the word "extent" in questions n°7, 13, and 14 which have been replaced by the word "degree". In this line, the feedback received before or after the study's pilot phase helped the researchers to review the main objective of the students' questionnaire to ensure the efficacy and clarity of the study.

2.   3. Ethical Consideration

Ethical concerns regarding managing research, gathering data, and presenting findings are inevitably raised. In order to obtain ethical clearance, researchers adhere to a set of requirements. These requirements encompass principles such as objectivity, transparency, confidentiality, and anonymity. The consent of participants is of utmost importance, and their privacy, dignity, and freedom of choice must be upheld. It is crucial to avoid any form of bias, prejudice, data manipulation, or assumptions while maintaining the integrity and authenticity of the research. All collected data should be presented without any alterations. Furthermore, accountability, accuracy, and reliability are key considerations that researchers must prioritise.

2.   3. 1. Participants' Consent

Before starting the journey of collecting evidence about the study, The Participants were asked about their willingness to take part to participate. Similarly, A consent form is not simply about a person permitting you to involve them in research; it represents an agreement between the researcher and the study's subjects.

 All information disclosed in this section and the next one is utilised or shared only after obtaining permission and consent. The researchers made sure to obtain the informed consent of the sample either before or during the introduction of the research tool. Additionally, the research objective was clearly conveyed to the participants.

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Before commencing the interviews, the researchers provided the interviewees with a consent form. The form included an information sheet summarising the research study's main details and objectives, as well as a contact list with the researchers', supervisor's, and coordinator's names, emails, and phone numbers for further inquiries. Additionally, measures were implemented to ensure the confidentiality of the research, stating that information provided by the informants would be kept private among the researchers and the supervisor and that their identities would remain anonymous. Informants also had the option to withdraw from the study within 15 days. Both the researchers and the participants signed their names. Similarly, a simplified version of the consent form was presented to the students in order to ensure their understanding of its content. Using Google Forms for the questionnaire, students were required to click "Yes" if they consented to participate in the study and "No" if they did not. The primary objectives of the consent form were to protect the legal rights of both parties and ensure the confidentiality of the research in the event of any misconduct.

2.   4. Conclusion

The chapter outlines the methodology utilised in the study, illustrating the research design, investigation context, sample population, tools, and data collection methods used in this particular case study. Subsequent to this chapter, the research analyses and interprets data quantitatively and qualitatively, discussing the findings. It will also present a series of pedagogical recommendations.

Chapter Three: Data Analysis, Discussions & Recommendations

CHAPTER THREE: DATA ANALYSIS, DISCUSSIONS & RECOMMENDATIONS

3. 1. Introduction

In this chapter, we delve into the data analysis and discussion of findings from our comprehensive study on using laboratories to enhance English as a Foreign Language (EFL) communication skills. The investigation employed a mixed-method approach to provide a holistic view of the pedagogical effectiveness and practical implementation of laboratory settings in EFL learning environments. Three primary instruments facilitated this exploration: classroom observations provided real-time insights into the interactive dynamics and practical application of language learning in laboratory settings; interviews with teachers and lab technicians offered in-depth perspectives on the operational challenges and educational benefits from the facilitators' viewpoints; and a detailed questionnaire administered to students captured their experiences, perceptions, and the tangible impacts of laboratory use on their communicative competence. Through this triangulated methodology, the chapter synthesises qualitative and quantitative data, unveiling the multifaceted role of laboratories in fostering EFL proficiency while also addressing the complexities and nuanced outcomes of integrating such technology-driven pedagogical tools in language education.

3. 2. Classroom Observation

The observation was carried out with precise attention to detail, taking into consideration various elements such as Technological Knowledge, Pedagogical Knowledge, Content Knowledge, student engagement, assessment and feedback, TPACK integration, and other relevant factors. A detailed observation grid was used to evaluate the main criteria during the observation Comprehension and Oral Expression sessions. This grid consisted of 52 items, as outlined in Appendix 1, which the researchers carefully assessed. Effective utilisation of the language lab and successful implementation of the TPACK framework in the teaching process

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would be indicated if a teacher scored well on the majority of these items. Each section was individually analysed, resulting in findings organised in the following table:

Observation Area	Observation Criteria	T 1	T 2	T 3	T 4
Technological Knowledge	Integration of language lab technology into the lesson plan.	√	√	√	√
	Proficiency in operating language lab equipment.	√			√
	Utilization of language lab software/tools.	√	√	√	√
	The availability of a wide range of ICT tools.	√	√	√	√
	Proficient at using technological tools for language acquisition.	√	√	√	√
	Integration of speaking-specific technologies into the lesson.				
	Identify any technical concerns experienced, primarily linked to speaking activities.				
	Technical challenges are addressed effectively.				
	The presence of experienced technicians in case of technical difficulties that could not be fixed.				
Pedagogical Knowledge	Alignment of language lab activities with learning objectives.	√	√	√	√
	A variety of language lab activities were employed.	√	√	√	√
	Adaptation of activities to students' proficiency levels.	√	√	√	√
	Effectiveness in designing and delivering speaking activities..	√	√	√	√
	Incorporation of Communicative Language Teaching (CLT) principles.	√	√	√	√
	Use of a variety of instructional strategies suitable for EFL learners.	√	√	√	√
	The application of Communicative Language Teaching (CLT) principles in the language laboratory.	√	√	√	√
	The willingness to employ ICT tools in Language labs.	√	√	√	√
Content Knowledge	Selection of appropriate content for language lab activities.				

Category	Item				
	Incorporation of authentic materials into language lab activities.	√	√	√	√
	Linkage of language lab activities to course curriculum.				
	Modify speaking assignments to fit EFL learners' competency levels.	√	√	√	√
	Identification of specific pronunciation activities incorporated into the lesson.	√			
	Teacher support for the development of fluency through speaking practice.	√	√		
	Teacher facilitation of vocabulary and grammar acquisition during speaking activities.	√	√	√	√
Student Engagement	Students are actively engaged in language laboratory activities.	√	√		
	Positive Impact of language lab activities on student learning.	√	√		
	The teacher facilitates student interaction in the technological environment.	√	√	√	√
	Enthusiasm and willingness to communicate in English in language lab activities.	√	√		
	Identification of signs of confidence in speaking English.	√	√		
	Meaningful interactions among students during speaking activities.	√	√	√	√
	Observation of opportunities for students to apply newly learned language structures in their speech using different ICT tools provided in the Lab.	√	√	√	√
Assessment and Feedback	Evaluation of students' fluency in spoken English.	√	√		
	Students' language skills were assessed after language laboratory activities.	√	√	√	√
	Improvement in different language skills.	√	√	√	√
	Pronunciation challenges are addressed during speaking tasks.	√	√		
	Monitoring of peer interaction during speaking tasks.	√	√	√	√
	Alignment between assessment criteria and language proficiency standards.	√			
	The teacher provides feedback on students' speaking performance.	√	√	√	√
	Observation of opportunities for peer feedback or self-assessment.	√	√	√	
	Assessment shift from traditional to ICT lab-based technologies.	√			
TPACK Integration	The effortless incorporation of technical, pedagogical, and subject knowledge.				

	Evidence of TPACK principles in lesson delivery.				
	The integration of technologies in lesson delivery and different classroom activities.	√	√	√	√
	Ability to troubleshoot technological issues during lessons.	√	√	√	√
Overall Observations	The use of ICT tools enhanced students' confidence over time.	√			
	Willingness to use language labs in other modules.	√	√	√	√
	Positive attitude towards more implementation of Language labs in the future.	√	√	√	√
	Effective teaching practices and strategies were observed during the different lessons.	√	√	√	√
	Identification of aspects of speaking instruction that could be strengthened for improved outcomes.	√	√	√	√
	Enhancements could be made to improve student learning.	√	√	√	√
	Additional observations or insights are provided from the classroom observation, particularly related to speaking skill development using language laboratories.	√	√	√	√

Table 3. 4: Observation Grid Results

3. 2. 1. Technological knowledge

The laboratory is equipped with computers for both teachers and students. The teacher's computer is used to control and monitor the students' computers. The software in the laboratory has various features that enhance the teaching and learning process. Additionally, there is a projector for screen sharing and headphones for listening to audio.

It was noticed that, to some extent, teachers have limited dependence when delivering their lessons. This was mainly due to technical difficulties experienced during the lesson delivery. These difficulties were beyond their control and could not be fully resolved due to the absence of a technician responsible for immediate assistance. They used the central computer and sometimes their personal computers when needed. These computers were connected to the

projector in the classroom since it was the only tool that worked well in the lab where they were used to present lessons and activities.

Additionally, the teachers did not depend heavily on particular programs or technologies for assessing their students' speaking abilities. Instead, they used oral tasks and activities to practice pronunciation, tone, and pitch. Occasionally, they integrated audio-visual materials with headphones to improve the student's listening and speaking skills. It was clear that the teachers were familiar with these tools, as they had already taken personal initiatives to enhance their proficiency using the electronic devices available in the laboratory since they had not received any training on how to use the laboratory.

Furthermore, teachers often only used the whiteboard to demonstrate some examples they gave while explaining when the writing skill was needed. Students, on the other hand, were very responsive towards such use. They also opted to use their smartphones during the lesson by taking pictures, recording the teachers' explanations, or using online dictionaries.

3. 2. 2. Pedagogical Knowledge

This particular section of observation delves into the pedagogical aspect of teaching, specifically looking at the various methods, approaches, and activities teachers use to deliver their lessons effectively. Through careful and intentional design, all of the observed teachers strongly emphasised the learning objectives for their students. This involved creating tailored activities and content that met the specific needs of each student, ensuring that the material being taught was relevant and applicable to their learning objectives. Furthermore, the researchers took note of the teachers' efforts to effectively integrate ICT tools into their methods and approaches, utilising an eclectic approach to cater to learners of different proficiency levels. The course activities were designed with great care by the teachers to cater to students of

different levels. The teachers ensured that every student could understand the concepts by varying the instructions and activities. This variation in instructions and activities helped ensure that each student grasped the knowledge. These activities included filling in gaps, role play, group discussions and other interactive exercises. Some teachers even went the extra mile to make the environment friendly, energetic and active by incorporating funny social media posts, using humour and creating a positive classroom atmosphere.

During the observation, it was evident that the teachers primarily employed the communicative approach in their teaching methodology. They encouraged open discussions and interactions among the students, fostering an environment conducive to exchanging ideas and opinions. The teachers actively facilitated these discussions, offering valuable feedback and insights that aided in developing the student's critical thinking and communication skills.

3. 2. 3. Content Knowledge

In this section, researchers tend to focus on the type of content being used within the lab. They examine the types of activities implemented in the lab, the integration of lab-related activities into the course curriculum, and the role of the teacher in enhancing student oral abilities. Not only that, but teachers also noticed that they emphasised the importance of communicating and speaking in the English language. In this section, the researchers found that there was no specific content designated for teaching in the language lab. However, teachers made efforts to incorporate and diversify activities and assignments according to the students' levels and needs; in addition, the use of authentic materials, such as real-world context content and audio recordings of native English speakers, was observed as a means of enhancing listening and speaking abilities. No specific software programs or applications were available to enhance speaking and pronunciation skills. However, some teachers supported the learners in developing their language skills naturally, focusing on achieving a basic level of fluency. All

the teachers prioritised correct grammar and vocabulary usage through various oral activities, including presentations, debates, role plays, and so on.

3. 2. 4. Student Engagement

This section of the observation report delves deeper into the students' participation in the Comprehension and Oral Expression sessions. The observation showed that the students' engagement and willingness to communicate are influenced by different factors: the content being taught, the activities used to teach it and the methods used by the teacher. The students tend to become bored and disengaged when the activities are too difficult and go beyond their proficiency level. In addition, when the content being taught is relevant and exciting to the students, they are more likely to engage and communicate during the class. Similarly, the teaching methods employed by the teacher play a significant role in capturing the students' attention and keeping them engaged. When the teacher uses creative and innovative teaching tools, especially those that are based on technology such as PPT presentations, audio/video recording, Kahoot, and online quizzes… etc. where the students become more interested in the topic. Moreover, when they struggle to find the necessary vocabulary related to the theme being taught, it affects their confidence in effective communication.

To overcome these challenges, the teacher provides support to the students through varying tasks and rephrasing the laboratory activities based on the student's interests. Additionally, the use of ICT tools plays a crucial role in fostering the students' motivation, as they are tech-savvy i.e. they possess a great knowledge regarding technology use . The teacher also facilitates communication and interaction among the students, allowing them to engage in meaningful discussions and conversations where they can apply new language structures acquired from various ICT tools, such as online dictionaries found on their mobile devices.

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3. 2. 5. Assessment and Feedback

When assessing students and providing feedback, researchers observed that teachers evaluated students after each lab activity to identify and correct their mistakes. In this process, teachers assumed multiple roles: they acted as guides, encouraging participation and providing knowledge. For instance, when students encountered difficulties with pronunciation, teachers made a conscious effort to address and monitor these errors during speaking tasks like peer interactions or group discussions. The aim was to rectify the errors and prevent their recurrence.

Additionally, we have observed that the method used for evaluating students involves distributing printed handouts in the form of tests and exams. During the assessment process, the teacher plays an audio or video for the students to listen to, after which they are provided with the printed handout containing questions related to the audio or video. Additionally, one teacher had a specific method for administering exams that heavily relied on the use of ICT tools, such as computers, projectors, and speakers. In fact, some students even brought their own personal computers to class. The teacher assigned topics and asked students to prepare PowerPoint presentations. The students brought their USB drives to save their work; some even emailed their presentations to the teacher the day before the exam. The students were expected to demonstrate their creativity and research skills by creating engaging and informative presentations. Some students took it further by incorporating interviews, videos, and recordings into their presentations, making them even more captivating and dynamic. When assessing the student's performance in the COE exam, the teacher considered several criteria (Appendix 5). These criteria included fluency, communicative ability, accuracy, grammar, vocabulary, pronunciation, and content.

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3. 2. 6. TPACK Integration

Since this study is based on longitudinal observation, the researchers focused on various areas, including the abovementioned elements. Additionally, they examined the effective integration of the TPACK model into the Oral lab session. Specifically, they investigated the role of teachers in successfully incorporating all aspects of the framework, such as technological tools, pedagogical practices, and subject knowledge, into their teaching to achieve a successful lab integration. The observation results revealed that the incorporation of the Technological Pedagogical Content Knowledge framework was not well applied. This means that certain principles and basics of the model were missing during language lab teaching. As a result, the lab atmosphere lacked proficiency, and there was a disconnect between teachers and students to some extent; this was due to the difficulties that arose during lesson delivery that was mainly responsible for the teachers' inability to manage everything effectively. Nonetheless, some teachers showed confidence in resolving these issues and handling the situation.

