Sinergi International Journal of Islamic Studies
E-ISSN: 2988-7445
Volume. 3, Issue 4, November 2025
Page No: 215-230

Development of Braille Codes for Qur'anic Literacy among Muslims with Blindness in Nigeria

Rasheed Adekunle Abilu[1], Jamal Abioye Adio[2], Akinbode P. Olaoye[3], Wasiu Ademola Jimoh[4], Aminullahi Adetoro Yusuff[5], Ibrahim A. Yeqeen[6], Abeeb A. Adewuyi[7], Fatimoh Adeola Adewoyin[8]
[1345678]Federal College of Education (Special), Oyo, Nigeria
[2]University of Ibadan, Nigeria
Correspondent: abilu.rasheed581@fcesoyo.edu.ng[1]

Received : September 20, 2025
Accepted : November 19, 2025
Published : November 30, 2025

Citation: Abilu, R.A., Adio, J.A., Olaoye, A.P., Jimoh, W.A., Yusuff, A.A., Yeqeen, I.A., Adewuyi, A.A., & Adewoyin, F.A., (2025). Development of Braille Codes for Qur'anic Literacy among Muslims with Blindness in Nigeria. Sinergi International Journal of Islamic Studies, 3(4),215-230.

https://doi.org/10.61194/ijis.v3i4.994

ABSTRACT: Access to the Qur'an in Braille formats for Muslims with blindness in Nigeria is limited due to the scarcity, high production cost, lack of basal reader, and uneven distribution of Braille copies. These constraints restrict opportunities for independent reading practice and affect the development of accurate tajweed application and sustained Qur'anic literacy among Muslims with blindness in Nigeria. This study developed Arabic Braille codes to enhance Qur'anic reading fluency among Muslims with blindness in Nigeria using a Design-Based Research (DBR) approach, which involves iterative development, expert validation, and field testing. The standard Arabic Braille alphabet was retained, while additional codes were developed for key recitation features, including elongation markers (al-madd), nasalization signs, and pause/stop signs. The codes were evaluated using a 24-item usability and accuracy instrument administered to 32 participants with blindness drawn from three specialized educational centers in Nigeria during a six-week guided reading intervention. Internal consistency reliability of the instrument yielded Cronbach's $\alpha = 0.82$. Inter-rater agreement on the accuracy of participants' transcriptions of selected symbols, assessed independently by five experts in Qur'anic studies and special education, produced $\varkappa = 0.85$. Qualitative feedback from participants and instructors indicated improved readability, learnability, and cultural acceptability of the codes. The findings suggest that the developed Braille code are viable for supporting Qur'anic literacy among Muslims with blindness. The study therefore recommends national adoption of the developed codes, large-scale production of Braille Qur'an using these standards, and the organization of Qur'anic Braille training workshops.

Keywords: Braille Codes, Blindness, Quran, Literacy, Muslims.

INTRODUCTION

The sense of sight is paramount for accessing print information. Individuals with blindness are unable to perceive visual information because their sense of sight is either diminished or totally lost due to

malformation, malfunction, or damage to the visual system. Consequently, persons with blindness require alternative modes of accessing printed materials, such as the Braille system, among others. Braille is a globally accepted medium for reading and writing among persons with blindness. It enables users to read by tactually perceiving raised dot patterns with their fingertips to decode symbols, thereby promoting literacy, access to information, and independence. Many languages across the world have Braille systems, including those with tonal and diacritical signs such as Arabic, French, and Yoruba (Abilu et al., 2025). The Braille system allows non-restrictive access to print information, supports the development of literacy skills, and places users on an equal footing in reading, writing, comprehension, and knowledge acquisition. Rafiu (2020) affirmed that the Braille system is the most effective and efficient mode of acquiring literacy skills by individuals with blindness.

Blind Muslims are therefore encouraged to learn and read the Glorious Qur'an in Braille, as it is a fundamental belief that Muslims across the world, regardless of tribe, origin, nationality, or disability, should be able to read the Qur'an in the Arabic language. Dahnil & Murah (2020), referencing *Surah 'Abasa*, noted that Allah emphasizes giving priority to poor, blind Muslims in acquiring religious knowledge over wealthy non-believers. Abdul-Raheem (2020) further posited that knowledge of the Arabic language is not only an obligatory requirement but a *sine qua non* for every mature and sane Muslim, with or without disabilities, to attain an in-depth understanding of Islam as both a religion and a way of life.

