

**Exploring Visually Impaired EFL Students' Perceptions of Assistive
Technology: A Case Study at Bordj Bou Arreridj University**

by

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Declaration

We hereby declare that this Master thesis entitled “Exploring Visually Impaired EFL Students’ Perceptions of Assistive Technology: A Case Study at Bordj Bou Arreridj University” is our work, and that all sources used were acknowledged. We also certify that this thesis follows solely the guidelines of the seventh edition of APA Style.

Dedications

" و قل اعملوا فسيرى الله عملكم و رسوله و المؤمنون "

With a heart overflowing with gratitude and a soul brimming with appreciation for all who supported me, I dedicate this humble work

With profound gratitude to Allah, whose blessings guided this journey from its first steps to its final words all praise is to Him, the Most Merciful.

To my indomitable spirit the flame that burned through midnight oil, transformed obstacles into opportunities, and refused to surrender to doubt or fatigue. This triumph is your resilience made visible.

To my beloved parents, Fatiha and Abdelaziz the architects of my character, the keepers of my dreams. Your sacrifices built my foundation, your wisdom lights my path, and your unconditional love remains my greatest blessing. This work is but a small reflection of all you have sown in me.

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To my guiding stars

Grandpa Slimane my quiet mountain of strength. Grandmas Kafia & Djamil whose prayers still whisper through my storms. Uncle Ismail and Aunt Baya (May Allah grant them Jannat al-Firdaus) forever alive in our family's story

To my extended family uncles, aunts, Naima, Asma, ,Arbi ,Hawass... and cousins Marem, Siredj ,Zanouba , Yousra , Chouaib, Louai, Yasser, haithem, Mohemmed, Wassim, Ibrahim, Aymen, Houda ,Alla, Loudjain, Djamila, Bassma and Aness..... you are my living roots and sheltering branches. Special mention to Ismail the younger (may Allah grant him complete healing).

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(وَمَا تَوْفِيقِي إِلَّا بِاللَّهِ عَلَيْهِ تَوَكَّلْتُ وَإِلَيْهِ أُنِيبُ)

(Wa mā tawfiqi illā billah, alayhi tawakkaltu wa ilayhi unib)

(And verily my success is only by Allah. Upon Him, I have relied, and to Him, I return)

(Qur'an, 2008, 11:88)

First and foremost, my sincere gratitude to Allah who provided me with everything that I required in completing this work.

Dedicating this thesis to a single person seemed unjust, as my growth and development are indebted to numerous individuals. Therefore, I dedicate this work to

Me, who feared the fall yet found the courage to jump, this is just a beginning of a beautiful journey and the best is yet to come,

My dear father, whose boundless love, wisdom, and guidance have been my constant source of strength in times of doubt,

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Abstract

In an era where digital technologies shape educational access, assistive technology (AT) has become essential for visually impaired (VI) students, particularly in language learning. Yet, in many Global South contexts, including Algeria, the implementation of AT in higher education remains limited and under-researched. This study aimed to explore the perceptions of VI English Foreign Language (EFL) students regarding the impact of AT on their language learning at Mohamed El Bachir El Ibrahimi University in Bordj Bou Arreridj (BBA), Algeria. Guided by the interpretivist paradigm, it adopted a qualitative exploratory case study design and conducted semi-structured interviews with four VI students and the Dean of the Faculty of Letters and Languages. The findings revealed a notable divergence in experiences and perceptions. Blind students who regularly used specialized AT (e.g., NVDA, JAWS, Smartphone accessibility features) reported enhanced access, autonomy, and academic performance. In contrast, partially sighted students who relied on general tools (e.g., YouTube, ChatGPT) expressed ambivalence toward AT, often due to limited awareness or institutional support. Across both groups, participants highlighted the lack of institutional AT provision and formal training, inaccessible learning platforms, and financial constraints as major challenges. The study emphasized the urgent need for institutional AT investment, teacher training, and policy reforms to bridge the existing gaps and foster an inclusive academic environment for VIS.

Keywords: inclusive education, visually impaired students, EFL learning, assistive technology, accessibility, Algeria

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List of Acronyms

ADHD: Attention Deficit Hyperactivity Disorder.

AT: Assistive Technology.

BBA: Bordj Bou Arreridj.

BERA: British Educational Research Association.

ChatGPT: Generative Pre-trained Transformer.

CRPD: The United Nations Convention on the Rights of Persons with Disabilities.

EFL: English as Foreign Language.

FM: Frequency Modulation.

ICD: The International Classification of Diseases.

ICF: International Classification of Functioning, Disability and Health.

JAWS: Job Access with Speech.

MELDICT: Multimedia English Learning Dictionary.

MESRS: Ministry of Higher Education and Scientific Research.

NLP: No Light Perception.

NVDA: Non-Visual Desktop Access.

OCR: Optical Character Recognition.

UDL: Universal Design for Learning.

UNCRPD: United Nations Convention on the Rights of Persons with Disabilities.

UNESCO: United Nations Educational, Scientific and Cultural Organization.

UNICEF: United Nations International Children's Emergency Fund.

UPIAS: Union of the Physically Impaired Against Segregation.

VA: Visual Acuity.

VF: Visual Field.

VI: Visually Impaired.

VIS: Visually Impaired Students.

WHO: The World Health Organization.

General Introduction

Background of the Study

In recent decades, education systems across the globe have increasingly embraced the principles of inclusive education, aiming to provide equitable learning opportunities for all students, including those with disabilities. As Ahmed (2015) emphasised, inclusive education promotes equality in teaching by ensuring that students with disabilities have the same opportunities to demonstrate their abilities and succeed alongside their peers. This approach challenges the legacy of segregation, fostering learning environments in which diversity is not only accommodated but actively celebrated.

An essential dimension of inclusive education involves enabling students with disabilities to participate fully in multidisciplinary learning, including the study of English as a Foreign Language (EFL). The global dominance of English in domains such as science, technology, and international communication emphasizes the need for inclusive pedagogical strategies that serve all learners (Crystal, 2003). Visually impaired students (VIS), in particular, represent an underrepresented group whose linguistic education requires careful, targeted support. Despite the progress made in policy and practice, VIS continue to face specific and significant barriers in accessing EFL instruction, highlighting the continued need for responsive educational interventions (Pandey, 2018).

Fortunately, these challenges are being increasingly addressed through the integration of assistive technologies (AT), which offer novel pathways for inclusive language learning. According to Groff (2021), AT designed for language learners includes tools such as screen readers, text-to-speech systems, and Braille displays, resources that mediate the gap between traditional teaching methods and the unique learning needs of VIS. These technologies not

only enhance comprehension, acquisition, and language production, but also empower VIS to engage more confidently and autonomously within EFL classrooms (Klimova et al., 2023).

Building upon this technological promise, a growing body of international research has examined the perceived impact of AT in EFL contexts. Studies conducted by Attachoo and Sitthitikul (2020) in Thailand, Al-Jarf (2021) in Saudi Arabia, Khan and Mahmood (2022) in Pakistan, and Hamid et al. (2022) in Indonesia have collectively demonstrated the potential of AT to facilitate English language learning among VIS. These studies also highlight persisting challenges in implementation, as reported through the lived experiences and perceptions of the students themselves. Notably, however, there remains an absence of research that specifically addresses this issue within the context of Bordj Bou Arreridj (BBA) University in Algeria.

This study therefore seeks to address this critical gap by exploring the perceptions of visually impaired EFL students at BBA University regarding the impact of AT on their language learning. By centring the voices and experiences of these students, the research aims to contribute to a more inclusive EFL educational environment and inform future practice within this specific institutional context.

Statement of the Problem

Despite global efforts to promote inclusive education, visually impaired students remain at a disadvantage in EFL learning environments. The inherently visual nature of language instruction that depend on printed texts, written exercises, and visual classroom cues poses significant challenges for these learners. In response, assistive technology has been introduced to bridge this accessibility gap and support language acquisition. Tools such as screen readers, Braille displays, and speech-to-text software have been shown to enhance

access, foster autonomy, and improve educational outcomes for visually impaired students (Al Siyabi et al., 2022; Muradyan, 2022; Sait, 2020).

A growing body of international research has examined how visually impaired students perceive the usefulness of such tools in EFL settings, highlighting both their benefits and the challenges of implementation across diverse educational landscapes (idont liikethe terermlandscapes!) (e.g., Attachoo & Sitthitikul, 2020; Al-Jarf, 2021; Khan & Mahmood, 2022; Hamid et al., 2022).

However, these findings are not directly transferable to all contexts. The effectiveness of AT, and students' perceptions of it, are shaped by institutional, technological, and pedagogical conditions that vary significantly across settings. To date, no study has investigated how visually impaired EFL students at BBA University experience and evaluate assistive technology. Their perspectives, shaped by the specific resources, support systems, and challenges within this university, remain undocumented.

This absence of research in BBA presents both a scholarly and practical problem. Without a clear understanding of how AT functions in the lived experiences of students within this local context, efforts to promote inclusive language learning may be based on assumptions rather than evidence. Policies and teaching practices may overlook key barriers or fail to build on effective supports already in place.

This study addresses that critical gap by exploring how VI EFL students at BBA University perceive the impact of on their English language learning. By centering their voices, the research aims to inform institutional decision-making, enhance inclusive pedagogy, and contribute to a more contextually sensitive understanding of the role of AT in specific institutional EFL settings

The Aim of the Study

This study aims to explore the perceptions of VI EFL students at BBA University regarding the impact of AT on their English learning. Specifically, the research seeks to:

- Examine the experiences of VI EFL students with AT in their language learning.
- Identify key challenges in implementing AT in EFL contexts.
- Propose student-centered improvements for assistive tools use.

Research Questions

The study addresses the following overarching research question: How do VI EFL students at BBA University perceive the impact of AT on their English language learning?

To address this question systematically, three sub-questions are explored:

1. How do VI EFL students describe their experiences with assistive AT in their EFL learning?
2. What specific challenges do they encounter when using these technologies?
3. What improvements do they propose to enhance the effectiveness of assistive tools in their learning context?

Research Methodology

To thoroughly explore the perceptions of VI EFL students on the impact of AT on English language learning, this study employs a qualitative research approach and adopts an exploratory case study as the research design. The research employs semi-structured interviews as the primary data collection instrument, administered to all four VI EFL students enrolled at BBA University, supplemented by an interview with the Dean of the Faculty of Letters and Foreign Languages. Given the specialized population under examination, the study utilizes comprehensive purposive sampling to include every available VIS in the English department, ensuring complete representation of this unique educational experience.

Significance of the Study

The study aims to deliver valuable insights into AT's impact on VI EFL students' English learning experiences. Additionally, it works to guide the establishment of enhanced support systems and specialized training initiatives, fostering improvements in English education for VI EFL students at BBA University. The findings can shape the creation and refinement of institutional support services and accessibility initiatives.

Structure of Thesis

This thesis is divided into two main chapters with general introduction and conclusion to systematically explore the perceptions of VI EFL students on English language learning at BBA University. It begins with a general introduction that provides an overview of the topic and highlights the statement of the problem. It also introduces research aims and questions, clarifies the research methodological framework adopted for the study, and discusses the significance of the study. The literature review chapter comprises three sections. The first one delves into inclusive education, exploring global perspectives and Algeria's policies. The second section focuses on visual impairment within the context of language learning, defining key terms and addressing the cognitive implications and specific challenges faced by VIS. The final section discusses assistive technology, emphasizing its definitions and types, while examining the advantages and barriers associated with AT implementation. The second chapter is also divided into three sections. The first section describes and justifies the study's methodology and research design. The second section includes data analysis and discussion of the findings, whereas the third section addresses research limitations, providing pedagogical recommendations and suggestions for future studies. The dissertation ends with a general conclusion.

Chapter One: Literature Review

Introduction

This study centers on the perceptions of visually impaired (VI) students regarding the influence of assistive technology (AT) on their learning of English as a foreign language. Since learning experiences are shaped not only by educational tools but also by broader institutional and social contexts, this chapter offers a detailed review of the key concepts that inform this research. It is structured into three interrelated sections. The first section presents an overview of inclusive education, including global frameworks, national policies in Algeria, and common barriers to educational inclusion. The second section examines visual impairment and its implications for EFL learning, addressing key definitions, classifications, and pedagogical challenges. The final section explores assistive technology (AT), outlining its types, uses, and the benefits and limitations of its application in supporting visually impaired learners in EFL contexts.

Section One: Inclusive Education

Inclusive Education: Global Perspectives and Principles

Inclusive education has emerged over the past few decades as a transformative educational ideal, founded on the principles of equity, diversity, and the right to quality education for all learners. Defined broadly, it involves the restructuring of schools and learning environments to accommodate all students, regardless of disability, socio-economic background, gender, or linguistic ability, within mainstream settings. Rather than relegating learners with disabilities to specialized institutions, inclusive education insists on full participation within general education systems (Ainscow et al., 2006).

The philosophical and legal roots of inclusive education lie in key international documents. The Salamanca Statement and Framework for Action on Special Needs Education (UNESCO, 1994) was seminal in advocating inclusive education as the guiding principle for

global educational systems. It argued that “regular schools with an inclusive orientation are the most effective means of combating discriminatory attitudes, creating welcoming communities, and achieving education for all” (UNESCO 11). This was reinforced by the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), adopted in 2006, which legally binds signatory countries, including Algeria, to ensure that “persons with disabilities are not excluded from the general education system” (Article 24).

From a pedagogical perspective, inclusive education is strongly aligned with Universal Design for Learning (UDL). The latter is a framework that emphasizes designing curricula and assessments that accommodate a wide range of learners from the outset, rather than through retroactive adaptation (Meyer et al., 2014). UDL aligns closely with the deployment of assistive technologies, which serve as both enabling tools and indicators of inclusive institutional cultures. The presence and effectiveness of assistive technologies are often cited as markers of how deeply inclusive principles have been internalized within educational institutions (Dell et al., 2012).

Despite its global endorsement, inclusive education remains uneven in practice. Implementation gaps often stem from underfunding, teacher preparedness, rigid curricula, and deep-seated cultural attitudes toward disability (Florian & Black-Hawkins, 2011). In low-resource contexts in particular, inclusion often remains aspirational rather than operational. The challenge lies in translating inclusive values into actionable policies that are sensitive to local contexts, particularly in transitional educational systems such as those found in parts of the Global South. According to Kiuppis (2014), the success of inclusive policies depends not only on institutional readiness but also on a broader cultural willingness to embrace difference as a value rather than as a deficit.

Algeria's Inclusive Education Policies

In Algeria, the commitment to inclusive education has been shaped by international conventions, national legislation, and ministerial directives. Algeria's ratification of the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) in 2009 marked a pivotal moment in aligning national educational priorities with global standards. The Convention, notably Article 24, obliges signatory states to develop an inclusive education system at all levels and lifelong learning opportunities for persons with disabilities. This article requires that schools provide reasonable accommodations like the provision of Braille materials, assistive technologies, and appropriate support from trained educators (United Nations, 2007).

