PEOPLE'S DEMOCRATIC REPUBLIC OF ALGERIA
MINISTRY OF HIGHER EDUCATION AND SCIENTIFIC RESEARCH
MOHAMMED EL BACHIR EL IBRAHIMI UNIVERSITY
BORDJ BOU ARRERIDJ
FACULTY OF LETTERS AND LANGUAGES
DEPARTMENT OF ENGLISH

A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Arts in the Didactics of English

Exploring Challenges Faced in Developing Writing Skills using Braille System among Visually Impaired EFL learners

The case of Visually Impaired School –BBA-

By: Boudjelida Hicham
Benhizia Abdelhak

Supervisor: Dr. Habitouche Mustapha

Board of Examiners

President	Dr. Benhamimid Abd Ennour
Supervisor	Dr. Habitouche Mustapha
Examiner	Dr. Benreghda Abdelmadjid

Academic Year: 2024/2025

Abstract

This dissertation investigates the challenges that visually impaired learners face in developing English writing skills using the braille system in EFL contexts. The study aims to explore cognitive, linguistic, technical, social and pedagogical barriers affecting braille based writing proficiency and to propose effective strategies to overcome them. A mixed methods research design was employed, combining qualitative and quantitative data collection tools, including semi-structured interviews with 3 EFL teachers, classroom observations and questionnaires administered to 18 visually impaired learners at Visually Impaired school in Bordj Bou Arreridj, Algeria. The study focused on learners' experiences with braille contractions, transitions between braille grade levels, writing mechanics and their perceptions of motivation, isolation and access to assistive technologies. The findings reveal that students face significant difficulties related to motor coordination, grammar and syntax and the limited availability of advanced braille tools. Although the learners benefit from teacher support and peer interaction, the absence of multisensory resources and assistive technologies hinders their writing development. Nevertheless, the study identifies promising practices such as scaffolded instruction, multisensory teaching methods, and peer collaboration, as effective approaches to enhance braille based EFL writing instruction. The study concludes by recommending for increased institutional support, specialized teacher training, and the integration of accessible technologies to promote an inclusive and fair learning environment for visually impaired EFL learners.

Keywords: braille system, visually impaired learners, EFL writing, assistive technology

Dedication

In the name of Allah, the most gracious, the most merciful, all praises be to Allah, the lord of the universe.

To my beloved parents whose endless love and support have been my greatest motivation, my pillars of strength and my source of inspiration.

To my family, I am deeply thankful for your unwavering support and understanding throughout this journey. Especially my sister (Nawel), thank you for your companionship and for always being there to cheer me on. Your support has been invaluable.

To everyone I know, thank you for your support and encouragement.

May Allah makes it a good omen for me.

Hicham

Dedication

I would like to express my heartfelt gratitude to all those who have supported me throughout my educational journey.

To my teachers from primary school to university, thank you for you guidance, encouragement and for instilling in me a love of learning.

To my parents, your unwavering support and belief in me have been my foundation.

Abdelhak

Acknowledgments

We would like to thank Allah for giving us the strength, power, and patience to finish our dissertation.

Our deepest respect, thanks and gratitude to our supervisor Dr. Habitouche Mustapha who made the realization of the present work possible. We would like to thank him for his accurate advice and patience throughout the stage of this research despite his academic commitments.

We also would like to thank the board examiners who accepted to read and help us polish up our dissertation.

Special thanks go to the visually impaired students and teachers who kindly accepted to participate in our research, without whom this research would not have been possible.

Our sincere gratitude goes to all our teachers who taught us over the five years at Mohamed El Bachir El Ibrahimi University. Thank you all for your support and encouragement.

Table of contents

List of Tables

List of Figures

List of Acronyms

- **EFL :** English as a Foreign Language
- **UNESCO:** United Nations Educational Scientific and Cultural Organization
- **VI:** Visually Impaired
- **UEB:** Unified English Braille
- **TSVI:** Teachers of Students with Visually Impairment
- **BNT:** Braille Note Taker
- **PBW:** Perkins Braille Writer
- **BBA:** Bordj Bou Arreridj
- **NVDA:** Non Visual Desktop Access
- **JAWS:** Job Access With Speech
- **L1:** Language First

General Introduction

Background of the study

Writing is one of the most important skills in learning English as a Foreign Language (EFL). It allows learners to express their ideas, practice grammar and vocabulary, and improve overall language proficiency (Bhowmik, 2021; Song & Song, 2023). However, for learners who are visually impaired, developing writing skills can be more difficult because they use Braille, which is a tactile system that requires reading and writing through touch. Braille uses raised dots to represent letters, punctuation, and whole words, and it often involves special codes and contractions (American Foundation for the Blind, n.d.; Liu et al., 2023). In EFL contexts, visually impaired learners face added challenges, such as learning grammar, spelling, and syntax without visual feedback (Aslan & Cakmak, 2022).

Many visually impaired learners use traditional tools like the slate and stylus to write in Braille. These tools are slow, require high motor control, and give delayed feedback (Kalra et al., 2009). While new technologies like refreshable Braille displays can help, they are often too expensive or not available in many schools (Zakrajsek et al., 2024). Despite these challenges, there is limited research in the field of EFL that focuses specifically on Braille writing. This study aims to explore these issues in more detail, focusing on the experiences of both students and teachers.

Statement of the problem

Although Braille provides a way for visually impaired learners to write and read, developing writing skills in English using Braille remains a complex task. Students often struggle with English grammar, spelling, and sentence structure, as well as using Braille contractions and writing tools. These challenges are made worse by a lack of access to modern

assistive technology, adapted EFL learning materials, and teacher training in Braille-specific writing instruction. There is a clear gap in understanding how these factors affect students' ability to write in English using Braille. This study aims to fill that gap by identifying the specific difficulties students face and how these challenges can be addressed.

Research questions

This study seeks to answer the following questions:

1- What are the primary challenges faced by visually impaired EFL learners when using braille system to develop writing skills?
2- What recommendations can be made to improve braille based EFL writing instruction?

Objectives of the study

The main objectives of this study are:

1- To explore the challenges that visually impaired learners face when developing writing skills using braille system in EFL contexts.
2- To provide recommendations for improving the teaching and learning of writing in braille for visually impaired EFL learners.

Significance of the study

This research is important because it sheds light on an underexplored area in EFL education. Most studies focus on sighted learners, while very few examine the specific needs of visually impaired students, especially in writing. Understanding the challenges faced by these learners can help educators, policymakers, and curriculum designers create more inclusive and supportive learning environments. This study also provides practical recommendations that can guide teacher training, technology use, and classroom strategies to support Braille literacy in EFL settings.

Overview of the methodology

This study adopts a mixed method research design, combining qualitative and quantitative approaches to comprehensively investigate the challenges faced by visually impaired EFL learners in developing writing skills using braille. The methodology is structured as follows:

Research paradigm

Interpretivist approach focuses on understanding the subjective experience of visually impaired learners and their teachers within their educational context.

Research design

Exploratory sequential mixed methods

Phase 1 (qualitative): semi structured interviews with teachers (n=3) and classroom observations (4 sessions) to explore challenges in depth.

Phase 2 (quantitative): a Likert scale questionnaire administered to visually impaired EFL learners (n=18) to quantify prevalent difficulties.

Data analysis

Qualitative data: thematic analysis of interview transcripts and observation notes.

Quantitative data: descriptive analysis (percentages, frequency distributions) for questionnaire responses.

Organisation of the study

The current dissertation is consisted of a general introduction, three chapters and a general conclusion.

The first chapter examines braille as a tactile writing system, its historical development, structure and cognitive demands. In addition, it examines the writing skills development in EFL context, its importance, common challenges and differences in writing skills acquisition between sighted and VI learners. Moreover, it examines the challenges in developing writing using braille in EFL learning as well as pedagogical strategies and interventions.

The second chapter is about the field of investigation and methodology used to investigate this study. It introduces the sampling strategy, it describes the data collection tools, research approach and design, and ethical protocols.

The third chapter provides data discussions and presentation of the findings as well as provide pedagogical implementations, recommendations and suggestions for further research.

Chapter One : Literature Review

Chapter one: Literature Review

Introduction

The development of writing skills in English as a Foreign Language (EFL) context is a challenge that becomes even more complex for visually impaired learners. The Braille system is a key part of their education. This tactile writing method has a long history and has empowered visually impaired people for many generations. However, while Braille has long been a crucial tool in facilitating access to written language, its unique structure, including the use of contractions, varying grade levels, and specialized writing tools, imposes distinct cognitive and motor demands compared to conventional print writing. Moreover, visually impaired students face extra challenges in learning English as a foreign language, they encounter additional linguistic and pedagogical obstacles such as mastering English syntax, spelling, and punctuation through touch based methods. This literature review explores various challenges faced by visually impaired EFL learners as they develop writing proficiency using the Braille system. In particular, it examines the higher cognitive load and motor skill difficulties inherent in Braille writing, as well as the limited availability of tailored Braille materials and the practical challenges related to the complexity of the Braille code and access to appropriate writing tools. Furthermore, the impact of social and psychological aspects, including isolation in the classroom and issues with self-confidence, is taken into account regarding their role in the writing development of students. By synthesizing insights from research on the Braille system's educational role, writing skills acquisition in EFL contexts, and current pedagogical interventions, this review aims to provide a comprehensive understanding of the barriers and potential strategies for improving Braille-based writing instruction for visually impaired students.

1. Overview of a braille as a tactile writing system

> Braille is a system of raised dots that can be read with the fingers by people who are blind or who have low vision. Teachers, parents, and others who are not visually impaired ordinarily read braille with their eyes. Braille is not a language. Rather, it is a code by which many languages—such as English, Spanish, Arabic, Chinese, and dozens of others—may be written and read. Braille is used by thousands of people all over the world in their native languages, and provides a means of literacy for all. (American Foundation for the Blind, n.d. what is braille section)
>
> Braille symbols are formed within units of space known as braille cells. A full braille cell consists of six raised dots arranged in two parallel rows each having three dots. The dot positions are identified by numbers from one through six. Sixty-four combinations are possible using one or more of these six dots. A single cell can be used to represent an alphabet letter, number, punctuation mark, or even a whole word. This braille alphabet and numbers page illustrates what a cell looks like and how each dot is numbered. (American Foundation for the Blind, n.d. what does braille look like)

Martiniello and Wittich (2020) state that braille reading involves complex coordination of tactile, motor, and cognitive capacities. Research has focused on younger learners, highlighting the need for studies on older adults learning braille later in life (Martiniello & Wittich, 2020). Despite technological advancements, it is still difficult to find affordable and high quality refreshable braille displays (Zakrajsek et al., 2024). This restriction makes it difficult for the blind community to access information, especially when combined with the widespread usage of graphical user interfaces (Zakrajsek et al., 2024). Researchers highlight the significance of examining braille as a distinct writing system, promoting an understanding

that appreciates the diversity in human perception and thought processes (Englebretson et al., 2023).

1.1 Historical development and significance for the visually impaired

The historical development of Braille for the visually impaired is a fascinating journey that began with the innovative work of Louis Braille in the early 19th century. Louis Braille, born in 1809 in France, lost his sight at a young age due to an accident and subsequent medical complications. Despite his blindness, he was determined to create a system that would allow visually impaired individuals to read and write effectively. Inspired by Charles Barbier de la Serre's tactile military code, Braille developed a simplified and more practical system of raised dots that could represent letters, numbers, and even musical notation (Jiménez et al., 2009; Roth & Fee, 2011).

Braille's system was revolutionary because it enabled blind individuals to access written culture, significantly improving their quality of life. The Braille alphabet, as it is known today, was first published in 1829 when Louis Braille was just 20 years old. His system was initially met with resistance but gradually gained acceptance and was eventually recognized as a vital communication tool for the blind (Jiménez et al., 2009; Roth & Fee, 2011).

In the 20th century, the Braille system was further standardized and universalized. In 1950, UNESCO played a crucial role in promoting the Braille alphabet globally, recognizing it as a legitimate language of communication. This recognition helped to solidify Braille's status as an essential tool for literacy among the visually impaired (Jiménez et al., 2009).

Technological advancements have continued to enhance the accessibility and functionality of Braille. The development of refreshable Braille displays and other digital Braille technologies has allowed for more dynamic and efficient reading experiences. These

innovations have made it possible for VI individuals to access digital content and participate more fully in the information age (Chen et al., 2024; Chen et al., 2023; Gayathri et al., 2020).

In summary, the development of Braille has been a transformative journey from its initiation by Louis Braille to its current status as a universally recognized and technologically advanced system. It has empowered many VI individuals by providing them with the means to read, write, and engage with the world around them.

1.2 Overview of Braille Structure and Mechanics

Braille is a tactile writing system used by individuals who are visually impaired. It consists of raised dot patterns that are read by touch. Below is an overview of its structure and mechanics, including contractions, grade levels, and writing tools.

1.2.1 Contractions

Braille uses contractions to represent common words or groups of letters with a single cell, which helps in reducing the space needed for text. For example, the word "and" is represented by a single braille cell (Liu et al., 2023). However, there is ongoing research to evaluate the efficiency of these contractions. Some studies suggest eliminating certain contractions to improve reading ease (Krebs, 1958). Additionally, contractions are a key part of the Unified English Braille (UEB) system, which aims to efficiently represent printed English (Savaiano & Kearns, 2021).

1.2.2 Grade Levels

Braille is categorized into different grade levels, primarily Grade 1 and Grade 2. Grade 1 braille is a letter-by-letter transcription, while Grade 2 includes contractions and is more space-efficient (Masea et al., 2018). The transition from Grade 1 to Grade 2 involves learning these contractions, which can be challenging for learners (Kalra et al., 2009). Research indicates

that environmental factors and teaching methods significantly affect the proficiency of learners in Grade 2 braille (Masea et al., 2018).

1.2.3 Writing Tools

Traditional braille writing tools include the slate and stylus, which require users to write from right to left, creating mirrored images of letters. This method can be challenging and often results in delayed feedback (Kalra et al., 2009). To address these challenges, innovative tools like braille writing tutors have been developed to assist learners in mastering braille writing skills (Kalra et al., 2009). Additionally, technological advancements such as deep learning strategies are being explored for automatic braille character recognition, enhancing accessibility and learning (Kausar et al., 2021).

In summary, braille is a complex writing system that incorporates contractions to enhance reading efficiency. It is divided into different grade levels, with Grade 2 being more advanced due to the inclusion of contractions. Traditional writing tools pose challenges, but new technologies and teaching aids are being developed to improve braille literacy. These advancements aim to make braille more accessible and easier to learn for visually impaired individuals.

1.3 Differences between print and braille writing in terms of cognitive load

1.3.1 Perceptual Processing

Braille reading requires sequential decoding and effective recruitment of phonological skills, as it is a tactile process. This contrasts with print reading, where visual processing allows for parallel recognition of letters and words, reducing cognitive load (Fischer-Baum & Englebretson, 2016; Veispak et al., 2012).

1.3.2 Working Memory

Reading comprehension in both braille and print involves complex language processes that challenge working memory. However, Braille readers depend more on redundancy and less on unitization than print readers, leading to different impacts on cognitive load (Daneman, 1988; Savaiano et al., 2016).

1.3.3 Reading Speed and Comprehension

Braille readers generally have lower reading speeds compared to print readers, which may increase cognitive load due to prolonged processing time. However, comprehension can sometimes be comparable, depending on the context and familiarity with the material (Sun et al., 2022).

1.3.4 Hand Use and Hemispheric Specialization

Braille reading involves strategic hand use and hemispheric specialization, which can influence cognitive load. Left-hand preference in braille reading can lead to faster and more accurate processing, suggesting a unique cognitive strategy not present in print reading (Wilkinson & Carr, 1987).

The cognitive load in braille writing and reading is influenced by the tactile nature of the process, requiring sequential decoding and strategic hand use, which differs from the visual and parallel processing in print reading. These differences highlight the unique cognitive demands of each modality, with braille readers often relying more on phonological skills and tactile perception, while print readers benefit from visual processing efficiencies.

2. Writing skills development in EFL contexts

Writing skills are an essential component of language learning, particularly in English as Foreign Language (EFL) contexts. The development of these skills involves a combination of strategies and methodologies to enhance learners' ability to express ideas, arguments, and emotions effectively in writing. This synthesis explores the importance of writing in EFL learning, common challenges in writing for EFL learners as well as the differences in writing skills acquisition between sighted and visually impaired learners.

2.1 Importance of writing in EFL learning

Writing is an importance element of English as a Foreign Language (EFL) learning, it serves multiple roles in the educational process. It is not only a means of communication but also a tool for language development and cognitive growth. Writing in EFL contexts helps learners to organize their thoughts, improve their grammar and vocabulary, and develop coherence and cohesion in their language use (Besral et al., 2023; Bhowmik, 2021; Song & Song, 2023). It is considered one of the most challenging skills to master, as it requires a high level of linguistic competence and the ability to express ideas clearly and logically (Kozhakhmet et al., 2022; Srikandi, 2019;).