Although several versions of the Braille Qur'an, such as the Saudi, Qatar, and Malaysian editions, are currently in circulation, none fully represent all tonal marks and symbols found in the Qur'an and are not accompanied by teaching pedagogy. This limitation poses challenges in fulfilling the rules of Qur'anic recitation and writing, particularly for Nigerian Muslims with blindness who are non-Arabs. In addition, there is no Arabic basal reader designed to prepare individuals with blindness for lexical development and step-by-step pedagogy in Qur'anic reading and writing, as is available for sighted learners in Nigeria. These gaps make it difficult for Muslims with blindness to accurately read Qur'anic texts and fully comprehend their teachings. Supporting this assertion, Abilu et al. (2025) reported a severe dearth of Qur'anic reading materials for individuals with blindness in Nigeria and recommended the development of an appropriate basal reader to facilitate access to Qur'anic literacy.

The absence of an Arabic basal reader makes it extremely difficult, if not impossible, for blind learners in Nigeria to effectively access Islamic Studies and Arabic Language curricula at the primary and junior secondary school levels, where Qur'anic verses and quotations are required to be read and written (Abilu & Oladimeji, 2020). Notably, one of these subjects, Islamic Studies or Arabic Language, is compulsory for Muslim learners who wish to practice their faith legitimately, just as their sighted counterparts do. Moreover, Muslims who acquire blindness later in life require Qur'anic literacy to worship appropriately, maintain allegiance to Islamic injunctions, cope with the psychological challenges of blindness, and overcome depression that often accompanies visual loss. Abilu et al. (2025) emphasized that the Glorious Qur'an is the Book of Allah revealed to humanity to serve as a spiritual foundation, a source of moral guidance, and a regulator of Muslim conduct. For an inclusive society to thrive, individuals with blindness must be adequately supported socially, mentally, physically, and spiritually. Consequently, Muslims with blindness should be given equitable opportunities to learn the Glorious Qur'an through Arabic Braille. In response to this need, the present study develops

Qur'anic Braille codes that capture all tonal marks and symbols in the Qur'an for Nigerian Muslims with blindness (Martos et al., 2014).

Comparative Analysis of Recitation Features, Waqf Symbols, and Instructional Support in Selected Braille Qur'an Editions and the Proposed Nigerian Code

Feature / Symbol Category	Print Meaning	Saudi Edition	Kuwait Edition	South Africa Edition	Malaysia Edition	Proposed Nigerian Code (This Study)	Design Rationale / Pedagogical Contribution
Short vowels (ḥarakāt)	Basic vowel signs	Fully represented	Fully represented	Fully represented	Fully represented	Fully represented	Retained standard Arabic Braille conventions
Tanwīn	Nunation marks	Represented	Represented	Represented	Represented	Represented	Supports pronunciation accuracy
Shaddah	Consonant doubling	Represented	Represented	Represented	Represented	Represented	Maintains phonological integrity
Sukūn	Absence of vowel	Represented	Represented	Represented	Represented	Represented	Ensures syllabic clarity
Elongation (al-madd)	Vowel lengthening	Partial / simplified	Partial	Varies	Varies	Fully differentiated	Supports tajweed timing rules
Nasalization (ghunnah)	Nasal sound rules	Limited	Limited	Limited	Limited	Explicit representation	Assists non-native learners
Assimilation rules	Idghām, iẓhār, etc.	Not systematic	Not systematic	Not systematic	Not systematic	Selectively encoded	Enables rule-based learning
Mandatory stop (م)	Waqf Lāzim	Dot 256	—	Mīm (Dots 1-3-4)	Mīm (Dots 1-3-4)	Dot 36 + Mīm	Preserves original symbol + explicit stop
Permissible stop (ج)	Waqf Jā'iz	Dot 5	Dot 5	Jīm	Jīm	Dot 36 + Jīm	Aligns with printed

Feature / Symbol Category	**Print Meaning**	**Saudi Edition**	**Kuwait Edition**	**South Africa Edition**	**Malaysia Edition**	**Proposed Nigerian Code (This Study)**	**Design Rationale / Pedagogical Contribution**
							Qur'an symbol
Continue preferred (صلى)	Continue better	Dot 56	Dot 56	Ṣād-Lām-Yāʾ	Same	Dot 36 + Ṣād-Lām-Yāʾ	Full print representation
Stop preferred (قلى)	Stop better	Dot 256 + Dot 3	Dot 256 + Dot 3	—	—	Dot 36 + Qāf-Lām-Yāʾ	Exact print equivalence
Paired stop (∴)	Taʿānuq	Dot 36 (2 spaces)	Same	Same	Same	Same	Maintains established convention
Prohibited stop (لا)	Waqf Mamnuʿ	—	—	Dot 1236	—	Dot 36 + Dot 1236	Emphasizes prohibition
Saktah (سكتة)	Slight pause	Letter sequence	Sīn	Letter sequence	—	Dot 36 + Dot 234	Distinguishes pause vs stop
Sajdah sign	Prostration point	Represented	Represented	Represented	Represented	Represented	Retained for ritual guidance
Verse numbering	Navigation	Present	Present	Present	Present	Present	Text navigation
Instructional guide	Teaching support	Not included	Not included	Not included	Not included	Basal reader + teacher's guide	Step-by-step pedagogy
Adaptation for non-Arabic learners	Context suitability	Not specified	Not specified	Limited	Limited	Explicitly designed for Nigeria	Supports gradual acquisition

The table above provides a comprehensive comparative analysis of major Braille Qur'an editions and the proposed Nigerian code, demonstrating differences in the representation of recitation symbols, particularly waqf signs, and highlighting the instructional innovations introduced in this study.