Domestically, Algeria's law number 02-09 on the Protection and Promotion of Persons with Disabilities, promulgated on 8 May 2002 serves as a legislative cornerstone for inclusion. Article 12 of this law guarantees the right to education for individuals with disabilities, explicitly stating that they are to be educated within mainstream educational institutions wherever possible, and calls for necessary accommodations in public facilities, including universities (Journal Officiel de la République Algérienne, 2002). Supplementary decrees and circulars, like circular No. 832 of 2015, issued by the Ministry of Higher Education and Scientific Research (MESRS) reiterate this formal commitment, calling for enhanced accessibility and the provision of dedicated support services. These include provisions for accessible examination formats and assistive technologies (MESRS, 2015). Collectively, these instruments construct a robust legal and policy framework, aligned with international norms and affirming inclusion as a fundamental right.

Barriers to Inclusion in Education in Algeria

Despite Algeria's formal commitment to inclusive education through international ratifications and domestic legislation, a critical analysis reveals significant gaps between

Algeria's inclusive education policies and their practical application in higher education. These gaps are clarified here as documented by Algerian scholars; Bessai (2018), Guersas and Ouadah (2018):

Lack of Data and Institutional Structures. A fundamental barrier to effective implementation is the absence of reliable data on the number and needs of students with disabilities. There is no national database or monitoring system at either the ministerial or university level. This lack of visibility translates into a lack of targeted planning, budget allocation, and policy development.

Moreover, most universities do not have dedicated departments or officers responsible for disability services. The absence of institutional structures means that there is no clear accountability mechanism or strategic planning unit tasked with ensuring accessibility and inclusion.

Inadequate Staff Training and Awareness. University faculty and administrative staff often lack the requisite training to accommodate students with disabilities. This is not merely a question of technical knowledge but of attitudinal change. Many staff members remain unaware of inclusive pedagogical practices or hold misconceptions about the capabilities of students with disabilities. Without professional development and sensitization programs, inclusive education remains only ambitious.

Fragmented and Localized Interventions. Practices that do exist are fragmented and rely heavily on local goodwill rather than formal institutional support. The current model is one of "individualized support" rather than systemic provision. This inconsistency leads to unequal access and quality of support, effectively institutionalizing a form of geographic and administrative discrimination.

Neglect of Sensory and Cognitive Disabilities. Current practices overwhelmingly focus on physical access, often ignoring the specific needs of students with visual, auditory,

or intellectual disabilities. For example, there are few efforts to adapt course materials into Braille or to ensure that lecture content is accessible for students with hearing impairments. This narrow conception of disability severely limits the reach and efficacy of existing policies.

Absence of Regulatory Enforcement. Lastly, the legal instruments that do exist lack enforcement mechanisms. Law No. 02-09 and related decrees outline the rights of students with disabilities but do not specify sanctions for non-compliance or incentives for proactive implementation. Without binding regulations or an empowered oversight body, universities face little pressure to transform rhetoric into reality.

These shortcomings reveal a disjuncture between international obligations and national realities. While Algeria has aligned itself with international legal instruments on inclusion, its higher education institutions remain ill-equipped to provide the conditions necessary for the realization of inclusive education. The findings of the Algerian scholars (Bessai, 2018; Guersas & Ouadah (2018) collectively highlight the need for a national, coordinated strategy that combines data collection, institutional infrastructure, staff training, and enforceable policy mechanisms. Only then, can inclusive education move beyond symbolic commitment and become a lived reality for Algerian students with disabilities.

Section Two: Visual Impairment and the EFL Learning Experience

Defining Impairment and Disability

The terms "disability" and "impairment" are often used interchangeably in everyday language, leading to significant confusion and misunderstanding. However, within academic discourse, policy frameworks, and the lived experience of disabled people, these concepts represent distinct, though interrelated, realities. Clarifying this distinction is crucial for understanding how individuals experience exclusion and for informing inclusive policies and practices.

Impairment. Impairment refers to a dysfunction or anomaly in the body's structure or function. It is understood primarily as a biomedical condition, resulting from congenital anomalies, disease, injury, or other health-related causes. The World Health Organization (WHO), in its International Classification of Functioning, Disability and Health (ICF, 2001), defines impairment as "a problem in body function or structure such as a significant deviation or loss." This means that it constitutes a physiological or psychological characteristic of the individual. Common forms include:

- Physical impairments (e.g., limb absence, spinal cord injury, paralysis)
- Sensory impairments (e.g., blindness, deafness)
- Cognitive impairments (e.g., traumatic brain injury, dementia)
- Intellectual impairments (e.g., Down syndrome, developmental delays)

These conditions represent deviations from what is considered normative biomedical functioning. However, as the WHO framework suggests, impairment in itself does not necessarily lead to reduced quality of life or limited participation; rather, it is society's response, or lack thereof, that determines the extent of exclusion.

Disability. In contrast to impairment, disability is not an intrinsic condition of the individual. Rather, it emerges from the interaction between a person with impairment and a world that is not designed to accommodate human diversity. This perspective is rooted in the social model of disability, which gained prominence in the late 20th century as a reaction against the medicalised, individualizing accounts that had long dominated policy and public discourse. The United Nations Convention on the Rights of Persons with Disabilities (CRPD, 2006) articulated this position clearly: “Persons with disabilities include those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others.” Here, disability is understood not as a personal deficit but as a form of structural injustice, an outcome of social environments that are physically inaccessible, communicatively exclusive, and attitudinally hostile. Barriers may include:

- Architectural: stairs without ramps, buildings without elevators
- Communicative: lack of sign language interpretation, inaccessible digital content
- Attitudinal: stigma, prejudice, or assumptions about incapacity
- Institutional: educational systems without accommodations, rigid work policies

While impairment denotes the biological condition of the individual, disability arises from the socially constructed obstacles that inhibit participation and equality. Recognizing this distinction is essential for developing effective policies, fostering inclusive practices

Models of Disability

Disability has been theorized through several paradigms, each offering distinct perspectives on the nature and origins of disablement.

The Medical Model sees disability as a defect or impairment located within the individual, focusing on diagnosis and treatment (Oliver, 1990). Its main limitation is

reductionism, ignoring social and environmental factors, which can foster dependency and marginalization (Shakespeare, 2006).

In contrast, the Social Model distinguishes impairment from disability, defining disability as the result of societal barriers (UPIAS, 1976). While powerful in shifting responsibility to society and advocating for accessibility, it may overlook the lived bodily experiences of impairment (Shakespeare, 2014).

The Human Rights Model frames disability as a matter of justice, enshrined in legal rights through frameworks like the UN CRPD (2006). It transforms inclusion into legal obligation but assumes equitable access to disability recognition and resources, which is often lacking in practice (Quinn & Degener, 2002).

Finally, the Biopsychosocial Model integrates biological, psychological, and social factors (WHO, 2001). Although holistic, it risks depoliticizing disability by focusing on individual functioning rather than systemic inequality (Thomas, 2004).

In sum, while each paradigm contributes valuable insights, none is without limitations. Understanding disability requires integrating these paradigms while remaining critically aware of their limitations and the social contexts in which they operate.

Conceptualizing Visual Impairment

Visual impairment (VI) is a globally significant health and educational issue. According to the World Health Organization (WHO), over 2.2 billion individuals worldwide live with some form of vision impairment (Zamzam, 2021). The term “visual impairment” broadly encompasses conditions ranging from mild vision loss to total blindness. The American Foundation for the Blind defines VI as including individuals with varying degrees of visual capability, from low vision to complete absence of sight. Similarly, Sait et al. (2020) described VI as a spectrum of partial or complete loss of vision, underscoring the diverse nature of visual challenges encountered by individuals. Such diversity implies that

individuals with VI may have markedly different support needs, depending on the nature, extent, and onset of their impairment.

Bhargava (n.d.) highlighted the importance of recognizing this diversity within the visually impaired community, noting that individuals vary not only in their medical conditions but also in terms of their educational backgrounds, coping strategies, and personal goals. Therefore, educational provisions must be tailored to address those specific needs rather than adopting a uniform approach to support.

Legal and Educational Definitions

Within the framework of the International Classification of Functioning, Disability and Health (ICF), "impairment" is understood as a condition that results from either known or unknown health issues, leading to diseases or irregularities in bodily functions or structures (WHO, 2019). According to Tamma (2023), there is no universally accepted definition of "visual impairment" because the criteria used to determine who is visually impaired can vary. However, despite these terminological discrepancies, the definition most commonly cited is that of the World Health Organization (WHO), which defined visual impairment as a condition in which an eye disorder disrupts the normal functioning of the visual system. In light of this, visual impairment is understood to vary depending on the context in which it is applied. This observation underscores the importance of aligning definitions with established guidelines, such as those provided by the WHO, to ensure clarity and consistency in both understanding and addressing visual impairment.

From a legal perspective, visual impairment is often defined by specific thresholds that determine eligibility for disability services or benefits. According to the WHO (2018), blindness is characterized by a best-corrected visual acuity of less than 3/60 in the better eye, while low vision is defined as a visual acuity of less than 6/18 but greater than 3/60. Woo (2008) noted that in the United States, the Social Security Administration classifies

individuals as legally blind if they have extremely limited vision of 20/200 or less in the better-seeing eye, even with corrective lenses, or if their visual field is restricted to 20 degrees or less in diameter. This definition incorporates both visual acuity (the sharpness of central vision) and visual field (the breadth of peripheral vision), highlighting that blindness is not solely about how much a person can see, but also about how much they can perceive from their surroundings. Tamma (2023) clarified that visual acuity (VA) refers to the obtained score of an eye examination test that detects the degree of vision loss and the potential for any specific rehabilitation, whereas visual field (VF) indicates the entire area of how far one's eye can see objects in any direction when both eyes focus on a single point. Both are essential in assessing the degree of visual loss and determining legal eligibility for disability services.

In contrast, educational definitions of visual impairment tend to be more functional. Kızılaslan (2020) argued that educational definitions are designed to inform environmental and instructional modifications, allowing learners with residual vision to utilize their sight effectively in the classroom. Mangal (2007) suggested that visual impairment in educational settings has a profound impact on attention, comprehension, and learning, necessitating the use of tailored teaching methods to meet the specific needs of these students. Kocyigit et al. (2015) further emphasized this point, asserting that students with visual impairments require distinct pedagogical strategies to address their unique learning needs, which differ fundamentally from those of sighted peers.

Classifications: Low Vision and Blindness

The WHO (2006) classified visual impairment into two main categories: low vision and blindness. The concept of low vision was first introduced by Faye and Fonda. It gained widespread acceptance through Faye's contributions at the Lighthouse Low Vision Service in New York City. Prior to the widespread adoption of the term "low vision," various terms such as subnormal vision, partial sight, or partial blindness were used to describe significant vision

loss that did not meet the criteria for legal blindness. Low vision describes a state of permanent vision loss that cannot be corrected through standard methods like glasses, contacts, surgery, or medication, but which allows some usable vision for daily tasks. This eye condition causes a visual impairment that limits the functionality of the eye or visual system, resulting in decreased clarity in vision (visual acuity), diminished side vision, or a combination of both (Woo, 2008).

On the other hand, blindness is generally defined as a complete absence of vision. As Kirbyoun and Sevgi (2021) noted, individuals who are totally blind have either no vision or only light perception in both eyes, and they often rely on tactile, auditory, and olfactory channels to gather information. The International Classification of Diseases (ICD-11, 2024) has further elaborated on this concept by providing both a numerical and a functional definition. Numerically, blindness refers to severe or complete vision loss, which is used for statistical purposes by the World Health Organization (WHO). Functionally, it describes individuals who have minimal or no remaining vision and who must depend on alternative senses, such as touch or hearing, to perform tasks typically done by sight. This includes the use of techniques like Braille, guide dogs, or tactile methods to assist with activities such as reading, mobility, and manipulation. This dual perspective emphasizes that those who are totally blind are unable to utilize their vision for any tasks, necessitating the adoption of alternative strategies to navigate their environment. Similarly, Gurnani et al. (2024) defined total blindness as a complete inability to perceive or detect light, a condition referred to as No Light Perception (NLP), which further highlights the total absence of visual awareness in affected individuals. These definitions collectively illustrate the profound nature of total blindness, where individuals must rely on alternative strategies to interact with their environment.

Visual Impairment and Language Learning

Cognitive and Linguistic Implications of Vision Loss

Learning a language is a multisensory process, and visual input plays a central role in language acquisition. Visual impairment therefore presents substantial challenges to language acquisition, particularly in foreign language contexts such as EFL. The absence or reduction of visual input poses distinct cognitive and linguistic challenges including development of vocabulary, phonological awareness, reading fluency, grammatical and contextual understanding, and concept formation.

Özer and Cabaroğlu (2018) argued that visually impaired (VI) learners encounter greater difficulties in acquiring foreign languages than their sighted peers, largely due to their limited access to visual stimuli, which are often essential for effective language processing. Kapur (2017) similarly maintained that damage or deformity in the visual system reduces the amount of sensory information received, thereby delaying cognitive functions related to language development, including reasoning, memory, and abstract thinking. These limitations are especially pronounced in educational environments where instruction and materials heavily rely on visual modalities.

However, more recent research in neuroscience has offered a nuanced perspective. Arslantaş (2017) noted that, prior to the 1980s, language education for visually impaired students was widely neglected, driven by the assumption that these learners were inherently disadvantaged in acquiring foreign languages. However, advances in cognitive science and neuroplasticity research have shown that individuals with VI often develop enhanced verbal memory and auditory processing skills, which can serve as compensatory strengths in language learning (Röder et al., 2002; Voss et al., 2004; Pascual-Leone et al., 2005). Susanto and Nanda (2018) reported that the development of those compensatory skills may offer unique strengths in learning vocabulary and listening comprehension but can only be realized

when learners are provided with accessible materials, differentiated instruction, and supportive learning environments.

To conclude, these findings suggest that, with appropriate pedagogical and technological support, visually impaired students can achieve language proficiency comparable to or exceeding that of their sighted counterparts. Yet attaining this potential in practice remains a challenge. In many educational contexts, VI learners continue to face persistent obstacles, primarily stemming from systemic shortcomings and pedagogical practices that fail to accommodate non-visual modes of learning.

EFL - Specific Challenges for VI Learners

As English increasingly becomes a global lingua franca, educational institutions across non-English-speaking countries have integrated English as a core subject. In such contexts, students with visual impairments face additional challenges when learning English as a foreign language (EFL). Susanto and Nanda (2018) highlighted the centrality of visual cues in second language learning, including facial expressions, gestures, text, and classroom visual aids. The inaccessibility of these cues can delay or disrupt the development of both receptive and productive language skills.

Reading and writing, in particular, are heavily reliant on visual perception and spatial awareness. Mwakyeja (2013) argued that students with VI often read more slowly than their sighted peers due to letter-by-letter decoding and difficulties with word recognition. This is because VIS tend to process written language at the level of individual letters rather than whole words, which, in its turn, slows reading fluency and affects comprehension. Their writing, likewise, may reflect oral structures more than the syntactic conventions of written language, owing to difficulties in reviewing, organizing and editing text visually (Al-Ghafri, 2015).