3. 2. 7. Overall observation

The section presents additional findings from researchers who conducted careful observations. The study revealed that students' confidence levels had been hindered over time due to limited access to ICT tools, especially from the first to the second semester. However, despite this, students remain enthusiastic about possibly having more extensive lab sessions in the future. It was noted that most, if not all, of the students are audio-visual learners with a positive attitude towards using the ICT in the language lab. The researchers also observed that the students strongly desired additional language sessions. Additionally, the researchers observed that teachers vary their methods, techniques, and teaching practices between sessions and for different levels, considering the content being taught. The teachers demonstrated a commitment to self-development by becoming familiar with the technological tools used in the

lab. They even sought assistance from students or other more knowledgeable individuals when needed. Furthermore, some teachers emphasised the importance of accurate speaking, including intonation, pitch, pronunciation, and tone, and provided immediate feedback. The researchers also made some additional observations about the way teachers instruct activities to students. Firstly, it was noted that the zero-paper policy, where Higher Education Algerian policymakers try to eliminate the printed handouts and substitute them with technological tools, was not fully implemented as printed handouts were used in classes when technical issues arose in the laboratory; most students preferred printed handouts over screens, finding them more practical and time-saving instead of waiting to resolve lab-related problems. Additionally, some teachers highlighted the fact that technology could have a negative impact on writing skills and lead to laziness. Consequently, the teachers blended their methods between teacher-centered and student-centered approaches.

3. 3. Interview

In this section, the researchers support the data collection process with interviews conducted with teachers and technicians. Both interviews are analyzed as follows:

3. 3. 1. Teachers' Interview

In order to enhance the reliability of the research, the researchers conducted semi-structured, in-depth interviews to gather more valuable data. The interview protocol consisted of twenty-six (26) questions; it is worth noting that not all questions were asked, and some were added based on the teachers' responses. The interviews were conducted with four (4) teachers from the Department of English at Belhadj Bouchaib University. The interview entails four headings: Teachers' professional profile, Technicality and functionality of the labs, Assessment and technology, and finally, Comments and future recommendations. The qualitative data analysis assessed the labs' effectiveness based on various teachers' perspectives. Additionally,

it sought to delve deeper into the laboratory setting and uncover teachers' primary challenges during lab instruction.

In light of this, the interview was undertaken to get clear answers and to be capable of comparing the obtained results. Therefore, teachers were purposively selected and offered an information sheet summarising the whole study, as well as a consent form to be signed (Appendix 2). The interview lasted from 1 to 2 hours for each teacher; the conversations were only in English since the interviewees chose to speak in English and were comfortable with it.

In this vein, to ensure a comprehensive presentation of the data, the researchers interpret and describe the evidence in detail. This approach allows for a thorough understanding of the findings and provides solid support for the results of our analysis.

3. 3. 1. 1. Teachers' Professional Profile

This section aims to assess the level of teaching experience among university instructors, particularly in the area of oral expression. One teacher, with a remarkable eighteen years of overall teaching experience and ten years specifically in oral expression, possesses a wealth of expertise that should not be underestimated. Consequently, interviewing her would be a more effective way to leverage their valuable knowledge.

Additionally, three instructors have been teaching at the university for approximately two years, with two of them indicating a two-year involvement in teaching oral expression, while the remaining instructor has one year of experience in the same field. Furthermore, the teachers are familiar enough with utilizing the language laboratory and adeptly incorporate technological resources to enhance their pedagogical approaches. By employing diverse digital instruments, they effectively captivate students and foster an interactive and immersive learning environment. It is essential to highlight that the three teachers still require training on effectively utilising the laboratory.

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In this light, one teacher declared that:

> Training is mandatory for all staff, not just those assigned to teach Oral Expression in order to easily use the labs … I am not asking them to train us about all the aspects of the lab but at least the main features that the teacher may need for example how to control it, how to fix some problems that we may face … etc.

This ensures they are equipped to handle any issues that may arise during a session, as problems can occur unexpectedly. Moreover, although they did not get any training, they took the initiative to familiarise themselves with the software program used in the laboratory to integrate it into their teaching practices seamlessly. They stressed the importance of receiving proper training. However, one teacher mentioned that she had attended a brief 2 to 3-hour training session on software usage due to prior experience in the old laboratory with versatile software utilised by various fields such as mathematics and computing. Despite this, their extensive teaching experience significantly enabled them to utilise the lab effectively.

3. 3. 1. 2. Technicality of the Laboratory

While acknowledging that the technical aspects of the laboratory may not be perfect and that teachers face many problems there, most teachers view it as a valuable and essential resource. One teacher drew from previous experience teaching oral courses and working in the old language laboratory at the University of Ain Temouchent Belhadj Bouchaib. Another teacher had the opportunity to teach in the old lab, but it was not functioning correctly, so they used it as a normal setting. The researchers asked the participants if both labs had similarities since two teachers used them. Thus, the participants emphasised that while the new lab shares some similarities, the old one lacks certain features and functionalities.

Additionally, two teachers declared they had no prior experience teaching oral expression sessions in a laboratory environment. The educators were asked about their difficulties while working in the new laboratory, and their responses varied. They shared concerns about software and hardware issues, particularly emphasising software programs. These concerns included screen glitches, program lagging, poor software quality, and a lack of knowledge about the software. The problems encompassed both the insufficient quantity and subpar quality of the equipment. The limited space prevented the language laboratory class from accommodating all students simultaneously since the lab only had 24 seats, and most groups consisted of more than 35 students. Therefore, the teachers had to split the groups into subgroups. As a result, one teacher expressed concerns about her inability to complete the syllabus, thus not achieving all the course objectives.

Furthermore, the laboratory was established without providing training for the teachers, and since there was a lack of technicians or operators to assist with the laboratory, the lab experienced lagging issues, making it unusable at certain times because teachers struggled to operate it. Moreover, each teacher utilised different techniques that were not consistent with one another. In terms of human resources, the problem was the inadequate training provided to the teachers on how to operate the devices in the language laboratory, how to teach using various techniques, and how to manage the laboratory effectively.

3. 3. 1. 3. Teaching in the Laboratory

The teachers were asked about the approach required while teaching in the laboratories. All the teachers affirmed that they employ the student-teacher or interactive approaches. In these approaches, the teachers ensure that their students actively participate in the learning process, as Comprehension and Oral Expression heavily rely on the students. The students are encouraged to listen, comprehend, and produce the target language. The teachers were asked

for their viewpoint on students' progress in terms of their engagement and motivation compared to the first semester. All the teachers expressed that they observed a significant enhancement in the level of interaction among students and with the teacher. Furthermore, a teacher also highlighted that : "the progress observed can be attributed to the student's familiarity with the surroundings, particularly the laboratory, as well as their exposure to technology in their classes…"

The teachers added that in contrast to the first semester, one teacher noted that the students displayed a greater sense of connection with their teachers upon returning from holidays. They exhibited enhanced comfort levels, expressed themselves more freely, and radiated positivity through their smiles and laughter. Moreover, the teachers further mentioned that the students displayed a higher level of engagement when technology is integrated into the lesson, as they are often referred to as digital natives and are accustomed to screens and technology. Teachers emphasised that technology is considered a valuable tool for improving student interaction and engagement. However, how teachers utilise it, along with their selection of strategies and techniques, is equally significant.

3. 3. 1. 4. Assessment and Feedback

The teachers were inquired about the existence of any specialised programs for assessing students and how they incorporate technology into the assessment process. All the teachers unanimously expressed that they do not utilise laboratory materials for assessing their students. This is primarily due to the unavailability of suitable programs for this purpose and their lack of knowledge on how to effectively use them, despite their attempts to explore such options. Most agreed that the software has many functions but requires a purchased key to use it. This inadequacy in training results in technology being employed solely to expose students to auditory stimuli. The teachers utilise headphones to facilitate listening activities and

subsequently distribute printed handouts for students to respond to. Consequently, they continue to rely on traditional methods for assessing their students. One teacher objected to this method: "Why do we have equipped language laboratories and invest money in software that cannot be properly utilised with all of its capabilities and features?"

In addition, she explained to the researchers how she utilised technology to assess her students. Lacking specialised assessment programs, she resorted to recording her students during presentations. To save time, she employed Google Docs for voice typing at home, allowing her to listen and identify errors made by the students. The teacher emphasised that specialised programs would greatly benefit teachers and students.

Moreover, the teachers were questioned about who provides feedback within the classroom environment: whether it is the teacher himself or if a software feature enables students to receive feedback on errors. All participants agreed that there are no dedicated programs for this purpose; instead, they evaluate students independently. Moreover, they actively encourage peer feedback to cultivate a strong sense of unity and collaboration among their students.

3. 3. 1. 5. Teachers' Perspectives

Within this section, Teachers were asked about the most efficient software and programs for enhancing Oral Expression and the materials they use in their teaching practices. The majority of teachers rely on the same E-book, known as Unlock, for their teaching materials. Additionally, they frequently incorporate audio and video resources from YouTube. However, they emphasised having a variety of options available to overcome any limitations in teaching as well as to make the learners more interested in the course.

In addition, they were questioned on their beliefs regarding the potential growth and emphasis on language labs in the future, particularly in Oral expression classes, and whether

the integration of language labs in Oral classes would be successful across all Algerian universities. The responses varied among teachers, but they all shared the same perspective that language labs hold significant value.

Additionally, they believe that Algerian universities will increasingly incorporate language laboratories as technology serves as a means to enhance and streamline the teaching and learning experience. In this context, a teacher expressed that the availability of laboratories would prove advantageous, particularly for students lacking internet access or personal computers at home. Consequently, ensuring all students have access to language learning labs is highly beneficial. The responses varied among participants, suggesting that each teacher had specific desires to improve teaching and learning. By examining the answers, we can conclude that if the problems are not resolved, teachers will not use the labs. People tend to avoid using things that have issues. If the problems are fixed and there is a willingness to address them, the teacher would utilise the labs sophisticatedly. In fact, many universities in Algeria have modern labs and training centres for teachers. These programs benefit teachers and enhance the learning experience so that students can meet course objectives. One participant predicted that laboratories would be conducted online, utilising virtual reality devices to establish a teacher's presence within the comfort of one's home. This approach is already being put into practice in certain universities to facilitate interactive teaching

3. 3. 1. 6. Further Recommendation

Teachers offered advice, suggestions, and feedback on using the language lab. Despite differing perspectives, they aim to improve language labs considering current obstacles. They also agreed on the significance of receiving training in order to utilise the language laboratory effectively. More so, this training would enable them to engage in meaningful activities and adopt practical approaches.

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Furthermore, the teachers also agreed on the importance of having a technician present inside the labs. This is particularly crucial when the teacher faces any problems with the software or hardware, as the technician can effectively resolve them. Additionally, due to the countable problems that teachers faced while working in the language lab, they tended to vary their teaching methods since most teachers base their lesson delivery on the eclectic approach. Thus, the teachers all stressed how important the lab layout is. So, the teachers believe that arranging the seating in a U shape would be better than the current one to help students make eye contact and make them feel at ease. However, the limited space in the labs makes it difficult for the teachers to have different seating arrangements. As a piece of advice, only one teacher suggested putting/ adding a camera in a lab to facilitate the teacher's job, she mentioned:

> Cameras can be used without any issue. In countries like Japan, cameras are commonly used in labs and even during exams to monitor students. Installing a camera would allow the teacher to concentrate on the session and prevent potential issues such as damaging the materials of the laboratory

Concerning the remaining individuals involved, the researchers proposed the idea of cameras to gain knowledge about the teachers' perspectives. Most teachers were not entirely in favour of the idea because they felt it violated their right to privacy; however, they did acknowledge the potential benefit of using it to safeguard materials and ensure effective teaching and lab safety since it is difficult for the teacher to teach the lesson while maintaining the safety of the lab.

A participant brought up the issue of the internet's necessity in the lab due to the lack of labs and underutilised programs. The internet allows teachers to be creative in their teaching, as well as listen to and converse with native speakers, use websites and apps that improve oral communication skills, and engage students, such as Google Forms and online quizzes.

However, other teachers did not see the need to equip the lab with internet, as they believed that teachers should be responsible for preparing and bringing their own resources. One participant stated: "I don't think that we can use it yet; we just have to master how to use the lab then we integrate the net". Accordingly, the teacher expressed the opinion that before integrating the Internet, it is essential first to understand and master the features of the lab, as using the Internet without proper knowledge of the lab's functionality could cause disruptions.

The four instructors also highlighted the importance of enhancing the laboratory program due to its lack of development. They are facing numerous technical challenges and have all suggested upgrading the software being utilised.

In order to keep the students interested, a participant recommended using the general speaker in the lab in addition to the individual headphones in the event that she wishes to explain and listen simultaneously.

3. 3. 2. Interview of Technicians

To enhance the reliability and gain a deeper understanding of the present study, the researchers interviewed two technicians who worked or were responsible for language laboratories to gather additional data regarding the current work one of them was in charge of the old multimedia laboratory that was established in 2013, which was used by different faculties and served as the backdrop for the study. The interviews took place inside their offices since the interviewee felt at ease to be interviewed in this way.

3. 3. 2. 1. Technician's Professional Background

During the initial phase of the interview, the primary objective was to ascertain the participants' professional background. Both individuals possess extensive expertise in the field of laboratories, with one of them having been in charge of the previous multimedia lab. This particular lab was specifically created to cater to various disciplines within the university, not

only foreign languages. Participant A was responsible for instructing teachers on effectively using lab materials. Once the lab was set up, she attended the installation of the lab, and she was hired to be responsible for it. Moreover, since the teachers had limited knowledge about managing lab materials, she regularly engaged in sessions to provide essential guidance and aid.

3. 3. 2. 2. Technicality of the Laboratory

The interview shifted its focus to the laboratory and related subjects, such as the technicality and functionality of the lab. Initially, the researchers asked the interviewee to provide an overview of both the old and new laboratories. Both technicians agreed that the laboratory in question is a multimedia lab intended to incorporate technology as a key tool in the educational process. When asked about the differences between the old and modern labs, they mentioned that the materials used in both are identical - computers, headphones, a projector, digital versatile disc (DVD) speakers, and the teacher's computer, which also manages the other students' computers and has a list of them. As for the software utilised, the old lab uses a German program called NOVA. However, they are unsure about the name of the software used in the new lab, but they agreed that both laboratories share similar features. When questioned about the lab's teaching qualities, the respondents also acknowledged that it has many aspects that are useful for teaching English to speakers of other languages (EFL), especially in Oral expression and phonetics.