Statement of the Problem

The Glorious Qur'an is a sacred book of Islam that Muslims study for guidance in belief and practice. It is written in Arabic and presented in print form using a complex system of orthographic and

recitation features. These include short vowel signs (ḥarakāt), consonant doubling (shaddah), elongation markers (al-madd), Qur'anic division signs, and pause/stop symbols (waqf signs), all of which support accurate pronunciation, rhythm, and tajweed recitation. Standard printed copies also preserve the canonical rasm (consonantal script) alongside these diacritical cues.

Muslims with blindness, whose sense of sight is diminished or lost, require an alternative medium such as Arabic Braille to access Qur'anic text through touch, as Braille remains the primary mode of literacy for persons with blindnes (Abilu & Olaoye, 2021)s. Access to the Qur'an depends on the accurate representation of these orthographic and recitation features in Braille. Although several Braille Qur'an editions, such as Saudi Arabia, Malaysia, Kuwait, and South Africa, provide Braille representations for many of these signs, some diacritical symbols and recitation indicators are simplified, inconsistently encoded, or omitted, and certain codes do not fully correspond to their print equivalents. These limitations may reduce the availability of cues that guide correct tajweed application and phrasing, potentially affecting reading accuracy and independent learning for non-native Arabic readers.

In Nigeria, where most Muslims learn Arabic Qur'an as a second language, limited access to Braille Qur'an materials due to high production costs and uneven distribution limits learning opportunities. Those who have available copies encounter challenges in applying recitation rules because of incomplete representation of key signs, such as elongation markers. Consequently, many Muslims with blindness rely heavily on oral recitation from sighted instructors, which may not be consistently available. In formal education settings, the absence of structured Braille instructional materials and pedagogical guides makes it difficult for teachers to effectively deliver Islamic Studies and Arabic curricula to learners with blindness (Willings, 2019). Similarly, out-of-school individuals with blindness often participate in Qur'anic lessons as listeners, depending on memorization without opportunities for independent reading practice. These challenges highlight the need for the development of context-appropriate Arabic Braille codes that will represent Qur'anic signs and symbols and support systematic instruction. Therefore, this study seeks to develop Arabic Braille codes for Qur'anic Literacy among Muslims with Blindness in Nigeria and to produce instructional materials based on the developed codes to facilitate effective teaching and learning of the Qur'an for persons with blindness in Nigeria.

Research Objectives

Objectives of the Study

The main objective of this study is to develop appropriate Arabic Braille codes to enhance Qur'anic literacy among persons with blindness in Nigeria. Specifically, the study seeks to:

- develop comprehensive Arabic Braille codes that accurately represent all Qur'anic signs, symbols, and tonal marks required for correct recitation (*Tajweed*);
- design and produce Qur'anic Braille reading materials using the developed codes for effective teaching and learning among persons with blindness;
- validate and field-test the developed Arabic Braille codes to determine their accuracy, usability, and reliability for Qur'anic reading; and

- generate practical recommendations for the adoption, large-scale production, and implementation of the developed Arabic Braille codes in Nigeria.

Literature Review

Braille is a medium of reading and writing for persons with visual impairments. It is a tactile system of raised six dots arranged in two (2) rows and three (3) columns, that enable persons with visual impairment to read using finger tips Demirdöven & Acar (2025). Arabic Braille prioritises literary braille codes to preserve phonetic integrity (Khalid & Mahmoud, 2019). Languages with diacritic signs including Arabic, are often confronted with inadequate representation; hence, there is the need for innovative representation of signs and symbols that are not adequately captured in the existing versions (Noornajihan et al., 2013). Mohd Zarif et al. (2014) recommended that Quranic Braille system must adhere with Rasm Uthmani orthography rules and avoid mistakes such as spelling errors, incorrect reading signs, separating one word into two different lines, inconsistencies in spelling Quranic words and inadequate representation of other reading signs.