The auditory and oral aspects of English learning also present hurdles. Almalki (2021) pointed out that VIS often struggle with listening comprehension, especially in classrooms lacking audio-enhanced instruction or where teachers are untrained in inclusive strategies. Distinguishing between unfamiliar accents, decoding fast speech, and following conversations without visual context (such as lip movement or gestures) are frequent obstacles. Consequently, speaking skills may also develop unevenly. Pronunciation, intonation, and prosody, which are typically learned through imitation and visual modeling, can be very difficult to master without multisensory reinforcement. Learners may hesitate to participate in oral activities due to uncertainty about their pronunciation or the risk of social stigma, further limiting their communicative practice (Aryanti, 2017).

Systemic and Pedagogical Barriers

Beyond cognitive and sensory challenges, systemic issues further complicate the experience of visually impaired EFL learners. According to Mwakyeja (2013), there are three major barriers to inclusive foreign language education: the absence of clear institutional policies on inclusion, teachers' lack of knowledge or training in inclusive pedagogy, and inadequate resources and limited parental involvement.

One of the most pressing challenges is the absence of clearly articulated institutional policies on inclusive education. As Mwakyeja (2013) observed, many educational systems pay rhetorical homage to inclusivity but fail to provide actionable frameworks for implementation or evaluation. In Algeria, for instance, although inclusive education is referenced in official discourse, its practical application remains vague because there are no clear guidelines on its implementation and evaluation (Hamida, 2015; Zerguine, 2021). This lack of institutional clarity leads to inconsistent practices across schools and universities.

Another key problem is the lack of teacher preparation. Teachers are often under trained in inclusive pedagogy, both at the pre-service level and during in-service professional development. Studies have shown that many educators lack both the theoretical understanding and practical skills needed to adapt their teaching for VI learners (Kocyigit et al., 2015). As a result, many rely on traditional methods that privilege sighted learners, leaving VI students to navigate learning independently or with minimal support. In many cases, students are forced to depend on family members or classmates to interpret or access learning materials, an arrangement that is neither sustainable nor equitable.

In addition to these issues, most schools lack basic resources that VIS need to succeed, such as audio-enhanced textbooks, Braille materials, tactile graphics, and screen-reading software (Liyanaage & Gunsekera, 2021). Without these accommodations, VI learners are effectively excluded from engaging meaningfully with the curriculum, struggle to follow lessons and complete assignments. This is further compounded by the low level of parental involvement in their children's education, often due to parents' limited awareness of inclusive strategies or lack of institutional support to participate actively (Mutasa & Wills, 2020).

In sum, while visual impairment introduces distinct challenges to language learning, particularly in EFL settings, these challenges can be mitigated through inclusive teaching practices, assistive technologies, and institutional commitment. The following sections will explore these supports in greater detail, particularly with regard to assistive technologies and their impact on EFL learning for students with VI.

Section Three: Assistive Technology

What is Assistive Technology?

In an increasingly digital world, the importance of ensuring equitable access to educational resources for individuals with disabilities cannot be overstated. Assistive technology (AT) plays a crucial role in bridging the gap between disabled individuals and their environments, providing tools that enhance learning, communication, and daily functioning. As society continues to embrace inclusive education and accessibility, the integration of AT in various fields, particularly in education, has become pivotal. However, despite its widespread application, the term assistive technology resists fixed interpretation as it encompasses a broad and evolving range of tools. It is therefore essential to examine how the term has been defined and understood across legal, educational, and technological contexts in order to clarify its current usage and implications.

The earliest formal and widely cited definition of assistive technology (AT) emerged from the U.S. Congress in the 1998 Technology-Related Assistance for Individuals with Disabilities Act (commonly referred to as the Tech Act). According to Section 3 of this Act, assistive technology includes “any item, piece of equipment, or product system, whether acquired commercially or off the shelf, modified or customized, that is used to increase, maintain, or improve the functional capabilities of a person with a disability” (Robitaille, 2010, p. 5). This legal framework established a broad and inclusive understanding that still informs contemporary policy and educational planning.

Building on this foundation, Alves et al. (2009) highlighted the interdisciplinary nature of AT, stressing its role in enhancing autonomy, independence, quality of life, and social participation for individuals with visual impairments. Their work underscored that assistive technology is not limited to hardware or tools, but includes a range of strategies,

methodologies, and services designed to meet individual needs in various contexts, including education.

More recently, definitions have continued to evolve in response to both technological advancements and inclusive education practices. For example, Muradyan (2023) described AT as “tools and devices designed to aid individuals with impairments,” reflecting a more functional and user-oriented approach. Likewise, the World Health Organization (2024) provided a comprehensive and holistic perspective, describing AT as “an umbrella term for assistive products and their related systems and services, which help maintain or improve an individual’s functioning related to cognition, communication, hearing, mobility, self-care, and vision, thus enabling their health, well-being, inclusion, and participation.”

However, this expanding conceptual scope has also brought certain challenges. As Austin et al. (2022) pointed out, despite good intentions, there remains no universally consistent definition of AT, which can lead to fragmented implementation and confusion across educational and policy contexts. In the case of visually impaired EFL learners, this ambiguity may limit the effective deployment of AT tools in mainstream classrooms unless institutions adopt clear and contextually grounded interpretations.

In sum, the concept of assistive technology has developed from a legally grounded definition to a more holistic and functional understanding that encompasses both tangible tools and supportive systems. This evolution is crucial for educators and policy-makers aiming to integrate AT meaningfully into EFL settings.

Types of Assistive Technologies

Assistive technologies (AT) encompass a broad array of tools, devices, and software developed to support individuals with disabilities in carrying out tasks that might otherwise be difficult or inaccessible. According to Halpin (2024), “the goal of assistive technology is

always the same: to increase, maintain, or improve the functional capabilities of individuals with disabilities, so that they can participate more wholly in all aspects of life.” In other words, the primary objective of AT is to enhance autonomy and inclusion by enabling people with disabilities to perform functions that are essential to daily living, education, communication, or work. This can involve introducing new ways of accessing information, maintaining existing abilities as conditions evolve, or improving performance through specialized tools. Thus, the end goal is not just functional support but meaningful participation, ensuring that individuals are not excluded from social, educational, and professional domains because of their impairments. To understand the practical applications of AT, it is essential to examine its major types. In a joint discussion paper, the World Health Organization and UNICEF (2015) classified AT into five general categories: mobility aids, visual aids, hearing aids, communication devices, and cognitive support tools.

First, mobility assistive technologies are designed to assist individuals with physical impairments in moving about independently. Sahoo and Choudhury (2024) state that these devices help users overcome challenges in navigating their surroundings, thereby promoting autonomy and reducing dependency. Common mobility aids include wheelchairs, electric scooters, crutches, canes, and walkers. These tools not only enhance physical movement but also contribute significantly to psychological well-being by fostering self-reliance.

For individuals who are blind or have low vision, visual assistive technologies provide alternative means of accessing visual information. This type of technology, as Halpin (2024) explained, “primarily serves individuals who are blind or have visual impairments. It helps them navigate the internet and digest digital content independently, allowing them to work, learn, and communicate online.” Tools such as screen readers, Braille displays, screen magnifiers, and optical character recognition (OCR) software exemplify this category (WHO

& UNICEF, 2015). These technologies empower users to engage with educational and digital content, bridging the gap between visual information and cognitive accessibility.

On the other hand, hearing aids and related technologies are crucial for individuals with hearing impairments to process sound and participate in auditory communication. Chisolm et al. (2007) defined them as “listening, alerting, and/or signaling devices that use auditory, visual, and/or tactile modalities to enhance communication and facilitate awareness of environmental sounds.” Examples include hearing loops, vibrating alarm systems, amplified telephones, and personal frequency modulation (FM) systems. These tools support both interpersonal communication and environmental awareness, enhancing inclusion in academic and social contexts.

Likewise, communication devices aid individuals who experience difficulties with speech or language. According to Sahoo and Choudhury (2024), these tools enable users to express themselves more clearly and effectively. This category includes speech-generating devices, communication boards, symbol-based software, and eye-tracking systems. Such technologies are vital for learners with non-verbal conditions, such as autism spectrum disorder or cerebral palsy, as they provide alternative channels for interaction and expression.

Finally, cognitive assistive technologies support individuals who face challenges related to memory, attention, problem-solving, or executive functioning. Jamieson (2016) noted that these tools are particularly beneficial in neuropsychological rehabilitation, as they help manage prospective memory deficits and provide reminders for tasks and routines. Common examples include electronic calendars, task management apps, visual schedules, and talking timers (WHO & UNICEF, 2015). These devices can enhance daily functioning and academic performance for individuals with conditions such as ADHD, dyslexia, or traumatic brain injury.

In summary, assistive technologies play a critical role in fostering autonomy, participation, and inclusion for individuals with disabilities. From supporting physical mobility to enhancing communication, cognition, hearing, and vision, each type or category addresses specific functional needs, ensuring that individuals with different types of disabilities can engage with their environments more effectively.

Assistive Technology Tools for VI EFL Learners

Assistive technology (AT) plays a pivotal role in facilitating access to language learning for visually impaired English as a Foreign Language (EFL) students. In their 2011 study, Pal et al. introduced a functional classification of assistive technologies (AT) into three categories: input tools, output tools, and back-end tools. This framework was designed to elucidate how individuals with visual impairments interact with computing systems, particularly in educational contexts. This section offers a synthesis of these typologies with examples of commonly used tools.

Output Technologies. Pal et al. (2011) explained that output technologies are those that render digital content accessible to learners with visual impairments, often through auditory or tactile formats. These tools are essential for compensating for the lack of visual access to text and interface elements. They are, as listed by them, as follows:

Screen Readers. A central example in this category is the screen reader; a software application that reads aloud text displayed on the screen or converts it into Braille. Screen readers such as JAWS (Job Access with Speech), Window-Eyes, System Access, and Zoom Text Magnifier/Reader are among the most widely used. Free alternatives like NonVisual Desktop Access (NVDA) and built-in screen readers on operating systems (e.g., VoiceOver on macOS) also offer comprehensive functionality (Pal et al., 2011). For visually impaired EFL learners, screen readers facilitate interaction with learning management systems, digital

textbooks, and online exercises, thereby supporting both literacy and autonomy (Almalki, 2021).

Text-to-Speech (TTS) Software. Distinct from full-screen readers, TTS programs read aloud written content such as documents, emails, and web pages. These tools help develop listening comprehension, vocabulary acquisition, and pronunciation for EFL learners. While they lack the interface navigation capabilities of screen readers, they are particularly useful for focused reading tasks and language immersion.

Braille Displays. These tactile output devices convert digital text into Braille, enabling visually impaired learners to access content through touch. Braille displays are indispensable for learners who are proficient in Braille, supporting precise literacy and enhancing the accessibility of complex grammatical or syntactical structures in EFL materials.

Audio Books. Providing spoken versions of literary and academic texts, audio books are especially valuable in EFL contexts for reinforcing listening skills. Also, they are useful for facilitating narrative comprehension, and offering an alternative to visual reading.

Input Technologies. Input tools refer to the mechanisms through which learners with visual impairments interact with digital devices. They are often adapted to accommodate users' levels of visual or auditory function, enabling effective interaction without reliance on traditional input methods such as a mouse or keyboard.

Speech Recognition Software. These tools allow users to input text and commands via voice. According to Pal et al. (2011), speech recognition is not only beneficial for individuals with visual impairments but also for those with limited mobility or temporary physical conditions. In the EFL context, such tools support pronunciation practice, oral

composition, and interactive learning, while also fostering independence in digital communication.

Back-End Technologies. Back-end tools operate invisibly within systems to ensure compatibility and accessibility, particularly in relation to output devices.

Braille Translators. One prominent example of a back-end tool is the Braille translator. This application bridged the gap between operating systems and Braille output devices by converting textual content into Braille-readable formats. As noted by Pal et al. (2011), a Braille translator creates Braille files that can be sent to Braille printers or displayed on refreshable Braille devices, allowing EFL learners to access core instructional materials in a format suited to their tactile literacy.

In short, Pal et al.'s (2011) classification of assistive technologies into input, output, and back-end tools offers a useful framework for understanding how visually impaired EFL learners access, interact with, and produce language. Each category addresses specific functional needs, enabling them to engage with content more independently and effectively.

Advantages and Barriers of AT in EFL Learning for VIS

In an increasingly digital society, technology permeates all facets of life, including education. Assistive Technology (AT), in particular, has emerged as a transformative instrument capable of bridging learning gaps for students with disabilities, enabling them to engage meaningfully in educational activities (Khasawneh, 2024). Within the sphere of English as a Foreign Language (EFL) learning, technology has facilitated not only accessibility but also a reimagining of pedagogical practices (Campado et al., 2023). As a result, AT is now widely recognized as both a tool of learning and a foundational component of equitable education.

Advantages of AT in EFL Learning for VIS. Assistive technologies, encompassing hardware, software, and digital tools, have the potential to support core language skills such as reading, writing, listening, and speaking. As Adebisi et al. (2015) argue, AT functions as a modern equivalent of pen and paper, indispensable for enabling learners to access and produce information. This aligns with Hassan et al. (2023), who contend that AT helps bridge the gap between learners' current abilities and academic demands, particularly for those who have not yet mastered essential language skills.

Moreover, the benefits of AT extend beyond the classroom. According to Khalil and Yasmeen (2020), AT enables learners to:

- Maximize independence in academic and employment tasks
- Participate in classroom discussions
- Gain access to peers, mentors, and role models
- Advocate for themselves
- Access a full range of educational and social experiences
- Succeed in work-based and high-tech career environments
- Prepare for transitions to higher education and the workplace

Such benefits illustrate AT's critical role in fostering inclusion, autonomy, and academic success for learners with disabilities. Case-based research supports these claims. In Indonesia, a study by Hamid, Setiawan, and Anam (2022) explored the experiences of a visually impaired student using JAWS and MELDICT in a private university. These tools significantly improved writing and comprehension skills, while also developing the student's academic independence and confidence.

In Pakistan, Khan and Mahmood (2022) found that screen readers such as JAWS, OCR applications, and Smartphones empowered visually impaired students to access course

materials independently, communicate with instructors, and complete assignments without reliance on sighted assistance. Here, AT functioned as a “great equalizer,” facilitating meaningful participation in academic life.

Similarly, Khan and Mahmood (2022), in their study of ten blind and visually impaired university students in Pakistan, reported that screen readers such as JAWS, along with OCR tools and smartphones, served as critical academic enablers. These technologies allowed students to access reading materials independently, complete assignments, and maintain communication with instructors without reliance on sighted assistance. Here, AT functioned as a “great equalizer,” facilitating meaningful participation in the university classroom.

In a Saudi Arabian context, Al-Jarf’s (2021) explored the experience of a blind Saudi female student majoring in languages and translation. The study revealed that VoiceOver, JAWS, and Braille Sense Notetaker enabled her to engage fully in academic and social activities, including navigating university platforms, taking notes, and participating on social media. Importantly, these technologies also helped her develop essential skills for academic independence and social integration.