The importance of writing in EFL learning is underlined by its role in academic and professional settings, where advanced writing skills are often necessary (Bhowmik, 2021). Writing allows learners to engage with the language actively, facilitating deeper learning and memory. It also provides a platform for learners to practice and improve their language skills, and contributes to overall language proficiency (Chen, 2021; Sun & Wang, 2020). Moreover, writing activities, such as pair reviews and collaborative instruction, have been shown to

enhance writing competence and promote a positive attitude towards writing among learners (Besral et al., 2023; Talebi, 2024).

In addition to language development, writing in EFL contexts supports the development of critical thinking and self-regulation skills. Learners are encouraged to reflect on their writing processes, set goals, and employ strategies to improve their writing outcomes (Sun & Wang, 2020). This self-regulated learning approach is essential for developing writing proficiency and enhancing learner autonomy. Overall, writing is a necessary skill in EFL learning, it offers numerous benefits that extend beyond language acquisition. It plays an important role in helping learners achieve academic success and prepare for future professional challenges.

2.2 Common challenges in writing for EFL contexts

2.2.1 Linguistic Challenges

One of the most significant challenges for EFL learners is mastering the linguistic components of writing, such as grammar, vocabulary, and punctuation. Iranian EFL learners, for instance, struggle with grammar, spelling, and punctuation, which are increased by negative transfer from their native language, Persian, to English (Derakhshan & Shirejini, 2020). Similarly, students at Soran University face difficulties with grammar, vocabulary, and punctuation, often due to first language interference and limited vocabulary (Ahmed, 2019). Bangladeshi learners also report challenges in using idioms and appropriate vocabulary, which are crucial for effective paragraph writing (Karim et al., 2017).

2.2.2 Cognitive and Organizational Challenges

Cognitive demands, such as organizing ideas and maintaining writing flow, are also significant hurdles. Saudi EFL learners frequently face difficulties in organizing paragraphs and using proper transitions, which disrupts the coherence of their writing (Khasawneh, 2023).

Kurdish EFL learners face challenges in paragraph writing, particularly in maintaining relevance and avoiding redundancy (Muhammed, 2015). These organizational issues are reflected in the experiences of Indonesian teachers, who note that students' motivation and reading habits influence their ability to structure their writing effectively (Hidayati, 2018).

2.2.3 Contextual and External Challenges

External factors, such as class conditions and available resources, further complicate the writing process for EFL learners. Indonesian teachers highlight the impact of class size and the availability of teaching aids on writing instruction (Hidayati, 2018). In the digital era, while technology offers new opportunities for learning, it also presents challenges in terms of expressing ideas and improving writing skills (Manggolo et al., 2024).

2.2.4 Pedagogical Implications and Solutions

To address these challenges, several studies suggest integrating grammar and punctuation teaching within a contextual framework, as well as using mnemonics for spelling (Derakhshan & Shirejini, 2020). Feedback and review, along with diverse materials and technological tools, are recommended to help students overcome grammatical and lexical errors (Irzawati et al., 2021). Additionally, designing writing courses based on students' specific challenges can lead to significant improvements in writing skills, as demonstrated in a study with Saudi university students (Alharbi, 2019). EFL learners face a complex set of challenges in writing, ranging from linguistic and cognitive difficulties to contextual and pedagogical issues. Treating these challenges requires a diverse approach that includes contextualized teaching, feedback mechanisms, and the integration of technology. By understanding and tackling these issues, educators can better support EFL learners in developing their writing proficiency.

2.3 Differences in writing skills acquisition between sighted and visually impaired

The acquisition of writing skills among sighted and visually impaired learners presents distinct challenges and differences, as highlighted by various studies.

2.3.1 Writing Skills in Visually Impaired Learners

Research indicates that students with visual impairments often face unique challenges in writing, particularly in areas such as text cohesion, coherence, and quality. A study examining the written expression skills of students with visual impairments found significant differences in text length, writing time, coherence level, and text quality when compared to their sighted peers. Students with visual impairments tend to struggle with maintaining the integrity of their thoughts and often produce texts that are less coherent and of lower quality (Aslan & Cakmak, 2022).

2.3.2 Comparison with Sighted Peers

In contrast, some studies suggest that certain students with visual impairments can perform comparably to their sighted peers in writing tasks. For instance, a study using the Essay Composition subtest of the Wechsler Individualized Achievement Test found no significant differences in writing skills between students who are blind and those with low vision, although there were differences noted in students with multiple disabilities (Savaiano & Hebert, 2019). This suggests that while some visually impaired students can achieve similar writing proficiency as sighted students, others, particularly those with additional disabilities, may face challenges that are more pronounced.

2.3.3 Handwriting and Assistive Technology

According to Harris-Brown et al (2015), Handwriting remains a significant area of difficulty for visually impaired students due to the reliance on visual-motor coordination. Challenges include lower legibility, slower writing speed, and difficulties with letter formation and spacing. Despite the availability of assistive technologies, many students still value the ability to handwrite, as it provides a sense of equality and independence in certain situations. Moreover, assistive technologies, while helpful, do not entirely replace the need for handwriting skills, as they can be expensive and sometimes unreliable.

2.3.4 Instructional Practices and Support

Rodgers et al (2024) emphasis that The instructional practices for teaching writing to visually impaired students vary significantly among teachers. Many Teachers of Students with Visual Impairments (TSVIs) express uncertainty about their role in teaching writing beyond braille instruction. However, they recognize the importance of writing skills and employ various practices to support their students. Additionally, Islam et al (2024) reveals that the innovative systems, such as multilingual handwriting learning systems with voice-over guidance, have been developed to aid VI learners in acquiring writing skills more effectively. Overall, while VI learners face distinct challenges in acquiring writing skills, with appropriate support and instructional strategies, they can achieve proficiency comparable to their sighted peers. Supporting these students' writing development requires the use of assistive technology and specialized teaching techniques.

3. Challenges in developing writing using braille in EFL learning

Developing writing skills using Braille in English as a Foreign Language (EFL) learning among VI learners presents several challenges. These challenges stem from cognitive, linguistic, technical and psychological challenges.

3.1 Cognitive and motor challenges

Visually impaired learners face several cognitive and motor challenges when developing writing skills using Braille in the context of English as a Foreign Language (EFL) learning. One significant challenge is the lack of access to appropriate resources and technology. Traditional tools like the Slate and Stylus or expensive devices such as the Perkins Brailler can pose accessibility and affordability issues, it limits the ability of learners to practice and develop their writing skills independently (Iman et al., 2023; Sadak et al., 2024).

Moreover, the cognitive demands of learning Braille are essential. Students must develop strong tactile perception and efficient hand reading patterns, which are crucial for mastering Braille. This process requires significant cognitive effort, particularly for those who learn Braille later in life, as they may experience declines in tactile, motor, or cognitive capacities (Martiniello & Wittich, 2020). Additionally, the lack of inclusive curricula and teachers' limited knowledge about Braille can further hinder the learning process, as these factors contribute to a less supportive learning environment (Kana & Hagos, 2024).

Motor challenges also play a significant role. The development of fine motor skills is essential for writing in Braille, as it involves precise finger movements to create and interpret Braille dots. The use of haptic feedback and passive haptic learning methods, such as wearable

gloves that provide tactile feedback, can aid in overcoming these motor challenges by reinforcing the memorization of Braille input gestures (Caulfield et al., 2024; Chou et al., 2021).

Besides, traditional braille slates require writing from right to left and creating mirrored images of letters, which can be confusing and difficult for beginners (Kalra et al., 2009). Users often receive delayed feedback when using a slate and stylus, making it hard to correct mistakes in real-time (Kalra et al., 2009). Handling the slate and stylus, especially for first-time users, can be challenging due to the need for precise motor skills (Hussain et al., 2021).

In summary, the development of writing skills using Braille among visually impaired learners in EFL contexts is challenged by a combination of cognitive demands, motor skill requirements, and resource limitations. To address these challenges, it requires many approaches, including the provision of affordable technology, teacher training, and the development of inclusive educational practices.

3.2 Linguistic and pedagogical barriers

3.2.1 English Syntax Barriers

Visually impaired learners face significant challenges in mastering English syntax due to the complexity of the language and the limitations of Braille. The syntax of English can be particularly difficult for these learners because Braille does not inherently convey the nuances of English grammar and sentence structure. This can lead to difficulties in understanding and constructing grammatically correct sentences, which is a fundamental aspect of writing skills (Kocyigit & Artar, 2015; Masea et al., 2018).

3.2.2 Spelling and Punctuation

Spelling and punctuation present additional difficulties for visually impaired EFL learners. The Braille system requires learners to memorize a large number of contractions and

symbols, which can lead to errors in spelling and punctuation. The lack of visual feedback makes it challenging for learners to self-correct mistakes, which can hinder their ability to develop accurate writing skills (Islam et al., 2024; Rodgers et al., 2024). Furthermore, differences between the Braille-based English alphabet and other alphabets, such as the Latin-script Uzbek alphabet, can cause confusion and further complicate the learning process (Muratova et al., 2024).

3.2.3 Limited Availability of Braille Materials

One major obstacle is the lack of Braille resources designed especially for EFL students. The lack of Braille versions of many educational resources restricts the variety of reading and writing materials that visually impaired students can access. This lack of resources can hinder the development of writing skills, as learners have fewer opportunities to practice and refine their abilities (Masea et al., 2018; Muratova et al., 2024). Additionally, the high cost and limited accessibility of Braille writing tools, such as the Perkins Brailler, further restrict the availability of necessary learning materials (Sadak et al., 2024). Visually impaired EFL learners face a series of linguistic and pedagogical challenges in developing writing skills using Braille. These include the lack of specialized Braille materials and issues with English syntax, spelling, and punctuation. To address these challenges, it requires a significant effort to provide more resources and support for these learners, including the development of specialized educational materials and the integration of assistive technologies.

3.3 Technical and practical obstacles

3.3.1 Complexity of Braille Codes

According to Masea et al (2018), one of the significant challenges for visually impaired learners in developing writing skills using Braille is the complexity of Braille codes. English

Braille Grade II, which is commonly used, involves contractions and abbreviations that can be difficult for learners to master. In a study conducted in Kisumu and Siaya counties, only 19.2% of learners were able to read and write English Braille Grade II proficiently, indicating the complexity and difficulty in acquiring these skills. Masea et al (2018) claims that the complexity of Braille codes requires early stimulation and introduction to Braille to improve proficiency.

3.3.2 Access to Braille Writing Tools

Access to Braille writing tools is another major challenge. Traditional tools like the slate and stylus or expensive devices such as the Perkins Brailler pose accessibility and affordability issues for many learners (Sadak et al., 2024). The use of traditional tools also involves writing from right to left and creating mirrored images of letters, which can be confusing and lead to delayed feedback (Kalra et al., 2009). Innovative solutions, such as portable devices using deep learning models to detect Braille cells, have been proposed to address these issues, but widespread implementation remains limited (Sadak et al., 2024).

3.3.3 Educational and Environmental Barriers

Educational barriers, such as a lack of trained teachers and insufficient Braille resources, further complicate the learning process. Many teachers are not adequately prepared to teach writing to students with visual impairments, and there is often a lack of inclusive curricula that accommodate the needs of these learners (Kana & Hagos, 2024; Rodgers et al., 2024). Additionally, environmental challenges, such as negative attitudes towards Braille and limited use of Braille in everyday contexts, hinder the development of writing skills (Masea et al., 2018). Overall, visually impaired EFL learners face several challenges in developing writing skills using Braille, including the complexity of Braille codes, limited access to writing tools, and educational barriers. While technological advancements offer promising solutions, their

implementation and accessibility remain limited. To address these challenges, it requires a many approaches, including early introduction to Braille, improved teacher training, and the development of affordable and effective assistive technologies.

3.4 Social and psychological challenges

3.4.1 Isolation in Classroom Settings

One of the primary social challenges is the feeling of isolation in classroom settings. VI learners often find themselves separated from their sighted peers due to the different mediums of learning and communication they use, such as Braille. This separation can lead to feelings of exclusion and isolation, as they may not be able to participate fully in activities that involve visual materials or group work that is not adapted for their needs. The study conducted in Kisumu and Siaya counties highlights the lack of functional educational inclusion, which can augment feelings of isolation among visually impaired learners (Masea et al., 2018).

3.4.2 Motivation Issues

Motivation is another significant psychological challenge for visually impaired learners. The study found that learners had a negative attitude towards communication in English Braille Grade II, which can be attributed to the lack of early stimulation and introduction to Braille code. This negative attitude can lead to decreased motivation to engage with the learning material, further hindering their ability to develop writing skills. The low percentage of learners who are competent in reading and writing English Braille Grade II suggests that motivation issues are a significant barrier to learning (Masea et al., 2018).

3.4.3 Confusion and Anxiety

The differences and similarities between Braille and other alphabets, such as the Latin-script Uzbek alphabet, can cause confusion and anxiety, making it difficult for learners to

develop accurate spelling and writing skills (Muratova et al., 2024). Visually impaired EFL learners face considerable social and psychological challenges, such as isolation from sighted peers, motivation issues and anxiety, which influence their ability to develop writing skills using Braille. Addressing these challenges through early introduction to Braille and inclusive educational practices is crucial for improving their learning outcomes.

4. Pedagogical strategies and interventions

4.1 Effective teaching methodologies

4.1.1 Multi-Sensory Approaches

Multi-sensory approaches are crucial in teaching Braille writing to EFL learners, as they engage multiple senses to enhance learning. These approaches combine tactile, auditory, and kinaesthetic inputs to facilitate a more comprehensive learning experience. For instance, Namigtle et al (2023) stated that the use of tactile feedback through devices like the Braille Cube Teaching-Learning Gadget (B-Cube) allows learners physically interact with Braille characters, enhancing their tactile sensitivity and memorization of dot placements. Additionally, Chou et al (2021) claimed that auditory feedback could be integrated into learning systems, as seen in the passive haptic learning method for Taiwanese Braille, where auditory cues complement tactile vibrations to reinforce learning. Mendoza (2022) reported that these multi-sensory strategies have been shown to be effective, particularly for learners with visual spatial learning disabilities, by providing alternative pathways for information processing.

4.1.2 Scaffolding Techniques

Scaffolding is an essential instructional strategy in teaching Braille writing, offering structured support to learners as they develop new skills. Techniques such as guided practice and peer collaboration are particularly effective. Guided practice involves the teacher providing

direct instruction and feedback, gradually reducing assistance as learners gain proficiency. This method has been shown to significantly improve writing skills in EFL contexts by creating a supportive learning environment (Chairinkam & Yawiloeng, 2024). Peer collaboration, on the other hand, promotes the social aspect of learning, where learners work together to solve problems and learn from each other. This approach not only enhances learning outcomes but also fosters a sense of community and shared responsibility among learners (Kivi et al., 2021; Rababah & Almwajeh, 2018).

In summary**,** incorporating multi-sensory approaches and scaffolding techniques in teaching Braille writing to EFL learners can significantly enhance their learning experience. By engaging multiple senses and providing structured support, educators can create a more inclusive and effective learning environment. These methodologies not only improve Braille literacy but also empower learners with the skills necessary for more complex language tasks.

4.2 Technology and assistive tools

4.2.1 Refreshable braille displays

One of the significant advantages of refreshable braille displays is their ability to facilitate independent learning and writing. For instance, the use of a braille note-taker (BNT) with a refreshable braille display has been shown to improve the writing process for visually impaired students. In a study comparing the use of a Perkins Braille Writer (PBW) and a BNT, students engaged more in the writing process and produced higher quality writing samples when using the BNT. This suggests that refreshable braille displays can enhance the engagement and quality of writing for visually impaired learners by allowing them to reflect and correct their work more effectively (Kamei-Hannan & Lawson, 2012).

Moreover, the development of cost-effective and portable refreshable braille displays has made this technology more accessible to a broader audience. For example, a novel

electromagnetic braille display offers stable performance and low cost, making it suitable for low-income visually impaired individuals in developing countries. This device provides a good fingertip touch and a high refresh frequency, which are essential for efficient braille reading and writing (Chen et al., 2023). Additionally, the introduction of single-cell refreshable braille displays has been explored as a means to reduce costs and complexity, although these may have limitations in terms of reading performance due to the lack of sliding contact between the fingertip and the braille surface (Bettelani et al., 2020; Russomanno et al., 2015).

In summary, refreshable braille displays are significant tools for visually impaired EFL learners that offer them the ability to read and write independently and effectively. These devices not only improve the quality of writing but also make braille literacy more accessible through cost effective and innovative designs.