Furthermore, given that Oral Expression is based on making utterances and that spoken expression is based on sounds made by a speaker, the multimedia lab includes a program that can identify pronunciation errors made by students, including those involving intonation, pitch, tone, and so forth. This is primarily due to its inclusion of headphones and speakers, which empower students to delve into various sounds, listen to native speakers, and engage in

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language drills and production. Moreover, The Central Computers are connected to monitoring devices, enabling the instructor to listen, share and speak to the students individually or as a group. In other words, the teacher can use the computers to speak with a student alone while the others cannot hear them, and they can even use the computers to form groups and have discussions. Additionally, the instructor can view the students' screens from his own screen, control their activities, and exercise control over their computers by locking, unlocking, or shutting them down. Furthermore, the lab's ability to be used for conducting testing or exams was another thing the researchers were interested in discovering, and both interviewees agreed that students might be evaluated using the lab. In response to this question, one technician stated:

> ...The laboratory offers numerous functionalities for student assessment. It can be utilised to distribute exams or tests to students' computers, set time limits, and lock the computers once the time is up. The teacher can then view and grade the responses from their own device, providing immediate feedback, or download the answers onto a USB drive. Each student has his own PC screen where his or her name is integrated into the computer, and each student keeps his or her place the same and the Same setting as the new one…

It is important to note that both participants stated that they were the sole technicians at Belhadj Bouchaib University Centre as the laboratory began to attract attention from other universities such as Oran, Telemcen, and Sidi Belaabes. The University of Ain Temouchent Belhadj Bouchaib began to recognise the significance of incorporating technology into the teaching and learning process, particularly within the laboratory setting. Once the University Centre of Ain Temouchent Belhadj Bouchaib became an official university, it witnessed substantial growth and development, resulting in the establishment of multiple faculties. As a result of this expansion, each faculty now has its own dedicated technicians who are responsible for

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managing various tasks. It is widely acknowledged that laboratories should adhere to either the U-shaped layout or the standard seating arrangement, which entails the traditional setup of rows of tables facing a projector screen at the front of the room. A participant in the discussion supported the idea of the arrangement. Nonetheless, it was noted that the laboratory requires additional space in order to accommodate the U-shaped layout.

The researchers questioned the interviewees regarding the reason behind their decision to establish a new laboratory, even though the university already had one in place. Both technicians indicated that two main factors drove this decision. Firstly, the university experienced a substantial increase in student enrollment, resulting in the need for additional space. Consequently, the existing laboratory was being utilised as a regular classroom due to the limited capacity to accommodate around 20 to 24 students. This overcrowding eventually led to the lab's deterioration.

Following multiple observation sessions at the laboratory and four interviews with Oral Expression teachers, the researchers have determined several issues, such as program lagging, screen glitches… etc., that the lab is now dealing with. In order to investigate the underlying reasons for these concerns and devise a solution, the researchers gave the technicians access to the aforementioned problems, which they had identified through the analysis of observation and teacher interviews. In addition, the researchers inquired about any complaints they had about the current lab. While the participants' responses varied, yet they had common points, including that the lab's software is based on a network schema, where students' computers are truly linked to the teacher's central computers and any disruption caused by cable removal or replacement in another device such as teachers personal computers, this could also be a contributing factor. Additionally, the building in which the laboratory is situated has an electricity issue, which may be the primary reason for the screen glitches. Thus, a participant claimed

> … The teachers need to wait for the entire system to finish uploading since the lab has a big network that takes time. The teacher is responsible for powering on/off the students' computers to avoid any possible harm. Students must not do it on their own…

Later on, the interviewers delve further into exploring the resolution of the previously mentioned problems. They inquire about who is responsible for fixing any issues that arise and who offers assistance. Correspondingly, they asserted that:

> ..If there are issues regarding the hardware, such as problems with laboratory equipment like computers, projectors, cables, etc., we can offer assistance as it falls under our responsibility. On the other hand, if any challenges or issues arise with the software, the responsibility lies with the company that installed it to resolve them. We cannot address these issues without an open-source license, which requires payment to obtain access, modification, and distribution rights to the software program…

3. 3. 2. 3. Technicians Perspectives

The interviewers asked the technicians for their opinions regarding integrating the Internet and installing cameras within the labs. Both interviewees shared the same view on using the Internet in the lab - they opposed it. A technician questioned the need for the Internet when a fully equipped laboratory is available for teaching the language. She mentioned that typically, the teacher arrives to class well-prepared. So, there is no need for the internet. Additionally, regarding installing cameras in the lab, both technicians mentioned that it is against the law to have cameras there because it violates teachers' and students' freedom.

3. 3. 2. 4. Techncians' Recommendations

The interviewers asked the technicians if they had any recommendations regarding the laboratory. They responded as follows:

Training: The technicians explained that they are unable to organise official training sessions for teachers every year, as there are new teachers of Oral expression each year. Therefore, they suggest that teachers try to enhance their knowledge of using technology and the lab independently since it is easy to explore the software used.

Protecting the materials of the lab: The laboratory functions as a connected network, meaning that a malfunction in one device can lead to issues in other devices. Therefore, the technicians emphasised the significance of adhering to the provided instructions by refraining from attempting to alter or introduce new devices or cables into the system. This precaution is essential for teachers and students, who must ensure the safety and preservation of the materials.

Hiring a technician: The teachers have raised concerns about managing lab materials and requested technicians' assistance. Both technicians agreed that it is important to have a technician available to help teachers in case of any technical issues that may arise in the laboratory. Additionally, it is beyond the teachers' power to fix any materials. One participant made this point clear:

> It is not within our purview to consistently handle repairs; while we can provide assistance and guidance during major issues, we have other duties to attend to. It would be advisable for them to hire a dedicated technician in the laboratory whose sole responsibility is to address issues of it.

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3. 4. Questionnaire

The subsequent section analyses and presents the findings collected from the questionnaire administered to the students (Appendix 6). Each of the 15 questions is addressed individually and sequentially. It is important to note that the research study focuses on two distinct levels: the first (L1) and second (L2) year. Out of 368 students, only 191 responded to the questionnaire.
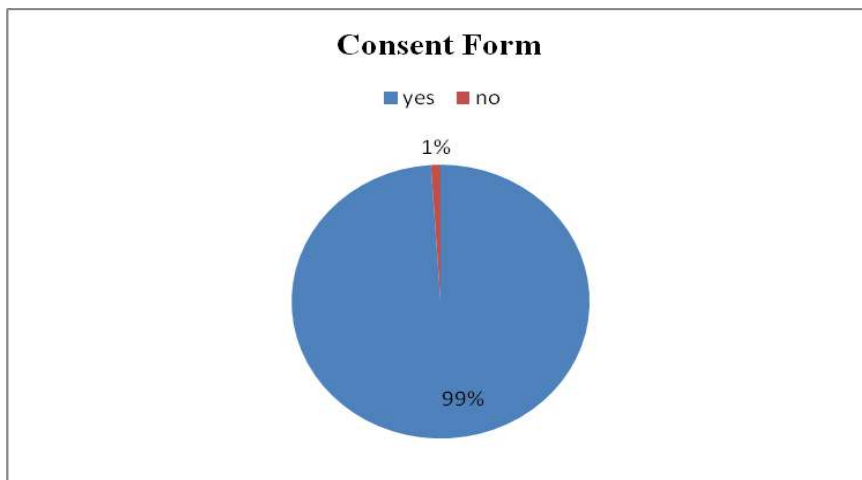
Graph 3. 9: Students' Consent Form

In order to conduct research ethically, a questionnaire was administered to a sample of students. The very first section of the questionnaire was a consent form (Appendix 5). It included two options: "Yes" and "No". Students who selected "Yes" confirmed their willingness to participate in the research, while those who selected "No" declined to participate.

Out of the sample of students who were approached for the research study, the graph below shows that 99% agreed to participate. However, 1% of the sample declined to participate in the research study, which is completely understandable as it is their right to choose whether or not they want to participate in any research study.

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The second section of the questionnaire consists of fifteen questions. Each question covers different aspects and contains various response options, including the Likert scale. The Likert scale ranges from "not at all" to "extremely," allowing respondents to indicate their agreement or disagreement with each question.

Q1: What is Your Current Academic Year?
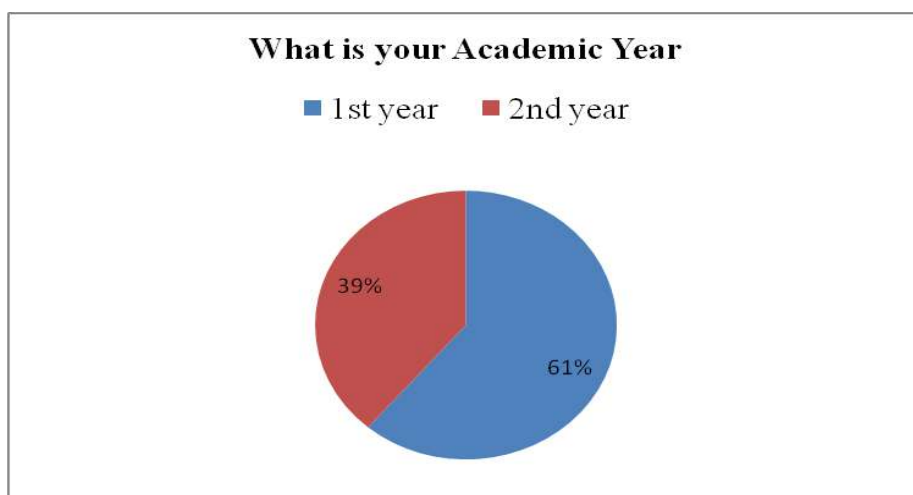
Graph 3. 10: Students' Academic Year.

According to the data presented in the pie chart, it can be observed that the sample comprises two categories of students - first-year and second-year students of English. Among them, the majority of the sample, which is 61%, falls under the category of first-year students, while the remaining 39% represents second-year students.

Q2: How Would you Describe your Proficiency Level in English?

The pie chart shows that among the surveyed students, 38% chose the upper-intermediate level for their language proficiency, making it the majority choice. The intermediate level was chosen by 23% of the students, while 16% of them selected the elementary level. Only 15% of the students identified themselves as advanced, and 6% of them

identified as beginners. However, it is worth noting that 2% of the sample population did not provide an answer to this question.

How Would you Describe Your Proficiency Level in English?

■Beginner ■Elementory ■upper-intermediate ■Intermediate ■Advanced ■not answered

6% 2%

15%

16%

23%

38%
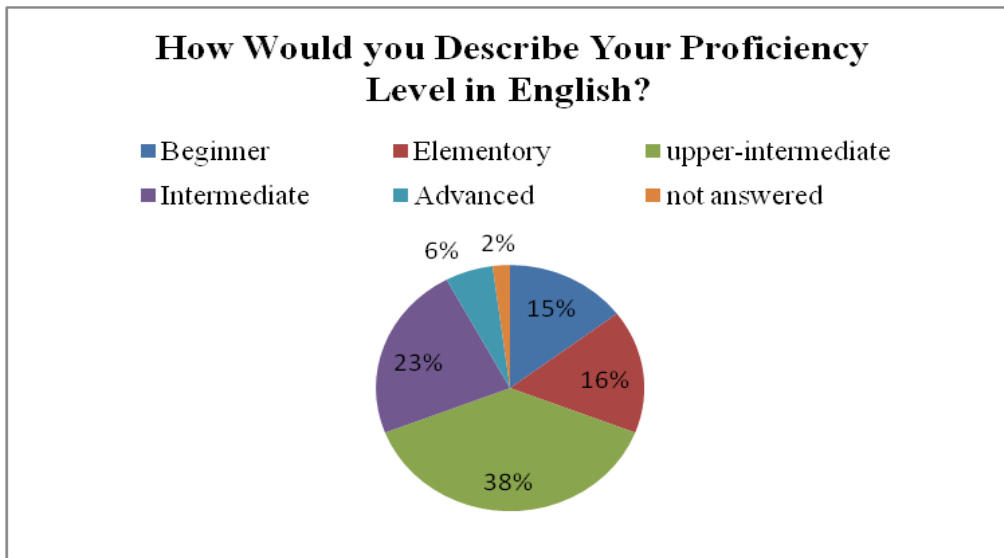
Graph 3. 11: Students' Proficiency Level in English Language.

Q3: How Often do you Use Technology for Language Learning Purposes?

The question offers a Likert scale that allows students to indicate the frequency at which they use technology for academic purposes. The results indicate that out of the total respondents, 40% of the students chose the option "always," indicating that they use technology frequently for academic purposes. 29% of the respondents selected "sometimes," Moreover,

How Often Do you Use Technology for Language Learning Purposes?

■Never ■Rarely ■Sometimes ■Often ■Always ■not answered

0% 0%

7%

40%

29%

24%
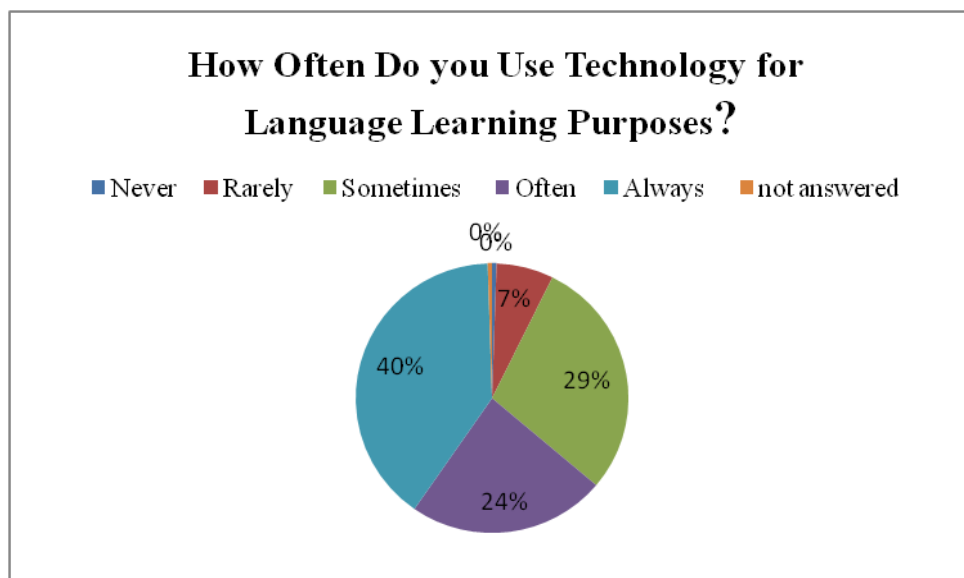
Graph 3. 12: Students' Frequency Use of Technology For Learning Purposes.