Barriers to AT in EFL Learning for VIS. Despite its numerous benefits, the implementation of Assistive Technology (AT) in English as a Foreign Language (EFL) learning is not without its challenges. As Seiradakis (2024) categorizes, these challenges can be broadly divided into:

- Teacher-related barriers, such as insufficient training, time constraints, and limited pedagogical support for implementing AT tools effectively.
- Student-related barriers, such as limited digital literacy and unequal access to devices, which can reduce the overall efficacy of AT for some learners.

- Institutional barriers, including inadequate leadership in technology adoption and insufficient funding, which often impede sustained integration.

These barriers emphasize the need for a coordinated, multi-level approach to AT implementation, one that engages educators, institutions, and policymakers alike. However, these challenges are not merely theoretical; they are frequently magnified in real-world classroom settings, as demonstrated by several empirical studies focusing on the lived experiences of visually impaired students (VIS) in EFL contexts.

For instance, in Thailand, Attachoo and Sitthitikul (2020) conducted a phenomenological study that examined the English learning experiences of nine visually impaired students in inclusive classrooms. The study revealed that tools such as Braille texts and slate-and-stylus note-taking, though essential for access, posed considerable limitations. Participants reported that Braille's linear structure hindered their ability to engage efficiently with complex academic content, while the manual nature of note-taking was time-consuming, often causing them to fall behind in class discussions. These findings reinforce a recurrent theme in the literature: while AT is indispensable, its effectiveness is often compromised by design constraints and a lack of pedagogical adaptation.

Similar challenges were echoed in studies by Al-Jarf (2021) and Hamid, Setiawan, and Anam (2022). While both studies highlighted the empowering potential of AT, such as the use of JAWS, MELDICT, and Braille Notetakers, they also identified structural barriers. These included the absence of screen reader support in language laboratories, instructors' limited familiarity with AT tools, and the high cost of advanced technologies such as Braille Notetakers. These barriers were compounded when institutional support was weak or inconsistent.

While these international studies offer vital insights into the benefits and challenges of AT in EFL education for visually impaired students, they also expose a crucial gap in context-

specific research. In particular, the Algerian higher education context remains significantly underrepresented in the literature. Algeria's unique educational policies, sociolinguistic landscape, and approach to inclusive education warrant dedicated scholarly attention. It is within this context that we aim to conduct our study to explore how visually impaired students in Algerian universities perceive the impact of Assistive Technology on their EFL learning experiences.

In conclusion, these studies illustrate a dual reality. Assistive Technology enables access, independence, and learning gains, but its potential is frequently curtailed by cost, institutional ignorance, and design limitations. Successful integration, therefore, depends not merely on the availability of devices but on the presence of supportive infrastructures and inclusive pedagogical practices.

Conclusion

The aim of this chapter was to establish a comprehensive conceptual framework for the study by exploring three interrelated areas: inclusive education, visual impairment, and assistive technology within the context of English as a foreign language learning. It highlighted both international and Algerian commitments to inclusive education, while also acknowledging the practical challenges that continue to hinder effective support for visually impaired students. The discussion of visual impairment elucidated the diverse experiences and specific obstacles faced by VI learners, particularly in accessing predominantly visual language learning materials. Finally, the exploration of assistive technology demonstrated its potential to enhance accessibility and learner autonomy, alongside the limitations that must be addressed to optimize its impact. Together, these insights set the stage for the following chapter, which details the methodological approach adopted to explore VI students' perceptions and experiences with assistive technology in their language learning.

Chapter Two: Research Methodology, Findings and Implications

Introduction

Building on the literature reviewed in Chapter One, this chapter outlines the methodological framework employed in the study, presents a critical analysis of the findings, and concludes with a discussion of their implications for pedagogical practice and future research. It is structured into three main sections. The first section introduces and justifies the methodological framework, beginning with the research aim and guiding questions. It then elaborates on the chosen research paradigm, approach, and design, as well as the selected research instruments. Additionally, it provides a detailed rationale for the population and sampling technique, outlines the data collection procedures, and discusses ethical considerations and trustworthiness. The second section focuses on analyzing the collected data and discussing the findings. Finally, the last section addresses the study's limitations and offers recommendations for future research.

Section One: Research Methodology

Research Aim and Questions

This study aims to explore the perceptions of VI EFL students at BBA University regarding the impact of AT on their English learning. Specifically, the research seeks to:

- Examine the experiences of VI EFL students with AT in their language learning.
- Identify key challenges in implementing AT in EFL contexts
- Propose student-centered improvements for assistive tools use

To achieve these three objectives, the study addresses the following overarching research question: How do VI EFL students at BBA University perceive the impact of AT on their English language learning?

To address this question systematically, three sub-questions are explored:

- How do VI EFL students describe their experiences with AT in their EFL learning?
- What specific challenges do they encounter when using these technologies?
- What improvements do they propose to enhance the effectiveness of assistive tools in their learning context?

Research Paradigm

Paradigms are the philosophical foundation that shapes all methodological choices (Creswell & Poth, 2018). This study adopted the interpretive paradigm to explore the subjective experiences and perceptions of VI EFL students regarding AT in English language learning. Interpretivism is particularly suited to this research because it prioritizes understanding how individuals construct meaning within their social and educational contexts, rather than seeking universal, objective truths (Merriam & Tisdell, 2016). Unlike positivist or postpositivist approaches, which rely on quantitative data and generalizable findings, interpretivism acknowledges that human experiences, especially those involving disability and technology use, are deeply personal and context-dependent (Chowdhury, 2014; Creswell & Creswell, 2018; Goodley, 2017).

The choice of interpretivism aligns with our research objectives in several ways. First, it allows us to centre the lived experiences of visually impaired students (VIS), capturing how they perceive and interact with assistive tools. While a positivist approach might reduce these experiences to measurable test scores, interpretivism ensures that the students' voices and personal narratives remain at the forefront. Second, interpretivism naturally supports qualitative methods such as interviews and focus groups, which are essential for gathering rich, detailed insights into individual perspectives (Braun & Clarke, 2022). These methods

enable us to move beyond surface-level observations to reveal the underlying challenges and benefits of using AT for English learning at BBA University.

Additionally, interpretivism was chosen over critical paradigms because our primary goal is to understand and document student experiences, rather than to critique systemic power structures or advocate for specific policy changes (Mertens, 2020). While critical theories might examine broader issues of accessibility and institutional support, our study focuses on the immediate, personal impact of technology on language learning. That said, the interpretive framework does not ignore contextual factors; rather, it provides flexibility to explore how institutional and technological environments shape individual experiences without imposing a predetermined analytical lens.

In short, interpretivism offers the best balance of depth, flexibility, and participant-centered inquiry for this study. By embracing its emphasis on subjectivity and meaning-making, we could develop a good understanding of how AT functions in the lives of VI EFL students at BBA University an understanding that would be difficult, if not impossible, to achieve through more rigid or detached methodological approaches. This paradigm ensures that our findings are not only academically sound but also authentically reflective of the students' own perspectives and needs.

Research Approach and Design

Guided by the interpretivist paradigm, the study employed a qualitative research approach that serves as the methodological bridge between philosophical paradigm and research design. The qualitative approach was deliberately selected because the investigation focuses on understanding phenomena that are inherently subjective and context-dependent (Denzin & Lincoln, 2018). As Creswell (2003) emphasized, qualitative methodology is particularly valuable when exploring new or underexplored areas of inquiry, which perfectly describes the current study's focus on AT use among VI EFL students at BBA University.

Klopper's (2008) assertion that qualitative methods are appropriate when investigating topics with limited existing knowledge further supports this methodological choice. The qualitative approach enables us then to delve deeply into participants' lived experiences, capturing the underlying meanings and perceptions that shape their use of AT in language learning.

Within this qualitative framework, the study adopts an exploratory case study design, which represents the concrete strategy for conducting the investigation. The case study is ideally suited to this research for several compelling reasons. First, as Yin (2018) explained, case study methodology allows for an intensive examination of a contemporary phenomenon within its real-life context, particularly when the boundaries between the phenomenon and context are not clearly evident. In this instance, the phenomenon of AT use cannot be separated from the specific educational context of BBA University, making case study particularly appropriate. Second, the exploratory nature of this case study design is especially valuable given the relative novelty of investigating assistive technology use among visually impaired EFL students in this particular institutional setting, allowing important themes and patterns to emerge without predetermined hypotheses.

The selection of an exploratory case study design also aligns with the study's goal of generating rich, detailed insights that can inform both academic understanding and practical applications. As Creswell (2003) noted, case studies are particularly effective when a researcher seeks to provide a comprehensive understanding of a specific issue or phenomenon. In this study, this case - VI EFL students at BBA University- represents a bounded system that can be examined in depth to understand the complex dynamics of AT use in language learning. The insights gained from this focused investigation will not only contribute to theoretical discussions about technology-enhanced English language learning for VIS but may also inform practical improvements in institutional policies and teaching practices at BBA University.

Research Instruments

To collect data for this research, semi-structured interviews were used as the sole data collection instrument, a methodological decision consistent with both the interpretivist paradigm and exploratory case study design. According to Ruslin et al. (2022), an interview is an interchange of views between two or more individuals - the interviewers and the interviewees - discussing a theme of mutual interest. The semi-structured format was deliberately selected for its capacity to balance between maintaining a focused line of inquiry and adapting to emerging insights. As noted by Wholey et.al (2010), these interviews incorporate a mixture of closed and open-ended questions, often supported by follow-up questions such as "why" or "how". This combination allows for greater freedom of discussion of agenda items and possibly the identification of problems one does not anticipate to uncover, rather than rigidly following a list of predetermined standardized questions.

The interview guide (Appendix 2) included 18 open-ended items designed to explore how VI EFL students perceive the impact of AT on learning English at BBA University. These items helped us collect rich data about participants' background information, their experiences with English language learning, their awareness and use of assistive technology, the role of Moodle as an assistive and learning platform, the use of Smartphone as a personal assistive strategy, the perceived and/or actual impact of assistive technology on English skills, and finally, institutional support and recommendations. By combining structured inquiry with adaptive dialogue, the method yielded data that is both systematically analyzable and richly contextual, perfectly suited to address the study's dual objectives of theoretical contribution and practical application.

Population and Sampling

The research population comprised a specific group of participants chosen to offer meaningful insights related to the objectives of the study. Specifically, the target population included VI EFL students of all levels at Mohamed El Bachir El Ibrahimi University in Bordj Bou Arreridj, Algeria. The decision to include students from all levels, ranging from first-year undergraduates to second-year master's students, stemmed from our interest to capture a comprehensive view on the perceptions of VIS regarding the impact of AT on English learning.

As noted by Creswell (2014), a sample is a subset of people chosen from a larger population in order to assess the characteristics of the total population and make statistical judgments. The study employed purposive sampling, a non-probability technique that allows researchers to intentionally select individuals who possess specific characteristics relevant to the research objectives (Campbell et al., 2020). Unlike random sampling, which seeks broad generalizability, purposive sampling prioritizes depth over breadth, making it ideal for qualitative research where rich, contextualized data is essential (Creswell, 2014).

Given the limited number of VIS at the university, the final sample consisted of four VI EFL students, a sample size that, while small, represented the entire population of VIS in the English department. This focused approach enabled an in-depth exploration of individual experiences, providing insights into how AT influenced their learning of English. Each participant was selected based on key criteria: first, formal registration as a VIS at BBA university; second, active enrolment in the English department; and third, firsthand experience or knowledge regarding the use (or absence) of AT for learning English. The decision to limit the sample size to four participants was pragmatic yet methodologically sound. In qualitative research, saturation; i.e., the point at which new data no longer provides additional insights, can often be achieved with a small number of information-rich cases

(Saunders et al., 2018). By concentrating on this subset, the study emphasized depth, allowing for thorough analysis of each participant's adaptive strategies, perceived barriers, and institutional support needs.

Table 1

Profile of VI EFL Participants

Participant	Academic Level	English Proficiency	Visual Impairment Degree
A	Master 2	Intermediate	Totally blind
B	Second year LMD	Intermediate	Totally blind
C	First year LMD	Intermediate	5% vision
D	Master 2	Intermediate	7/10 vision in one eye; blind in other

Table 1 provides a summary of the participants' profile based on responses to initial background questions during the semi-structured interviews. It outlines their academic levels, self-reported English language proficiency, and degrees of visual impairment, offering important contextual background for interpreting their experiences with assistive technology in EFL learning.

In addition to the student participants, the Dean of the Letters and Languages Faculty was also interviewed (Appendix 4) to provide an institutional perspective on the availability and use of AT. He was purposively selected due to his position of authority and insight into the administrative and financial aspects of AT provision at the university. His perspective was intended to complement the students' information and facilitate data triangulation, thereby strengthening the overall validity of the study.

Data Collection Procedures

After structuring the interview items and obtaining participants' approval, data collection took place between the second week of March and the second week of April 2025. The process was carried out methodically and ethically, employing a combination of face-to-face and online interview formats to accommodate the diverse preferences and circumstances of the participants. Central to this process are the students' and the Dean's interview consent forms (Appendix 1 and Appendix 3, respectively), which were crafted with clarity and relevance to ensure participants fully understood the study's objectives and their rights, thereby fostering trust and transparency.

To gather rich qualitative data on students' perceptions and experiences, semi-structured interviews were conducted with four VIS from the English department at BBA University, as well as with the Dean of the Letters and Languages Faculty. The VI participants were purposefully selected to reflect varying degree of visual impairments and academic levels, ensuring a diversity of perspectives. Three interviews were conducted face-to-face in quiet university settings to encourage in-depth engagement, while one was held online via Google Meet due to scheduling constraints. To complement the students' perspectives with institutional insights, a sequential, face-to-face semi-structured interview was conducted with the Dean of the Faculty. This interview focused on support mechanisms and inclusive practices within the department, and was strategically designed to follow the student interviews in order to explore and contextualize their reported experiences. Each interview lasted between 30 and 45 minutes. With informed consent, all interviews, except for the online one, were audio-recorded and subsequently transcribed to facilitate accurate and detailed analysis.

It is worth mentioning that before the main data collection, we conducted a pilot interview in accordance with the flexible nature of qualitative research, particularly as

emphasized by Lincoln and Guba (1985), who advocate for credibility and contextual responsiveness over rigid procedural adherence. The aim of the pilot was to assess the clarity, accessibility, and overall suitability of the semi-structured interview guide. Ideally, the pilot would have involved a participant who was not part of the final sample; however, the limited number of VI EFL students at BBA English department made this impractical. Therefore, we carried out the pilot with one of the eventual study participants. This pragmatic decision was guided by the need to balance methodological ideals with the constraints of the research context, an approach that is consistent with the principles of qualitative inquiry. The pilot was instrumental in evaluating whether the interview questions were sufficiently clear and relevant, and whether they were logically sequenced to allow the natural emergence of follow-up questions during the conversation. Based on the feedback received, we made a minor revision to reword one question, thereby ensuring that the final set of questions was fully comprehensible to all participants. Importantly, the data collected from the pilot interview were excluded from the main analysis to avoid any potential bias.

Research Ethics

Ethical considerations were central to the research design and implementation, guided by key principles to ensure the ethical conduct of the study. Given that our research involved VI EFL students, careful attention was given to ensuring that participants' rights were fully respected. This study adhered to internationally recognized ethical guidelines, including the Declaration of Helsinki (1964), and the British Educational Research Association (BERA) Ethical Guidelines (2018).