4.2.2 Digital platforms for EFL braille practice

Mobile applications like mBRAILLE and Vide are designed to teach Braille reading and writing. These apps offer interactive and user-friendly interfaces, they enable learners to practice Braille in both English and other languages. mBRAILLE, for instance, provides a platform for learning Bangla and English Braille, making it a adaptable tool for multilingual EFL learners (Nahar et al., 2015). Vide focuses on tactile Braille reading and writing, ensuring that visually impaired users can efficiently develop their skills (Amézquita-Soto et al., 2023).

4.3 Teachers training and institutional support

Enhancing writing skills using Braille in EFL learning involves specific teacher training and institutional support. The focus is on developing effective training programs and utilizing technology to support visually impaired students.

4.3.1 Teacher Training

Teachers need to be trained in specific programs designed to teach Braille reading and writing. These programs should introduce Braille in a simple and engaging manner, using various levels of difficulty and reinforcement techniques to motivate students (Shokhedim, 2023). In addition, Training should also cover methods for teaching both blind and partially sighted students, ensuring that educators can effectively support diverse needs within inclusive classrooms (Shokhedim, 2023).

4.3.2 Institutional Support

Institutions should develop curricula that incorporate Braille learning into the EFL framework, ensuring that visually impaired students receive comprehensive language education (Shokhedim, 2023). Besides, schools need to provide resources such as Braille textbooks and writing tools, as well as access to technology that can assist in language learning (Shokhedim, 2023). Moreover, creating an environment that supports collaborative learning and interaction among students can enhance motivation and engagement, which is crucial for language acquisition (Gharehblagh & Nasri, 2020). Overall, to enhance writing skills using Braille in EFL learning, it is essential to implement specialized teacher training programs and provide strong institutional support. This includes developing tailored curricula, providing necessary resources, and fostering an inclusive and supportive learning environment. These measures ensure that visually impaired students can effectively learn and improve their writing skills in English.

Conclusion

This review emphasizes the challenges visually impaired EFL learners face in mastering Braille based writing, from cognitive and motor demands to linguistic barriers and social

isolation. While Braille remains important, its complexity such as contractions and delayed tactile feedback hinders proficiency. Although technologies (such as refreshable Braille displays) and effective teaching methods like multisensory instruction provide answers, gaps still exist. Research often overlooks older learners, lacks long-term evidence on assistive tools, and under addresses socioeconomic disparities in resource access. Additionally, few research address systemic biases toward Braille or classroom inclusion strategies. Hence, it is crucial to give priority to culturally sensitive materials, accessible technologies, and inclusive teacher training.

Chapter Two : Research Methodology

Chapter Two: Research Methodology

Introduction

This chapter outlines the research methodology employed to explore and investigate the challenges visually impaired EFL learners face when developing writing skills using the braille system. The study adopts a mixed methods approach to comprehensively address cognitive, linguistic, technical and social challenges as well as evaluate pedagogical interventions.

1. Research paradigm

This study focused on the interpretivist paradigm, which emphasizes understanding the subjective experiences of individuals within their specific social and educational contexts. The interpretivist approach is particularly appropriate for this research, as it aims to explore the personal, linguistic and pedagogical challenges faced by visually impaired EFL learners when developing writing skills using the braille system.

This paradigm focuses on creating meaning from participant viewpoints rather than seeking for generalizable laws. It recognizes that knowledge is shaped by participants' lived experiences and is constructed through interactions between the researcher and participants.

2. Research approach

This study adopts a mixed methods research approach, combining both qualitative and quantitative methods to provide a comprehensive understanding of the challenges faced by visually impaired EFL learners in developing writing skills using the braille system.

The reason behind using a mixed methods approach is the need to explore not only the statistical trends and patterns (quantitative aspect), but also the individual experiences and perceptions (qualitative aspect) of learners and teachers. This approach enhances the validity of

the findings through triangulation, which allow the researcher to verify results obtained from different data sources.

The quantitative components may involve analysing learner's questionnaire for a broader perspective to identify common challenges, perceptions and experiences faced in developing writing skills. In addition, the qualitative components includes semi structured interview with teachers to gather in depth insights into the perceived difficulties, teaching methods and contextual factors affecting writing development. Classroom observation on the other hand aims to see real time teaching and learning practices. This combination of tools allows for cross verification of results and provides a more comprehensive understanding of the challenges faced in developing writing skills through the braille system.

3. Research design

The term "research design" refers to a systematic plan or collection of "inquiry strategies" that provide guidance to researchers in organizing and carrying out their research activity (Cohen et al., 2018). Considering the focus on exploring the challenges faced in developing writing skills using the braille system among visually impaired EFL learners, we have selected an exploratory sequential mixed methods design for this research. It is when the researcher starts first with a qualitative data collection to explore issue in depth, followed with quantitative data collection to measure the prevalence and the perception of these issues among learners. This design allows in depth exploration and understand the challenges visually impaired face when developing writing skills in its context.

Nevertheless, the study utilizes a mixed method approach in order to enhance validity and reliability of the research. Therefore, the data collected using three research instruments namely semi structured interview, semi structured questionnaire and classroom observation in

order to capture participants' viewpoints, gain deeper insights and enhance credibility of the findings.

4. Research settings

The research is conducted in Visually Impaired School of El Ayachi Zerroug in BBA, Algeria, which is a specialized educational institution for visually impaired learners. The school has two grades, which are primary and middle school. It includes four classrooms equipped with braille writing tools and resources. Our research was conducted in middle school with the four levels from the 4th of April to the 8th of May 2025.

5. Sampling

The sample consists of 18 visually impaired EFL learners, selected using purposive sampling, which used to select participants who are directly involved in braille based EFL learning. In addition to 3 EFL teachers who have taught visually impaired learners as well as 4 classroom sessions were observed selected to represent a variety of writing focused activities across different learners and levels.

6. Data collection procedures

This study employs a mix method design to explore the challenges faced in developing writing skills using braille system among visually impaired EFL learners. For the purpose of gathering qualitative and quantitative data through a questionnaire administered to 18 visually impaired EFL learners, a semi structured interview for three EFL teachers as well as an observation which is conducted within four sessions.

6.1 Questionnaire

The questionnaire was translated into Arabic because the learners did not master English language to facilitate the instructions for them and gather learner's views on writing challenges.

6.2 Semi structured interview

The semi structured interview was conducted with three EFL teacher lasting approximately 20 – 30 minutes. It focuses on their experiences, strategies and perceptions.

6.3 Observation

The observation was conducted during 4 classroom sessions with the researcher taking field notes on learner teacher interactions, use of braille tools and writing activities.

7. Instrumentations

7.1 Questionnaire

The questionnaire is designed to gather insights from visually impaired EFL learneers about their experiences using braille to develop writing skills. It consists of 15 questions, 14 of them are Likert scale questions and one open-ended question. In addition, the questionnaire includes 5 sections, each section involves 3 questions. The first section aims to collect basic background data about the participants. The second one focuses on the technical aspects of writing with braille. In addition, the third section explores the physical and mental challenges that affect writing. Moreover, the fourth section addresses emotional and classroom related aspects of braille writing activities. The last section assesses technological tools and educational support. It was conducted in one on one setting; it was a printed-paper and took approximately 20 – 30 minutes. Moreover, we assigned to read the questions for the learners and to write their answers due to their disability.

7.2 Interview

As a second data instrument, we have chosen a semi structured interview for three EFL teachers who teach visually impaired learners at visually impaired school to collect their insights and perceptions about learners' challenges in developing writing skills using braille system. All the teachers are males and they experienced more than five year of teaching EFL visually impaired learners. The interview was conducted in one on one setting, it was an audio recorded for the purpose of analysis, and it took approximately 20-30 minutes. This interview composed of 16 open-ended questions and six sections, each section tackled the different challenges VI face when developing writing skills using braille.

7.3 Observation grid

Observation grid is a tool designed to take notes on the use of braille tools, teaching strategies and learner teacher interaction during writing activities. The non-participant observation was conducted during four classroom sessions with all levels of middle school. It consists of seven criteria, followed by its indicators in which we observe learners' use of braille assistive tools, writing task performance, interaction with their peers, motivation and participation. In addition, the challenges they face when they experience writing as well as the teacher's instructional strategies, support and feedback to explore the challenges visually impaired EFL learners face in developing writing skills using braille.

8. Data analysis procedures

In the process of analysis, the research findings cover both quantitative and qualitative data, two different techniques were employed: descriptive analysis and qualitative thematic analysis.

8.1 Descriptive analysis of the questionnaire

To analyse our questionnaire, we used descriptive analysis methods. The data was calculated manually. Descriptive analysis was used to present the percentages of the respondents, which was illustrated through tables and pies. By using this method, we ensured a comprehensive presentation of our findings.

8.2 Thematic analysis of the interviews and observations

Qualitative data from interviews and observations were analysed using manual thematic analysis, by the identification of themes related to writing difficulties, instructional practices and learner attitudes. We transcribed the audio recorded of the interview word for word, identified, and summarised the key themes. The same with the analysis of the observation, we identified and summarised the key themes about the behaviour and challenges the learners face in writing activities using the braille system. Then, we compared the findings with the interview to enhance its validity.

8. Ethical considerations

When conducting a research on challenges faced in developing writing skills using braille system among visually impaired students, numerous ethical measures were implemented to ensure the safety, dignity and rights of all the participants. These includes the following ethical considerations:

Informed consent: we ensure all participants including teachers and learners are conscious of the study's purpose, methodology, risks and benefits. All participants should give their consent forms.

Confidentiality: anonymize data and make sure that personal information is not published without their permission.

Voluntary participation: research participants can quit at any time without facing any negative consequences.

Avoiding risks: we take precautions to reduce any possible discomfort to participants. This includes making sure that the study methodology and questions appropriate for the students.

Beneficence: we attempt to optimise the study's benefits while limiting risks. The findings should contribute to greater knowledge in the field of education, benefiting teachers, learners and educational practices.

Respect of participants: we provide a special care to respect the needs and comfort of visually impaired learners. All instruments and interactions were adapted to ensure accessibility.

Approval and permission: ethical permission was obtained from the Visually Impaired School. Teachers and administrators were also consulted for approval and coordination.

9. Research limitations

Despite the efforts to conduct an accurate and comprehensive study, certain limitations must be admitted, here are some limitations:

Small sample size: the study involved 18 visually impaired leaners and 3 teachers, which may not be sufficient to generalize the findings to all EFL learners with visual impairments.

Time constraints: the research was conducted within a short time to collect the data due to the holiday season and Ramadan, which potentially influencing the participation and availability of participants as well as limited the ability to track long term development in learners' writing skills.

Context specific setting: the research was conducted in one institution of visually impaired due to the limited number of visually impaired schools in Algeria, specifically one school in Bordj Bou Arreridj. The challenges identified may vary in different regions, school types or educational systems.

Limited access to literature: the limited access to literature influenced the review and synthesis of current information due to time constraints, limited library resources, and access to academic databases.

Conclusion

This chapter explained how the research was planned and carried out, to explore the challenges that visually impaired EFL learners face when developing writing skills using braille system. A mixed methods approach was used, combining interviews with teachers, questionnaire with students and classroom observation to collect both detailed and general information. The study took place at the Visually Impaired School in BBA with selected learners and teachers. All tools were adapted to suit the learners' needs, and ethical rules were followed to protect their rights and comfort. Although the research faced some limits such as small sample size and time restrictions, the chosen methods helped gather useful and comprehensive data for the next parts of the study. The next chapter gets deeper into the findings of these techniques.

Chapter Three : Report Results and Findings

Chapter Three: Report Results and Findings

Introduction

This chapter presents and analyses the findings collected through teacher interviews, classroom observation and student questionnaires. The aim is to explore the key challenges faced by visually impaired learners in developing writing skills in EFL using braille system. By triangulating perspectives from teachers and learners, the chapter identifies the cognitive, linguistic, technical, social and pedagogical difficulties faced during braille based writing instruction. The results are discussed in relation to existing literature, offering a clearer picture of how theoretical knowledge aligns with real classroom experience. The analysis also provides insight into effective teaching strategies, learner perceptions and technological intervention.

1. Teachers' interview analysis

The analysis of the Interview with the teachers aim to explore the primary challenges faced by visually impaired EFL learners when using Braille to develop writing skills. This study involves an interview where we are going to analyse a series of answers regarding their experiences and perceptions of using the Braille to enhance writing skills. The findings can be categorized as follows:

1.1. Section one: participant background

The teachers' experience is arranged between five to six years of teaching Braille to visually impaired learners. Their teaching careers began after receiving specialized training in Braille instruction. The students taught ranged in the age 11 to 18 years, which was confirmed during the questionnaire with the students themselves.

1.2. Section two: cognitive and motor challenges

1.2.1. Use of braille contractions. Teachers emphasized that students face challenges in using Braille contractions, which require a solid understanding of Braille fundamentals. Moreover, contractions involve complex codes and symbols, which demand higher cognitive effort from learners.

1.2.2. Hand coordination on braille slate. Teachers observed difficulties in coordinating both hands when using the Braille slate, often due to health-related issues or limited motor skills. In addition, students struggle to identify the position of the Braille dots, which hinders writing accuracy.

1.2.3. Adaptation of teaching methods for learners who struggle cognitive load. Teachers simplify activities according to the learners' case and need, provide more breaking time to avoid boredom and fatigue, and provide them with assistive technologies such as NVDA or JAWS system.

1.3. Section three: linguistic and pedagogical barriers

Visually impaired students often struggle with word order, as the syntactic structure of English differs from their native language. Besides, since they rely primarily on auditory input, they tend to write what they hear, which may lead to spelling errors and incorrect use of punctuation marks. The lack of visual signals further limits their ability to understand text structure and grammar. The majority of both teachers and students confirmed that technological Braille devices are not used in the learning process. The high cost of such devices makes them inaccessible and unavailable because the Algerian government does not take it in charge. As a result, instruction is limited in using the Braille slate and stylus. Despite these limitations,

teachers expressed a sense of satisfaction with the support they are able to provide using available resources.

1.4 Section four: technical and practical obstacles

Most of teachers declared the lack of assistive technologies because the institution did not offer them. This is due to the high cost of these tools and the government did not take it in charge.

1.5 Section five: social and psychological challenges

The teachers revealed that visually impaired students generally do not experience social isolation. Teachers play a critical role in supporting students emotionally through encouragement, motivation, and positive reinforcement to reduce anxiety.

1.6 Section six: pedagogical strategies and institutional support

The teachers agreed that the most effective teaching method for VI in audio lingual because it emphasises on listening and repetition. Furthermore, visually impaired did not have clear image to express their thought. In addition, they clarified that the institution support the braille based EFL instruction through providing teachers with specialized training in teaching braille system.

1.7 Recommendations for Improving Braille Writing Skills

- Break down learning activities into clear, manageable steps.
- Increase practice, review, and reinforcement with regular activities.
- Combine tactile and auditory methods to enhance comprehension.
- Integrate assistive technology gradually.

- Offer targeted support and scaffolding to help learners understand English grammar and syntax rules more effectively.

The findings reveal that visually impaired students face numerous challenges in writing in English via Braille, including linguistic, motor, cognitive, and technological barriers. A significant limitation is the lack of access to assistive technologies, which increases reliance on traditional tools and teacher support. Nonetheless, the emotional and social environment appears to be supportive, with teachers actively working to build students' confidence and inclusion.

2. Observation analysis

The observation provides detailed insights into four sessions conducted with visually impaired EFL learners using braille. Below is a structured analysis based on criteria outlined in the grid:

2.1 Use of braille or assistive tools

Across all four sessions, learners consistently used slates and styluses, which indicate that learners rely on traditional braille writing tools. This suggests that learners may face mechanical challenges that come with slate use such as time consuming. In addition, there is a lack of access to advanced assistive technology that could facilitate smoother writing.

2.2 Writing task performance

In sessions one and three, learners were unable to complete writing tasks, with spelling errors being most frequent, and some syntax errors in sessions one.

In sessions two and four, learners completed the tasks, but spelling and vocabulary errors remained.

In session four, vocabulary and organization issues were also noticed. Hence, the performance variation suggests inconsistency possibly tied to task complexity, learner level or external support. Spelling errors were a consistent challenge, possibly due to limited vocabulary exposure and tactile spelling difficulties.

2.3 Teacher support and feedback

In sessions one, three and four, teachers provide individualized support and corrective feedback. While in session two, the support was inconsistent. This indicate that individualized support appears important for learner success, as seen by better performance in sessions with consistent support.

2.4 Peer interaction

All sessions included collaborative writing activities, indicating that peer interaction is encouraged, which is a positive element for inclusive and supportive learning.