Qur'anic literacy for Muslims with visual impairment using Quranic braille system facilitates fluency, comprehension, and retention, thereby surpassing rote memorization (Alfin et al., 2024). Basal readers provide scaffolding for progression from huruful hijaiyyah to words recognition and reading complete verses, which improve fluency in the reading of Quran, which is lacking in auditory approaches (Abilu et al., 2025). (Abilu et al., 2025; GAExcellence, 2024; Sari & Rahman, 2025) In their various experimental studies found that Arabic-Braille basal readers enhanced fluency mastery and independent reading of Quran by Muslims with blindness. (Umar, 2014). Talaqqi, or repetition, independent reading (iqra'), and hija'iyyah drills, which have been modified for Braille mushafs, represent effective pedagogical strategies, although resource limitations hinder widespread implementation (Noornajihan & others, 2021). Peer-led sessions and A-to-Z sequencing have demonstrated their efficacy within inclusive educational environments (Roslaili, 2025). While Nigerian initiatives, such as MAVIN's Braille Quran programs, have proven viable, they necessitate further expansion (MAVIN, 2024). Nigerian blind Muslims encounter difficulties arising from orthographic inconsistencies, inadequate training, and insufficient Arabic language skills, a situation exacerbated by the oral-centered approach prevalent in Qur'anic schools (Alfin et al., 2024; Babarinde, 2018). Moreover, global disparities, including the lack of nun wiqayah symbols, impede the adoption of integrated learning methodologies (Rasdi, 2023; Roslaili, 2025). Conversely, policy deficiencies impede production, contrasting with the progress achieved in regional tactile technologies (IQNA, 2023).

Conceptual Framework

The study adopted the existing Qur'anic braille alphabet, Arabic vowels, and develop some Arabic elongation signs (Al maddi) which are not represented in the existing braille Qur'an versions that often posed difficulties to readers with blindness in Nigeria. (A. Abualkishik & Omar, 2013) Similarly, Arabic stop signs and signs for the division of the Qur'an were modified to reflect the print version. The developed codes were used to design step-by-step pedagogical approaches in the form of a basal reader

(training manual) for learning Braille Qur'an by persons with blindness in Nigeria. Similarly, the codes was used to develop a teacher's guide that integrates both Braille and printed versions of the Qur'an to support instruction by regular teachers who may not be proficient in Braille. Writing and critique workshop was organized to ascertain the efficacy and appropriateness of the developed codes. The Codes were validated by experts in Special Education, Arabic Language, Islamic Studies department and visually impaired Muslims. It was also subjected to a reliability test to obtain a reliability index. Subsequently, the developed Arabic braille codes together with teachers' guide were used to train resource room attendants, Islamic Studies teachers, Arabic teachers, while training manual was used to train Muslims with blindness on Qur'anic literacy. Interviews and focus group discussions were carried out among the experts after the writing and critique workshop to ascertain the efficacy or otherwise of the instrument. The Juzu Amma (training Manual and teachers' guide) and complete Braille Qur'an were packaged following the recent development.

METHOD

This study employed a Design-Based Research (DBR) approach, also known as developmental research which is adequate for developing and testing educational innovations as it aligns with the iterative development, validation, implementation, and evaluation of instructional tools. DBR combines the design of instructional tools with empirical research, allowing for iterative refinement based on practical feedback and data analysis. This methodology was chosen to guide the development, validation, and implementation of Arabic-Braille codes and instructional materials aimed at improving Qur'anic literacy among persons with blindness in Nigeria.

The research commences with a needs assessment that identified gaps in existing Arabic Braille Qur'an versions, such as the incomplete representation of diacritic signs and symbols, elongation signs (*Al-Maddi*), inadequate representation of stop signs, and structural markers that align with the print version. In response, new Braille codes were developed, and two key resources were produced: a basal reader for learners with blindness and a teacher's guide for instructors who are not Braille literate.

These materials were validated through a writing and critique workshop held at the National Resource Centre for the disabled FCE(Special) Oyo, involving experts in Special Education, Arabic Language, and Islamic Studies and members of Muslim Association of the Visually Impaired in Nigeria. There and then, tools were developed, validated and evaluated for content accuracy, usability, and instructional value. Reliability testing was also conducted, with the reliability index of (Cronbach's Alpha = 0.82) and high inter-rater agreement (Cohen's Kappa = 0.85).

Subsequently, the materials were implemented in a training workshop held at the Federal College of Education (Special), Oyo. Teachers and learners were trained using the respective guides. After implementation, qualitative data were gathered through focus group discussions and interviews with experts to assess the tools' effectiveness and practicality. The iterative process of design, implementation, feedback, and refinement ensured that the final instructional materials were pedagogically sound, accessible, and contextually appropriate for blind Qur'anic learners in Nigeria.

Components of the Developed Braille Codes

The developed Braille Qur'an code adopted the existing alphabet to ensure uniformity. It introduced obvious improvements over the existing versions of the Braille Qur'an by comparing international editions, including the Saudi, Malaysian, Kuwaiti, and South African versions. One of the notable advancements is the development of the Arabic-Braille Basal Reader, an instructional tool designed to introduce learners to the foundational aspects of Qur'anic reading in Braille. The Arabic-Braille Basal Reader is a structured instructional material created to support beginners in learning Arabic Braille, specifically for Qur'anic studies. As a basal reader, it follows a leveled and sequential approach, introducing learners to Arabic letters, diacritical marks (Harakat), word combinations, special signs, and reading strategies in a gradual manner. The Basal Reader provides a step-by-step guide to Qur'anic reading, beginning with: Arabic alphabet, Harakat (vowel marks), Combination of letters, Special Arabic word signs, Elongation (Maddi) signs, Qur'anic stop signs, Qur'anic division signs and a complete rendering of *Juz Amma*.