All participants were fully informed about the purpose of the research, the procedures involved, and any potential risks or benefits prior to data collection. Informed consent was obtained from each participant, who was assured that their participation was entirely

voluntary and that they had the right to withdraw from the study at any stage without explanation or consequence, making sure that they felt comfortable and in control throughout their involvement. To protect participant confidentiality, all identifying information was removed from transcripts and research documents. Pseudonyms were used in all reporting to maintain anonymity. Audio recordings and transcripts were securely stored on our laptops. These ethical practices were followed to uphold the utmost respect for participants' autonomy, dignity, and privacy throughout the research process.

Research Trustworthiness

To ensure the trustworthiness of our study, we adopted Lincoln and Guba's (1985) framework for qualitative research, which identifies four key criteria for establishing research rigor: credibility, transferability, dependability, and confirmability. These criteria, as defined by Lincoln and Guba, ensure that the research is conducted ethically, rigorously, and in alignment with participants' realities. Each aspect of the framework was applied systematically throughout our research to uphold the quality of the study.

Firstly, credibility, which refers to the accuracy and truthfulness of the findings from the perspective of the participants, was enhanced through participant verification. Given that our participants were visually impaired, we adapted the member-checking process to suit their needs. Instead of reviewing written transcripts, participants were sent audio versions of their interviews via the email addresses they had provided during the initial interview. This enabled them to listen to their responses and confirm that their views had been accurately represented.

Secondly, transferability refers to the extent to which the findings can be applied to other contexts or groups. To support this aspect, we provided a rich and detailed description of the participants' characteristics and the data collection procedures. For instance, we included information about the degree of visual impairments among participants, their

academic levels, and the specific assistive tools they used. By offering this level of demographic details, we allowed readers and future researchers to assess the applicability of our findings to similar contexts, such as other EFL settings or institutions with limited technological support for VIS.

Thirdly, dependability, which refers to the consistency and stability of the research process over time, was established through a transparent and well-documented audit trail. This included how data were collected, how interview questions were refined after a pilot study, and how data were analyzed. For example, the pilot revealed that one interview question was unclear, prompting us to rephrase it for better accessibility and understanding. Such documentation demonstrated that the process was consistent and could be replicated or scrutinized by future researchers.

Lastly, confirmability refers to the extent to which the findings are shaped by the participants' experiences rather than researcher bias or preconceptions. We supported this aspect through a combination of reflexivity and data triangulation. We continuously reflected on our assumptions, particularly the expectation that some institutional assistive technologies would be available to students at the university. However, as the data emerged, students consistently reported that they relied entirely on personal tools and strategies, as no AT was provided within the English department. We consciously reflected on these contradictions and ensured that our interpretations remained faithful to participants' lived experiences, rather than shaped by our initial expectations. To further strengthen confirmability, we triangulated data by comparing student interviews with the Dean's perspective. The Dean confirmed that financial constraints had prevented the university from providing dedicated AT. This alignment between individual accounts and institutional context affirmed that the reported lack of support was not merely a perception, but a systemic issue. In this way,

confirmability was reinforced through both critical self-reflection and convergence of independent sources.

In conclusion, by applying participant validation, thick description, transparency, critical reflexivity, and triangulation, we aimed to ensure that our study is trustworthy; i.e., credible, transferable, dependable, and confirmable. These strategies collectively allowed us to adhere to the standards of qualitative research quality set forth by Lincoln and Guba, ensuring that the findings are authentic, reliable, and grounded in the participants' experiences.

Section Two: Data Analysis and Findings

Data Analysis Procedure

Following the completion of data collection, we proceeded with the analysis of the data from four visually impaired EFL students and the Dean of Faculty using a thematic analysis approach. As described by Clarke and Braun (2006, 2022), this method involves identifying, analyzing, and interpreting patterns of meaning, referred to as ‘themes,’ within qualitative data, making it an effective approach for uncovering the experiences and the perceptions of VI EFL students regarding the impact of AT on their English learning.

Guided by Braun and Clarke’s (2006, 2022) six-phase framework, thematic analysis was applied inductively to the student interviews, enabling a detailed exploration of lived experiences without imposing pre-existing theoretical codes. Situated within a critical realist epistemology (Maxwell, 2012), the analysis acknowledged the existence of an objective educational reality while recognizing that participants’ accounts are shaped by socio-linguistic and institutional structures. Both semantic and latent coding were employed to capture the explicit content of students’ reflections on learning strategies and challenges, as well as the deeper ideological and systemic forces embedded within their narratives.

We started by carefully transcribing all five interviews, four with the VI EFL students and one with the Dean, word for word. This helped us become familiar with the content and better understand the meaning behind participants’ responses. We read each transcript several times and took notes on important points. Then, we began coding the data by highlighting words, phrases, and sentences that seemed meaningful or relevant to our research focus; for example, comments about the benefits or limitations of AT, the types of tools students used, or the kind of support they received from the university. Next, we grouped similar codes together to create broader themes. Themes were then clearly defined and substantiated with illustrative excerpts to preserve the authenticity of participants’ voices. For instance, several

participants talked about their perceptions on AT impact so we grouped these codes under a theme like “Perceived Impact of AT”. This theme, for instance, was developed gradually by comparing different interviews and looking for shared experiences.

Concerning the Dean’s interview, it was analyzed it separately at first, and his responses underwent a focused single-case analysis. This means that data was not analyzed thematically in the same manner as students’ data. Key administrative viewpoints were coded for salient issues such as resource allocation, policy frameworks, faculty awareness, and institutional challenges.

After both sets of interviews were analyzed, we brought the findings together. We compared the themes from the student interviews with the Dean’s responses to see where they agreed or differed. This helped us develop a enabling a more comprehensive and triangulated understanding of the situation and gave us insight into both the personal experiences of VIS and the broader institutional context.

This approach allowed us to keep the participants’ voices central while also providing a structured and meaningful analysis of the data.

Thematic Analysis of Students’ Semi-Structured Interview

A thematic analysis of the qualitative data collected through semi-structured interviews with visually impaired university students was conducted using Braun and Clarke’s (2006, 2022) iterative approach to coding and categorisation. The process yielded six key themes, each capturing a distinct yet interconnected dimension of participants’ experiences with assistive technology (AT). The analysis that follows aimed to foreground the voices of the participants while critically examining how their narratives reflect broader patterns of exclusion, adaptation, and resilience within the university context.

Theme 1: Diverse Learning Modalities & Adaptive Strategies. This theme captured the main ways VIS learn English. It showed how they mostly relied on listening and how they actively found their own ways and tools to learn.

Sub-theme 1.1: Learning by listening. Students consistently reported that listening is their main and most effective way to learn English. This highlights how they naturally use their hearing to acquire the language, optimizing their primary sensory channel. For instance, Participant B clearly stated, "I rely on listening I use auditory tools," while Participant C echoed this sentiment, emphasizing, "I rely on listening I am auditory student and memory," and further adding, "I study just by listening." Participant D also affirmed the importance of auditory engagement, noting: "... I developed my speaking through listening," even mentioning relying on videos where her limited vision still pushed her towards their auditory elements: "I rely on watching videos because I am a visual learner."

Sub-theme 1.2: Strategic Technology Integration. Students demonstrated significant personal drive in both discovering and actively integrating various learning tools, including assistive technologies. This highlights their proactive approach to enhancing their studies, often through their own research or informal networks. Participant B shared how he discovered essential tools: "Through my friend, who is visually impaired too, I asked him about anything that can help me to learn English and he recommended Smart Voice and Install Reading for me and I am using them since then."

Similarly, Participant A took the initiative to research solutions upon acquiring a computer, stating, "I have discovered them in 2011 when I bought a computer I started searching about systems that can really help visually impaired people." Participant C showcased her resourcefulness by adapting existing tools for her needs, explaining, "I copy the lesson into chat GPT to listen to it and then summarize it in my head without writing."

Theme 2: Perceived Impact of Assistive Technology. This theme captured how assistive technologies, even when students do not use them widely, have positively changed their school performance, confidence, and ability to learn independently. It also points out how AT could help even more with specific English skills.

Sub-theme 2.1: Tangible Benefits: Improved Performance, Confidence, and Independence. Students who used assistive technology reported clear benefits, leading to improved academic performance, increased confidence, and greater independence.

Participant B notably observed:

I achieved better I got better grades in the first semester comparing to the first year where I didn't use any. I also became more confident and motivated participating in the classroom....when my friend recommended Smart Voice and Install Reading for me my life changed learning became easier.

Participant A highlighted specific gains in reading and pronunciation:

These technologies for sure facilitated reading for me as well they helped me enhancing my pronunciation through listening to these screen readers... NVDA this program helped me to read documents especially word documents because the program transformer written words into oral speech and without it I could not be able to achieve this academic level.

Participant B further emphasized the newfound independence provided by AT, stating, "Install Reading helped me a lot through reading the lessons files... which is something; I could not do before without the assistance of somebody else."

Participant D generally believed that: "These technologies significantly affect student performance, confidence and motivation. The more students use them, the more their English skills develop. This improvement boosts their confidence in speaking and motivates them to learn more and achieve greater success."

Sub-theme 2.2: Perceived Impact on Specific English Skills. Participants generally agreed that assistive technology primarily benefits listening, reading, vocabulary, and pronunciation. This alignment with their auditory learning preferences and challenges with visual tasks was evident. Participant B noted, "As I use text to voice features only, I developed my listening skill, my vocabulary, and my pronunciation." Participant C hesitatingly stated: "Maybe in reading or to summarize the lessons." Participant A expressed confidence that AT "For sure they will make the learning easier than it is, at the same time using these technologies will develop my four skills as well as my grammar and vocabulary." Participant D specifically connected auditory learning to skill development, stating:

I think it could benefit both vocabulary and pronunciation because all visually impaired student rely most on their listening so whenever they listen they will unconsciously pick up new words and enhance their pronunciation...it can help, it can help me, since I rely on hearing I have good pronunciation; it can assist me with vocabulary.

Furthermore, participants actively integrated specific assistive technologies to facilitate their learning across various skills. For instance, Participant A said "Braille helps me in writing" and "assistive technologies such as NVDA and JAWS systems helps in reading." He also cited Install Reader, On Vision, and Voice Talk as tools that "Helped me to improve my reading as well as my pronunciation." Participant B specifically utilized his phone's "Smart Voice application to address various challenges.

Theme 3: Core language skill Challenges. This detailed the inherent challenges visually impaired students face in learning English. These problems come from basic skill barriers.

Sub-theme 3.1: Profound Writing Challenges. Students consistently reported significant difficulties with writing skills due to their visual impairment and the limitations of traditional or even assistive writing methods. Participant B articulated his struggle: "for me, it is writing, I cannot write especially in modules like phonetics I have no idea how to write those signs and I cannot write them using the Braille." Participant A similarly found "difficulties in writing skills because the Braille system is so hard to use." Participant C highlighted her challenges, stating, "For me, it is writing, for example when the teacher explains the lesson in class, I cannot take notes." Participant D also confessed, "I am struggling with writing because sometimes letters are very small so it is difficult for me to read them."

Sub-theme 3.2: Persistent Reading Inaccessibility. Accessing reading materials also presented a consistent barrier for students, though somewhat more varied depending on degree of visual impairment... Participant C specifically stated her difficulty, "when it comes to reading, and I cannot read from paper, a computer, or anything else." She further elaborated on challenges with specialized content, noting, "I have a problem with the subject of phonetics; I cannot see the symbols, and I don't have a mental image of the drawings." Although reading was not always named as a primary challenge, it was consistently interwoven with writing issues. For instance, Participant D stated that her main struggle is writing but this also showed that she had difficulty in reading since, in her words, "sometimes letters are very small so it is difficult for me to read them."

Theme 4: Pedagogical, or institutional and systemic Gaps. This theme encompassed the challenges participants encountered across teaching practices, institutional provisions, and learning platforms. While many issues were explicitly articulated by participants, deeper analysis reveals a sense of marginalization embedded within the educational infrastructure.

Sub-theme 4.1: Limited Teacher Adaptability and Awareness. A recurring concern was the lack of awareness among instructors regarding how AT functions and how their own teaching practices could either facilitate or hinder its use. Students reported that lecturers often shared inaccessible materials, gave insufficient time for digital engagement, or failed to offer alternatives to visually demanding tasks. Such inflexibility compounded the challenges of independent learning.

Participant B stated bluntly: “No, no one provided something helpful for me. I asked them about any materials that may help and they said that we do not know any and that they do not know how to use them” Participant A confirmed, "Unfortunately, they never did it...I depend only on myself." Participant C echoed these sentiments: “Never, no one provided something helpful for me... I asked the phonetics teacher, he just gave me his email, but when I asked him, he told me to watch the videos.” She added: “There are teachers who give us lessons the day before the exam, and I cannot study it because it takes time.” Participant D also said: "To be honest, they haven't adapted any specific methods..... they recommend me to audio record what they are explaining.”

These responses indicate not merely logistical shortcomings, but a systemic pedagogical rigidity that displaces responsibility onto the student.

Sub-theme 4.2: University's Failure to Provide Essential AT and Training. The university is seen as largely unsupportive in terms of providing necessary AT or training for its use, contributing to the students' struggles.

Participant B said: "No, nothing. I asked them last year about the Braille machines and they said that they do not have." Participant A confirmed: "No, they both (institution staff and teachers) never did." Participant C shared same opinion, stating:

No, nothing. Except they provide you with a teacher to write and read for you in the exam.... There are no teachers or friends who provide me with summaries. I have a friend who works on research with me; she researches and I discuss. However, in individual assignments, no one helps me

Sub-theme 4.3: Inaccessible Digital Learning Platforms. The university-mandated online platform, Moodle, and the limited utilization of Smartphone accessibility features posed significant usability barriers, reflecting a broader issue of inaccessible digital learning environments. Despite being designed as universal tools, Moodle was repeatedly described as unusable without external assistance. Participant B stated: "I cannot use it alone without my sister's in law assistance." Participant C expressed similar difficulties, stating: "This application (Moodle) does not help me, and I find it difficult to use... I cannot use it. For example for questions you need someone to read for you and I don't have who read for me." Participant A simply said, "To be honest, I do not use it (Moodle)," suggesting its lack of accessibility or usefulness given his proficiency with other AT. Participant D confirmed, "I have use it (Moodle) only once but I did not find it that useful." Participant C also noted challenges with Smartphone use for study: "No, I use the Smartphone just for connecting... in the field of study, I cannot use it because I have to use zoom, and this tired me a lot because I cannot reading."