2.5 Motivation and participation

The sessions one, two and four showed learners were motivated to write. However, the session three reported disengagement. This shows that engagement appears to improve with task interest or appropriateness of level. Motivation reduces when tasks are perhaps too complex or when feedback/ support is lacking.

2.6 Challenges observed

Linguistic barriers such as spelling, vocabulary and syntax errors were frequent in all sessions. Whereas, structural and organizational issues appeared in session four. These challenges underline the need for targeted linguistic instruction and perhaps braille adapted vocabulary-building activities.

2.7 Use of tactile or audio materials

All sessions indicated that teachers rarely or never used tactile or audio resources. This shows a gap in using assistive technology tools, which could enhance understanding and engagement in doing writing tasks for VI learners.

The observation reveals that while learners engage actively with braille tools, challenges appear in task completion, linguistic accuracy and motivation. Addressing these issues through enhanced assistive technologies, targeted error correction and integrating multisensory teaching methods could improve writing skill development.

3. Student Questionnaire Analysis

3.1 Section one: demographic information

Question 1: age

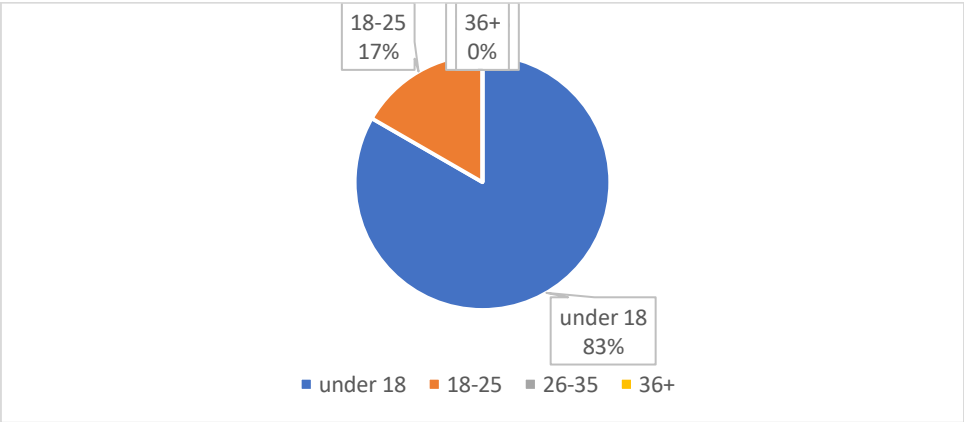
Table 1

Students' age

Age	Number	Percentage
Under 18	15	83,33 %
18 – 25	3	16,67 %
26 – 35	0	0%
36+	0	0%

Figure 1

Students' age



Based on the data obtained from this question, the results from table 1 show that the majority of students' participants (83, 33%) are under 18 years old. In addition, the results show that (16, 67%) of students are between 18-25 years, while there are no students above the age of 25 years old.

Question 2: age of starting learning braille for students

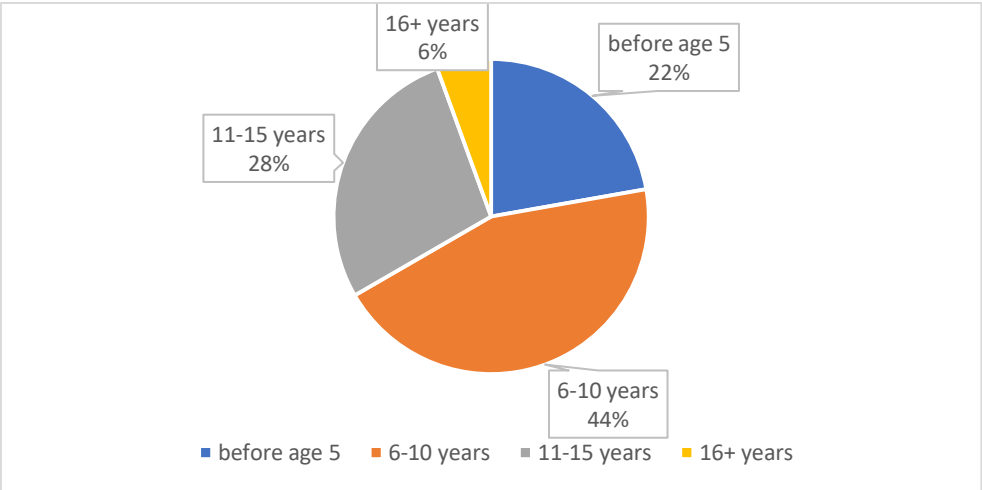
Table 2

Age of starting learning braille for students

Age	Number	Percentage
Before age 5	4	22,22%
6-10 years	8	44,44%
11-15 years	5	27,78%
16+ years	1	5,56%

Figure 2

Age of starting learning braille for students



The results displayed on the table and the figure above showed that 44, 44% started learning braille between the age 6-10 years old. 22, 22% of students begun learning braille before age 5 and 27, 78% started between 11-15 years. Whereas, we find only one student started learning braille above the age 16 years old. These results reveals that the majority of students are starting learning braille at early age.

Question 3: student's level of English

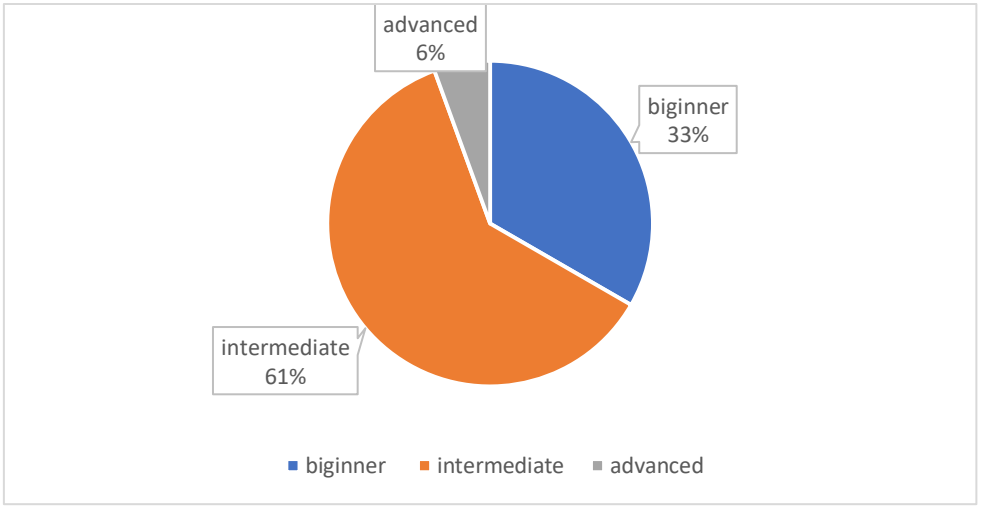
Table 3.

Student's level of English

Options	Number	Percentage
Beginner	6	33,33%
Intermediate	11	61,11%
Advanced	1	5,56%

Figure 3.

Student's level of English



The table and the figure above indicate that 61, 11% of students have a good level in English which is intermediate, while 33, 33% of students are beginner and 5, 56 % are advanced level (one student) which means that the majority of students have a good level in English.

3.2 Section two: braille mechanics and tools

Question 4: the braille writing tool that students use frequently

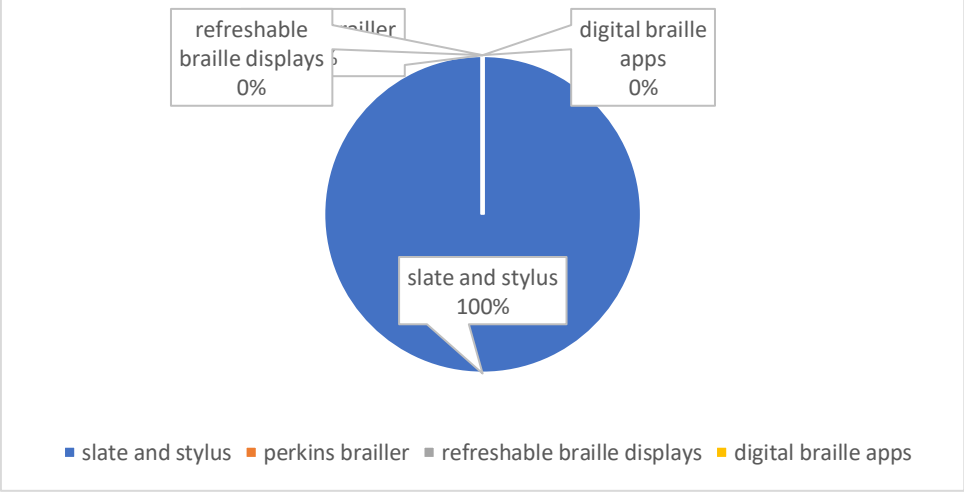
Table 4.

The braille writing tool that students use frequently

Options	Number	Percentage
Slate and stylus	18	100%
Perkins brailler	0	0%
Refreshable braille displays	0	0%
Digital braille apps	0	0%

Figure 4.

The braille writing tool that students use frequently



According to the results above, all students use slate and stylus as a braille writing tool which means that there is an absence of using the advanced writing tools as well as the limited access of assistive technology in writing.

Question 5: difficulty in using braille contractions

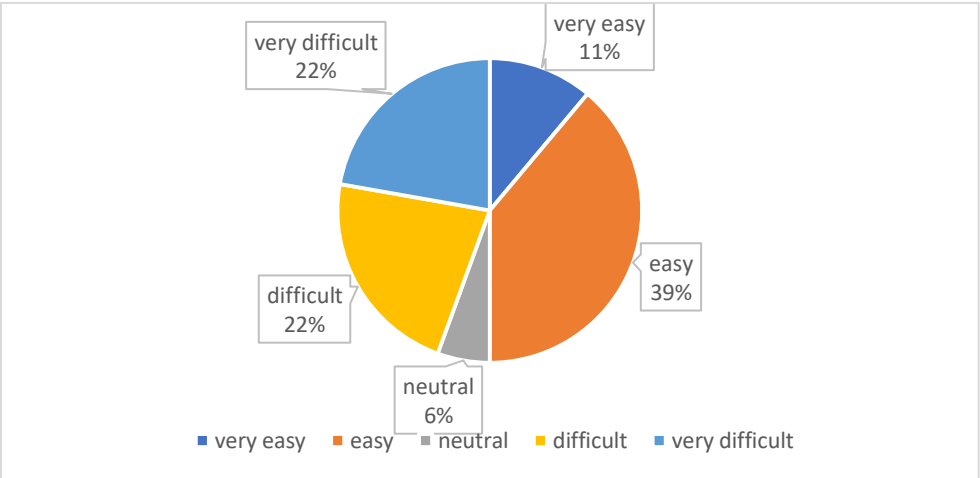
Table 5.

Difficulty in using braille contractions

Options	Number	Percentage
Very easy	2	11,11%
Easy	7	38,89%
Neutral	1	5,56%
Difficult	4	22,22%
Very difficult	4	22,22%

Figure 5

Difficulty in using braille contractions



The results above show that most of the students (38, 89%) found that the use of braille contractions are easy and (11, 11%) of them use it very easy, one student choose the option neutral, while 4 students declared that the use of braille contractions are difficult and the rest 4 choose the option very difficult. This indicate that the majority of students use the braille contractions easily but still some students need support and training about the use of braille contractions.

Question 6: the difficulty in transitioning from grade 1 to grade 2 braille

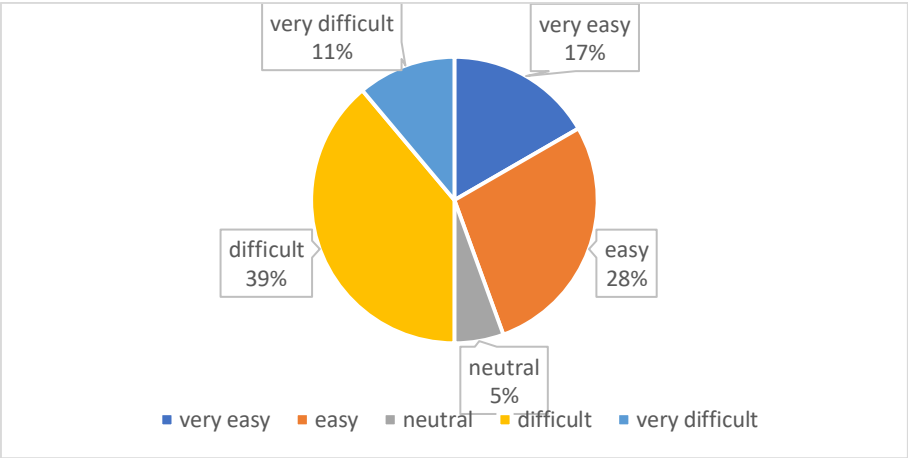
Table 6.

The difficulty in transitioning from grade 1 to grade 2 braille

Options	Number	Percentage
Very easy	3	16,67%
Easy	5	27,78%
Neutral	1	5,56%
Difficult	7	38,89%
Very difficult	2	11,11%

Figure 6.

The difficulty in transitioning from grade 1 to grade 2 braille



According to the results above, the majority of students (38,89% difficult and 11,11% very difficult) struggle with the transition from grade 1 to grade 2 braille, while students who choose easy (27,78%) and very easy (16,67%) options didn't face a challenge in transition, only one student was neutral. This means that the majority of students face challenges during transitioning from grade 1 to grade 2 due to the complexity of grade 2 braille level which suggest the need for more support in teaching and the use of assistive tools.

3.3 Section three: cognitive, motor and linguistic challenges

Question 7. Effect of tactile demands of braille on writing speed

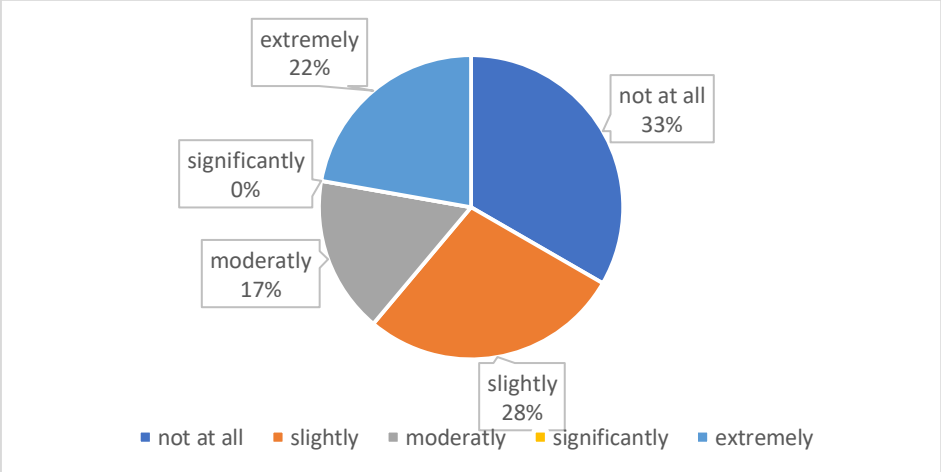
Table 7.

Effect of tactile demands of braille on writing speed

Options	Number	Percentage
Not at all	6	33,33%
Slightly	5	27,78%
Moderately	3	16,67%
Significantly	0	0%
Extremely	4	22,22%

Figure 7.

Effect of tactile demands of braille on writing speed



According to the results above, 33, 33% of students who choose not at all find that tactile demands do not affect their writing speed. 27, 78% of them feel slight affect, while 16, 67% note a moderate affect. 22, 22% experience an extreme impact but 0% find it significantly

impactful. This indicate that the majority of students do not struggle an effect of tactile demands of braille on writing speed while the others face a challenge in writing speed.

Question 8. Struggling with English grammar and sentence structure when when writing in braille

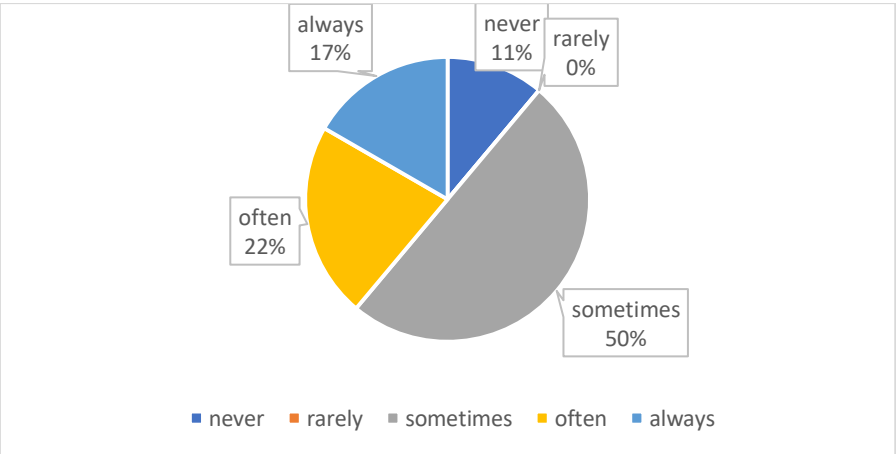
Table 8.