ARABIC ALPHABET									
ا	ب	ت	ث	ج	ح	خ	د	ذ	ر
⠠	⠃	⠞	⠹	⠚	⠓	⠭	⠙	⠮	⠗
ز	س	ش	ص	ض	ط	ظ	ع	غ	ف
⠵	⠎	⠩	⠯	⠱	⠾	⠿	⠫	⠻	⠋
ق	ك	ل	م	ن	ه	و	لا	ء	ي
⠟	⠅	⠇	⠍	⠝	⠓	⠺	⠡	⠂	⠽

Arabic Alphabet

The existing Arabic braille alphabet was adopted to enhance universality in line with the ("The Unification and Development of Arabic Braille Font," 2002).

Special Arabic Alphabet 5

No	Special Arabic Alphabet ⠠⠎⠏⠑⠉⠊⠁⠇ ⠁⠇⠋⠁⠃⠑⠞ ⠠⠁⠗⠁⠃⠊⠉	Arabic Signs	Braille Dots
1.	Alif-hamzah	أ	⠠
2.	Hamzah-alif	ءا	⠂⠁
3.	Waaw-hamzah	ؤ	⠸
4.	Yaah-alif	ى	⠼
5.	Yaah-hamzah	ئ	⠿
6.	Taah-maributoh	ة	⠾
7.	Haa-maributoh	ه	⠓

Some special Arabic alphabet some codes were adopted while some were developed for example **Sukoon sifru** and Haahu Maributoh. The **Sukoon Sifru**, or circular Sukoon, differs from the standard Sukoon mark and is not represented in the existing Braille Qur'an versions. The developed code addresses this omission by assigning **dot 1,4** to represent the circular Sukoon, thereby enhancing the

fidelity of Qur'anic Braille transcription. Similarly, Taah-maributoh was represented with **dot 1,6** in the existing version while Haa-maributoh is represented with **dot 5** in the developed code.

Arabic Vowels

	ARABIC VOWEL	ARABIC SIGNS	BRAILLE DOTS
1	**Fat'hah**	◌َ	⠠
2	**Kasrah**	◌ِ	⠐
3	**Dommah**	◌ُ	⠸
4	**Sukun**	◌ْ	⠤
5	**Shaddah**	◌ّ	⠂
6	**Fat'hataani**	◌ً	⠰
7	**Kasrataani**	◌ٍ	⠢
8	**Dommataani**	◌ٌ	⠲
9	**Fat'hah alif-maddi**	اَ	⠄ ⠁
10	**Kasrah yaah-madd**	◌ِي	⠈ ⠌
11	**Dommah waaw-maddi**	◌ُو	⠸ ⠴

Arabic Elongation Signs (Al Maddi)

The Maddi signs are categorized into Primary Maddi (e.g., *Maddi Tobi'inyu*) and Secondary Maddi, which includes: *Maddi Lazim, Maddi Wajib, Maddi Jaiz, Maddi Muttasil and Maddi Munfasil.*

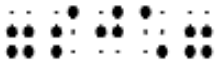
Most existing Braille Qur'an versions represent only the primary Maddi signs. However, the newly developed Nigerian code incorporates both primary and secondary Maddi, using a combination of **dot 3,4 followed by dot 1** for the secondary maddi. These signs are applied in a way that reflects their actual phonetic and grammatical functions in Qur'anic recitation.

	Arabic elongation signs (almaddi)	ARABIC SIGNS	BRAILLE DOTS
1.	**Maaddi tobiinyyu**	أ ي و	⠄ ⠁ ⠈ ⠌ ⠸ ⠴
2.	**Maaddi jaaiz**	◌ٓ	⠨ ⠁
3.	**Maaddi wajib**	آ	⠨ ⠁
4.	**Miimu Iqlab/miimu kubro**	م	⠶ ⠴
5.	**Waaun suguro**	و	⠸
6.	**Maddi Siila**	ه	⠴

Tajweed Signs – Meem Iqlab (Small Meem)

Tajweed rules, especially Meem Iqlab, are often neglected in existing Braille Qur'an versions (Sulaiman et al., 2015). The small Meem, which is crucial for accurate Tajweed, has now been incorporated into the Nigerian Braille system. It is represented using dots 3,6 followed by 2,3,5, ensuring that learners

can correctly apply the rule during recitation. The small waaun suguro is represented with dot 3,4,6. The maddi sila is represented with dots 4,5.