Sub-theme 4.5: Limited student Awareness and Access: A Barrier to Adoption. A

significant latent theme is the general lack of awareness among students about the existence and full capabilities of AT, particularly for those just beginning their studies. They were either uninformed or reluctant non-users of AT due to its complexity or inefficacy. Even Active adopters (Participants A and B) came to know about AT only through independent searching and peer networks. Participant A explained: "I searched for assistive systems systematically after getting my computer..." Meanwhile, Participant B further stated: "My friend who is visually impaired recommended screen readers for me." This clearly points to a systemic failure in providing information and training. Participant C exemplified limited awareness, using nothing but Chat-GPT, Google Translate, and YouTube without even realizing there existed specific AT for VIS, stating:

No. I know just chat GPT and Google Translate... I don't know, maybe because I just started, I did not know that it exist..... The Braille method. At the beginning, I used it....., but over time, it became exhausting... I abandoned it, especially with the long lessons; it was very difficult to do it

In contrast, Participant D recognized as a non-user who possessed theoretical knowledge of available technology, was aware of assistive options but chose did not use it, stating: "I tried Voice-Talk once before giving up on it,"

Regarding Moodle's text-to-speech/voice-to-text, both Participant C and Participant B said that they did not know about its accessibility features. Participant B was surprised as he exclaimed: "Really? I didn't know and I have never used it without help."

Theme 5: Compensatory Strategies and Adaptive Agency. Students' primary academic support came not from the university but from personal networks. While these relationships provided essential scaffolding, their necessity reflects a profound institutional

void. Most participants described consistent reliance on familial and peer support for critical academic tasks, such as reading, writing, uploading materials, and taking exams.

Participant B shared: “I ask my sister-in-law to upload materials as I cannot do it myself... In exams, teachers help me to write.” Participant C reported: “With the help of my mom I started reading the questions with difficulty, and I completed the test (online on Moodle).”

Participant D described her reliance on peers: “For writing, I have overcome this challenge with the help of my friend. She first writes the notes, and then I copy from her.”

While this form of support is essential to academic survival, it nevertheless places emotional and logistical burdens on students and their immediate networks. These dependencies represent not only workarounds to structural exclusion, but also reveal a significant loss of autonomy, an issue largely invisible to institutional structures yet profoundly felt by the students themselves.

Theme 6: Aspirations for Inclusive Education: Technology, Training, and Adapted Pedagogy. This theme encapsulates the students' clear vision for how the university could better support them, focusing on the provision of technology, comprehensive training for both students and staff, and changing teaching methods to be more helpful.

Sub-theme 6.1: Strong Demand for Specific Assistive Technologies. There was a consistent and strong request for the university to provide various kinds of assistive technologies, which students view as vital for equal access and improved learning. Participant B expressed a broad desire: “Any type of assistive technology can help Braille, apps, screen readers because I believe in its power and it can really be helpful.”

Participant A specifically recommended NVDA:

If the university will provide assistive technology I think that NVDA will be the most useful because through using it you can go and search in Google, Google scholar or any other webs it make the access to these platforms easier.

He further detailed specific software needs: "I believe that the university should implement cyber Braille technology or provide computers equipped with programs such as JAWS, NVDA, ON Vision, and Voice Talk."

Participant C highlighted the need for Braille books and integration of some features on Moodle stating:

Books with Braille for example. Because I'm going to be a teacher, even me, and I'm going to teach students, so I have to know how to write words.... They should add two features text to speech feature like Smart Voice and the feature that I speak and it write.

Participant D also requested, "Tools like screen readers would allow me to access textbooks, articles, and online resources efficiently."

Sub-theme 6.2: Call for Training for Teachers and Students. Beyond just providing technology, students stressed out the critical need for training to ensure effective utilization by both visually impaired students and the teachers who support them. Participant B emphasized this dual need: "Providing technology and train us and teachers how to use it. This can help us a lot to improve." Participant A echoed this, stating, "Moreover the university should train both students and teachers on how to use this technology for making it successful." Participant C also suggested, "... it would be helpful if they provided teacher training or provide us with teacher that guides us to develop our English and provide assistive technology." Participant D similarly argued: "I think the university should prioritize providing assistive technologies while also offering training for both teachers and students.

Teachers need guidance on effectively using these technologies and supporting students with disabilities”.

Sub-theme 6.3: Desire for Adapted Teaching Methods and Materials. Students expressed a strong desire for teachers and the university to proactively adapt their teaching methods and materials. This includes providing accessible summaries, timely access to materials, and general consideration for their unique learning needs. Participant C hoped:

I hope that the teacher provides us with summary of the lesson or send to me a voice recording... Give use a summary of the lessons and the teachers appreciate our situation and give us the lessons long before the exam.

She also acknowledged the teachers' workload but still saw the need for training:

I don't blame the teacher; he or she can't focus on one student when there are so many students... Therefore, it would be helpful if they provided teacher training or provide us with teacher that guides us to develop our English and provide assistive technology.

Thematic Analysis of the Dean's Semi-Structured Interview

The interview with the Dean of the Faculty of Letters and Foreign Languages at BBA University offers an institutional perspective on the availability and use of AT for VI EFL students. It also provides insights into the administrative realities, policy frameworks, and financial constraints influencing AT provision at the university. His perspective complements the students' experiences, contributing to a broader understanding of the challenges and support systems at the faculty.

Theme 1: Absence of Formal Policy and Dedicated Funding. This theme highlighted a fundamental gap in official institutional frameworks and financial commitment

for supporting visually impaired students. The Dean's responses consistently pointed to a lack of formalization and specific resource allocation.

Sub-theme 1.1: Lack of Official Policy Framework. The Dean explicitly stated the absence of a documented policy for supporting visually impaired students, indicating a foundational void in institutional guidance. He noted, "Currently there is no official documented policy for supporting visually impaired students." This absence signifies a critical gap, impacting the transparency and consistency of support provided.

Sub-theme 1.2: Budgetary Constraints and External Dependency. Financial limitations emerged as a significant barrier. The Dean confirmed the lack of a specific budget within the faculty dedicated to visually impaired students, stating, "There is no specific budget allocated for them in our faculty." He further emphasized that financial decisions are beyond the faculty's immediate control, asserting, "The decision to allocate funds for this issue is not within our authority, rather falls under the responsibility of the university and the ministry." This highlights that the faculty's capacity to acquire essential resources is severely constrained by external funding allocations. He reiterated, "There is no dedicated budget to support visually impaired students."

Theme 2: Scope and Perceived Adequacy of Current Support. This theme describes the types of support currently available for visually impaired students from the Dean's perspective and his assessment of their sufficiency. It reveals a reliance on informal and moral assistance over structured academic provisions.

Sub-theme 2.1: Predominance of Psychological and Moral Support. The Dean indicated that the primary form of assistance extended to visually impaired students is psychological and moral, aimed at boosting their confidence. He stated, "Since there is no

specific financial support for them, assistance is limited to psychological and moral support." This suggests a focus on well-being rather than direct academic material or technological aids.

Sub-theme 2.2: Exam Accommodations and Teacher Support. Support during exams is provided through teachers who assist by reading questions and writing responses. The Dean mentioned, "As well as providing teachers to help them during exams." He acknowledged the absence of formal teacher training, relying instead on educators' individual willingness, stating, "I do not believe any teacher would refuse to help a visually impaired student if they ask for summary or extra explanations. It is a human duty." This indicates that crucial academic support is dependent on individual goodwill rather than standardized, formalized training or protocols. While positive, this approach is inherently unsustainable and risks inequitable provision.

Sub-theme 2.3: Administrative Satisfaction amidst Evident Limitations. Despite the noted limitations, the Dean expressed overall satisfaction with the current level of support, conveying a sense of doing their best within existing constraints. He noted, "Yes, I am totally satisfied. We are doing our best to help them, and we will not hesitate to provide any other possible support." The Dean's stated satisfaction, juxtaposed against the evident absence of comprehensive material or academic support, hints at a constrained administrative perspective, possibly accepting current limitations as the maximum achievable within existing frameworks.

Theme 3: Technology and Digital Accessibility Gaps. This theme identified the specific challenges and perceived gaps related to the provision of assistive technologies and the accessibility of digital learning platforms. The Dean demonstrated varying levels of awareness regarding these issues, reflecting a reactive awareness and conditional commitment to address these technical gaps.

Sub-theme 3.1: Limited Assistive Technology Provision. The Dean explicitly cited funding as the main challenge in providing AT. He reported, "The main challenge is lack of funding." This has severely restricted acquisition, with only one Braille machine purchased: "We have tried several times to buy Braille machines for students, but we were only able to purchase one device."

Sub-theme 3.2: Moodle Accessibility Issues. Initially, the Dean claimed unfamiliarity with student complaints regarding Moodle's accessibility, stating, "I have never received complaints about this issue." However, upon being informed, he expressed institutional commitment to resolve the issue: "We will try to provide engineers and technicians to adjust the program so they can use it independently. We will definitely work on this." This initial unawareness of Moodle issues, followed by a reactive commitment, suggests a communication gap between students and administration, and a reactive rather than proactive approach to digital inclusivity. However, the Dean's willingness to engage engineers signifies a positive stance towards enhancing digital accessibility.

Theme 4: Future Priorities and Commitment to Inclusion. This theme encapsulates the Dean's forward-looking perspective, outlining priorities for future investment and a broader philosophical commitment to inclusive education, often contingent on external funding.

Sub-theme 4.1: Advocacy for Mainstreaming and Holistic Support. The Dean emphasized the faculty's commitment to promoting inclusive education through mainstreaming visually impaired students with their peers, advocating for social integration over segregation: "We will strive to promote inclusive education because studying alongside their peers is better than feeling isolated." He also reiterated a commitment to psychological well-being as a key factor for student success.

Sub-theme 4.2: Prioritizing Investment in Assistive Technologies. The Dean identified investment in AT as the top priority if additional funding were secured. He specified tools such as Braille machines, text-to-speech software, and screen readers: "The priority would be providing assistive technologies based on students' needs and suggestions like Braille machines, text-to-speech software, and any tools that facilitate their learning." He also highlighted the need for systemic digital accessibility improvements, such as installing screen readers on university computers.

Sub-theme 4.3: Reliance on External Funding for Future Improvements. While expressing a positive attitude towards potential future support, the Dean consistently linked the ability to implement significant changes to the availability of external funds, particularly from the ministry: "If the ministry allocates funds for this group of students, we will be grateful and implement it." This emphasized that the faculty's capacity for enhanced support is largely dependent on external resource allocation. This reveals a lack of autonomous decision-making power at the faculty level.

Triangulation of Student and Institutional Perspectives

Triangulating the voices of VI EFL students with the Dean's perspective revealed key points of convergence, divergence, and complementarity. The aim was to generate a multidimensional understanding of how assistive technology was experienced, supported, and constrained within the institutional context.

Convergence: Shared Recognition of Barriers and Aspirations. Both students and the Dean identified assistive technology as pivotal to inclusive learning. Students expressed the transformative potential of AT (Theme 2) and articulated specific needs for adapted materials, teacher training, and accessible platforms (Theme 6). These demands were echoed by the Dean's future-facing agenda (Dean's Theme 4), including mainstreaming inclusion and prioritizing AT investment. Similarly, both parties highlighted digital inaccessibility,

particularly with Moodle (Student Sub-theme 4.3; Dean's Sub-theme 3.2), acknowledging current systems fall short of accessibility standards. This mutual recognition offers a foundation for targeted reform.

Divergence: Perceived Adequacy of Support. A stark divergence emerged in how current support mechanisms were evaluated. Participants emphasized self-devised strategies (Themes 1 and 5), including auditory learning and informal peer/family support, as compensatory rather than complementary. The Dean, however, viewed existing informal measures, such as moral support and teacher goodwill (Dean Theme 2), as largely adequate. This mismatch reveals a critical gap: what the institution viewed as generous, participants experienced as inadequate, compensatory, and systemically unsustainable.

Complementarity: Explanatory Context for Student Experience. While informants emphasized skill-specific challenges in writing and reading (Theme 3), the Dean's account provided structural explanations: lack of policy (Sub-theme 1.1), absent budget (Sub-theme 1.2), and limited AT provision (Sub-theme 3.1). These insights did not contradict the students' claims but rather complemented them, exposing how institutional passivity and funding dependency shaped the academic barriers students faced. The Dean's belated awareness of Moodle's flaws and willingness to act also reflected reactive alignment, where recognition followed, rather than anticipated, student difficulty.

In sum, triangulation revealed that while students and administrators shared an awareness of systemic gaps and a vision for improvement, their perspectives diverged on the nature and adequacy of existing support. These identified patterns of convergence, divergence, and complementarity provide a crucial foundation for the subsequent interpretation of the study's findings.

Discussion and Interpretation of the Findings

The findings of the study provide insights into VI EFL students' perceptions on the impact of AT on their English learning. The discussion below engages directly with the study's research questions by analyzing how VI students use AT, the challenges they face, and the institutional provisions, or lack thereof, that shape these experiences, drawing on triangulated perspectives from both students and the Dean of their faculty. This discussion also situates these findings within the context of previous studies to identify key similarities, differences, and novel contribution.

Perceptions and Use of Assistive Technology. Visually impaired students perceived the impact of assistive technology differently, largely influenced by the severity of their impairment, their knowledge of available tools, and the support they received in learning to use them. Participants A and B, who are totally blind, viewed AT as transformative. They highlighted how screen readers such as JAWS, NVDA, and Smart Voice enabled independent engagement with reading, writing, and pronunciation tasks, boosting both their confidence and sense of autonomy. In contrast, Participants C and D, who have partial vision, adopted a more ambivalent stance. One lacked awareness of specialized AT and relied on mainstream platforms like YouTube and ChatGPT; the other consciously chose traditional methods, citing unfamiliarity or discomfort with complex technologies. These differences suggest that the benefits of AT are not uniformly experienced but are shaped by individual familiarity, access to information, training, and institutional support.

The Dean supported this view, admitting that the institution lacks an official policy or strategy for helping VI students use AT. He confirmed that only one Braille machine was available, and that more advanced tools were not provided due to budget constraints. This confirms the students' impression that they must often find solutions on their own.

Challenges in Learning English with AT. Students identified several difficulties.

Writing in English was the hardest skill to manage. They mentioned that Braille was slow and complex, and that even typing with screen readers could be time-consuming and frustrating. During exams, some students needed help from teachers or family members, which reduced their independence.

Another issue was the university's online platform of Moodle, which two participants B and C found hard or impossible to use without help. The Dean was unaware of these problems, which suggests a lack of communication between students and staff, and a lack of routine checks on accessibility.

The Dean also explained that the faculty cannot make major changes without approval from higher university or ministry levels. While he expressed concern and support for VI students, he also said that current help, like reading questions aloud during exams, was, in his view, sufficient. This view is out of touch with the more complex challenges described by students.

Overall, the barriers faced by VI students are not just personal or technical but also structural. A lack of training, tools, funding, and institutional planning continues to prevent students from making the most of AT in learning English.

Students' Recommendations. VI EFL participants proposed concrete improvements to enhance AT effectiveness in their learning context. They advocated for institutional provision of Cyber Braille technology or computers equipped with JAWS and NVDA, emphasizing that such tools would make their EFL learning easier. Participants also stressed the need for comprehensive teacher training. Additionally, students suggested practical solutions like pre-recorded audio summaries of lessons and Braille-to-text conversion tools for exams. The Dean expressed agreement with these aspirations, citing plans to pursue external funding for improved AT provision. While this reflects potential alignment, it also

highlights a critical issue: student needs depend on decisions and resources beyond the faculty's immediate control. This shows that even when local leaders are supportive, real change can be delayed by larger institutional systems. This partial agreement between students and the Dean is important: both groups want better support, but the current system makes it difficult to act. Without clear policies, proper funding, and direct communication between students and staff, students' suggestions are unlikely to be put into action.