Struggling with English grammar and sentence structure when when writing in braille

Options	Number	Percentage
Never	2	11,11%
Rarely	0	0%
Sometimes	9	50%
Often	4	22,22%
Always	3	16,67%

Figure 8.

Struggling with English grammar and sentence structure when when writing in braille



According to the above results, it shows a half of the respondents 50% reported sometimes facing difficulties with grammar and sentence structure when writing in braille and this indicates that is a common but not constant issue. A combined 38, 89% of respondents

(often + always) face these difficulties frequently, suggesting that a substantial minority struggle regularly. While, only 11, 11% reported never who experience these challenges and none selected rarely, which highlight the issue is widespread to some degree.

Question 9. Accessibility of braille EFL materials

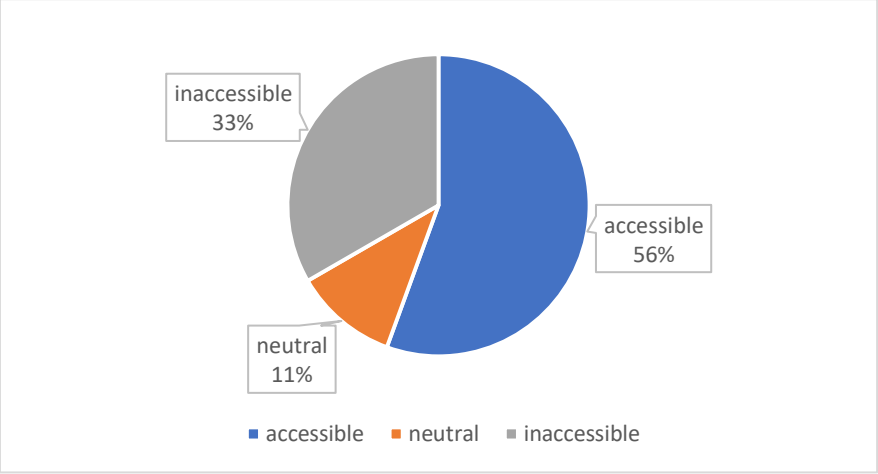
Table 9.

Accessibility of braille EFL materials

Options	Number	Percentage
Accessible	10	55,56%
Neutral	2	11,11%
Inaccessible	6	33,33%

Figure 9.

Accessibility of braille EFL materials



The results above show that most of students 55,56% declared that braille EFL materials are accessible. Further, 2 students (11;11%) chose the option neutral. Whereas, 6 students (33,33%) stated that braille EFL materials are inaccessible. Which means that the majority more than half of respondents found materials accessible. Therefore, they indicate a general positive

perception of accessibility. However, a significant percentage 33,33% faced a challenge which suggests an area for improvement in material design or distribution.

3.4 Section four: Social and psychological factors

Question 10. Students' feeling of isolation from sights peers during writing activities

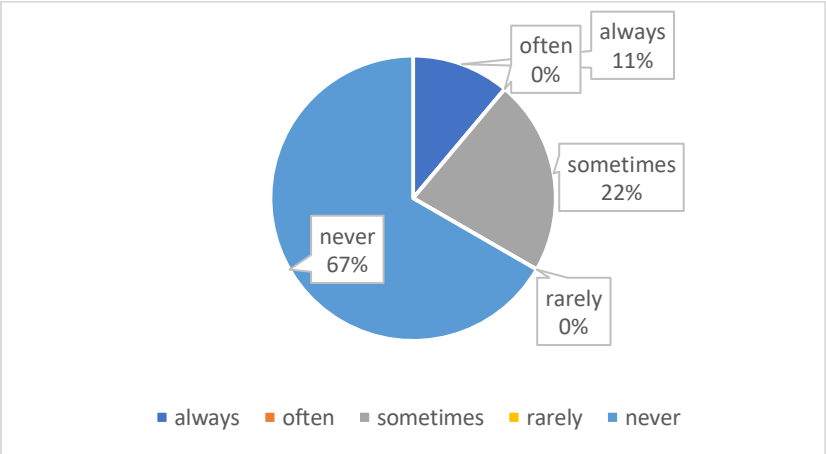
Table 10.

Students' feeling of isolation from sights peers during writing activities

Options	Number	percentage
Always	2	11,11%
Often	0	0%
Sometimes	4	22,22%
Rarely	0	0%
Never	12	66,67%

Figure 10.

Students' feeling of isolation from sights peers during writing activities



According to the results above, the majority of learners 66,67% do not feel isolated from their peers during writing activities. In addition, 22,22% of them reported sometimes feeling isolated. Besides, 2 learners (11,11%) stated always feeling isolated. In contrast, 0 % of learners reported often and rarely feeling isolated. This indicates that most students feel connected or

comfortable in their writing environment. While, a minority of learners need targeted interventions such as collaborative activities to reduce feelings of disconnection.

Question 11. Students' motivation while practicing writing in English using braille

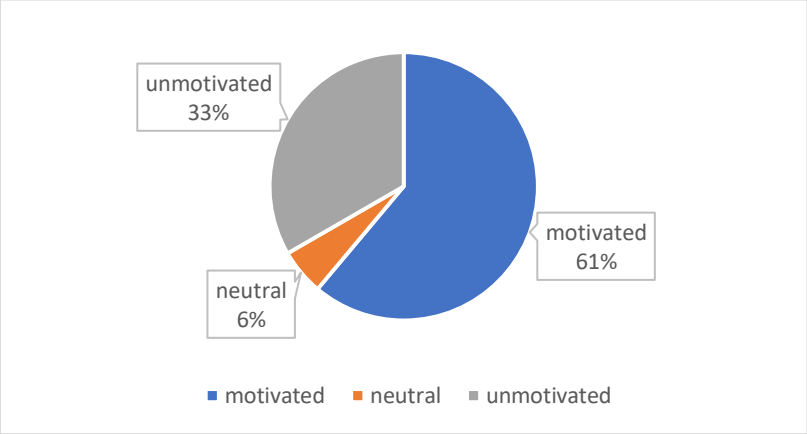
Table 11.

Students' motivation while practicing writing in English using braille

Options	Number	Percentage
Motivated	11	61,11%
Neutral	1	5,56%
Unmotivated	6	33,33%

Figure 11.

Students' motivation while practicing writing in English using braille



The results above show that the majority of students 61,11% reported feeling motivated while practicing writing in English using braille. However, 33,33% of them reported feeling unmotivated. Only one student reported a neutral feeling. Which means that most students find the activity engaging and beneficial. While minority of them require scaffolding such as provide them with interactive activities as well as collaborative activities, which could help increase motivation.

Question 12. Frequency of confusion caused by similarities and differences between braille and other writing systems

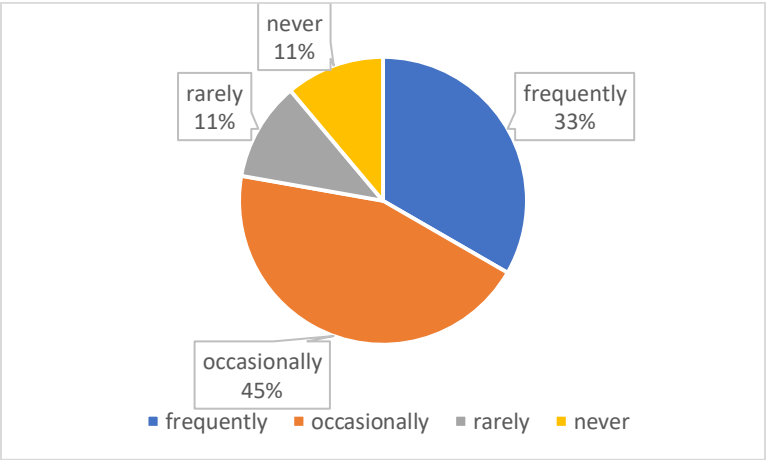
Table 12.

Frequency of confusion caused by similarities and differences between braille and other writing systems

Options	Number	Percentage
Frequently	6	33,33%
Occasionally	8	44,44%
Rarely	2	11,11%
Never	2	11,11%

Figure 12.

Frequency of confusion caused by similarities and differences between braille and other writing systems



According to the result shown above, most of learners get confused 44,44% are confused occasionally and 33,33 % are confused frequently. However, only 4 learners of 22,22% are rarely and never confused which means that braille is harder to learn for the majority

of learners because it is different from regular writing, so , they need more support. In addition, a small group of students adapt quickly.

3.5. Section five: Technology and support

Question 13. The effectiveness of refreshable braille displays or digital tools in improving students' writing skills

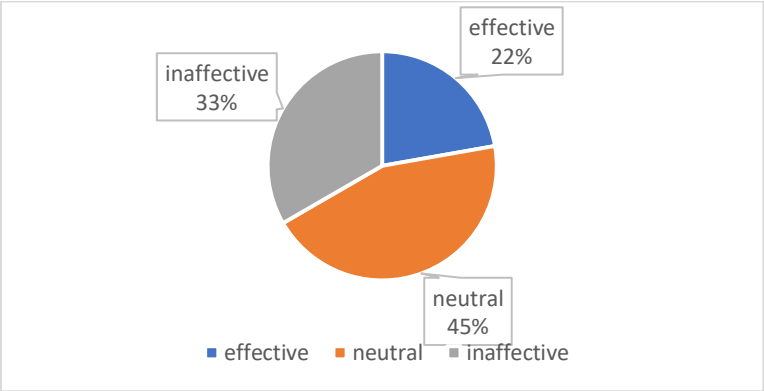
Table 13.

The effectiveness of refreshable braille displays or digital tools in improving students' writing skills

Options	Number	Percentage
Effective	4	22,22%
Neutral	8	44,44%
Ineffective	6	33,33%

Figure 13.

The effectiveness of refreshable braille displays or digital tools in improving students' writing skills



The results above show that only 22,22% of students found these tools clearly helpful (effective), while 44,44% of them felt neutral they did not see much improvement or decline.

Whereas, 33,33 % of students said the tools did not help (ineffective). This indicate that the majority of students are not benefiting from these tools and did not experience significant writing skill improvement as these tools might not be working as expected for them or maybe the devices are hard to use or did not much their needs.

Question 14. Learners' perceptions of teachers' training adequacy in supporting braille based EFL writing

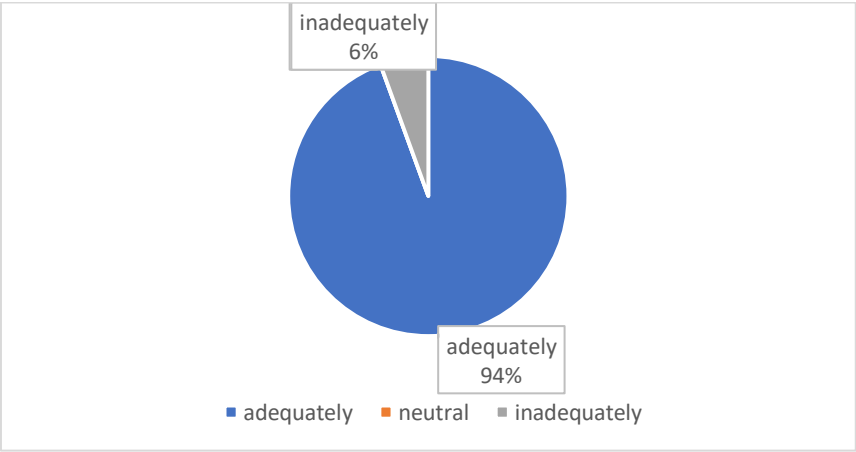
Table 14.

Learners' perceptions of teachers' training adequacy in supporting braille based EFL writing

Options	Number	Percentage
Adequately	17	94,44%
Neutral	0	0%
Inadequately	1	5,56%

Figure 14.

Learners' perceptions of teachers' training adequacy in supporting braille based EFL writing



According to the above result, most of learners 94,44% said that their teachers were adequately trained to help with braille EFL writing. However, almost no neutral opinions, while only one student felt their teachers were inadequately trained. Which means that the majority

of students are satisfied with their teachers training. However, the single negative response could mean one teacher might need additional training or one learner might have had a unique challenge.

Question 15. The support that helps students in improving their braille writing skills in EFL (open ended)

Table 15.

The support that helps students in improving their braille writing skills in EFL

Themes	Number	Percentage
Provide additional support in copying sentences using the touch method	12	66,67%
Provide assistive technologies in writing	2	11,11%
No answers	4	0%

The table above shows that most of students 66, 67% suggested providing additional support in copying sentences using touch method for improving their braille writing skills in EFL. Only two students mentioned that providing assistive technologies in writing might help them for improving their braille writing skills in EFL. Whereas, four students did not answer the question.

4. Discussion of the Findings

The findings from both the literature review and the empirical data collected through teacher interviews, classroom observations and student questionnaires reveal common challenges faced by visually impaired EFL learners in developing writing skills using the braille system. These challenges include cognitive, motor, linguistic, technical, social, and psychological domains, aligning with existing research while also highlighting unique contextual barriers specific to the studied population.

4.1. Cognitive and motor challenges

The literature emphasizes the high cognitive load associated with braille, particularly due to its tactile nature and the need for sequential decoding (Veispak et al., 2012). This is asserted by the teachers' observations, who noted students' difficulties with braille contractions and hand coordination on the slate. The transition from grade 1 to grade 2 braille was particularly challenging for learners, with 50% of students reporting moderate to extreme difficulty (table 6). This aligns with studies suggesting that contractions in grade 2 braille demand significant cognitive effort (Masea et al., 2018). Motor challenges were also evident, as students relied only on traditional tools like the slate and stylus (table 4), which require precise hand movements and offer delayed feedback (Kalra et al., 2009). The absence of advanced assistive technologies (e.g. refreshable braille displays) intensify these challenges, as noted in both the literature (Sadak et al., 2024) and teacher interviews.

4.2. Linguistic and pedagogical barriers

Linguistic barriers were prominent, with 50% of students struggling "sometimes" with English grammar and syntax (table 8). Teachers attributed this to auditory reliance, leading to spelling errors and incorrect punctuation, and a finding consistent with studies on negative

transfer from native languages (Derakhshan & Shirejini, 2020). The lack of braille adapted EFL materials further increase these issues, as 33% of students found materials inaccessible (table 9). This supports the need for specialized resources in the literature (Rodgers et al., 2024).

Pedagogically, teachers employed audio lingual methods and scaffolding, but the absence of multisensory tools (e.g. tactile/audio aids) was noted in observations. This gap contrasts with recommendations for multi-sensory approaches to enhance comprehension (Namigtle et al., 2023).

4.3. Technical and practical obstacles

As mentioned in interviews, the dependence on slates and styluses (100%, Table 4) highlights structural problems with accessibility and cost. Teachers criticised the lack of institutional support for assistive technologies, reflecting global disparities in braille tool access (Chen et al., 2023). Students' neutral/ negative perceptions of digital tools' effectiveness (table 13, 15) suggest that existing technologies may not meet their needs or are underutilized due to inadequate training.

4.4. Social and psychological factors

Contrary to literature on isolation (Masea et al., 2018), 66% of learners reported never feeling isolated (table 10), likely due to supportive peer interactions observed in classrooms. However, 33% lacked motivation (table 11), linked to task complexity and limited feedback. This indicates that teacher involvement and collaborative tasks are essential to sustaining engagement as reported in Kivi et al. (2021)'s research on peer interaction.

4.5. Institutional and teacher support

While 94% of learners perceived teachers as adequately trained (table 14), interviews revealed gaps in braille specific EFL strategies. Institutional support was limited to basic

training, with no provision for advanced tools, a disparity noted in the literature (Kana & Hagos, 2024).

5. Pedagogical implications

The findings of this study highlight several important pedagogical considerations for enhancing braille based writing instruction for visually impaired EFL learners.

5.1. Need for multisensory instruction

Since braille relies heavily on tactile processing, integrating auditory and kinaesthetic methods such as voice assisted braille apps can reduce cognitive load and improve retention. Teacher should use tools like the braille cube teaching learning gadget (B cube) (Namigtle et al., 2023) to reinforce learning.

5.2. Scaffolded learning for braille contractions

The transition from grade 1 to grade 2 braille is challenging due to contractions. Teachers should introduce contractions gradually with repetitive exercises, mnemonic technique and peer assisted learning.

5.3. Focus on language specific challenges

Targeted instruction in English syntax, grammar and punctuation must be integrated into braille literacy lessons. These linguistic aspects pose particular difficulties due to reliance on auditory input and structure of braille.

5.4. assistive technology integration

Traditional tools such as slates and styluses slow down writing and limit real time feedback. Schools should integrate and invest in refreshable braille displays and digital braille note takers to enhance writing fluency.