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24% of the respondents chose "often," indicating that they use technology frequently but not as much as those who chose "always." Only 7% of the respondents selected "rarely". Furthermore, the options "never" and "not answered" had a response rate of 0%.

Q4: How Confident are you in Using Technology to Enhance your Communication Skills?

As illustrated in the graph, out of the total number of respondents, around 41% responded with moderate confidence, indicating their ability to use technology to enhance their communication skills. On the other hand, 36% of the students were very confident in their ability to use digital tools to improve their communication skills. Only 10% of the respondents displayed slight confidence, whereas 9% were extremely confident, and only 3% were not at all confident.
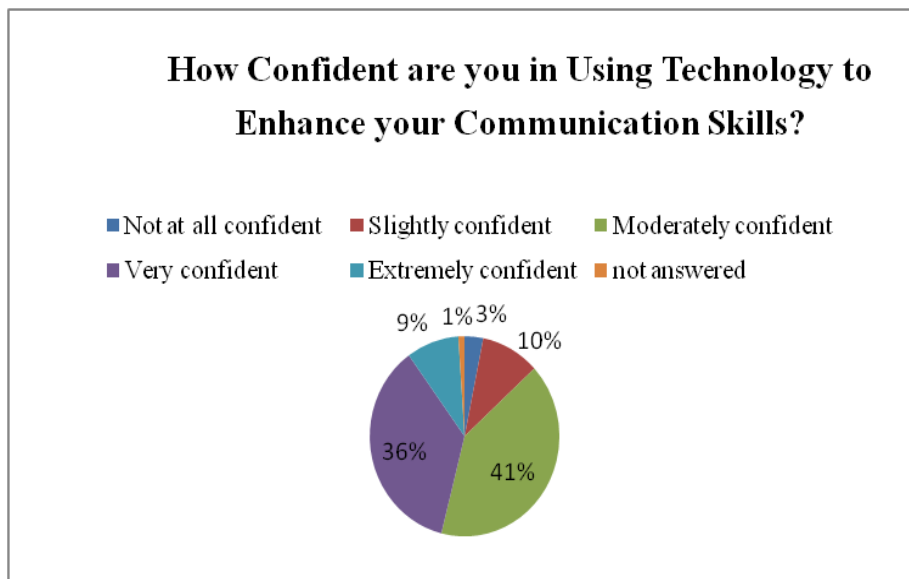
Graph 3. 13: Student's Confidence in Using Technology.

Q5: How Effective do you Believe Language Labs are in Enhancing Communication/Speaking Skills?

The results presented in the form of a graph showed that 2% of the students found the lab ineffective, and another 2% of the sample did not respond to the question. On the other hand, 10% of the students found it slightly effective, while 11% found it extremely effective.

Interestingly, 40% of the students confirmed that the lab was very effective, and 35% found it moderately effective.

Graph 3. 14: The Effectiveness of Language Lab in Enhancing Communication Skills.

Q6: What ICT Tools do you Use During your COE Classes?

The graphical representation of the results indicates that computers are the most frequently used tool, selected by 60% of participants. Additionally, 50% of all participants noted using their phones during COE sessions, while 49% reported using headphones. Furthermore, 28% of participants reported using a projector during the sessions. Speakers were also popular, with 25% of participants choosing it as a tool. Finally, since participants were
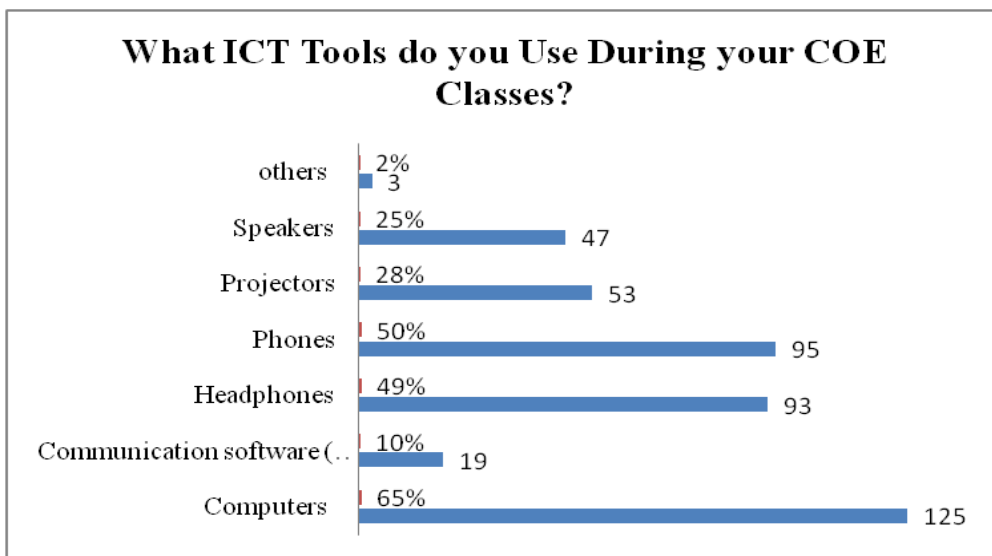
Graph 3. 15: Student's Use of ICT Tools During COE Sessions.

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allowed to add their own answers, 3% provided additional responses, such as PowerPoint presentations.

Q7: In your opinion, to What Degree Have Language Lab Sessions Contributed to the Improvement of the Following Language Skills?

This particular question comprises four criteria that represent an individual's language skills. These criteria include speaking, listening, pronunciation, vocabulary, and grammar, and each criterion offers respondents the option to rate their skills on a scale of 1 to 5. The rating scale ranges from "not at all improved" to "extremely improved." All of this information can be found in the upcoming graph.

Speaking ability was one of the key criteria analysed in this study. The most frequently selected rating for speaking was number 3, which 31% of respondents chose. Number 2 was chosen by 21% of respondents, while 18% rated their speaking ability as 5. The remaining responses were either 4 (17%) or 1 (7%), which indicates that speaking ability has not improved in the lab. However, 5% of respondents did not provide a rating.

The next criterion to consider is listening ability. The most popular choice was a rating of 3, chosen by 28% of participants. Following closely behind, 27% selected a rating of 4. Rating 2 was chosen by 21% of the group. However, 18% rated it as a 5. Only 4% rated it as a 1, while 2% did not respond.

Shifting the focus to pronunciation, 29% of the population chose to rate it as 3, 22% for rate 4, 19% for rate 2, and 17% for rate 5. The remaining 8% rated pronunciation as 1, while 4% did not provide an answer.

In regards to vocabulary, which is a crucial criterion for measuring language proficiency, the respondents were asked to rate their perception of the lab's contribution to their

vocabulary development. Of the total sample, 34% of the respondents rated the lab's contribution as 3 out of 5. 25% of the respondents selected 2, indicating a below-average contribution. Additionally, 18% of the respondents chose 4. On the other hand, 12% of the respondents rated the lab's contribution as 5 out of 5, indicating an excellent contribution, while 8% chose number 1, indicating that the lab did not contribute to improving their vocabulary at all. Lastly, 3% of the respondents did not answer the question.

Regarding the Grammar skills criterion, it is noteworthy that 31% of the entire population rated their skills with a score of 3. Moving on to the other ratings, 29% of the population rated their skills under 2. Additionally, 16% of the population rated their skills under the score of 4. On the other hand, 11% of the population rated their skills with the highest competency level, i.e., a score of 5. Interestingly, 9% of the population rated their skills with the lowest level of competency, i.e., a score of 1. Noting that 5% of the population has not answered this criterion.
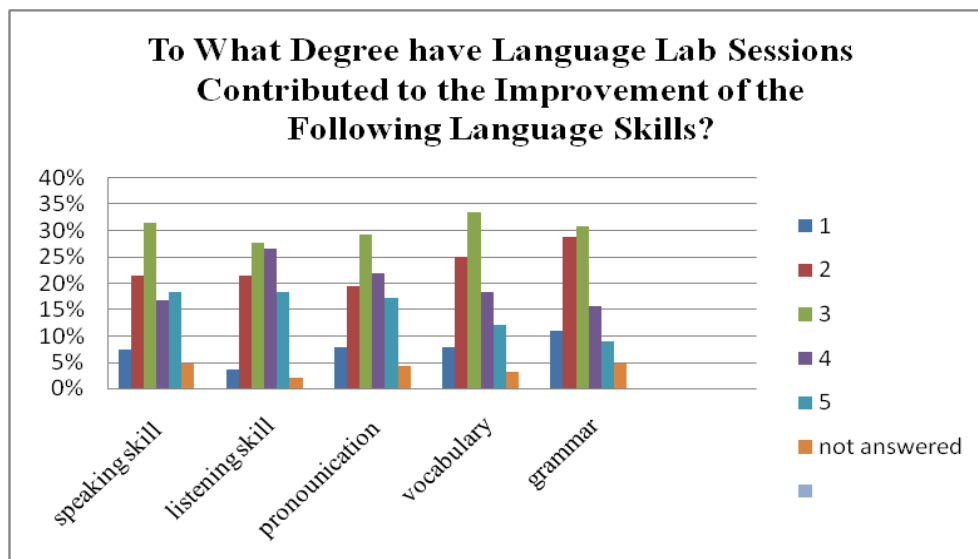
Graph 3. 16: Student's perception of the improvement of Language Lab on Given Skills.

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Q8: Do you believe that Language Labs have Positively Influenced your Confidence in Using English for Communication?

When looking at the effectiveness of language labs on overall communication skills, only 2% strongly disagreed, and 4% disagreed. Additionally, 2% did not respond to this question. 49% of participants agreed, 18% strongly agreed. Additionally, 26% remained neutral.
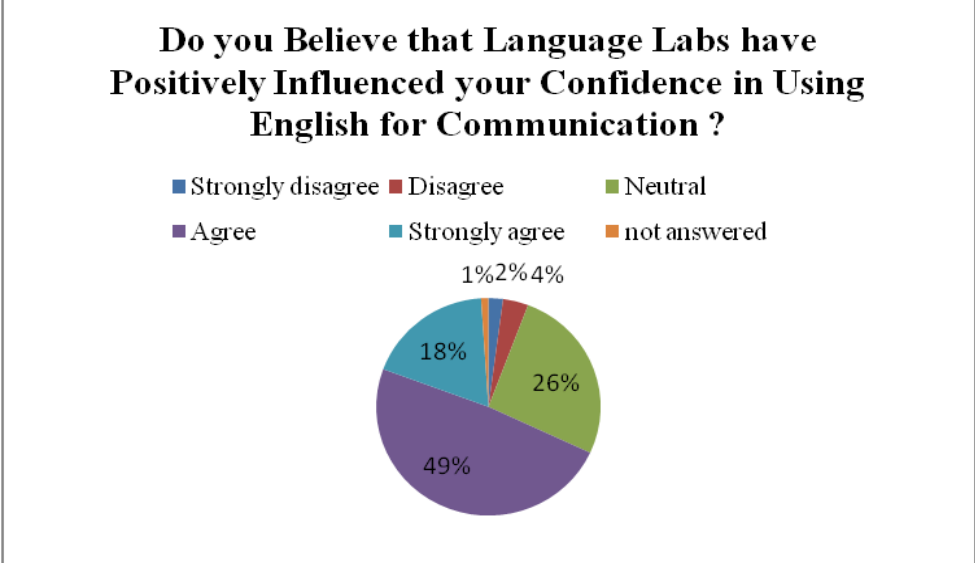
Graph 3. 17: Student's Perception of the Efficacy of lab on Communication Skills.

Q9: How do you Perceive the Impact of Language Lab Sessions on your Overall Communication Skills in Comparison to Traditional Classroom Interaction?

The question provides a Likert scale that allows participants to rate the effectiveness of the laboratory. The results show that the most popular option chosen by participants, representing 42% of the total, is that both laboratory sessions and traditional classroom interaction are equally effective. Meanwhile, 38% of participants rated the laboratory sessions as very effective, and 8% rated them as extremely effective. Only a tiny percentage of participants, representing 1%, rated the laboratory sessions as not at all effective. Interestingly, 2% of participants did not provide an answer.
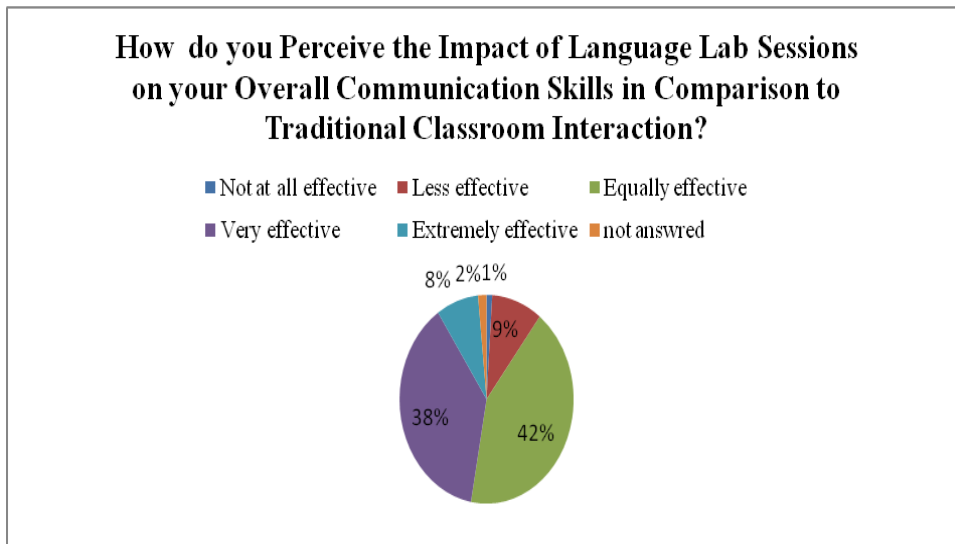
Graph 3. 18: Student's Perception of the Impact of Language on Communication Skills in Comparison to Traditional Classroom.

Q10: How Would you Rate the Effectiveness of the Teaching Methods and Strategies in Language Labs Used by your Teacher During the COE Session in Enhancing your Communication Skills?