In short, the findings show that VI students believe in the value and positive impact of AT, but their ability to benefit from it depends heavily on the tools, training, and support they receive. Students face major obstacles, especially in writing and using online platforms, and these problems are often not known or addressed by the institution. While both students and the Dean recognise that better support is needed, the institution has yet to take clear, coordinated action. Lasting improvement will require more than goodwill; it needs strong policies, proper funding, and active engagement with VI students' own experiences and suggestions.

Comparison with Existing Literature. The study aimed to explore how VI EFL students perceive the impact of AT on their English learning. The findings revealed significant challenges in AT accessibility, institutional support, and a need for training, which align with, but also diverge from, previous studies in other contexts.

The current study's findings both confirm and extend existing research on VI EFL students' experiences with AT. Consistent with Hamid et al. (2022) and Khan and Mahmood (2022), our participants demonstrated that specialized AT tools like NVDA, JAWS, and Smartphone text-to-speech features significantly enhance learning autonomy, particularly for totally blind students. These technologies enabled independent reading, writing, and pronunciation practice, reinforcing AT's role as a "great equalizer" in education (Khan & Mahmood, 2022). However, our research revealed important nuances. While blind students

actively utilized these specialized tools, those with partial vision relied more on general solutions like ChatGPT and YouTube, often due to limited awareness of specialized AT and personal preference. This suggests that AT adoption is influenced not only by availability but also by students' awareness and their level of visual impairment.

Notably, writing emerged consistently as the most challenging skill, primarily due to Braille's inefficiency. This aligns with Attachoo and Sitthitikul's (2020) findings about Braille's linear limitations in Thailand, but with a critical difference: Algerian students reported complete lack of institutional Braille provision, unlike the Thai context where Braille was at least available. Our participants' dependence on human scribes or improvised screen reader solutions mirrors Al-Jarf's (2021) observations about exam barriers, while their innovative adaptive strategies (e.g., using screen readers for typing) and calls for Braille-to-text conversion tools represent novel contributions to the literature.

Another point to tackle is the institutional perspective; which revealed systemic challenges that contextualize these individual experiences. The absence of formal policies, budgets, and AT provision at BBA University stands in contrast to Hamid et al.'s (2022) Indonesian context where JAWS and MELDICT were provided, and Al-Jarf's (2021) documentation of Special Needs Center. While the Dean acknowledged the need for AT investment and teacher training, budget constraints make these intentions largely aspirational, a finding that aligns with Khan and Mahmood's (2022) cost barrier analysis but reveals deeper structural issues in our context.

Additionally, Students' complaints about Moodle's inaccessibility align with Khan and Mahmood's (2022) findings on digital barriers but reveal a unique administrative disconnect, as the Dean was unaware of these issues, suggesting institutional oversight rather than just technical limitations. The study's findings regarding Moodle inaccessibility confirm

Khan and Mahmood's (2022) identification of digital barriers in online learning platforms. However, our research reveals a more profound institutional issue. The Dean's apparent unawareness of these accessibility challenges highlights an administrative disconnect; which represents a critical finding that extends beyond previous studies' focus on technological shortcomings alone.

Regarding pedagogical support, all participants recommend teacher training if AT was available. This finding strongly echoes prior research (Attachoo&Sitthitikul, 2020; Al-Jarf, 2021) that identified educator capacity building as fundamental for effective AT implementation. Our participants' recommendations for comprehensive teacher training programs reinforce these earlier calls for professional development, while introducing innovative solutions like audio summaries and Braille-to-text conversion tools as practical interventions not previously documented in the literature.

Overall, while global studies emphasized AT's transformative potential, our context reveals a systemic gap marked by an administrative disconnect in understanding student needs, a complete absence of dedicated funding, and an absence of formal policies, places BBA University at a severe disadvantage compared to other contexts where at least minimal support structures exist. The study makes three key contributions to the literature. First, it demonstrates how macro-level institutional neglect, particularly in local budget allocation as confirmed by the Dean, worsen micro-level challenges such as students' limited awareness of AT options. Second, it reveals a troubling disparity between administrative perceptions of adequate support and students' actual technological needs. Third, it identifies the complete absence of funded AT programs as a defining feature in the Algerian context.

Section Three: Limitations, Recommendations, and Suggestions

Research Limitations

While this study offered valuable insights into the role of assistive technology (AT) in shaping the English learning experiences of visually impaired (VI) EFL students, it was not without limitations. First and foremost, the small sample size, comprising four students and one faculty dean, limited the breadth of perspectives captured. Although the depth of qualitative analysis enriches the findings, the study cannot claim statistical generalizability. The insights should therefore be understood as indicative rather than representative.

Furthermore, the research was confined to a single institutional context, BBA University. While this focus allowed for a nuanced case study, it inevitably narrows the study's scope. Educational policies, resource availability, and institutional cultures vary widely across Algeria, and as such, the experiences documented here may not fully reflect the realities of VI EFL students in other universities.

Finally, the study relied exclusively on self-reported data from interviews. While these narratives provide rich, subjective accounts, they may also be shaped by memory, social desirability, or participants' understanding of the research purpose. The absence of classroom observations or teacher perspectives further limits triangulation. Future research could benefit from a multi-institutional design and a broader range of data sources to better capture the systemic and pedagogical dimensions of AT integration.

Pedagogical Recommendations

This study highlighted the impact of AT on VI EFL learning of English through students' perceptions. Various pedagogical suggestions are put forward for The Ministry of Higher Education, universities, and teachers.

For the Ministry of Higher Education, it is essential to establish dedicated funding to allocate specific budgetary resources for acquiring and maintaining essential ATs, such as JAWS, NVDA, and Braille displays, in educational institutions. Additionally, it is crucial to implement accessibility standards by mandating regular audits of educational platforms like Moodle to ensure compatibility with AT. Furthermore, the Ministry should promote the development and enforcement of formal policies that institutionalize disability inclusion across all educational levels, prioritizing the needs of VIS.

For universities, there must be an investment in comprehensive training programs that provide mandatory workshops on the effective use of AT and the creation of accessible learning materials. Developing structured orientation sessions for VIS is essential to familiarize them with available technologies and resources. Additionally, universities should explore innovative assessment methods that reduce reliance on human scribes, such as incorporating speech-to-text software and Braille-compatible materials, thereby ensuring a more equitable assessment process.

For teachers, they should regularly adapt teaching materials to ensure they are accessible and meet the diverse needs of VIS. Utilizing diverse teaching strategies, including multimedia resources and interactive tasks, can enhance engagement and comprehension for all students. Moreover, fostering a supportive learning environment by encouraging collaboration through group activities and discussions will help promote an inclusive classroom atmosphere.

By implementing these recommendations collectively, the Ministry of Higher Education, universities, and teachers can create an inclusive learning environment that maximizes the benefits of AT, ultimately improving the learning experience for VI EFL students.

Suggestions for Future Research

For future studies, researchers should expand this inquiry to other universities to gain broader insights into how VI EFL students perceive the impact of AT in English learning across multiple institutions. Given the limited sample size in this study, which restricts the generalizability of the findings, we encourage studies with larger sample sizes to strengthen the credibility of the findings. Additionally, future research could focus on students' experiences with specific assistive tools, such as JAWS or NVDA, to evaluate their effectiveness in language acquisition. Moreover, it would be beneficial to investigate the impact of AT on specific language skills, such as reading comprehension, writing proficiency, or listening abilities. Finally, we recommend experimental studies to measure the direct impact of AT on English learning among VI EFL students. Such investigations would provide deeper insights into this evolving field and contribute to the development of more effective educational strategies.

Conclusion

This chapter detailed the methodology, findings, and recommendations of this study exploring VI EFL students' experiences with AT at BBA University. Using an interpretivist paradigm and qualitative case study design, the research employed semi-structured interviews with four VI students and the Faculty Dean, analyzed through thematic analysis. The findings directly addressed the research questions by documenting students' varied experiences with AT adoption, persistent challenges, and concrete recommendations for student-centered improvements. Analysis revealed AT's transformative potential in English learning, though hindered by institutional gaps in support, funding, teacher training, and digital accessibility (e.g., Moodle incompatibility). While students using tools like NVDA/JAWS reported benefits, others relied on improvised solutions due to accessibility barriers. The Dean

highlighted budget and policy constraints as key challenges. Recommendations included institutional AT provision, teacher training, and digital platform improvements, with future research suggestions to expand the study's scope. Despite limitations like a small sample size, the study underscores the need for systemic reforms to optimize AT's role in inclusive EFL education for VI learners.

General Conclusion

This study aimed to explore the perceptions of visually impaired (VI) English as a Foreign Language (EFL) students regarding the impact of AT in their English learning. The research was organized into two core chapters, literature review and research methodology.

Initially, the first chapter established the theoretical foundation through three key sections: inclusive education, visual impairment, and assistive technology within the EFL context. This comprehensive review highlighted AT's transformative potential while identifying gaps in current implementation practices. The examination of previous studies further contextualized the research within existing scholarship.

The second chapter outlined the empirical investigation through three interconnected sections also: research methodology, data analysis and findings, as well as the section of recommendations, suggestions, and limitations. Employing qualitative semi-structured interviews, the study captured rich insights into participants' experiences with AT. Key findings addressed the research questions, revealing participants' experiences, challenges, and recommendations. The Dean's institutional perspective further illuminated systemic barriers including budget constraints and policy gaps. The study concluded by analyzing and discussing these findings, emphasizing the need for increased awareness and investment in AT within educational settings. Recommendations for future research suggested the exploration of specific assistive tools and their impact on particular language skills, as well as the necessity of larger participant pools to improve the generalizability of the findings.

By addressing these areas, we can contribute to a more nuanced understanding of how AT can effectively support VI EFL students, ultimately leading to better educational practices and improved learning experiences.

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Appendices

Appendix 1 : Information Sheet / Consent Form for VI EFL Participants



*Mohamed El
Bachir
El Ibrahimji*

Title of Study:

Exploring the Perceptions of Visually Impaired EFL University Students on the Impact of Assistive Technology on Their English Learning

You are invited to take part in a research study. You do not have to take part if you do not want to. Please take time to read/listen the following information carefully to help you decide if you would like to take part.

What is the purpose of the study?

This study aims to explore how visually impaired EFL (English as a Foreign Language) university students perceive and experience the impact of assistive technology on their English learning. Your insights will help improve understanding how assistive technology can support visually impaired learners.

Why have I been invited to participate?

You have been invited to participate in this study as you are recognised as a member of a key interest group from whom we wish to collect data. You are an EFL learner at Mohamed El Bachir El Ibrahimji University who may have been using assistive technology for English learning.

Do I have to take part?

No, your participation is entirely voluntary. You can ask questions about the research before deciding whether to take part. If you do not want to take part, that is OK. During the interview, you are free to withdraw at any time without giving a reason.

What will happen if I take part?

If you agree to participate, you will be asked to answer questions in an interview. The interview consists of different questions that address the challenges you have encountered to learn English as a visually impaired student. It also addresses your experience, opinions, and suggestions about using assistive technology for English learning. If you agree, the interview will be audio-recorded for transcription and analysis purposes.

Are there any risks or benefits?

Participating in the research is not anticipated to cause you any disadvantages or discomfort. The potential physical and/or psychological harm or distress will be the same as any experienced in everyday life. If you feel uncomfortable discussing any topic, you may skip it or stop the discussion at any time.

Regarding benefits, participating in this study does not claim to have any direct benefits to you or your own EFL study. Your involvement, however, may lead to improvements in educational tools and practices in English department at BBA university because your input insight will contribute to a better understanding of how assistive technology can support visually impaired EFL students in their learning.

Payments, reimbursements of expenses, or any other benefit or incentive for taking part:

There will be no payment or any benefit or incentive for taking part in this study.

Unfortunately, we cannot reimburse any expenses you may incur.

What will happen to the information/data provided?

Your personal data will be processed in accordance with the ethical guidelines of BBA University. All information you provide will be treated confidentially. Your name and any identifying details will be anonymised in the data, and no identifying information will be included in any publications or presentations. Audio recordings will be deleted after the study is completed.

What will happen to the results of the study?

The findings of this study will be included in a master's thesis and may be published in academic journals.

If you have any concerns about how your data is being handled, please contact us on:

Your email:

Consent Statement

By signing below, you confirm that:

1. You have understood the information provided in this consent form.
2. You voluntarily agree to participate in this study.
3. You understand that you may withdraw at any time without penalty.
4. You agree to have the interview audio-recorded for transcription and analysis purposes.

Participant's Name :

Participant's Signature:

Date:

Researcher's Name:

Researcher's Signature:

Date:

Appendix 2: Interview Guide for VI EFL Participants

1. Can you introduce yourself (academic level, English proficiency level)?
2. What is your level of visual impairment?
3. How do you currently learn English? What materials and strategies do you use?
4. What English skills (listening, speaking, reading, writing, grammar, vocabulary) do you find most difficult? Why?
5. Have you heard of or used any assistive technology? If yes, which ones? If no, why not?
6. Do you use Moodle for learning English? If yes, how often and what features do you use?
7. How accessible is Moodle for you as a visually impaired learner? Do you find the format of uploaded materials (text, audio, video) accessible?
8. Does Moodle help you improve any specific English skills (listening, reading, writing, speaking)? Why or why not?
9. What challenges do you face when using Moodle for learning English?
10. What improvements would you suggest for Moodle to better support visually impaired students in learning English?
11. Do you use smartphone accessibility features (screen readers, voice-to-text) for English learning? If yes, how? If no, why not?
12. What challenges, if any, do you face when using your phone for studying English?
13. If assistive technology were available, how do you think it could help you? (E.g., speaking, listening, reading, writing, vocabulary, grammar)
14. What challenges do you face learning English without assistive technology? How does it affect your performance, confidence, motivation?
15. Have your teachers made any effort to adapt their teaching methods or materials to accommodate visually impaired students? If yes, how?
16. If the university provided assistive technology, which tools would be most useful for you? Why? (Braille, speech-to-text, AI apps)

17. What improvements should the university make to support visually impaired students in learning English?

18. Is there anything else you would like to share about your experience learning English as a visually impaired student?

Appendix 3: Consent Form for the Dean of Letters and Languages Faculty

Title of Study:

Exploring the Perceptions of Visually Impaired EFL University Students on the Impact of Assistive Technology on Their English Learning

To the Dean of the Faculty of Letters and Languages BordjBouArreridj University you are invited to take part in a research study. You do not have to take part if you do not want to.

Please take time to read the following information carefully to help you decide if you would like to take part.

What is the purpose of the study?

This study aims to explore how visually impaired EFL (English as a Foreign Language) university students perceive and experience the impact of assistive technology on their English learning. Your insights will help improve understanding how assistive technology can support visually impaired learners.

Why have you been invited or participate?