	ARABIC STOP SIGNS (Alamatul-waqfi) Arabic stop signs 7'alamatul-waqfi7	**ARABIC SIGNS**	**BRAILLE DOTS**
1.	where it is compulsory to stop	◌ۜ	
2.	where it is not compulsory to stop	◌ۚ	
3.	where it is good to stop or to pause but you may not if you wish	◌ۛ	
4.	where you are allowed to stop or pause but it is good if you don't.	◌ۖ	
5.	where it is expected to stop.	◌ۗ	
6.	where, if you pause on the first double dot (ۜ) it is not permissible to pause on the second.	◌ۜ ◌ۜ	
7.	where you take a slight pause without breathing.	◌ۙ	
8.	sign of prostration (Alaamotus-sujuud tilaawat)	◌۩ السجدة	

Stop Signs

In existing Braille Qur'an versions, stop signs are inconsistently or inaccurately represented. For instance, dot 256 (typically a full stop in standard Braille) is used to represent *Lam-Alif*, which actually signifies 'do not stop'. In the Malaysian version, dot 5 is used for *Jim*, and dot 56 for *Sad-Lam-Ya* (Kuwaiti version), these deviate from the letter in the printed version. The developed Braille code rectifies this by using dot 5,6 in combination with the corresponding Arabic letter (A. M. Abualkishik & Omar, 2009). This representation ensures small letters to indicate specific stop signs, ensuring greater accuracy and consistency with the original Qur'anic script.

Signs of the Division of the Qur'an

The signs of the division of the Qur'an is represented below.

	SIGNS OF DIVISION OF THE QUR'AN (ALAAMOTU-AJZAAH) ⠠⠎⠊⠛⠝⠎ ⠕⠋ ⠞⠓⠑ ⠟⠥⠗⠠⠁⠝ ⠠⠁⠇⠁⠍⠕⠞⠥ ⠠⠚⠵⠁⠁⠓	**ARABIC SIGNS**	**BRAILLE DOTS**
1.	One quarter of hizbu	○ ربع	
2.	Half of hizbu	○ نصف	

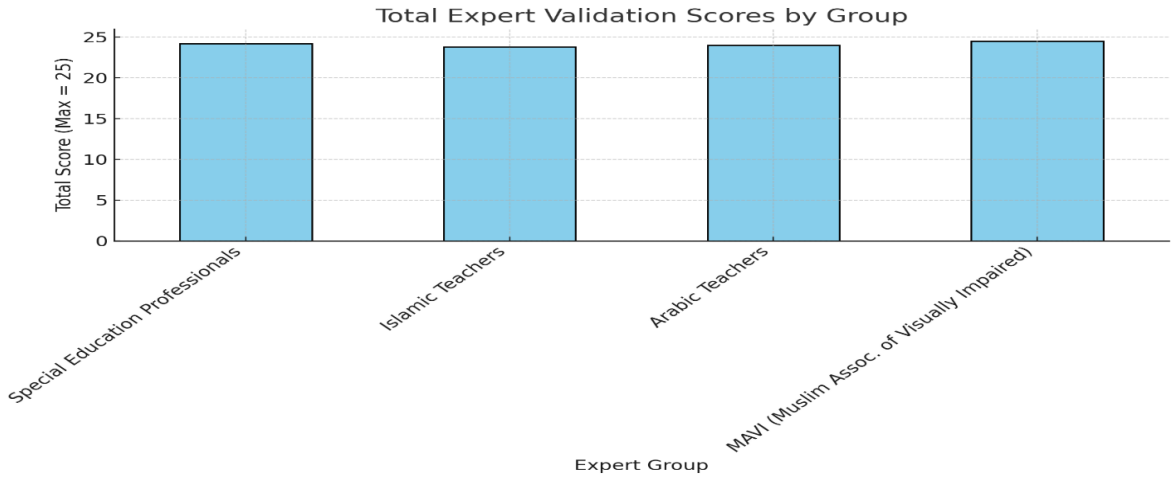
	SIGNS OF DIVISION OF THE QUR'AN (ALAAMOTU-AJZAAH)	ARABIC SIGNS	BRAILLE DOTS
3.	Three quarter of hizbu	ثلاثة ○	⠒⠇
4.	Half of Jizu	حزب	⠒⠓⠵⠃
5.	One of thirty part of Qur'an	جزء	⠒⠚⠵⠄

Results and Discussion of Findings

Expert Validation of Arabic-Braille Instructional Materials

The table and chart below present the results of expert validation involving four distinct groups: Special Education Professionals, Islamic Teachers, Arabic Teachers, and members of the Muslim Association of the Visually Impaired in Nigeria (MAVIN). Each group consisted of 10 experts who evaluated the instructional materials based on five criteria: Relevance of Content, Accuracy of Arabic Braille Codes, Instructional Clarity, Cultural & Religious Appropriateness, and Usability for Teachers & Learners. Each criterion was rated on a 5-point Likert scale, where 1 = Strongly Disagree and 5 = Strongly Agree.