5.5. Inclusive and collaborative learning

Peer interaction reduces isolation and improve motivation. Implementing paired writing activities, where sighted peers describe visual content while VI learners transcribe in braille.

6. Recommendations

Based on the findings and pedagogical implications, the following recommendations are proposed:

-Integrate assistive technology gradually: institutions should aim to introduce affordable and user friendly assistive tools like refreshable braille displays or braille writing apps to support independent learning and improve writing efficiency.

-Develop specialized braille EFL materials: ministries of education and educational publishers should invest in producing adapted EFL textbooks, grammar guides and writing activities tailored to braille readers.

-Offer regular teacher development programs: ongoing professional training should focus on inclusive EFL instruction strategies, braille grammar teaching methods and integrating digital tools in language teaching.

-Promote collaborative learning models: teachers should implement peer collaboration strategies to reduce isolation, promote shared learning and improve writing output through joint activities.

-Incorporate formative assessment technique: teachers should use individualized feedback and tactile correction techniques to monitor progress and address learners' writing difficulties in real time.

7. Suggestions for further research

-Longitudinal studies on braille writing development: future research should examine how braille based writing skills progress over time, especially through different stages and EFL proficiency levels.

-**Effectiveness of digital tools in braille instruction:** more studies that are empirical are needed to evaluate the actual impact of refreshable braille displays, braille typing apps and audio supported learning platforms on writing accuracy and motivation.

-Comparative studies with sighted EFL learners: investigating the differences and similarities in writing skill acquisition between sighted and VI learners could highlight specific support strategies.

-Cross linguistic braille challenges: analyse error patterns in EFL braille writing among learners from different L1 background by examining native language braille systems (Arabic braille) interfere with English braille.

Conclusion

In summary, the findings highlight that visually impaired EFL learners face many challenges in developing writing skills using the braille system. These include cognitive demands such as processing contractions and managing tactile coordination, linguistic struggles related to English grammar and syntax, and limited access to assistive technologies. While learners generally benefit from strong teacher support and inclusive peer environment, the absence of multisensory tools and adapted EFL braille materials hinders their full development.

These results underscore the urgent need for innovative instructional practices; include curriculum design, and future research focused on improving writing skills in EFL.

General Conclusion

This dissertation has investigated the multiple challenges faced by visually impaired EFL learners in developing writing skills through the braille system. By employing a mixed method approach that combined teacher interviews, learner questionnaires and classroom observations, the study has identified important obstacles in the cognitive, linguistic, technical, and psychological domains and offered practical solutions for more inclusive pedagogy.

The findings show that braille based EFL writing presents unique cognitive demands, particularly in mastering grade 2 contractions and coordinating tactile motor skills with language processing. These challenges correspond with existing research on the increased working memory load in braille literacy (Veispak et al., 2012), but they become more complicated in EFL contexts where learners must manage both English syntax and braille coding. Notably, 50% of participants reported significant difficulty transitioning between braille grades, while 44,44% faced frequent confusion from cross linguistic differences between braille and their native writing systems. These results highlight the need for specialized instructional strategies that address both linguistic and tactile processing challenges.

Technical challenges revealed as equally important, with 100% of learners relying only on traditional slates and styluses tools due to the unavailability of refreshable braille displays or digital aids. This reliance on manual tools not only slows writing fluency, but also denies learners of real time feedback- a finding that supports global differences in assistive technology access (Sadak et al., 2024). The study's observation data further highlighted how these limitations appear in classroom practice, with spelling and syntax errors continue to occur across 75% of writing tasks despite teacher interventions.

Psychological factors presented a paradoxical finding: while 66,67% of learners denied feeling isolated from sighted peers (contrasting with Masea et al.'s 2018 study), 33.33%

reported demotivation linked to task complexity and delayed progress. This suggests that social inclusion alone cannot compensate for pedagogical inadequacies, emphasising the need for targeted writing supports.

The study's key contribution is combining research about braille learning with research about English language learning. This helps us understand how the difficulties of learning through touch braille affect the process of learning EFL. Practically, it identifies three actionable priorities:

-Curriculum adaptation: gradual introduction of contractions paired with English grammar instruction.

-Technology integration: development of affordable braille writing apps with audio feedback.

-Teacher training: professional development in multisensory EFL strategies and assistive technology use.

Limitations including the small sample size (n=18) and single institution focus, suggest caution in generalizing findings. Future research should explore longitudinal braille writing development and cross cultural comparisons of EFL braille pedagogies.

Ultimately, this study affirms that braille remains essential for VI learners' literacy but requires structural changes to meet EFL demands. By addressing the identified challenges through collaborative efforts among educators, policymakers and technologists, we can transform braille from a basic accessibility tool into a strong medium for global English literacy.

References

Abu Shokhedim, S. S. (2024). Developing a training program in reading and writing Braille symbols in English language for students with visual disability in low elementary grades and measuring its effectiveness. *British Journal of Visual Impairment*, *42*(1), 287–296. https://doi.org/10.1177/02646196231197940

Ahmed, P. H. (2019). Major Writing Challenges Experienced by EFL Learners in Soran University. *Journal of University of Human Development*, *5*(3), 120–126. https://doi.org/10.21928/juhd.v5n3y2019.pp120-126

Alfredo Namigtle, J., Oscar Bautista, M., Jesus Namigtle, J., & Caldera, R. A. E. (2023). Braille Cube Teaching- Learning Gadget for inclusive education: B-Cube. *2023 IEEE International Humanitarian Technology Conference (IHTC)*, 1–5. https://doi.org/10.1109/IHTC58960.2023.10508816

Alharbi, M. A. (2019). Saudi Arabia EFL university students' voice on challenges and solution in learning academic writing. *Indonesian Journal of Applied Linguistics*, *8*(3), 576–587. https://doi.org/10.17509/ijal.v8i3.15276

Amézquita-Soto, E., Mendoza-Polanco, D., Ordoñez-Arratia, J., Soto-Sana, N., & Sulla-Torres, J. (2023). *Usability of a Mobile Application for Teaching Braille to People with Visual Disabilities*. 130–140. https://ceur-ws.org/Vol-3693/paper11.pdf

Aslan, C., & Cakmak, S. (2022). A Cross-Sectional Examination of the Written Expression Skills of Students with Low Vision, Visual Impairments, and their Sighted Peers. *Acta Educationis Generalis*, *12*(3), 116–134. https://doi.org/10.2478/atd-2022-0027

Besral, B., Yustina, L. S., & Basit, A. (2023). Language development in writing through pair-reviews in EFL learning. *Studies in English Language and Education*, *10*(3), 1181–1196. https://doi.org/10.24815/siele.v10i3.31063

Bettelani, G. C., Averta, G., Catalano, M. G., Leporini, B., & Bianchi, M. (2020). Design and Validation of the *Readable* Device: A Single-Cell Electromagnetic Refreshable Braille Display. *IEEE Transactions on Haptics*, *13*(1), 239–245. https://doi.org/10.1109/TOH.2020.2970929

Bhowmik, S. (2021). Writing Instruction in an EFL Context: Learning to Write or Writing to Learn Language? *BELTA Journal*, *5*(1), 30–42. https://doi.org/10.36832/beltaj.2021.0501.03

Caulfield, M., Forsyth, J., Deportes, L., & Castaneda, D. (2024). Braille Learning using Haptic Feedback. *2024 Systems and Information Engineering Design Symposium (SIEDS)*, 460–465. https://doi.org/10.1109/SIEDS61124.2024.10534648

Chairinkam, J., & Yawiloeng, R. (2024). The Use of Scaffolding Strategies to Enhance the Writing Development of EFL Students. *Theory and Practice in Language Studies*, *14*(9), 2996–3007. https://doi.org/10.17507/tpls.1409.35

Chen, D., Zhang, Y., Hu, X., Chen, G., Fang, Y., Chen, X., Liu, J., & Song, A. (2024). Development and Evaluation of Refreshable Braille Display and Active Touch-Reading System for Digital Reading of the Visually Impaired. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, *32*, 934–945. IEEE Transactions on Neural Systems and Rehabilitation Engineering. https://doi.org/10.1109/TNSRE.2024.3363495

Chen, H., Tao, W., Liu, C., Shen, Q., Wu, Y., Ruan, L., & Yang, W. (2023). A Novel Refreshable Braille Display Based on the Layered Electromagnetic Driving Mechanism of Braille Dots. *IEEE Transactions on Haptics*, *16*(1), 96–105. https://doi.org/10.1109/TOH.2023.3241952

Chen, P.-J. (2023). Looking for the right blend: A blended EFL university writing course. *Computer Assisted Language Learning*, *36*(7), 1147–1176. https://doi.org/10.1080/09588221.2021.1974052

Chou, C.-H., Hsieh, Y.-Z., Lin, S.-S., Yang, T.-J., Chen, W.-A., Chu, Y.-L., & Chang, H.-L. (2021). Passive Haptic Learning of Taiwanese Braille Writing for Visually Impaired

Individuals. *Journal of Imaging Science and Technology*, *65*(2). https://doi.org/10.2352/J.ImagingSci.Technol.2021.65.2.020402

Cohen, L., Manion, L., & Morrison, K. (2018). *Research Methods in Education* (8th ed.). Routledge. https://doi.org/10.4324/9781315456539

Daneman, M. (1988). How reading braille is both like and unlike reading print. *Memory & Cognition*, *16*(6), 497–504. https://doi.org/10.3758/BF03197051

Derakhshan, A., & Karimian Shirejini, R. (2020). An Investigation of the Iranian EFL Learners' Perceptions Towards the Most Common Writing Problems. *Sage Open*, *10*(2). https://doi.org/10.1177/2158244020919523

Englebretson, R. (2009). An overview of IPA Braille: An updated tactile representation of the International Phonetic Alphabet. *Journal of the International Phonetic Association*, *39*(1), 67–86. https://doi.org/10.1017/S0025100308003691

Englebretson, R., Holbrook, M. C., & Fischer-Baum, S. (2023). A position paper on researching braille in the cognitive sciences: Decentering the sighted norm. *Applied Psycholinguistics*, *44*(3), 400–415. https://doi.org/10.1017/S0142716423000061

Fischer-Baum, S., & Englebretson, R. (2016). Orthographic units in the absence of visual processing: Evidence from sublexical structure in braille. *Cognition*, *153*, 161–174. https://doi.org/10.1016/j.cognition.2016.03.021

Gayathri, S., Sujathakumari, B. A., Murthy, N. S., Balabhadra, M., Joshi, N. S., & Sandesh, C. (2021). Digitized Braille cell: A novel solution for visually impaired. *International Journal of Information Technology*, *13*, 1201–1208. https://doi.org/10.1007/s41870-020-00506-9

Gharehblagh, N. M., & Nasri, N. (2020). DEVELOPING EFL ELEMENTARY LEARNERS' WRITING SKILLS THROUGH MOBILE-ASSISTED LANGUAGE LEARNING (MALL). *Teaching English with Technology*, *20*(1), 104–121. https://www.semanticscholar.org/paper/DEVELOPING-EFL-ELEMENTARY-

LEARNERS%E2%80%99-WRITING-SKILLS-Gharehblagh-Nasri/e7625087aa3d8cd3532d8ccdd01d0028ff4adddb?utm_source=consensus

Harris-Brown, T., Richmond, J., Maddalena, S. D., & Jaworski, A. (2015). A Comparison of the Handwriting Abilities of Secondary Students with Visual Impairments and those of Sighted Students. *Journal of Visual Impairment & Blindness*, *109*(5), 402–412. https://doi.org/10.1177/0145482X1510900510

Hidayati, K. H. (2018). Teaching Writing to EFL Learners: An Investigation of Challenges Confronted by Indonesian Teachers. *Langkawi: Journal of The Association for Arabic and English*, *4*(1), 21–31. https://doi.org/10.31332/lkw.v4i1.772

Iman, B. N., Izza, A. A. N., Alasiry, A. H., & Oktavianto, H. (2023). Development of Be-Braille Learning Tool: Enhancing Braille Education and Interaction for Visually Impaired Students. *2023 Sixth International Conference on Vocational Education and Electrical Engineering (ICVEE)*, 222–227. 2023 Sixth International Conference on Vocational Education and Electrical Engineering (ICVEE). https://doi.org/10.1109/ICVEE59738.2023.10348286

Irzawati, I., Hasibuan, A. R., & Giovanni, V. (2021). PORTRAIT OF EFL LEARNERS' WRITINGS: ERRORS, CHALLENGES AND SOLUTIONS. *Esteem Journal of English Education Study Programme*, *4*(1), 10–20. https://doi.org/10.31851/esteem.v4i2.5126

Islam, M. N., Jahangir, R., Mohim, N. S., Wasif-Ul-Islam, Md., Ashraf, A., Khan, N. I., Mahjabin, M. R., Miah, A. S. M., & Shin, J. (2024). A Multilingual Handwriting Learning System for Visually Impaired People. *IEEE Access*, *12*, 10521–10534. https://doi.org/10.1109/ACCESS.2024.3353781

Jamali Kivi, P., Namaziandost, E., Fakhri Alamdari, E., Ryafikovna Saenko, N., Inga-Arias, M., Fuster-Guillén, D., Sirisakpanich, D., & Nasirin, C. (2021). The Comparative Effects of Teacher Versus Peer-Scaffolding on EFL Learners' Incidental Vocabulary Learning and

Reading Comprehension: A Socio-Cultural Perspective. *Journal of Psycholinguistic Research*, *50*(5), 1031–1047. https://doi.org/10.1007/s10936-021-09800-4

Jiménez, J., Olea, J., Torres, J., Alonso, I., Harder, D., & Fischer, K. (2009). Biography of Louis Braille and Invention of the Braille Alphabet. *Survey of Ophthalmology*, *54*(1), 142–149. https://doi.org/10.1016/j.survophthal.2008.10.006

Kalra, N., Lauwers, T., Dewey, D., Stepleton, T., & Dias, M. B. (2009). Design of a braille writing tutor to combat illiteracy. *Information Systems Frontiers*, *11*(2), 117–128. https://doi.org/10.1007/s10796-009-9171-2

Kamei-Hannan, C., & Lawson, H. (2012). Impact of a Braille-Note on Writing: Evaluating the Process, Quality, and Attitudes of Three Students Who are Visually Impaired. *Journal of Special Education Technology*, *27*(3), 1–14. https://doi.org/10.1177/016264341202700301

Kana, F. Y., & Hagos, A. T. (2024). Factors hindering the use of Braille for instruction and assessment of students with visual impairments: A systematic review. *British Journal of Visual Impairment*, 02646196241239173. https://doi.org/10.1177/02646196241239173

Karim, S., Maasum, T. N. R. T. M., & Latif, H. (2017). WRITING CHALLENGES OF BANGLADESHI TERTIARY LEVEL EFL LEARNERS. *E-BANGI Journal*, *12*(2), 296–306. https://www.semanticscholar.org/paper/WRITING-CHALLENGES-OF-BANGLADESHI-TERTIARY-LEVEL-Karim-Maasum/9bf90388a15d6ed64494841df033032d14d9e89a

Kausar, T., Manzoor, S., Kausar, A., Lu, Y., Wasif, M., & Ashraf, M. A. (2021). Deep Learning Strategy for Braille Character Recognition. *IEEE Access*, *9*, 169357–169371. IEEE Access. https://doi.org/10.1109/ACCESS.2021.3138240

Khasawneh, M. (2023). INVESTIGATING WRITING CHALLENGES ENCOUNTERED BY SAUDI EFL LEARNERS. *Imagens Da Educação*, *13*(1), 01–14. https://doi.org/10.4025/imagenseduc.v13i1.62335

Kocyigit, N., & Artar, P. S. (2015). A Challenge: Teaching English to Visually-impaired Learners. *Procedia - Social and Behavioral Sciences*, *199*, 689–694. https://doi.org/10.1016/j.sbspro.2015.07.599

Krebs, B. M. (1978). Current Literature. *Journal of Visual Impairment & Blindness*, *72*(2), 77–78. https://doi.org/10.1177/0145482X7807200213

Liu, Y.-F., Rapp, B., & Bedny, M. (2023). Reading Braille by Touch Recruits Posterior Parietal Cortex. *Journal of Cognitive Neuroscience*, *35*(10), 1593–1616. https://doi.org/10.1162/jocn_a_02041

Manggolo, N. S. K. H., Arifin, M. F., Indriani, L., & Khusniyati, N. N. (2024). Analysis of EFL Learners' Writing Challenges in the Digital Era. *ETERNAL (English Teaching Journal)*, *15*(1), 130–143. https://doi.org/10.26877/eternal.v15i1.376