Dear Dean of the Faculty of Letters and Languages, Bordj Bou Arreridj University, we are honored to invite you to participate in this study, given your distinguished role as the academic leader overseeing English language education at the Faculty of Letters and Languages. Your expert insights are invaluable to this research, as you possess first-hand experience in supervising visually impaired EFL learners particularly those utilizing assistive technologies for English language acquisition at our university.

Do you have to take part?

No, your participation is voluntary. You can ask questions about the research before deciding whether to take part. If you do not want to take part, that is OK. During the interview, you are free to withdraw at any time without giving a reason.

What will happen if you take part?

If you agree to participate, you will be asked to answer questions in an interview. The interview consists of different questions that address the institutional challenges faced in supporting visually impaired EFL learners and your insights on students' experiences with assistive technologies. It also addresses your experience, opinions, and suggestions about using assistive technology for English learning. If you agree, the interview will be audio-recorded for transcription and analysis purposes.

Are there any risks or benefits?

Your participation carries no anticipated risks, and you may decline to address any topic of preference. While this study offers no direct personal benefits, your expertise holds significant institutional value. By contributing your insights on assistive technology implementation, you will directly inform enhancements to the Faculty of Letters and Languages' support systems for visually impaired EFL learners. This may improve pedagogical approaches, resource allocation, and policy development at BBA University, ultimately advancing our commitment to inclusive education.

What will happen to the information/data provided?

Your personal data will be processed in accordance with the ethical guidelines of BBA University. All information you provide will be treated confidentially. Your name and any identifying details will be anonymized in the data, and no identifying information will be included in any publications or presentations. Audio recordings will be deleted after the study is completed.

What will happen to the results of the study?

The findings of this study will be included in a master's thesis and may be published in academic journals.

If you have any concerns about how your data is being handled, please contact us on:

visdissertation@gmail.com

Consent Statement

By signing below, you confirm that:

1. You have understood the information provided in this consent form.
2. You voluntarily agree to participate in this study.
3. You understand that you may withdraw at any time without penalty.
4. You agree to have the interview audio-recorded for transcription and analysis purposes.

Dean's Name:

Dean's Signature:

Date:

Researchers' Names:

Researchers' Signatures:

Date:

Appendix 4: Interview Guide for the Dean of Letters and Languages Faculty

1. What is the faculty's current policy for supporting visually impaired students, especially in language learning? Is this policy officially documented, and how is it communicated to students and teachers?
2. Is there a dedicated budget for supporting students with visual disabilities or is the support random?
3. What are the biggest challenges the university faces in providing assistive technologies (e.g., Braille machines, text-to-speech software)?
4. What types of support are available for visually impaired students in the English language department? (e.g., adapted curricula, exam accommodations, assistive tools).
5. Are you satisfied with the level of support provided to blind students?
6. Students complain that Moodle is not accessible for them. What steps has the university taken to ensure compatibility with their needs (e.g., screen reader support, text-to-speech)? Are there any development plans?
7. Are teachers trained on how to adapt curricula for visually impaired students, such as providing audio summaries?
8. Are there efforts to increase financial support for students with visual disabilities?
9. If the faculty receives additional funding, what would be your top priorities to improve support for visually impaired students?
10. Are there any other points you would like to mention about the university's role in supporting visually impaired students or challenges we have not discussed?

11. What advice or message would you like to give to visually impaired students struggling with learning English at your university?

Arabic version



Mohamed El
Bachir
El Ibrahimy

استمارة موافقة على المشاركة في الدراسة – لعמיד كلية الاداب و اللغات بجامعة برج بوعريريج

عنوان الدراسة:

استكشاف آراء طلبة اللغة الانجليزية - ذوي الإعاقة البصرية حول تأثير التكنولوجيا المساعدة على تعلمهم للغة الإنجليزية.

إلى عميد كلية الآداب واللغات بجامعة برج بوعريريج، يسعدنا دعوتكم للمشاركة في هذه الدراسة الاستكشافية لمذكرة تخرج طور الماجستير. نأكد لكم ان المشاركة اختيارية، ولن يترتب عليكم أي ضرر في حالة رفضكم. نرجو منكم قراءة المعلومات التالية بعناية لمساعدتكم في اتخاذ قرار المشاركة.

ما هو الهدف من الدراسة؟

تهدف هذه الدراسة إلى استكشاف آراء الطلاب الجامعيين ذوي الإعاقة البصرية (متعلمو اللغة الإنجليزية كلغة أجنبية) حول تأثير التكنولوجيا المساعدة على تعلمهم للغة الإنجليزية. ستساهم آراؤكم في تحسين فهم كيف تدعم التكنولوجيا المساعدة هذه الفئة من المتعلمين.

لماذا تمت دعوتكم للمشاركة؟

يشرفنا دعوتكم للمشاركة في هذه الدراسة نظراً لدوركم المتميز كقائد أكاديمي يشرف على تعليم اللغة الإنجليزية في هذه الكلية. تعتبر خبرتكم القيمة ذات أهمية بالغة لهذا البحث، حيث لديكم معرفة مباشرة من خلال متابعة الطلاب ذوي الإعاقة البصرية متعلمي اللغة الإنجليزية، خاصة أولئك الذين يستخدمون التكنولوجيا المساعدة في تعلم اللغة الإنجليزية في الجامعة.

هل المشاركة إلزامية؟

لا، المشاركة طوعية تماماً. يمكنكم الاستفسار عن أي تفاصيل قبل اتخاذ قراركم. إذا اخترتم عدم المشاركة، فلا مشكلة في ذلك. كما يمكنكم الانسحاب في أي وقت أثناء المقابلة دون إبداء أسباب.

ماذا سيحدث إذا وافقت على المشاركة؟

في حال موافقتكم، سيتم إجراء مقابلة معكم تتضمن أسئلة حول التحديات التي تواجهها المؤسسة الجامعية لدعم الطلاب ذوي الإعاقة البصرية متعلمي اللغة الإنجليزية، ورأيكم حول تجاربهم مع التكنولوجيا المساعدة. كما سنتناول المقابلة خبرتكم وآراءكم ومقترحاتكم حول استخدام التكنولوجيا المساعدة في تعلم اللغة الإنجليزية. إذا وافقتم، سيتم تسجيل المقابلة صوتياً لأغراض التحليل والنقل الكتابي.

هل هناك أي مخاطر أو فوائد؟

لا توجد مخاطر متوقعة من مشاركتكم تتجاوز التفاعلات المهنية اليومية، ويمكنكم الامتناع عن الإجابة على أي سؤال. بينما لا توجد فوائد مباشرة لكم شخصيًا، فإن خبرتكم لها قيمة مؤسسية كبيرة: من خلال مشاركة رؤيتكم حول تطبيق التكنولوجيا المساعدة، ستساهمون مباشرة في تحسين أنظمة الدعم المقدمة للطلبة ذوي الإعاقة البصرية في كلية الآداب واللغات. قد يؤدي ذلك إلى تحسين المناهج التعليمية وتوزيع الموارد ووضع السياسات في جامعة برج بوعريريج، مما يعزز الالتزام بالتعليم الشامل.

كيف سيتم التعامل مع البيانات المقدمة؟

سيتم معالجة البيانات الشخصية وفقًا للمبادئ الأخلاقية لجامعة برج بوعريريج. جميع المعلومات التي تقدمونها ستكون سرية، ولن يتم ذكر اسمكم أو أي تفاصيل تعريفية في أي منشورات أو عروض تقديمية. سيتم حذف التسجيلات الصوتية بعد انتهاء الدراسة.

ما مصير نتائج الدراسة؟

ستُدرج نتائج هذه الدراسة في مذكرة شهادة الماجستير، وقد تُنشر في مجلات أكاديمية.

إذا كانت لديكم أي استفسارات حول كيفية التعامل مع بياناتكم، يرجى التواصل معنا

عبر visdissertation@gmail.com:

بيان الموافقة

بالتوقيع أدناه، فإنكم تؤكدون أنكم:

1. قد فهمتم المعلومات الواردة في نموذج الموافقة هذا.
2. توافقون طواعية على المشاركة في هذه الدراسة.
3. تدركون أنه يمكنك الانسحاب في أي وقت دون أي عواقب.
4. توافقون على تسجيل المقابلة صوتيًا لأغراض التحليل والنقل الكتابي.

اسم العميد:

توقيع العميد:

التاريخ:

اسماء الباحثات:

توقيع الباحثات:

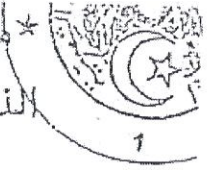
التاريخ:

Arabic Version

1. ما هي سياسة الكلية الحالية لدعم الطلاب المكفوفين، خاصة في تعلم اللغات؟ هل هذه السياسة موثقة رسمياً؟ وكيف يتم إبلاغها للطلاب والأساتذة؟
2. هل توجد ميزانية خاصة لدعم الطلاب ذوي الإعاقة، أم أن الدعم عشوائي؟
3. ما هي أكبر التحديات التي تواجهها الجامعة في توفير تقنيات مساعدة مثل (برايل، برامج تحويل النص إلى صوت)؟
2. الدعم الحالي والممارسات المتبعة
4. ما هي أنواع الدعم المتاحة للطلاب المكفوفين في كلية اللغة الإنجليزية؟ (مثل تكيف المناهج، تسهيلات الامتحانات، أدوات مساعدة)؟
5. هل أنت راضٍ عن مستوى الدعم المقدم للطلاب المكفوفين؟
6. يشتكى الطلاب من أن نظام Moodle غير قابل للاستخدام بالنسبة لهم. ما الخطوات التي اتخذتها الجامعة لضمان توافقه مع احتياجات المكفوفين؟ (مثل دعم قارئات الشاشة، تحويل النص لصوت)؟ هل هناك خطط للتطوير؟
7. هل يتم تدريب الأساتذة على كيفية تكيف المناهج للطلاب المكفوفين مثل تقديم ملخصات صوتية؟
8. ما الذي تحتاجه الجامعة لتنفيذ مثل هذا التدريب؟
9. كيف تقارن الجامعة بين الاستثمار في التعليم الشامل وباقي الاحتياجات المالية؟
10. هل هناك جهود لزيادة الدعم المالي لذوي الإعاقة؟
11. إذا حصلت الكلية على تمويل إضافي، ما هي أولوياتك لتحسين دعم الطلاب المكفوفين؟
12. هل هناك أي نقاط أخرى تود ذكرها حول دور الجامعة في دعم ذوي الإعاقة البصرية، أو تحديات لم نناقشها؟
13. ما النصيحة أو الرسالة التي تود توجيهها للطلاب ذوي الإعاقة البصرية الذين يواجهون صعوبات في تعلم اللغة الإنجليزية في جامعتكم؟

27 ص 2020

* ملحق بالقرار رقم 1082... المؤرخ في
الذي يحدد القواعد المتعلقة بالوقاية من السرقة العلمية ومكافحتها



الجمهورية الجزائرية الديمقراطية الشعبية
وزارة التعليم العالي والبحث العلمي

مؤسسة التعليم العالي والبحث العلمي:

نموذج التصريح الشرقي
الخاص بالالتزام بقواعد النزاهة العلمية لإنجاز بحث

أنا المضي أسفله،

السيد(ة): بن عبد النبي بن شيراز الصفة: طالب، أستاذ، باحث طالبة

الحامل(ة) لبطاقة التعريف الوطنية رقم 111640233 والصادرة بتاريخ 10/03/2024

المسجل(ة) بكلية / معهد الآداب واللغات قسم اللغة الإنجليزية

والمكلف(ة) بإنجاز أعمال بحث (مذكرة التخرج، مذكرة ماستر، مذكرة ماجستير، أطروحة دكتوراه)،

عنوانها: Exploring visually impaired EFL student's perceptions of assistive technology A case study at Bordj Bou Amredj university

أصرح بشرفي أنني التزم بمراعاة المعايير العلمية والمنهجية ومعايير الأخلاقيات المهنية والنزاهة الأكاديمية
المطلوبة في إنجاز البحث المذكور أعلاه.

التاريخ: 2025/07/13

توقيع المعني (ة)

hph

شهادة لأجل التصديق

العلمي

ولاية البويرة

رقم التعريف الوطنية رقم:

تاريخ:

الذي:

2025

31 جويلية

رئيس المجلس الشعبي البلدي وبنفويض منه
ضابط الحالة المدنية

حروز زهير

* ملحق بالقرار رقم 10821... المؤرخ في
الذي يحدد القواعد المتعلقة بالوقاية من السرقة العلمية ومكافحتها



الجمهورية الجزائرية الديمقراطية الشعبية
وزارة التعليم العالي والبحث العلمي

مؤسسة التعليم العالي والبحث العلمي:

نموذج التصريح الشرقي
الخاص بالالتزام بقواعد النزاهة العلمية لإنجاز بحث

أنا المعضي أسفله،

السيد(ة): بو. طاهر الصفه: طالب، أستاذ، باحث طالبة

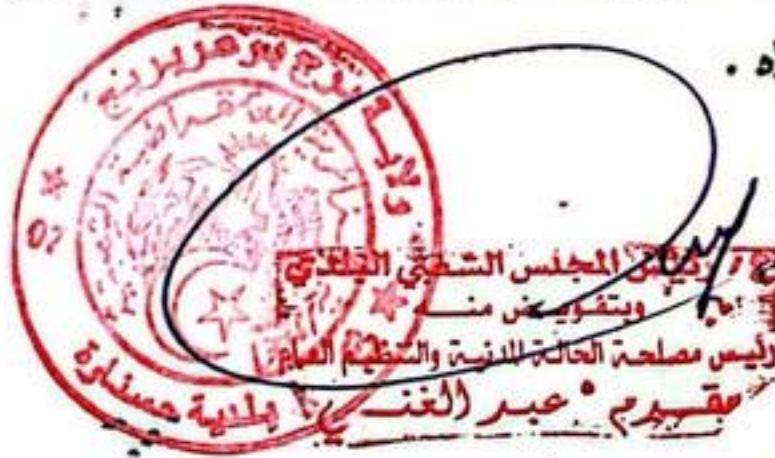
الحامل(ة) لبطاقة التعريف الوطنية رقم 1164044 والصادرة بتاريخ 2.09.15/02/17

المسجل(ة) بكلية / معهد الأدب واللغات قسم اللغة الإنكليزية

والمكلف(ة) بإنجاز أعمال بحث (مذكرة التخرج، مذكرة ماستر، مذكرة ماجستير، أطروحة دكتوراه).

عنوانها: Exploring Visually Impaired EFL Students' perceptions of Assistive Technology Use Study at Bordj Bou Arreridj University

أصرح بشرتي في أنني التزم بمراعاة المعايير العلمية والمنهجية ومعايير الأخلاقيات المهنية والنزاهة الأكاديمية المطاوعة في إنجاز البحث المذكور أعلاه .



التاريخ: 2023/09/13

توقيع المعني (ة)

[Handwritten signature]

توقيع السيد(ة): 1164044
ب.ت.و.ر. من 2023/09/13
صدارة بتاريخ: 2023/09/13
من: بو. طاهر
محل: بورد بوازرديج

3 أ جويلية 2025