Expert Group	Relevance of Content	Accuracy of Braille Codes	Instructional Clarity	Cultural & Religious Appropriateness	Usability for Teachers & Learners	Total Score (Out of 25)
Special Education Professionals	4.9	4.8	4.9	4.7	4.9	24.2
Islamic Teachers	4.8	4.7	4.8	4.9	4.6	23.8
Arabic Teachers	4.9	4.9	4.7	4.8	4.7	24.0
MAVIN (Muslim Assoc. of Visually Impaired in Nigeria)	5.0	4.9	4.8	4.9	4.9	24.5



Interpretation of the Data

All four expert groups provided highly positive evaluations, with mean scores ranging from 23.8 to 24.5 out of a possible 25 points. The overall mean score across all experts was 24.13 (SD = 0.29), indicating a high level of agreement with limited variability in ratings. For the purpose of this study, a mean score of 20 (80%) and above on the 5-point Likert-type validation instrument was predetermined as the threshold for acceptable content adequacy and instructional suitability. The overall mean therefore corresponds to a 96.5% rating relative to the maximum obtainable score, indicating that the materials were judged by experts to be highly appropriate in terms of content coverage, clarity, usability, and cultural relevance. These expert evaluations provide evidence of perceived content adequacy and contextual appropriateness of the developed materials; however, they are interpreted as indicators of expert acceptability rather than objective measures of linguistic effectiveness or learner performance.

Special Education Professionals

This group gave strong ratings across all criteria, especially for instructional clarity (4.9) and usability (4.9), confirming that the materials are pedagogically sound and accessible for learners with visual impairment. Their slightly lower rating for cultural appropriateness (4.7) suggests a call for closer alignment with Qur'anic traditions across different Nigerian contexts.

Islamic Teachers

Islamic education experts rated the materials highest in cultural and religious appropriateness (4.9), indicating confidence in the theological alignment of the Braille Qur'an with traditional Islamic teachings. Their slightly lower rating in usability (4.6) may reflect a need for additional guidance or training for teachers unfamiliar with Braille.

Arabic Teachers

Arabic teachers gave a balanced and uniformly high score profile, with a peak in accuracy of Arabic Braille codes (4.9). Their endorsement reinforces the linguistic credibility of the Braille codes and script adaptations. A slightly lower rating on instructional clarity (4.7) may suggest they perceived a learning curve for first-time users.

Muslim Association of the Visually Impaired In Nigeria (MAVIN)

MAVIN provided the highest overall rating (24.5), including a perfect score for relevance of content (5.0). This strongly validates the materials' utility and importance from the perspective of the actual end users. Their high scores across all dimensions confirm that the materials are both accessible and empowering for the target population.

RESULT AND DISCUSSION

To complement expert validation scores, focus group discussions were conducted with four expert groups: Special Education Professionals, Arabic Teachers, Islamic Teachers, and representatives from the Muslim Association of the Visually Impaired in Nigeria (MAVIN). Each group provided plausible information on the relevance and needs for braille Qur'anic codes, effectiveness, and cultural appropriateness of the newly developed Arabic Braille codes and accompanying instructional design and clarity. Their contributions shed light on the appropriateness of the developed basal reader and the training manual. Qualitative analysis of participants' responses indicated strong agreement regarding the relevance and timeliness of developing localized Arabic Braille codes. This conclusion was based on thematic coding of interview transcripts, in which all participant groups referenced the need for context-appropriate Braille representations for Qur'anic learning. Special Education professionals highlighted that the initiative addresses an identified gap in inclusive religious education, while Arabic and Islamic Studies teachers emphasized its potential to improve accuracy and consistency in Qur'anic recitation among learners with blindness. Across the coded responses, the theme of "instructional necessity" appeared in the majority of submissions, indicating broad consensus rather than absolute unanimity.

Representatives of the Muslim Association of the Visually Impaired of Nigeria (MAVIN) described the materials as potentially facilitating more independent engagement with Qur'anic reading and writing, based on their experiences with limited accessible resources. These views are consistent with prior findings reported by Abilu et al. (2025), which indicated that an Arabic Braille basal reader improved recitation proficiency among Muslims with blindness in Nigeria. Arabic language teachers also commended the precision of the developed codes, particularly the inclusion of elongation markers (al-madd), pause/stop signs (waqf), and structural divisions that are not consistently represented in some existing Braille editions. Islamic Studies teachers noted alignment with established tajweed conventions, while MAVIN participants reported perceived improvements in readability and comprehension attributable to the explicit representation of phonetic markers.