Manoti Masea, Z., Charles Michael, W., & Agak, J. (2018). Learning environmental effects on reading and writing English Braille grade ii for the visually impaired child. *Educational Research*, *09*(01), 8–15. https://doi.org/10.14303/er.2017.511

Martiniello, N., & Wittich, W. (2020). (PDF) The association between tactile, motor and cognitive capacities and braille reading performance: A scoping review of primary evidence to advance research on braille and aging. *Disability and Rehabilitation*, *44*(11), 2515–2536. https://doi.org/10.1080/09638288.2020.1839972

Mendoza, D. (2023). Visual spatial learning disabilities and braille instruction. *British Journal of Visual Impairment*, *41*(4), 990–997. https://doi.org/10.1177/02646196221124422

Muhammed, A. A. (2015). Paragraph Writing Challenges Faced by University EFL Learners. *International Journal on Studies in English Language and Literature (IJSELL)*, *3*(8), 23–27. https://www.arcjournals.org/pdfs/ijsell/v3-i8/3.pdf

Muratova, N., Khasanova, G., Toshov, X., & Kurbanov, O. (2024). Problems and prospects of developing spelling skills in schoolchildren with visual impairments in Uzbekistan. *Salud,*

Ciencia y Tecnología - Serie de Conferencias, *3*, 1219. https://doi.org/10.56294/sctconf2024.1219

Nahar, L., Jaafar, A., Ahamed, E., & Kaish, A. B. M. A. (2015). Design of a Braille Learning Application for Visually Impaired Students in Bangladesh. *Assistive Technology*, *27*(3), 172–182. https://doi.org/10.1080/10400435.2015.1011758

Rababah, L., & Almwajeh, M. O. (2018). Promoting Creativity in EFL/ESL Writing through Scaffolding Strategy. *International Journal of English and Education*, *7*(3), 148–160. https://www.researchgate.net/publication/326521976_Promoting_Creativity_in_EFLESL_Writing_through_Scaffolding_Strategy

Rodgers, D. B., Hebert, M., Savaiano, M. E., Koziol, N. A., & Bazis, P. S. (2024). A National Survey of the Writing Instructional Practices of Teachers of Students With Visual Impairments. *The Journal of Special Education*, *58*(3), 150–160. https://doi.org/10.1177/00224669231226325

Roth, G. A., & Fee, E. (2011). The Invention of Braille. *American Journal of Public Health*, *101*(3), 454–454. https://doi.org/10.2105/AJPH.2010.200865

Russomanno, A., O'Modhrain, S., Gillespie, R. B., & Rodger, M. W. M. (2015). Refreshing Refreshable Braille Displays. *IEEE Transactions on Haptics*, *8*(3), 287–297. https://doi.org/10.1109/TOH.2015.2423492

Sadak, H. M., Khalaf, A. A. M., Hussein, A. I., & Salama, G. M. (2024). Braille code classifications tool based on computer vision for visual impaired. *International Journal of Electrical and Computer Engineering (IJECE)*, *14*(6), 6992–7000. https://doi.org/10.11591/ijece.v14i6.pp6992-7000

Savaiano, M. E., Compton, D. L., Hatton, D. D., & Lloyd, B. P. (2016). Vocabulary Word Instruction for Students Who Read Braille. *Exceptional Children*, *82*(3), 337–353. https://doi.org/10.1177/0014402915598774

Savaiano, M. E., & Hebert, M. (2019). A Cross-Sectional Examination of the Writing of Students with Visual Impairments. *Journal of Visual Impairment & Blindness*, *113*(3), 260–273. https://doi.org/10.1177/0145482X19854921

Savaiano, M., & Kearns, D. M. (2022). An examination of Unified English Braille and its efficiency in representing print. *British Journal of Visual Impairment*, *40*(2), 289–300. https://doi.org/10.1177/0264619620973710

Song, C., & Song, Y. (2023). Enhancing academic writing skills and motivation: Assessing the efficacy of ChatGPT in AI-assisted language learning for EFL students. *Frontiers in Psychology*, *14*. https://doi.org/10.3389/fpsyg.2023.1260843

Srikandi. (2019). The Teaching of Writing in EFL Classes. *EDUCASIA: Jurnal Pendidikan, Pengajaran, Dan Pembelajaran*, *4*(1), 69–80. https://doi.org/10.21462/educasia.v4i1.43

Sun, T., & Wang, C. (2020). College students' writing self-efficacy and writing self-regulated learning strategies in learning English as a foreign language. *System*, *90*. https://doi.org/10.1016/j.system.2020.102221

Sun, Y., Li, C., & Sun, Y. (2022). A development trend comparison of reading speed and comprehension between students with visual handicap in Chinese Braille and sighted ones in print. *Journal of Chinese Writing Systems*, *6*(4), 273–279. https://doi.org/10.1177/25138502221116146

Talebi, Z. (2024). The Impact of Collaborative Instruction on Enhancing EFL Learners' Writing Proficiency. *International Journal of Psychology and Educational Studies*, *11*(2), 169–178. https://doi.org/10.52380/ijpes.2024.11.2.1298

Veispak, A., Boets, B., Männamaa, M., & Ghesquière, P. (2012). Probing the perceptual and cognitive underpinnings of braille reading. An Estonian population study. *Research in Developmental Disabilities*, *33*(5), 1366–1379. https://doi.org/10.1016/j.ridd.2012.03.009

What Is Braille? (n.d.). The American Foundation for the Blind. Retrieved 31 March 2025, from https://www.afb.org/blindness-and-low-vision/braille/what-braille

Wilkinson, J. M., & Carr, T. H. (1987). Strategic hand use preferences and hemispheric specialization in tactual reading: Impact of the demands of perceptual encoding. *Brain and Language*, *32*(1), 97–123. https://doi.org/10.1016/0093-934X(87)90119-2

Zakrajsek, A. D., Foulkes, S., Nagel, N., Neurohr, F., & Nauman, E. A. (2024). Biomechanical Considerations of Refreshable Braille and Tactile Graphics Toward Equitable Access: A Review. *Journal of Biomechanical Engineering*, *146*(6). https://doi.org/10.1115/1.4064964

E. Kozhakhmet, Saule Tulepova, & I. Stepanov. (2022). THE IMPORTANCE OF WRITING SKILLS FOR EFL LEARNERS: COMMON ERRORS AND WAYS OF IMPROVING. *Педагогика и Методы Обучения*, *61*(4), 14–20. https://doi.org/10.47344/sdu20bulletin.v61i4.859

Appendices

Appendix 1

Semi Structured Interview Questions

Section 1: Participant Background

1. How long have you been teaching EFL to visually impaired students?

2. What is your experience with teaching Braille writing? Have you received formal training in Braille instruction?

3. What age groups or proficiency levels do you typically work with?

Section 2: Cognitive and Motor Challenges

4. In your experience, what cognitive challenges do visually impaired EFL learners face when writing in Braille (e.g., mastering contractions, managing tactile perception)?

5. Have you observed difficulties related to motor skills (e.g., using a slate and stylus, hand coordination)?

6. How do you adapt your teaching to accommodate learners who struggle with the cognitive load of Braille and EFL simultaneously?

Section 3: Linguistic and Pedagogical Barriers

7. What linguistic barriers (e.g., English syntax, spelling, punctuation) do students face when using Braille for EFL writing?

8. How accessible are Braille materials adapted for EFL learners in your classroom?

9. Do you feel adequately trained to address the unique pedagogical needs of visually impaired EFL learners? If not, what gaps exist?

Section 4: Technical and Practical Obstacles

10. Have you used technologies like Braille-to-speech devices or digital Braille platforms (e.g., mBRAILLE)?

Section 5: Social and Psychological Challenges

11. Have you noticed social isolation among visually impaired learners in mixed classrooms?

12. How do you treat motivation issues or anxiety related to Braille literacy in your students?

Section 6: Pedagogical Strategies and Institutional Support

13. What teaching methodologies do you find most effective (e.g., multi sensory approaches, scaffolding)?

14. How does your institution support Braille-based EFL instruction (e.g., training, resources, and inclusive curricula)?

15. What changes would you recommend to enhance Braille writing instruction for visually impaired EFL learners?

Closing

16. Is there anything else you'd like to share about your experiences or challenges in this field?

Appendix 2

Consent Form for Interview Participants

Title of Study: Challenges Faced in Developing Writing Skills using Braille System among Visually Impaired EFL Learners. Case study: Visually Impaired School-BBA- "middle school"

Investigators: Boudjelida Hicham & Benhizia Abdelhaq

Dear teacher,

You are invited to participate in a research study that aims to explore the primary challenges faced by visually impaired EFL learners when using braille to develop writing skills. The study involves an interview where you will be asked a series of questions regarding your experiences and perceptions of using the braille to develop writing skills.

Procedures: The interview will be conducted in a one-on-one setting and will take approximately 20-30 minutes. The interview will be audio-recorded for the purpose of transcription and analysis. Your name will not be used in any publications or reports. All data collected will be kept confidential, and the audio recordings will be destroyed once the research is completed.

Voluntary Participation: Participation in this study is completely voluntary. You have the right to refuse to participate in the study, and you have the right to withdraw from the study at any time without penalty.

Risks and Benefits: There are no known risks associated with participating in this study. However, the benefits of participating in this study include contributing to research on the use of the braille to develop writing skills, and potentially gaining insights into your own experiences and perceptions of using braille.

Confidentiality: All information collected in this study will be kept confidential. Any identifying information such as your name will not be used in any reports or publications. The audio recordings will be securely stored and only accessible to the research team.

Contact Information: If you have any questions or concerns regarding the study or the interview process, please contact the investigators at hicham.boudjelida@univ-bba.dz or hako817@gmail.com

Consent: By signing this form, you confirm that you have read and understood the information provided in this form and that you agree to participate in the study. You also confirm that you understand that participation is voluntary, and that you have the right to withdraw from the study at any time.

Participant's Signature: _____ Date:

Investigator's Signature : _____ Date :

Appendix 3

Students' Questionnaire

Demographic information

1. How old are you ?

☐ Under 18 , ☐ 18-25 , ☐ 26- 35 , ☐ 36+

2. At what age did you begin learning braille?

☐ Before age 5, ☐ 6-10 years , ☐ 11-15 years , ☐ 16+ years

3. What is your current level of English proficiency?

☐ Beginner , ☐ intermediate , ☐ advanced

Braille mechanics and tools

4. Which braille writing tools do you use most frequently? (select all that apply)

☐ Slate and stylus, ☐ Perkins brailler, ☐ refreshable braille displays, ☐ digital braille apps, ☐ other :

5. How challenging do you find braille contractions (e.g. using single cells for words like "and" or "the"?

☐ Very easy, ☐ easy, ☐ neutral, ☐ difficult, ☐ very difficult

6. How difficult is transitioning from grade 1 (basic) to grade 2 (contracted) braille?

☐ Very easy, ☐ easy, ☐ neutral, ☐ difficult, ☐ very difficult

Cognitive, motor and linguistic challenges

7. How much do the tactile demands of braille (e.g. finger sensitivity, hand coordination) affect your writing speed?

☐ Not at all, ☐ slightly, ☐ moderately, ☐ significantly, ☐ extremely

8. How often do you struggle with English grammar and sentence structure when writing in braille?

☐ Never, ☐ rarely, ☐ sometimes, ☐ often, ☐ always

9. How accessible are braille specific EFL materials (e.g. textbooks, worksheets) for your learning needs?

☐ Accessible, ☐ neutral, ☐ inaccessible

Social and psychological factors

10. Do you feel isolated from sighted peers during writing activities in class?

☐ Always, ☐ often, ☐ sometimes, ☐ rarely, ☐ never

11. How motivated do you feel to practice writing in English using braille?

☐ Motivated, ☐ neutral, ☐ unmotivated

12. Do similarities / differences between braille and other writing systems (e.g. latin script) cause confusion?

☐ Yes, frequently, ☐ occasionally, ☐ rarely, ☐ never

Technology and support

13. How effective are refreshable braille displays or digital tools in improving your writing skills?

☐ Effective, ☐ neutral, ☐ ineffective

14. How adequately trained do you feel your teachers are in supporting braille based EFL writing?

☐ Adequately, ☐ neutral, ☐ inadequately

15. What changes or support would most help you improve your braille writing skills in English?

……

Appendix 4

Students' Questionnaire (Translated)

المعلومات الديموغرافية

1. كم عمرك؟

أقل من 18 □ من 18-25 □ من 26-35 □ 36 + □

2. في أي عمر بدأت تعلم طريقة برايل؟

قبل سن 5-سنوات، □ 6-10 سنوات، □ 11-15 سنة، □ 16-سنة فأكثر □

3. ما هو مستواك الحالي في اللغة الإنجليزية؟

مبتدئ، □ متوسط، □ متقدم □

آلية البرايل وأدواته

3. ما هي أدوات الكتابة بطريقة برايل التي تستخدمها بشكل متكرر؟ (اختر كل ما ينطبق)

لوحة وقلم، □ برايل بيركنز، □ شاشات برايل قابلة للتحديث، □ تطبيقات برايل الرقمية، □ تطبيقات برايل الرقمية، □ تطبيقات برايل أخرى، □ أو أخرى.....

5. ما مدى الصعوبة التي تجدها في الاختصارات بطريقة برايل (على سبيل المثال استخدام خلايا مفردة لكلمات "the" أو " and مثل " ؟

سهل جداً، □ سهل، □ محايد، □ صعب، □ صعب جداً □

6. ما مدى صعوبة الانتقال من المستوى الأول (الأساسي) إلى المستوى الثاني (المتقدم) بطريقة برايل؟

سهل جداً، □ سهل، □ محايد، □ صعب، □ صعب جداً □

التحديات المعرفية والحركية واللغوية

7. إلى أي مدى تؤثر المتطلبات اللمسية لطريقة برايل (مثل حساسية الأصابع وتناسق اليدين) على سرعة كتابتك؟

□ لا على الإطلاق، □ بشكل طفيف، □ بشكل معتدل، □ بشكل ملحوظ، □ بشكل كبير،

8. كم مرة تعاني من صعوبة في قواعد اللغة الإنجليزية وتركيب الجمل عند الكتابة بطريقة برايل؟

أبدًا، □ نادرًا، □ أحيانًا، □ غالبًا، □ دائمًا □

9. إلى أي مدى يمكن الوصول إلى مواد اللغة الإنجليزية كلغة أجنبية بطريقة برايل (مثل الكتب المدرسية وأوراق العمل) لتلبية احتياجاتك التعليمية؟

يسهل الوصول إليه، □ محايد، □ غير متاح الوصول إليه □

العوامل الاجتماعية والنفسية

10. هل تشعر بالعزلة عن أقرانك المبصرين أثناء أنشطة الكتابة في الفصل؟

دائماً، □ غالباً، □ أحياناً، □ نادراً، □ أبداً □

11. ما مدى تحفيزك لممارسة الكتابة باللغة الإنجليزية باستخدام طريقة برايل؟

متحمس، □ محايد، □ غير متحمس □

12. هل أوجه التشابه/الاختلاف بين طريقة برايل وأنظمة الكتابة الأخرى (مثل الكتابة اللاتينية) تسبب الارتباك؟

نعم، في كثير من الأحيان، □ في بعض الأحيان، □ نادراً، □ أبداً □

التكنولوجيا والدعم

13. ما مدى فعالية شاشات العرض بطريقة برايل القابلة للتحديث أو الأدوات الرقمية في تحسين مهاراتك الكتابية؟

فعالة، □ محايدة، □ غير فعالة □

14. إلى أي مدى تعتقدون أن أساتذتكم مُدرَّبُون تدريباً كافياً على دعم الكتابة بطريقة برايل في اللغة الإنجليزية كلغة أجنبية؟

بشكل كافٍ، □ محايد، □ بشكل غير كافٍ □

15. ما هي التغييرات أو الدعم الذي سيساعدك أكثر في تحسين مهاراتك في الكتابة بطريقة برايل باللغة الإنجليزية؟

.....
.....

Appendix 5

Consent Form for Questionnaire Participants

Title of Study: Challenges Faced in Developing Writing Skills using Braille System among Visually Impaired EFL Learners. Case study: Visually Impaired School-BBA- "middle school"

Investigators: Boudjelida Hicham & Benhizia Abdelhaq

Dear participant,

You are invited to participate in a research study that aims to explore the primary challenges faced by visually impaired EFL learners when using braille to develop writing skills. The study involves a questionnaire where you will be asked a series of questions regarding your experiences and perceptions of using the braille to develop writing skills.

Procedures: The questionnaire will be conducted in a one-on-one setting and will take approximately 20-30 minutes. The questionnaire will be printed papers for the purpose of analysis. Your name will not be used in any publications or reports. All data collected will be kept confidential, and the papers will be destroyed once the research is completed.