The graph represents the data of the population illustrating that 40% found it to be highly effective, 37% chose to remain neutral, 10% considered it extremely effective, 7% found it to be less effective, only 4% deemed it not effective at all, and 2% did not provide an answer.
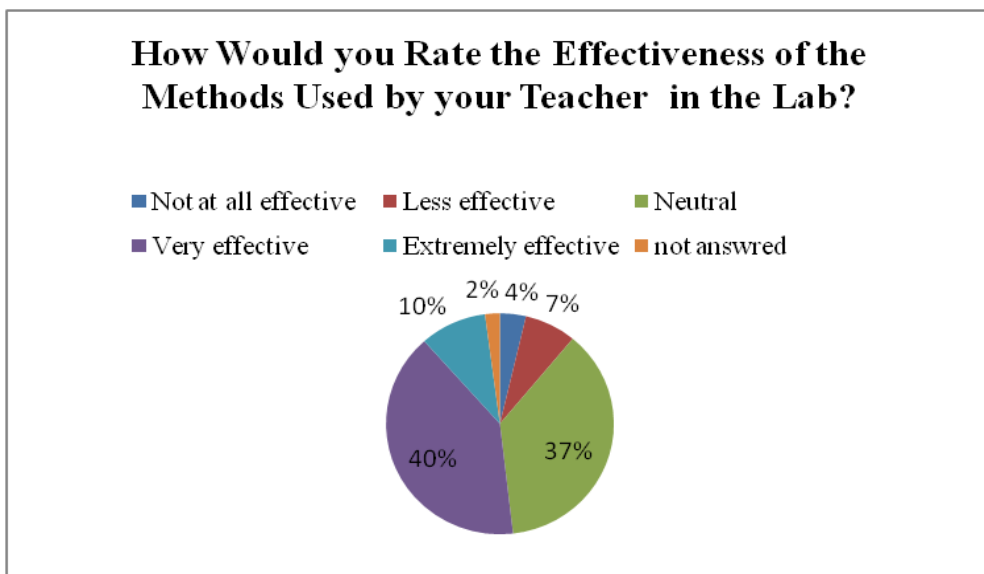
Graph 3. 19: The Effectiveness of Teaching Methods Used in Lab

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Q11: How is your Communication Performance Assessed during your COE Lab Sessions?

The question offers a range of options, including the opportunity to indicate further options. Out of the total sample, 66% agreed that oral presentation is the primary mode of evaluation used for assessing students. Group discussion was selected by 54% of the respondents, while 40% opted for audio and video recordings. Multimedia presentations were chosen by 22% of the participants, while 18% selected structured dialogues, and 16% preferred choosing role-playing. In addition, 7% of the respondents selected software pronunciation programs as a means of evaluation. However, it is worth noting that 2% of the sample did not answer the question.

Q12: To what degree does Assessment in COE Incorporate Feedback Received from both Instructors and Classmates?
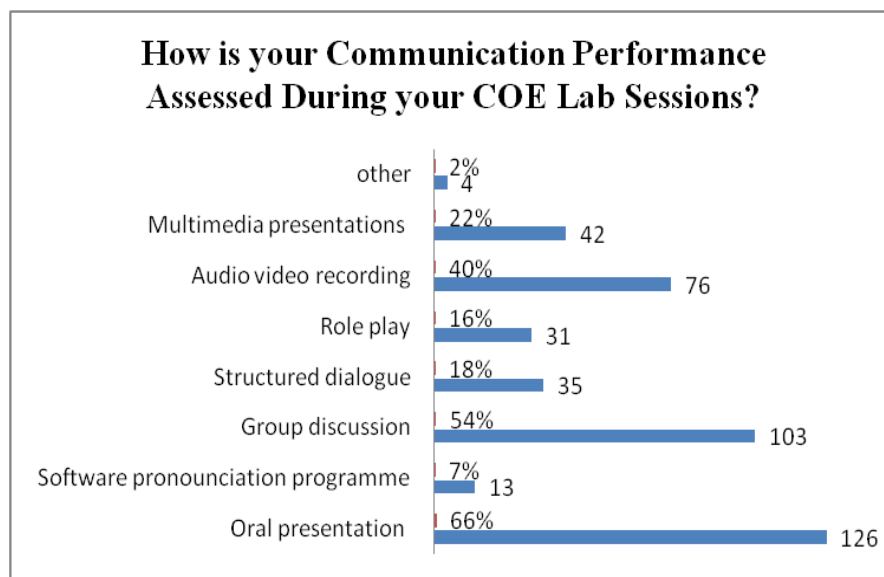
Graph 3. 20: Student's Assessment in COE Sessions.

The question provides respondents with a range of options from "not at all incorporated" to "completely incorporated", allowing them to indicate the degree to which they believe feedback is being used. According to the responses received, the majority of respondents, accounting for 49%, chose the option "moderately incorporated". 23% of respondents selected "very incorporated", while 17% indicated that feedback was "slightly incorporated".

Additionally, 8% of respondents chose the option "completely incorporated". Only 2% of respondents indicated feedback was "not at all incorporated". Additionally, 1% of respondents did not provide an answer.
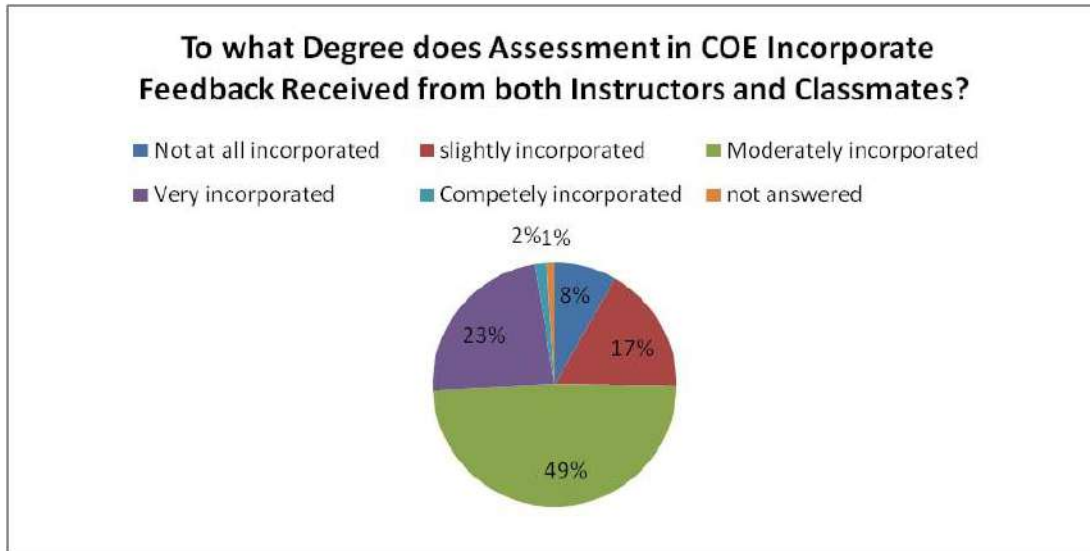
Graph 3. 21: The Degree Does Assessment Incorporate Feedback.

Q13: To What Degree do you Actively Apply the Feedback Received in Language Laboratory Sessions to Improve your Communication Skills Outside the Lab?

As it is shown in the graph, Out of the total sample, 48% of the students stated that they applied the feedback moderately, 25% of them chose the option of being very applied, 15% of the students mentioned that they slightly applied the feedback, while 8% of them claimed that they did not apply the feedback at all. Finally, only 4% of the students reported applying the feedback extremely well.
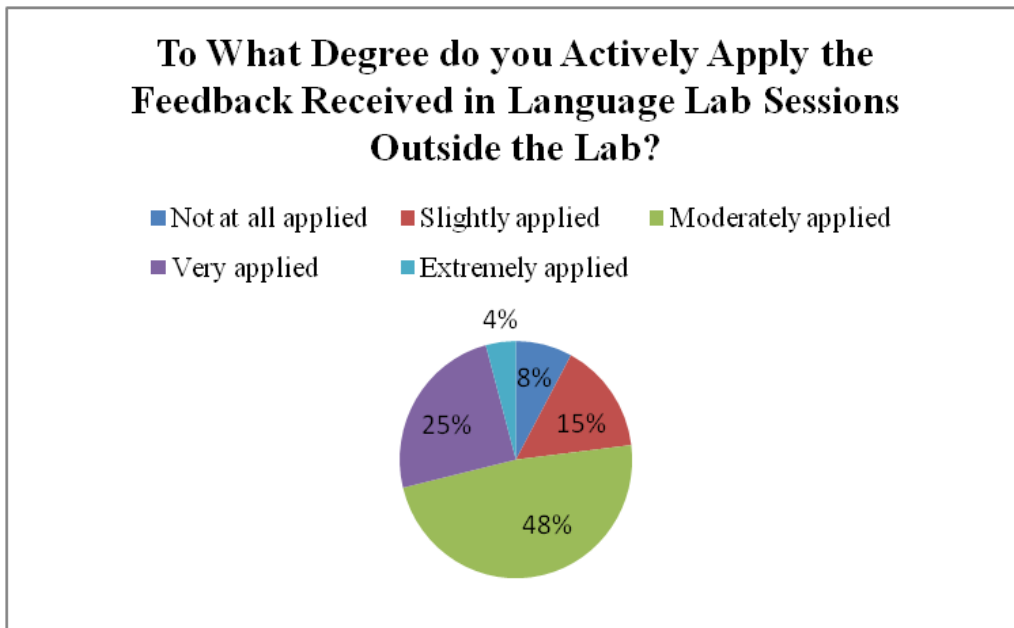
Graph 3. 22: The Degree of Applying Feedback Outside Lab.

Q14: Do you prefer to have more Language Lab Sessions Integrated into your Curriculum?

In the questionnaire, the majority of the sample, which is 34%, indicated that they prefer to have more lab sessions. On the other hand, 32% of the sample chose to keep the same frequency, which is one session per week. About 20% of the sample chose the option of having some extent of lab sessions. The option of fewer sessions was chosen by 9% of the sample, and
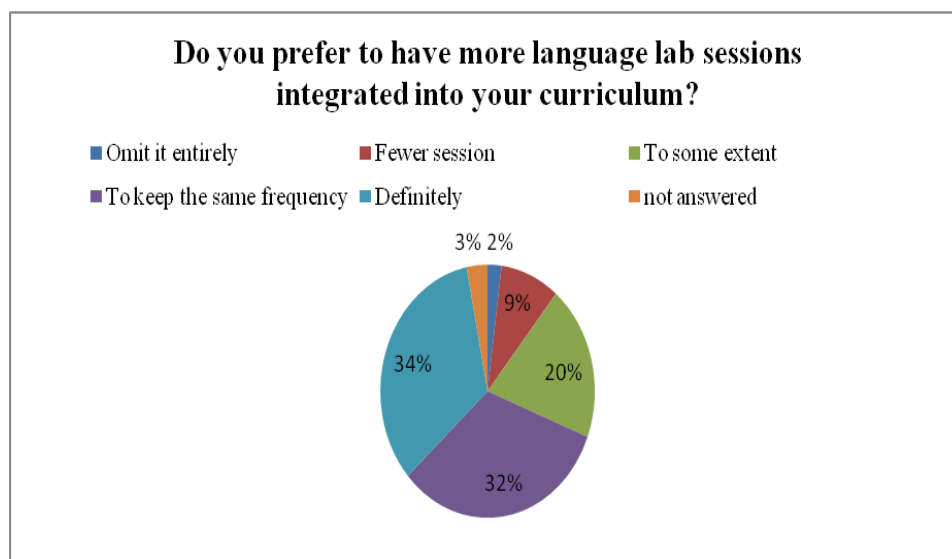
Graph 3. 23: Student's Perception of Having More Lab Sessions.

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the remaining 2% chose to omit it entirely. However, there were 3% of students who did not answer the question.

Q15: In your Opinion, will Language Lab use in Oral Expression Classes Continue to Grow in the Future?

The results shown in the graph indicate that out of the total sample size, 44% agreed that these labs will continue to develop in the future. On the other hand, 20% of the participants strongly disagreed with this statement, while 18% strongly agreed with it. Approximately 14% of the respondents chose to remain neutral, 2% disagreed with the statement, and the remaining 2% chose not to answer. These findings provide valuable feedback on the perceptions and expectations of students regarding the future of language labs in the context of Oral Expression classes.
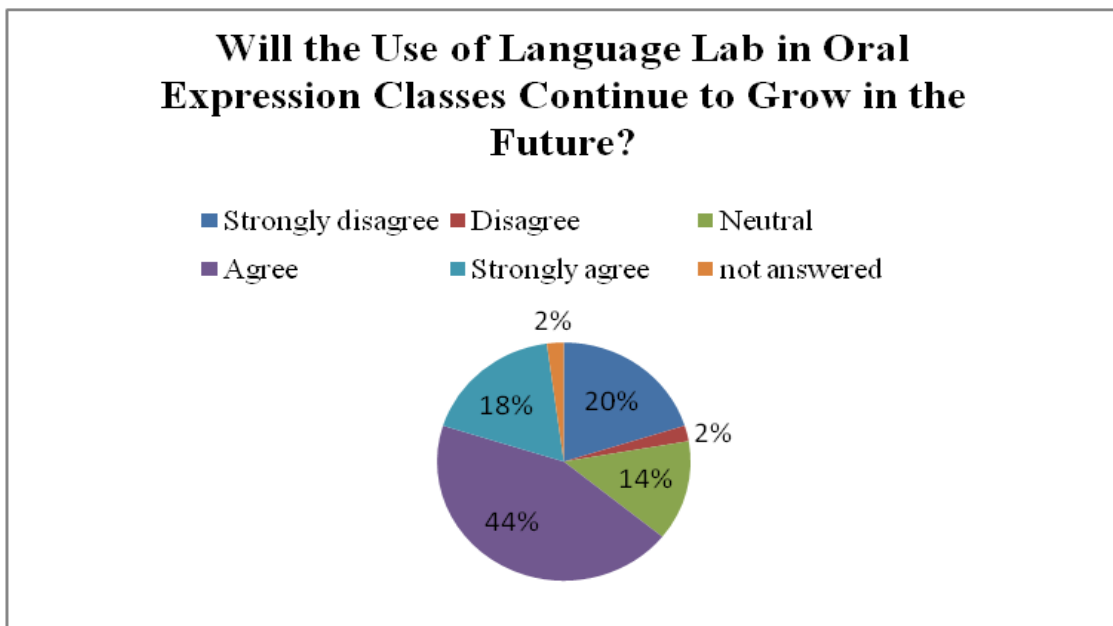
Graph 3. 24: Student's Perception of the Growth of Language Lab in COE

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3. 5. Discussion of the Findings

In Algeria, English language education is introduced from the first grade of middle school in almost all educational institutes. Therefore, it is recommended that students engage in intensive activities to encourage them to practice listening and speaking inside and outside their classes (Slobin, 1985, p. 1164). Technological advancements make English communication increasingly crucial for academic, professional, and personal success. However, many university students lack the necessary resources to improve their speaking skills, even with a language laboratory available at the Department of Letters and English Language level. Additionally, the mere availability of a language lab is not enough to enhance students' communication abilities. It requires teachers' guidance and teaching strategies to make the language laboratory an effective tool for language learning.

The objective of our study is to explore the effectiveness of the language laboratory when used in Comprehension and Oral expression classes, taking into account the application of the TPACK model, especially in developing first and second-year EFL students' speaking skills; it also seeks to unveil the obstacles that both teachers and students may face during the teaching-learning process within language laboratory. Additionally, this research attempts to find out procedures that can be undertaken to successfully implement language laboratories in COE classes to improve learners' language proficiency by targeting their speaking competencies, alongside developing digital competency awareness and familiarity with language laboratories for teachers and students. The results obtained from the previous analyses are subsequently discussed. The discussion of the findings is based on a well-structured analysis of the data obtained from the three research instruments: semi-structured in-depth interviews conducted with teachers and technicians, a questionnaire administered to the students, and non-

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participant classroom observations. Additionally, the researchers have been analysing the data gathered from three instruments precisely and specifically.

In the case of the University of Ain Temouchent Belhadj Bouchaib, the language laboratory was the spot of our interest and focus. Ultimately, the research work at hand concentrated not only on checking the effectiveness of implementing language laboratory in Oral expression and comprehension classes in improving students' language skills targeting speaking abilities but also on examining the teacher's contribution toward tailoring the teaching methods in the lab setting. This would include the principle of effective implementation of language lab, where the TPACK framework is the compass means of the discussion.

This section delves into how the principles of Technological Pedagogical Content Knowledge (TPACK) intersect with the methods employed for data collection, namely non-participant longitudinal classroom observation and the use of questionnaires.

The data analysis revealed several key findings that support the notion that teachers and students prefer utilising ICT tools in the lab for different purposes. Despite facing challenges with laboratory implementation, both students and teachers maintain a positive attitude and hope for more integration of labs in their teaching-learning journey. From the research instruments employed during the research, some aspects of utilising language laboratories need to be considered. As a matter of fact, the current language lab is equipped with necessary materials that can be beneficial for both students and teachers. Nevertheless, it should be emphasized that the laboratory is not being used to its full potential as it was declared by the teachers during the interview, because it lacks important features that could significantly improve its efficiency. For instance, there are no assessment programs in place, which means that teachers are unable to administer tests and exams using laboratory equipment , in this vein, one of the teachers stated: "Why do we have equipped language laboratories and invest money

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in software that cannot be properly utilised with all of its capabilities and features?". As a result, they have to resort to alternatives such as oral presentations and creating assessments using printed handouts (Appendix 7). This is supported by the reasons noticed during the observation process and reported by the teachers during the interview. Therefore, these findings confirm the third hypothesis of the study, which focuses on the challenges faced by teachers and students.

Based on the valuable data we have gathered, our thorough analysis confirms and expands on the previous findings discussed in the proposed literature, it revealed a gradual progression in which technology is to some extent substituting the traditional teaching environment, encompassing the incorporation of technology in lesson delivery. The diversification of teaching methodologies, and the content covered in the topics discussed. This would reveal that technology is being used to enhance the teaching-learning process, as first and second-year students utilise it to create PowerPoint presentations for their oral presentations, demonstrating the application of the augmentation principle. It should be noted that teachers do not heavily depend on technology for delivering lessons, as the equipment is of poor quality and there is not enough space. This leads to the language laboratory being unable to accommodate all students simultaneously, which makes it difficult for teachers to manage the session time effectively. When issues arise with the devices in the language laboratory, teachers often resort to alternative approaches such as providing printed handouts or oral presentations and group discussions, as they are unable to use different materials effectively. This is because of the challenges faced during teaching sessions, such as screen glitches, program lagging, damage to hardware materials like headphones, and the absence of training for teachers on how to use the laboratory's software or hardware.

As a result, teaching in the language laboratory requires a combination of using ICT tools, designing content activities, and effectively managing the language laboratory, which is challenging for teachers to do all at once. Another crucial factor to be considered is the absence

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of expert technicians to assist in resolving technical issues in the laboratory. In line with that, most of the equipment provided in the lab needs to be of better quality. It is important to note that no matter how cutting-edge the technology, lab usage is directly affected by the presence of skilled technicians or experienced teachers. The notion is not about abandoning or discarding the language laboratory facility but optimising the classroom's teaching and learning activity by bringing effective lab-based methods to meet both learning objectives and students' needs. The lab implementation focused on improving students' communication skills as they learn the COE module in the lab using ICT tools. These tools include computers, headphones, and even mobile devices for using online dictionaries and browsing the internet. This allows students to practice the English language based on the curriculum objectives, considering students' needs and selecting real-life topics that interest them. They can then engage in discussions on various themes such as culture, norms, traditions, food, society, and history.

The findings of this study also revealed that the English language laboratory would be used mainly to teach speaking skills through listening to various resources, enabling students to listen to English sounds and produce them in one way or another. There is an additional point that needs to be addressed. The frequency of some answers noticed by the teachers and even technicians does prove that the actual language lab, in fact, is a multimedia lab. It is no longer a language lab, meaning it could teach our students all language skills and components, including writing, listening, reading, phonetics, phonology... etc.

However, the lab does not have the role of interacting with students; consequently, students cannot interact with each other. Thus, the role of teaching in the language lab exceeds the role of teaching oral expression and comprehension. In fact, it includes all the language skills and language components. Therefore, this does not confirm the second hypothesis regarding the expectation that the language lab would improve overall language proficiency. Based on the findings obtained from various sources, such as longitudinal observation, semi-

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structured in-depth interviews, and questionnaires, it is suggested that the language lab is making a moderate contribution to improving students' speaking skills. This can be attributed to the presence of materials and features in the lab, which allow students to immerse themselves in the English language and practice and improve their language proficiency.

According to the findings, attention has been given to the intentional use of language laboratories, specifically in relation to the TPACK framework and its connection to the SAMR model. The reason for these unexpected findings is likely because if the TPACK framework is not taken into account, the benefits of language laboratories are unlikely to be realised. This framework is the most effective tool for ensuring that technology enhances learning opportunities rather than detracting from them. In summary, TPACK helps educators overcome the challenge of integrating technology into their curriculum by combining content, pedagogy, and technology knowledge. Therefore, while having modern language labs is undoubtedly important for supporting effective language teaching and learning, the primary focus should be on the competence of teachers in conducting their lessons in the language laboratory to enhance learning.

Referring to pedagogy, which encompasses the various teaching approaches and methods used by educators to facilitate student learning, as it is presented in question 10 in the students' questionnaire (Graph 11), the laboratory setting offers a unique opportunity to customise these methods according to specific learning objectives.

In language labs, teachers primarily utilise the eclectic approach in conjunction with the communicative approach. Both of these are particularly beneficial for technologically oriented students with a strong emphasis on real-life communication. Additionally, language labs offer various features that can be leveraged in teaching. Therefore, it is important for teachers to vary their teaching methods to maintain student interest and engagement while

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promoting more effective learning. By diversifying teaching methods, Teachers are habituated to the traditional teaching methods. It is high time that their teaching methods have to undergo a change. Teachers can tailor their lessons to meet the needs of each student, making it easier for them to grasp complex concepts. It was noted that teachers were adjusting instructions to match the students' levels, which is essential for meeting their objectives.

Furthermore, it is equally noticed that teachers, to some extent, used effective methods and strategies when utilising a language lab and even without; in other words, teachers offered a remarkable amount of effort by extending the activities and instructions. Without these, successful implementation of the lab cannot be guaranteed. Similarly, by implementing customized teaching approaches and blending methods, educators can ensure that the laboratory setting yields the best possible outcomes. This provides students with valuable opportunities to develop and enhance their communication skills practically and engagingly. Therefore, the first hypothesis, which suggests that implementing the TPACK model improves the teaching process in the lab, has been partially confirmed. This partial validation is attributed to the incomplete application of the TPACK framework. Despite teachers not being fully aware of its principles, they unintentionally incorporate it into their teaching. In reality, the diligent efforts of the teachers have made the language lab somewhat effective.

Based on the findings presented in this chapter, we can conclude that the researchers initially expected to find a more conducive teaching and learning environment in a new setting. However, it became evident upon investigation that there is a lack of awareness regarding the presence of the TPACK model in the language laboratory during Comprehension and Oral Expression sessions. Nevertheless, both teachers and students hold a positive attitude on this matter. Despite the considerable efforts made by teachers to enhance students' speaking abilities, the improvement within the lab setting remains weak. It is crucial to empower this setting in order to address this weakness.

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3. 6. Pedagogical Suggestions and Recommendations

This section is dedicated to humbly providing recommendations and solutions to the issues stemming from the interpretation of the results. Considering the results obtained from this research, it is important to note that they are not definitive. Therefore, some recommendations have been suggested to address the challenges related to the use of language labs in COE classes. The recommendations provided in this section aim to assist both teachers in overcoming the challenges associated with implementing language labs in the oral expression and comprehension sessions and students' willingness to improve their communication skills. By taking into account these recommendations, it is hoped that the use of language laboratories in education will become more effective and efficient, leading to better learning outcomes for students and a more fulfilling teaching experience for teachers at the Department of Letters and English Language at the University of Ain Temouchent Belhadj Bouchaib.

1. Beyond Teaching COE

Both technicians and teachers described the laboratory as being more than a language lab. It was noted that it is a '*multimedia lab*' with comprehensive equipment suitable for teaching a diverse array of modules and language skills, including phonetics, reading, and writing. The lab is characterised by a variety of features that allow students to practice the target language. Its functionality extends beyond foreign language instruction and can be utilized by other academic disciplines as well.

2. Offering Training for Teachers

The research findings indicate that providing teacher training is essential to enhance the quality of teaching practices in the language lab due to its benefits. First and foremost, training helps reduce and minimize the issues teachers may face during lab sessions. Additionally, it improves teachers' performance in the lab, as trained teachers understand how to diversify

methods using technology to enhance communication skills, aligning with the COE module's primary objective. Furthermore, training enables teachers to design suitable activities that align with the course content objectives of COE and meet students' needs in the language lab. Lastly, training fosters a positive attitude among teachers towards using the language lab. Therefore, all Oral Expression and Comprehension teachers need training to overcome any potential challenges. It should be comprehensive and cover all aspects of laboratory-related ICT usage, including equipment handling, software operation, and lesson planning. By doing so, teachers will be well-prepared to deliver high-quality lessons that cater to the diverse learning needs of the students. Ultimately, this will lead to better learning outcomes and a deeper appreciation of English.

3. **Raising Awareness Towards the Importance of Language Laboratory**

The general findings showed that even though encountering numerous challenges in the laboratory, teachers, students, and technicians still recognise its significance and advantages. Nevertheless, the language lab is not being given the appropriate level of importance and attention it deserves. It is essential to raise awareness about the significance of the language lab, as it serves as a platform for teachers and students to enhance their understanding of technology and language skills, particularly communication skills. This helps them improve their communication proficiency. Teachers and technicians need to arrange hands-on workshops to enhance understanding of the proper utilisation of lab materials and to help students appreciate the importance of the resources available in the laboratory. Additionally, students should be encouraged to take accountability for their actions to prevent any potential damage to the equipment.

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4. Providing Materials and Programs

The answers provided by the participants clearly demonstrate the necessity of equipping the current laboratory with a well-developed ICT material to ensure a comfortable teaching and learning atmosphere, eliminate potential difficulties and improve communication abilities, which is the target skill that needs to be improved. Stakeholders and the university should also guarantee free access to premium versions of the programs, such as programs for assessment and speech recognition…etc. Additionally, the Ministry of Higher Education and Scientific Research needs to establish partnerships and agreements that will assist in equipping the laboratory with Internet access and advanced digital ICT tools. This can be achieved by lowering the cost of materials and ensuring software support is readily available.

5. Collaboration between Teachers and Technicians

To overcome the challenges related to the lab, the presence of a laboratory technician would be essential to address lab challenges. The technician's role involves identifying and resolving complex issues, including material malfunctions, by pinpointing the root cause of the problem and offering solutions. This, in turn, minimises the obstacles that hinder teachers from delivering their lessons effectively.

6. TPACK Integration

Teachers must recognise the significance of TPACK in the language lab and incorporate its principles into their teaching process. They should strive to understand better the connections between technology, pedagogy, and content. Additionally, it is essential for educators to explore how technology can be utilised to support students' learning objectives and align technology use with specific learning goals.

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3. 7. Limitations of the Study

Researchers encounter limitations and challenges in any scientific investigation that can disrupt their research and affect its progress. This research is no exception; the researchers have faced various issues and limitations that require careful consideration and discussion. The primary limitation to address is the time constraint; because multiple data collection methods were used in this study, the researchers were pressed for time to gather all the necessary data to answer the research questions. The study's timeframe may not have been enough to capture long-term effects and changes. The researchers intended to conduct a longitudinal observation to assess changes in student behaviour, attitude, and development and variations in teachers' methods and use of technology. To achieve this, classroom observations began in October 2023. However, the data collection phase was interrupted by the researchers' exams in the first semester of Master Two. Once the exams were finished, the data collection phase resumed. Additionally, the researchers had limited time to analyse and interpret all the collected data within a short period. Therefore, it is recommended that this type of research be conducted over a more extended period.

Based on a mixed-method methodology blending both quantitative and qualitative approaches, it was essential to carefully plan and focus on selecting the study sample, determining the sequence of data collection, and analysing and interpreting the data. However, we encountered limitations with sample accessibility. Despite our efforts to distribute questionnaires, we could not reach our target number of participants. We faced challenges such as classrooms lacking electricity and students not having internet access to their phones, which made the data collection process difficult. Instead of the intended 386 students, only 191 students participated in the study. Consequently, we had to send reminders via email and student Messenger groups to encourage students to complete the questionnaire.

Writing a literature review can be an extremely challenging task, especially when there are limited available sources, and the research process becomes more complex and time-consuming. The researchers devoted significant time searching for suitable sources from the start of the academic year. However, they struggled to find valuable articles and dissertations related to the investigation's topic, especially in the Algerian context, where sources are scarce or nonexistent.