Voluntary Participation: Participation in this study is completely voluntary. You have the right to refuse to participate in the study, and you have the right to withdraw from the study at any time without penalty.

Risks and Benefits: There are no known risks associated with participating in this study. However, the benefits of participating in this study include contributing to research on the use of braille to develop the writing skills, and potentially gaining insights into your own experiences and perceptions of using braille.

Confidentiality: All information collected in this study will be kept confidential. Any identifying information such as your name will not be used in any reports or publications. The papers will be securely stored and only accessible to the research team.

Contact Information: If you have any questions or concerns regarding the study or the questionnaire process, please contact the investigators at hichamboudj93@gmail.com or hako817@gmail.com

Consent: By signing this form, you confirm that you have read and understood the information provided in this form and that you agree to participate in the study. You also confirm that you understand that participation is voluntary, and that you have the right to withdraw from the study at any time.

Participant's Signature: _____ Date:

Investigator's Signature : _____ Date :

Appendix 6

Consent Form for Questionnaire Participants (Translated)

عنوان الدراسة: التحديات التي تواجه تطوير مهارات الكتابة باستخدام نظام برايل بين متعلمي اللغة الإنجليزية كلغة أجنبية من ذوي الإعاقة البصرية. دراسة حالة:" مدرسة المعاقين بصريًا الطور المتوسط"

الباحثون: بوجليدة هشام و بن حيزية عبدالحق

عزيزي المشارك،

أنت مدعو للمشاركة في دراسة بحثية تهدف إلى استكشاف التحديات الأساسية التي يواجهها متعلمي اللغة الإنجليزية كلغة أجنبية من ذوي الإعاقة البصرية عند استخدام طريقة برايل لتطوير مهارات الكتابة. تتضمن الدراسة استبياناً حيث ستُطرح عليك سلسلة من الأسئلة المتعلقة بتجاربك وتصوراتك حول استخدام طريقة برايل لتطوير مهارات الكتابة.

الإجراءات: سيتم إجراء الاستبيان في إطار فردي وسيستغرق حوالي 20-30 دقيقة. ستتم طباعة أوراق الاستبيان لغرض التحليل. لن يتم استخدام اسمك في أي منشورات أو تقارير. سيتم الحفاظ على سرية جميع البيانات التي تم جمعها، وسيتم إتلاف الأوراق بمجرد الانتهاء من البحث.

المشاركة الطوعية: المشاركة في هذه الدراسة طوعية تماماً. لك الحق في رفض المشاركة في الدراسة، ويحق لك الانسحاب من الدراسة في أي وقت دون عقوبة.

المخاطر والفوائد: لا توجد مخاطر معروفة مرتبطة بالمشاركة في هذه الدراسة. ومع ذلك، فإن فوائد المشاركة في هذه الدراسة تشمل المساهمة في البحث حول استخدام طريقة برايل لتطوير مهارات الكتابة، واحتمال اكتساب رؤى حول تجاربك وتصوراتك الخاصة حول استخدام طريقة برايل.

السرية: سيتم الحفاظ على سرية جميع المعلومات التي تم جمعها في هذه الدراسة. لن يتم استخدام أي معلومات تعريفية مثل اسمك في أي تقارير أو منشورات. سيتم تخزين الأوراق بشكل آمن ولن يتمكن من الوصول إليها إلا لفريق البحث فقط.

معلومات الاتصال: إذا كانت لديك أي أسئلة أو استفسارات تتعلق بالدراسة أو عملية الاستبيان، يرجى الاتصال بالباحثين : hichamboudj93@gmail.com أو hako817@gmail.com

الموافقة: بتوقيعك على هذا النموذج، فإنك تؤكد أنك قرأت وفهمت المعلومات الواردة في هذا النموذج وأنك توافق على المشاركة في الدراسة. كما تؤكد أنك تفهم أن مشاركتك طوعية، وأن لك الحق في الانسحاب من الدراسة في أي وقت.

توقيع المشارك: _____ التاريخ:

توقيع الباحث: _____ التاريخ:

Appendix 7

Classroom Observation

Observation grid

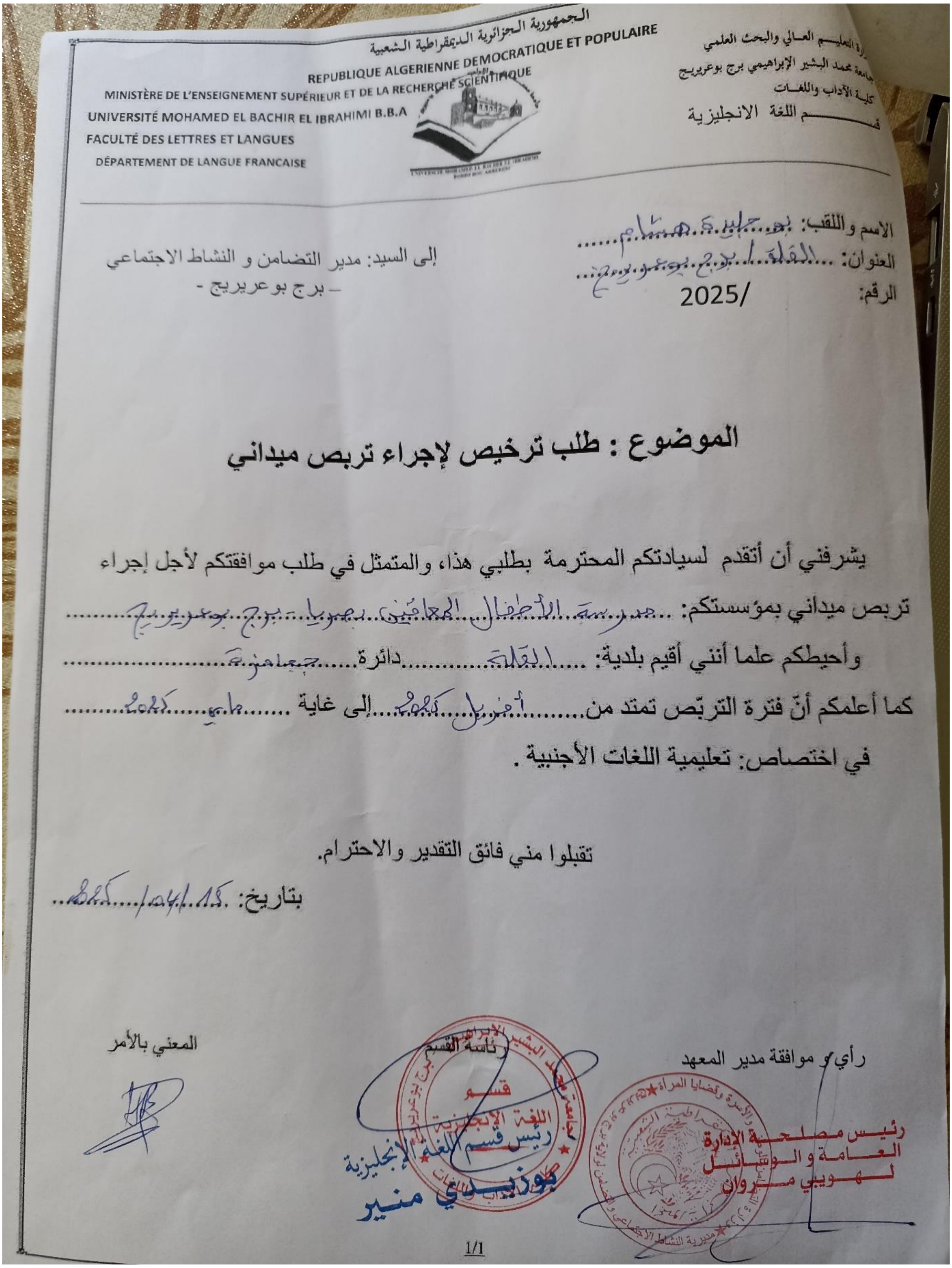
Session	Date	Duration	Lesson topic	Number of lrs	Level	teacher

Observation criteria table

Criteria	Indicators	Session 1	Session 2	Session 3	Session 4
Use of braille or assistive tools	Are learners using braille typewriters, slates, or screen readers to write?				
Writing task performance	Are learners able to complete writing tasks? What kind of errors do they make?				
Teacher support and feedback	Does the teacher provide individualized support and corrective feedback				
Peer interaction	Are learners engaged in peer discussions or collaborative writing activities?				
Motivation and participation	Are learners motivated to write? Do they show				

	engagement or no?				
Challenges observed	What specific difficulties are visible (e.g., spelling, structure, vocabulary, organization)?				
Use of tactile or audio materials	Does the teacher use any tactile or audio resources to support the writing lesson?				

Appendix 8



الجمهورية الجزائرية الديمقراطية الشعبية
REPUBLIQUE ALGERIENNE DEMOCRATIQUE ET POPULAIRE
MINISTÈRE DE L'ENSEIGNEMENT SUPÉRIEUR ET DE LA RECHERCHE SCIENTIFIQUE
UNIVERSITÉ MOHAMED EL BACHIR EL IBRAHIMI B.B.A
FACULTÉ DES LETTRES ET LANGUES
DÉPARTEMENT DE LANGUE FRANCAISE

وزارة التعليم العالي والبحث العلمي
جامعة محمد البشير الإبراهيمي برج بوعريريج
كلية الآداب واللغات
قسم اللغة الانجليزية

الاسم واللقب: بوجليدة هشام
العنوان: القلة / برج بوعريريج
الرقم: 2025/

إلى السيد: مدير التضامن و النشاط الاجتماعي
- برج بوعريريج -

الموضوع : طلب ترخيص لإجراء تربص ميداني

يشرفني أن أتقدم لسيادتكم المحترمة بطلبي هذا، والمتمثل في طلب موافقتكم لأجل إجراء تربص ميداني بمؤسستكم: مدرسة الأطفال المعاقين بصريا - برج بوعريريج

وأحيطكم علما أنني أقيم ببلدية: القلة دائرة: جعافرة

كما أعلمكم أنّ فترة التربّص تمتد من: أفريل 2025 إلى غاية: ماي 2025

في اختصاص: تعليمية اللغات الأجنبية .

تقبلوا مني فائق التقدير والاحترام.

بتاريخ: 2025/04/13

المعني بالأمر

رئاسة القسم
رئيس قسم اللغة الإنجليزية
بوزيدي منير

رأي و موافقة مدير المعهد
رئيس مصلحة الإدارة العامة و الوسائل
لهويبي مروان

1/1

الجمهورية الجزائرية الديمقراطية الشعبية

REPUBLIQUE ALGERIENNE DEMOCRATIQUE ET POPULAIRE

MINISTÈRE DE L'ENSEIGNEMENT SUPÉRIEUR ET DE LA RECHERCHE SCIENTIFIQUE

UNIVERSITÉ MOHAMED EL BACHIR EL IBRAHIMI B.B.A

FACULTÉ DES LETTRES ET LANGUES

DÉPARTEMENT DE LANGUE FRANCAISE

وزارة التعليم العالي والبحث العلمي

جامعة محمد البشير الإبراهيمي برج بوعريريج

كلية الآداب واللغات

قسم اللغة الانجليزية

الاسم واللقب: بن حمزة عبد الحق

العنوان: القلة برج بوعريريج

الرقم: 2025/

إلى السيد: مدير التضامن و النشاط الاجتماعي
- برج بوعريريج -

الموضوع : طلب ترخيص لإجراء تربص ميداني

يشرفني أن أتقدم لسيادتكم المحترمة بطلبي هذا، والمتمثل في طلب موافقتكم لأجل إجراء تربص ميداني بمؤسستكم: مدرسة الأطفال المعاقين بصريا برج بوعريريج

وأحيطكم علما أنني أقيم بلدية: القلة دائرة جعافرة

كما أعلمكم أنّ فترة التربّص تمتد من أفريل 2025 الى غاية ماي 2025

في اختصاص: تعليمية اللغات الأجنبية .

تقبلوا مني فائق التقدير والاحترام.

بتاريخ: 2025/04/15

المعني بالأمر

رأي و موافقة مدير المعهد

رئيس قسم اللغة الإنجليزية
بوزيدي منير

رئيس مصلحة الادارة العامة والوسائل
لهويبي مروان

1/1

الملخص

تتناول هذه الأطروحة التحديات التي يواجهها المتعلمون المكفوفون في تطوير مهارات الكتابة باللغة الإنجليزية باستخدام طريقة برايل في سياقات تعليم اللغة الإنجليزية كلغة أجنبية. وتهدف الدراسة إلى استكشاف العوائق المعرفية واللغوية والتقنية والاجتماعية والتربوية التي تؤثر على كفاءة الكتابة باستخدام برايل، واقتراح استراتيجيات فعّالة لتجاوز هذه التحديات. وقد تم اعتماد منهج بحثي متعدد الاساليب، يتضمن جمع البيانات النوعية والكمية، بما في ذلك مقابلات شبه مهيكلة مع ثلاثة معلمي لغة إنجليزية كلغة أجنبية، وملاحظات صفية، واستبيانات تم توزيعها على 18 متعلماً مكفوفاً في مدرسة المعاقين بصريا بولاية برج بوعريريج، الجزائر. ركزت هذه الدراسة على تجارب المتعلمين مع اختصارات برايل، والتنقل بين مستويات برايل المختلفة، وآليات الكتابة، بالإضافة إلى تصوراتهم حول الدافعية، والعزلة، وإمكانية الوصول إلى التقنيات المساعدة. كشفت النتائج أن المتعلمين يواجهون صعوبات كبيرة تتعلق بالتنسيق الحركي، والقواعد النحوية، وبنية الجملة، فضلاً عن النقص في توفر أدوات برايل المتقدمة. وعلى الرغم من استفادة المتعلمين من دعم الاساتذة وتفاعلهم مع أقرانهم، إلا أن غياب الموارد متعددة الحواس والتقنيات المساعدة يعيق تطورهم في الكتابة. ومع ذلك، حددت الدراسة ممارسات واعدة مثل التعليم المتدرج، والأساليب التدريسية متعددة الحواس، والتعاون بين الأقران كنهج فعّال لتعزيز تعليم الكتابة باللغة الإنجليزية باستخدام برايل. وتختتم الدراسة بتوصيات تدعو إلى تعزيز الدعم المؤسساتي، وتدريب المعلمين بشكل متخصص، ودمج التقنيات الميسرة من أجل تعزيز بيئة تعليمية شاملة ومنصفة للمتعلمين المكفوفين في سياق تعليم اللغة الإنجليزية كلغة أجنبية.

الكلمات المفتاحية: نظام البرايل، المتعلمون المكفوفون، الكتابة باللغة الانجليزية كلغة أجنبية، التكنولوجية المساعدة

*ملحق بالقرار رقم ....1082.... المؤرخ في ..... 27 ديسمبر 2020

الذي يحدد القواعد المتعلقة بالوقاية من السرقة العلمية ومكافحتها

1

الجمهورية الجزائرية الديمقراطية الشعبية

وزارة التعليم العالي والبحث العلمي

مؤسسة التعليم العالي والبحث العلمي: جامعة برج بوعريريج

نموذج التصريح الشرفي

الخاص بالالتزام بقواعد النزاهة العلمية لإنجاز بحث

أنا المعضي أسفله،

السيد(ة): بوجليدة هشام الصفة: طالب، أستاذ، باحث طالب

الحامل(ة) لبطاقة التعريف الوطنية رقم: 100465106 والصادرة بتاريخ 2016/04/07

المسجل(ة) بكلية / معهد الآداب واللغات الأجنبية قسم اللغة الانجليزية

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

عنوانها: Exploring Challenges Faced in Developing writing Skills using Braille Systems among Visually Impaired EFL Learners The case of Visually Impaired School-BBA.

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

التاريخ: 2025/06/28

توقيع المعني (ة)

*الملحق بالقرار رقم ....1082.... المؤرخ في 27 ديسمبر 2020

الذي يحدد القواعد المتعلقة بالوقاية من السرقة العلمية ومكافحتها

الجمهورية الجزائرية الديمقراطية الشعبية

وزارة التعليم العالي والبحث العلمي

مؤسسة التعليم العالي والبحث العلمي: جامعة 8 ماي 1945 قالمة

نموذج التصريح الشرفي

الخاص بالالتزام بقواعد النزاهة العلمية لإنجاز بحث

أنا الممضي أسفله،

السيد(ة): بن حميزي عبد الحق ..... الصفة: طالب، أستاذ، باحث ..... طالب .....

الحامل(ة) لبطاقة التعريف الوطنية رقم: 104196107 والصادرة بتاريخ: 23/01/05 .....

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

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

عنوانها: Exploring Challenges Faced in Developing Writing Skills using Braille System among Visually Impaired EFL Learners the case of Visually Impaired School-BBA.

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

التاريخ: 25/06/2025

توقيع المعني (ة)