3. 8. Conclusion

The research is centred on investigating how effective the laboratory is in developing students' communication skills and the challenges faced by the teachers and students. The purpose of this section was to provide a thorough examination and detailed review of the information gathered from the three data collection tools utilised in this research: questionnaire, semi-structured in-depth interviews, and non-participant longitudinal observation. After carefully analysing and discussing the data collected from the various research tools used in this study, it is important to emphasise that the researchers employed a mixed-method approach to analyse the findings both qualitatively and quantitatively in order to confirm the previous hypothesis discussed earlier and to offer a set of pedagogical recommendations related to the study. This chapter aims to present a comprehensive analysis and discussion of the findings obtained from the research conducted in the relevant field.

General Conclusion

GENERAL CONCLUSION

The implementation of a language laboratory is increasingly recognised as an indispensable element in the language education domain, particularly within the context of English as a Foreign Language (EFL). The purpose of this integration is to facilitate and enrich the process of teaching and learning consistently. It is evident that the primary goal of many learners is to attain a high level of proficiency in spoken English. The structure of EFL education is influenced by a multitude of factors that collectively contribute to the development of successful foreign language learners. It is crucial to acknowledge that mastering spoken English as a foreign language is a complex process, particularly when incorporating a fully equipped ICT environment, such as implementing a language laboratory in oral expression and comprehension classes. It becomes challenging to some extent, and as a result, most learners fail to speak the target language fluently and accurately.

After a thorough investigation of the study, The researchers discovered that the appropriate use and successful implementation of language laboratory is based upon the application of TPACK principles, despite the fact that the language laboratory faces various challenges that hinder its effective implementation and relies on three interconnected elements of TPACK. These elements encompass technology knowledge, pedagogy, representing teachers' approaches and methods, and content knowledge, which pertains to the topics and activities utilised in the teaching process. Therefore, it was revealed that the appropriate use and successful implementation can reduce the impediments that prevent both EFL teachers and learners from benefiting from the lab integration. That is to say, the research is useful for both learners and teachers to facilitate an effective learning-teaching process.

The findings collected from teachers, students, and technicians indicate that although the language lab is recognized as a valuable tool for English teaching and learning, it can also pose challenges that hinder the benefits for both teachers and students despite the use of various methods and strategies for teaching within the lab. Therefore, this study aims to evaluate the

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extent to which TPACK principles are applied in the lab in Comprehension and Oral Expression classes and to explore the effectiveness of language lab in enhancing students' speaking skills. It also examines the challenges and issues encountered by teachers and students and how teachers try to address them during lab sessions.

The research work is divided into three main chapters. The first chapter discusses theoretical concepts related to language labs, frameworks for effective ICT integration, tech pedagogy, and technology assessment. The second chapter outlines the methodology of the research work. It provides details about the study's context, the sample population, data collection instruments and procedures, analysis methods, and justifications for selecting each instrument. The third chapter centres on data analysis, discussion, and interpretation of the main research findings. The goal is to either confirm or reject the hypothesis formulated earlier. Finally, this chapter offers suggestions and pedagogical recommendations.

Prior to conducting the research study, the researchers initially anticipated that the language lab would significantly improve students' language proficiency by offering English practice opportunities and increasing their exposure to the language. They also expected the lab to be an effective setting for facilitating the teaching process. However, upon analysing the collected data, the researchers found that the language lab did not meet their original expectations. After conducting research, it was revealed that teachers encountered various challenges while working in the laboratory setting. Furthermore, it was noted that students did not experience significant benefits from the laboratory activities in terms of improving their communication skills, as the lab is not utilised to its full potential and lacks certain features in terms of TPACK elements. Overall, The analysis of the tools employed in this study suggests that the hypotheses mentioned previously are, to some extent, unconfirmed.

In conclusion, the research suggests that EFL teachers should incorporate the use of materials inside the lab to increase language activities and encourage student participation,

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leading to the development of their communication proficiency. Therefore, integrating the lab into Oral Expression and Comprehension classes requires special attention from different angles, including policy and decision-makers, technicians, equipment providers, and teachers.

Future research works can extend beyond the findings provided in the current study. In this prospective study, researchers are encouraged to conduct a comprehensive experimental investigation comparing the effectiveness of language laboratory instruction with traditional classroom methods. The research design can involve selecting two groups of participants: one experiencing language laboratory-based instruction and the other undergoing traditional classroom instruction. Researchers can measure and analyse various outcomes such as linguistic proficiency, comprehension, speaking skills, and learner motivation before, during, and after the intervention. The findings from this future research will provide critical insights into the effectiveness of integrating language laboratory resources into language education curricula. By identifying the strengths and limitations of each instructional method, educators and policymakers can make more informed decisions about the most effective strategies for enhancing language learning.

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Appendices

APPENDICES

Appendix 1: Observation Grid

Observation Area	Observation Criteria	T 1	T 2	T 3	T 4
Technological Knowledge	Integration of language lab technology into the lesson plan.				
	Proficiency in operating language lab equipment.				
	Utilisation of language lab software/tools.				
	The availability of a wide range of ICT tools.				
	Proficient at using technological tools for language acquisition.				
	Integration of speaking-specific technologies into the lesson.				
	Identify any technical concerns experienced, primarily linked to speaking activities.				
	Technical challenges are addressed effectively.				
	The presence of experienced technicians in case of technical difficulties that could not be fixed.				
Pedagogical Knowledge	Alignment of language lab activities with learning objectives.				
	A variety of language lab activities were employed.				
	Adaptation of activities to students' proficiency levels.				
	Effectiveness in designing and delivering speaking activities..				
	Incorporation of Communicative Language Teaching (CLT) principles.				
	Use of a variety of instructional strategies suitable for EFL learners.				
	The application of Communicative Language Teaching (CLT) principles in the language laboratory.				
	The willingness to employ ICT tools in Language labs.				
Content Knowledge	Selection of appropriate content for language lab activities.				
	Incorporation of authentic materials into language lab activities.				
	Linkage of language lab activities to course curriculum.				
	Modify speaking assignments to fit EFL learners' competency levels.				
	The teacher demonstrates knowledge of English language concepts and skills.				

	Identification of specific pronunciation activities incorporated into the lesson.				
	Teacher support for the development of fluency through speaking practice.				
	Teacher facilitation of vocabulary and grammar acquisition during speaking activities.				
Student Engagement	Students are actively engaged in language laboratory activities.				
	Positive Impact of language lab activities on student learning.				
	The teacher facilitates student interaction in the technological environment.				
	Enthusiasm and willingness to communicate in English in language lab activities.				
	Identification of signs of confidence in speaking English using.				
	Meaningful interactions among students during speaking activities.				
	Observation of opportunities for students to apply newly learned language structures in their speech using different ICT tools provided in the Lab.				
Assessment and Feedback	Evaluation of students' fluency in spoken English.				
	Students' language skills assessed after language laboratory activities.				
	Improvement in different language skills.				
	Pronunciation challenges are addressed during speaking tasks.				
	Monitoring of peer interaction during speaking tasks.				
	Alignment between assessment criteria and language proficiency standards.				
	The teacher provides feedback on students' speaking performance.				
	Observation of opportunities for peer feedback or self-assessment.				
	Assessment shift from traditional to ICT lab-based technologies.				
TPACK Integration	The effortless incorporation of technical, pedagogical, and subject knowledge.				
	Evidence of TPACK principles in lesson delivery.				
	The integration of technologies in lesson delivery and different classroom activities.				
	Ability to troubleshoot technological issues during lesson.				
Overall Observations	The use of ICT tools enhanced students' confidence over time.				
	Willingness to use language labs in other modules.				

	Positive attitude towards more implementation of Language labs in the future.				
	Effective teaching practices and strategies were observed during the different lessons.				
	Identification of aspects of speaking instruction that could be strengthened for improved outcomes.				
	Enhancements could be made to improve student learning.				
	Additional observations or insights are provided from the classroom observation, particularly related to speaking skill development using language laboratories.				

APPENDICES

Appendix 2: Interviews Consent Form

Dear Participants,

You are kindly invited to take part in this research study entitled **"**Implementing Language Laboratories in COE Classes: The TPACK Framework Application between Expectation and Realities. The Case of L1 & L2 EFL Students at the University of Ain Temouchent, **c**onducted by BENSAAD Safaa and BAKHTI Halima, and supervised by Ms Fatima YAHIA.

<u>Information sheet:</u>

 Please read carefully this information sheet to understand why the research is being conducted and what your participation will involve.

Incorporating language laboratories in teaching oral expression has proven to be a game-changer for students' communication abilities. The integration of such facilities has resulted in a significant positive impact on learners' communicative skills. This is because these facilities provide a controlled environment where students can practice their speaking abilities with the aid of specialized audio and visual equipment.

The objective of the present interview is to offer a comprehensive overview of the utilization of technology in oral expression sessions and assess its impact on augmenting communication skills. To achieve this objective, we have thoroughly analysed the data gathered from various sources. We aim to provide insights into the extent to which technology has been integrated into the oral expression sessions.

This research employs qualitative and quantitative approaches which lead to triangulation to evaluate the effectiveness of TPACK framework in the lab . Our primary focus is to investigate the the significance of lab in the developing speaking skills among students. We have also analysed the impact of various technological tools on the overall effectiveness of oral expression sessions.

APPENDICES

By conducting this research, we hope to contribute to the ongoing discourse on the role of technology in language learning and teaching. Our findings will provide valuable insights to educators and policy-makers on the effective integration of technology in oral expression sessions.

Data Confidentiality:

As part of our data collection process, we may use your own language when presenting our findings while ensuring that your identity remains anonymous. We want to assure you that we take data privacy and confidentiality very seriously, and every piece of information we gather will be treated with the utmost care and discretion. All data will be securely stored in a closed file on a password-protected computer, and only authorized individuals will have access to it.

We also want to emphasize that your participation in this study is entirely voluntary, and you have the right to withdraw your consent within 15 days without having to provide any explanations. We believe your involvement in this study could be of immense value to future researchers, and we are grateful for your willingness to participate.

We have taken every precaution to ensure that your participation in this study is safe, and we have not identified any potential downsides or drawbacks to participating. In fact, we believe that your participation could help us gain important insights into the topic we are studying. We appreciate your time and effort in helping us with our research, and we look forward to sharing our findings with you soon.

You can ask for more details related to the conduction of this research from us, our supervisor and you can write to the Master Coordinator, to complain about your involvement in this research in the contacts list provided below.

Contacts List:

APPENDICES

__Researchers__: ……………….

__Emails :__ …………………………..

__Supervisor:__ ……….

__Master Coordinator__: ………

Ø You are free to decide whether you will take part or not in this study.

Ø You are free not to answer any questions.

Ø Your identity is kept anonymous during data collection and presentation.

Ø You can withdraw from the study within 15 days.

APPENDICES

Appendix 3: Teachers' Interview

a) Section 01: Background information

1. How long have you been teaching at the university?

2. Did you teach any modules related to communication skills?

3. May I know for how long you have been involved in teaching COE?

4. Have you ever taught a COE in a traditional classroom setting?

5. When you teach oral expression, did you integrate technology into your

6. course?

7. Do you have experience teaching oral expression in language labs?

8. Have you been trained to use language labs?

9. Do you think that training in using language labs is necessary?

b) Section 02: Technicality

10. What was your first impression of the process of integrating language labs into oral expression classes?

11. Do you encounter any technical problems when teaching in labs? And how do you resolve them?

12. What are the technical issues that have you encountered during your teaching process? Is it concerned with software or hardware problems?

13. Are there any differences in teaching in the old lab in comparison to the new one?

14. What are exactly the differences? Software/hardware?

15. What was in the previous lab and is missing now?

c) Section 03: Teaching

16. Could you please share your perception of the level of interest students show when using technology as a tool for learning?

17. It is known that technology requires a combination of software systems and hardware; do you rely on specific programs when teaching Oral Expression?

18. How do you perceive the impact of language lab sessions on your overall communication skills compared to traditional classroom interaction?

19. During the lesson delivery, is technology the sole resource you rely on?

20. Do you believe that language labs implemented the Algerian educational policy of "zero paper"?

21. According to you, do you think that printed handouts will be substituted entirely by technology in the future?

22. Would it be feasible for students to participate effectively in a given situation that requires the use of technology?

23. Although it is well-recognized that a teacher-centred approach to teaching is the foundation of instruction in traditional classrooms, where the teacher serves as both the source and the provider of knowledge, what do you think about the approach required in language labs?

24. Does the incorporation of technology affect students' oral communication skills positively? What impact does it have on them?

25. It is commonly known that implementing language labs supports/facilitates the teaching-learning process. What is your opinion?

26. In comparison to the first semester, have you noticed any improvement among students when it comes to engagement and motivation?

27. What does the language lab lack?

d) Section 04: Assessment

28. When it comes to assessing your students in (CEO), how do you incorporate technology into this process?

29. Language lab is an effective tool for teachers to provide immediate feedback to students. Who provides feedback for students in language labs? Do you employ technology in providing feedback to your students?

30. When students commit mistakes are there any programs designed specifically to detect errors made by students.

31. Based on your prior lab experience, did previous laboratories have any specialized programs for student assessment? Would you please mention those programs?

32. Does the new lab have any programs for assessing students? What programs are these?

33. Since students are studying in a language laboratory surrounded by computers, do you allow your students to use them in a free-form manner?

    e) Section 05: Teachers' perspectives

34. In your opinion, do you think that the use of labs in oral expression classes will continue to increase in the future?

35. What can you say about the idea that says: "Language laboratories will gain a great interest/ focus by policymakers in the future?"

36. Do you believe it will be successful to integrate language labs in all Algerian universities?

    f) Section 06: Future recommendation:

37. If you have any recommendations or further comments, you are welcome to be answered.

APPENDICES

Appendix 4: Technicians' Interview

Technicians Interview 01

- ➤ Would you inform us if you have any experience working in a laboratory? How many years?

- ➤ May I kindly request that you provide an overview of your professional responsibilities when working there?

- ➤ Can you provide us with a short overview of the previous language laboratory? How can you define it? What does it include as software (programs) and hardware (ICT equipment) materials?

- ➤ When we say a "language lab", what are its special features? Is it special for FL?

- ➤ What are these programs? Their nature and origin? Who sponsored, installed, and developed them?

- ➤ How can a teacher interact with his students in the language lab using computers? Is there any special program that is used for this purpose?

- ➤ Once Foreign languages are based on specific sounds, was there a lab program for speech recognition?

- ➤ Do you have any idea how teachers were assessing their students? Did they use computers or special programs for the students' assessment? What are those programs?

- ➤ For which purpose was the previous lab used?

- ➤ Do you think that students were benefiting from it? How can students benefit from it?

- ➤ Do you use the same materials and programs in the new language lab?

- ➤ What happened to the previous lab? Why did they implement a new one?

- ➤ May I inquire about your current responsibilities in the language lab? Are you responsible for the new lab?

- ➢ Did you face any technical issues while working in the lab? What kind of technical issues? Would you provide us with an example?

- ➢ Have any training opportunities been provided to teachers? If so, what kind of training was offered? Who provided the training?

- ➢ What do you think is the purpose behind implementing language labs in language departments, generally and precisely in oral expression classes?

- ➢ Have you noticed any willingness on the part of both teachers and students to use language labs?

- ➢ According to you, which technology worked best in the language lab? and what technology would you suggest for future use?

- ➢ Would you like to provide any recommendations or any further comments?

Arabic Version of Interview 1

هل يمكننا معرفة ادا كان لديك خبرة في العمل في مجال المختبر؟ كم سنة؟ هل يمكنك تقديم لمحة عامة عن مسؤولياتك المهنية في المختبر؟

هل يمكنك أن تقدمي لنا لمحة موجزة عن مختبر اللغات السابق؟ كيف يمكنك ذكر ما تضمنه من أجهزة و معدات تكنولوجيا المعلوماتية والاتصالات؟

- عندما نقول 'مختبر اللغات' ما الذي يجعله مميز او بماذا يتميز؟هل هو خاص باللغات ؟

- ما هي هذه البرامج؟ طبيعتهم وأصلهم؟ ومن قام برعايتها وتركيبها وتطويرها؟

- كيف للمدرس أن يتفاعل مع طلابه في معمل اللغات باستخدام الحاسب الآلي؟ عن طريق ماذا و هل هناك برنامج خاص يستخدم لهذا الغرض؟

- بما أن اللغات الأجنبية تعتمد على أصوات محددة، فهل كان هناك برنامج معملي للتعرف على الكلام؟

- هل لديك أي فكرة عن كيفية تقييم المعلمين لطلابهم؟ هل استخدموا أجهزة الكمبيوتر أو برامج خاصة للتقييم؟ ما هي تلك البرامج ؟

- هل لديك اي فكرة عن مستوى الطلبة ؟ هل تعتقدين أن الطلاب كانوا مستفيدين من المختبر القديم؟

- هل تستخدم نفس المواد والبرامج في معمل اللغات الجديد؟ ماذا حدث للمختبر السابق؟ لماذا انشؤوا مختبر جديد ؟

- هل يمكنني الاستفسار عن مسؤولياتك الحالية في معمل اللغات؟ و هل أنت المسؤول عن المختبر الجديد ؟

- هل واجهت أي نوع من المشاكل التقنية أثناء العمل في المختبر؟ أي نوع من القضايا التقنية؟ هل يمكنك أن تقدم لنا مثالا؟

- هل تم توفير أي فرص تدريبية للاساتذة ؟ إذا كان الأمر كذلك، ما هو نوع التدريب المقدم؟ من قدم التدريب؟

- ما هو برأيك الهدف من إنشاء مختبرات اللغة في أقسام اللغة بشكل عام وفي فصول التعبير الشفهي على وجه التحديد؟

- هل لاحظت أي رغبة من جانب كل من المعلمين والطلاب لاستخدام مختبرات اللغة؟

- برأيك، ما هي التكنولوجيا التي نجحت بشكل أفضل في معمل اللغة؟ وما هي التكنولوجيا التي تقترحها للاستخدام المستقبلي؟

- هل ترغب في تقديم أي توصيات أو أي تعليقات أخرى؟

Technician Interview 02

➢ Would you inform us if you have any experience working in a laboratory? How many years?

➢ May I inquire about your current responsibilities in the language lab?

➢ May I kindly request that you provide an overview of your professional responsibilities when working there?

➢ Can you provide us with a short overview of the previous lag lab? How can you define it? What does it include as software(programs) and hardware(ICT equipment) materials?

➢ What do you think is the purpose behind implementing language labs in language departments, generally and precisely in oral expression classes?

➢ What are these programs? Their nature and origin? Who sponsored, installed, and developed them?

➢ Do you have any idea about the previous lab? What can you say about it?

➢ Do you know if they are utilizing the same software in the new lab?

➢ What are its unique features when we say a "language lab"? Is it unique for FL?

➢ How can a teacher use computers to interact with his students in the language lab? Is there any special program that is used for this purpose?

➢ Since Foreign languages are based on specific sounds, was there a lab program for speech recognition?

➢ Do you have any idea how teachers were assessing their students? Did they use computers or special programs for the Students' assessment? What are those programs?

➢ For which purpose is the new lab used?

Arabic Version of Interview 2

- هل لنا أن نستفسر عن مسؤولياتك الحالية في مخبر اللغات؟

- هل لنا أن نطلب منك تقديم لمحة عامة عن مسؤولياتك المهنية عند العمل هناك؟

- هل يمكنك تزويدنا بنظرة عامة قصيرة عن مختبر السابق؟ كيف يمكنك تعريف ذلك؟ ما الذي تتضمنه كمواد برمجية (برامج) وأجهزة (معدات تكنولوجيا المعلومات والاتصالات)؟

- ما هو برأيك الهدف من إنشاء مختبرات في أقسام اللغة بشكل عام وفي حصوص التعبير الشفهي على وجه التحديد؟

- ما هي البرامج المستخدمة ؟ طبيعتها وأصلها؟ ومن قام برعايتها وتركيبها وتطويرها؟

- هل لديك أي فكرة عن المعمل السابق؟ ماذا تستطيع القول في هذا الشأن ؟

- هل لديك فكرة ما إذا كانوا يستخدمون نفس البرنامج في المختبر الجديد؟

- عندما نقول 'مختبر اللغات' ما هي مميزاته؟ هل هو خاص باللغات الاجنبية ؟

- كيف يمكن للمدرس أن يتفاعل مع طلابه في معمل اللغات باستخدام الحاسب الآلي؟ فهل هناك برنامج خاص يستخدم لهذا الغرض؟

- بما أن اللغات الأجنبية تعتمد على أصوات محددة. هل كان هناك برنامج معملي للتعرف على الكلام؟

- هل لديك أي فكرة عن كيفية تقييم المعلمين لطلابهم؟ هل استخدموا أجهزة الكمبيوتر أو برامج خاصة للتقييم؟ ما هي تلك البرامج؟

- هل تلقيت أي شكاوى حول مشاكل فنية من طرف الاساتذة حول المختبر الجديد؟ ما هو نوع الشكاوى هناك؟ أي نوع من القضايا التقنية؟ هل يمكنك أن تقدم لنا مثالا؟

- هل تم توفير أي فرص تدريبية للمعلمين؟ إذا كان الأمر كذلك، ما هو نوع التدريب المقدم؟ من قدم التدريب؟

- ما هي الاجهزة الموجودة في معمل اللغات؟ هل هي نفس المعمل السابق؟ ماذا حدث للمختبر السابق؟ لماذا طبقوا واحدة جديدة؟

- ما هو المعمل الذي واجه أكثر الصعوبات التقنية مقارنة بالمختبر السابق؟

- ما هي الصعوبات التي واجهتكم؟ هل حصلت على أي مساعدة في الخارج؟ هل اتصلت بالمسؤول عن هذه القضية؟

- هل توجد أي برامج حاسوبية للتقييمات توفر تصحيحات و ردود الفعل ؟ ما هي هذه البرامج؟

- برأيك، ما هي التكنولوجيا التي نجحت بشكل أفضل في معمل اللغة؟ وما هي التكنولوجيا التي تقترحها للاستخدام المستقبلي؟

- في رأيك، هل تعتقد أن مختبرات اللغة ستحظى باهتمام من طرف المسؤولين في المستقبل؟ هل سيتم تعميمهم على جميع الجامعات؟

- هل ترغب في تقديم أي توصيات أو أي تعليقات أخرى؟

APPENDICES

Appendix 5: Questionnaire Consent Form

Dear Participants,

You are kindly invited to take part in this research study entitled Implementing Language Laboratories in COE Classes: The TPACK Framework Application between Expectation and Realities. The Case of L1 & L2 EFL Students at the University of Ain Temouchent, conducted by BENSAAD Safaa and BAKHTI Halima and supervised by Ms. Fatima YAHIA.

<u>Information sheet:</u>

Please read carefully this information sheet to understand why the research is being conducted and what your participation will involve.

The incorporation of language laboratories in teaching oral expression has significantly influenced students' communication abilities. The utilisation of such facilities have positively impacted learners' communicative skills by allowing them to practice their speaking abilities in a controlled environment with the help of specialized audio and visual equipment.The objective of the present questionnaire is to evalutae the effectiveness of TPACK framework in the lab . Our primary focus is to investigate the the significance of lab in the developing speaking skills among students. Through a thorough analysis of the data gathered, we seek to provide insights into the extent to which technology has been integrated into the oral expression sessions . This research at hand, employed a mixed method approach to evaluate the effectiveness of technology in enhancing communication skills.

Data Confidentiality:

During the presentation of results obtained from data collection, your own words may be used in the text; nevertheless, your identity remains anonymous. All the information we

gather will be kept completely confidential. All data will be identified in a closed file and a secured computer. Your participation is voluntary; you have the option to withdraw from the study within the next 15 days without giving a reason. There are no known drawbacks or disadvantages to participating in this study; rather, it may help other future researchers in their work.

You can ask for more details related to the conduction of this research from us, our supervisor and you can write to the Master Coordinator, to complain about your involvement in this research in the contacts list provided below.

Contacts List:

Researchers: Bakhti halima & Bensaad Safaa

Emails :

Supervisor:

Master Coordinator:

Conset Form :

By clicking "**Yes**" below, you acknowledge that you have read and understood that:

* Your participation in this survey is voluntary.

*You may withdraw from this research project within the next 15 days. Your refusal to participate will not in any way adversely impact upon you.

*You have given consent to be a subject of this research study and respond to this questionnaire as truly as possible.

*Your identity is kept anonymous during data collection and analysis.

*You agree to provide information to the researches under the conditions of confidentiality set out in the information sheet

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*You consent to the information collected for the purposes of this research, once anonymised,

to be used for any other research purposes.

- Yes

- No

Appendix 6: Students' Questionnaire

Questions:

-What is Your Academic Level?

- 1st year

- 2nd year

-How Would you Describe Your Proficiency Level?

- Beginner

- Elementary

- Upper-intermediate

- Intermediate

- Advanced

-How Often Do You Use Technology for Language Learning Purposes?

- Never

- Rarely

- Sometimes

- Often

- Always

-How Confident are you in Using Technology for Enhancing your Communication Skills ?

- Not at all confident

- Slightly confident

- Moderately confident

- Very confident

- Extremely confident

-How Effective do you Believe Language Labs are Enhancing Communication/ Speaking Skills?

- Not at all effective

- Slightly effective

- Moderately effective

- Very effective

- Extremely effective

-What Information and Communication Technology Tools do you use During your COE Classes ?

- Computers

- Communication software (zoom, classroom…)

- Phones

- Headphones

- Projectors

- Speakers

- Others……….

-In your Opinion to what Degree have Language Lab Session Contributed to the Improvement of the Following Language Skills

1- Not improved   5-significatly improved

- Speaking skills   *1   *2   *3   *4   *5

- Listening skills   *1   *2   *3   *4   *5

- Pronunciation   *1   *2   *3   *4   *5

- Vocabulary   *1   *2   *3   *4   *5

- Grammar   *1   *2   *3   *4   *5

-Do you Believe that Language Labs have Positively Influenced your Confidence in Using English for Communication?

- Strongly disagree

- Disagree

- Neutral

- Agree

- Strongly agree

-How do you Perceive the Impact of Language Lab Sessions on your Overall Communication Skills in Comparison to Traditional Classroom Interaction ?

- Not at all effective

- Less effective

- Moderately effective

- Very effective

- Extremely effective

-How is your Communication Performance Assessed During your COE Lab Sessions?

- Oral presentations

- Software pronunciation programmes

- Group discussion

- Structured dialogues

- Role-playing

- Audio video recorded activities

- Multimedia presentation (ppt, photos…)

- Others

-To what degree do Assessments in CEO Incorporate Feedback Received from

both Instructors and Classmates?

- Not at all incorporated

- Slightly incorporated

- Moderately incorporated

- Very incorporated

- Extremely incorporated

-To What Degree do you Actively Apply the Feedback Received in Language

Laboratory Sessions to Improve your Communication Skills Outside the Lab?

- Not at all applied

- Slightly applied

- Moderately applied

- Very applied

- Extremely applied

- Do you Prefer to Have more Lab Sessions Integrated into Your Curriculum?

  • Definitely

  • To some extent.

  • To keep the same frequency.

  • Fewer sessions.

  • Omit it entirely.

- In your opinion will the Use of Language Lab in Oral Expression Classes Continue to Grow in the Future?

  • Strongly disagree

  • Disagree

  • Neutral

  • Agree

  • Strongly agree

Appendix 7: CEO (Speaking) Exam Evaluation Sheet

Name ……………………………

Signature:……………………………

Level ………………………………

Group…………….Subgroup……………

Mark ……………………….. /20

Date…………………………

1. Fluency	Suitable speed, pauses, and discourse strategies. How positively the student contributes to the debate/presentation: conversation.	**0**	**1**	**2**	**3**	
2. Communicative ability.	Includes the length of utterances, and flexibility to speakers of different levels.	**0**	**1**	**2**	**3**	
3. Accuracy/ Grammar	How accurate and appropriate was the student's Grammar, verbs, sentence structures	**0**	**1**	**2**	**3**	**4**
4. Vocabulary	If the student uses a wide variety of words and phrases or uses new vocabulary learned and related to the unit studied	**0**	**1**	**2**	**3**	**4**
5. Pronunciation	Efforts made to use correct intonation, stress, and individual sounds (final s/ed pronunciation)	**0**	**1**	**2**	**3**	**4**
5. Content	Topic elaboration, organisation, coherence and cohesion, suitable linkers and connectors		**0**	**1**	**2**	

NB:
1. **0.5 can be used!**

2. **Print in advance a copy for each student.**

3. **Start by the first student on the list and go forward/ the first volunteer.**

4. **Give another chance for those who haven't well performed**