Also, all four groups agreed that the basal reader and teacher's guide were well-structured and accessible. Special Education professionals rated high the step-by-step design, which allowed learners to gradually build fluency and comprehension skills. Arabic and Islamic teachers described the materials as pedagogically sound. MAVIN participants found the instructional layout intuitive and appreciated the simplicity and logical progression of each lesson. Similarly, in terms of cultural and religious alignment, all participants affirmed that the materials reflected Islamic principles and honored the sanctity of Qur'anic instruction. Islamic teachers, in particular, were confident in the theological correctness of the representations, while MAVIN participants expressed a deep sense of spiritual empowerment and inclusion through access to Braille Qur'an. When discussing teacher usability, Arabic and Islamic teachers acknowledged that while the teacher's guide was comprehensive, and can be easily be use without the knowledge of braille reading and writing. Special Education experts recommended a "train-the-trainers" model to build capacity among Qur'anic teachers and resource room staff. MAVIN also encouraged grassroots collaboration with mosques and Islamic centers for broader outreach.

CONCLUSION

This study reveals the adequacy and relevance of the newly developed Arabic Braille codes in enhancing Qur'anic literacy among Muslims with blindness in Nigeria. Both the training manual and teacher's guide received high ratings from experts and stakeholders across various disciplines, confirming their effectiveness and appropriateness for teaching and learning the Qur'an among Muslims with blindness in Nigeria. The instructional materials not only filled lacunae in existing Braille Qur'anic versions for non-Arabic speakers in Nigeria but also introduced a pedagogically sound, step-by-step approach that promotes literacy, comprehension, and proper Qur'anic recitation. The sample sizes were relatively small and drawn from a limited geographical area of Oyo State, which may restrict representativeness and generalizability to other regions of Nigeria or different educational contexts. In addition, the evaluation relied mainly on expert judgments and participant perceptions without objective performance measures such as standardized reading accuracy or tajweed error rates. The intervention was acknowledged as a landmark achievement by experts and stakeholders in the field of inclusive practices as it aligns with both Braille-literate and non-Braille-literate teachers. The positive reception of the materials signals a transformative potential for expanding religious education to previously underserved learners, thereby enhancing equity, autonomy, and spiritual inclusion among blind Muslims in Nigeria**.**

REFERENCES

Abdul-Raheem, A. L. (2020). Some Theoretical and Factual Propositions in Language as Contained in the Glorious Qur'an: A Critical Linguistic Exploration. In M. M. Jimba, M. A. Adedimeji, M. A. Lawal, & M. S. Abdullahi (Eds.), *Language, Education and Religion for National Development* (pp. 20–32).

Abilu, & Olaoye. (2021). *Technological Alternatives for Repositioning Special Needs Education in the Post COVID-19 Era*. Glory Land Publishing Company.

Abilu, R. A., Jimoh, W. A., Yeqeen, I. A., Aminullahi, A. Y., & Olaoye, A. P. (2025). Effects of Arabic-Braille Basal Reader on Qur'anic Reading Among Persons with Blindness in Katsina State, Nigeria. *Indiana Journal of Humanities and Social Sciences*, *6*(7), 87–92. https://doi.org/10.5281/zenodo.16377427

Abilu, R. A., & Oladimeji, M. A. (2020). Meeting the Core and Expanded Curriculum Needs of Students with Visual Impairment in Nigeria. In K. O. Usman, M. A. Abimbola, S. O. Agbato, & S. J. Ogunkunle (Eds.), *Achieving Sustainable Development in Nigeria through Innovation, Creativity and Entrepreneurial Education*. Peerless Grace Prints and Publishing. https://doi.org/10.5923/J.LIBRARY.20170603.03

Abualkishik, A. M., & Omar, K. (2009). Quran vibrations in braille code. *Proceedings of the 2009 International Conference on Electrical Engineering and Informatics, ICEEI 2009*, *1*, 12–17. https://doi.org/10.1109/ICEEI.2009.5254826

Abualkishik, A., & Omar, K. (2013). Framework for translating the Holy Quran and its reciting rules to Braille code. *International Conference on Research and Innovation in Information Systems, ICRIIS*, 380–385. https://doi.org/10.1109/ICRIIS.2013.6716740

Alfin, R. J., Umar, F. H., Guar, F., Eseigbe, P., & Lengmang, S. (2024). Low Vision among Students Attending Schools for Blind Students in Two States of North-Central Nigeria. *Journal of Visual Impairment & Blindness*. https://doi.org/10.1177/0145482X241289871

Babarinde, O. (2018). Writing and Reading Skills of the Blind as an Aspect of Language Testing. *Journal of Language and Linguistics*, *2*(1), 45–56. https://jolan.com.ng/index.php/home/article/view/181

Dahnil, D. M. N., & Murah. (2020). *The Fundamental of Al-Qur'an Braille in Rasm Uthmani*. 19–22. https://doi.org/10.1109/IC3e50159.2020.9288429

Demirdöven, B., & Acar, Ö. (2025). The Tactile Journey of Writing: Experiences of Individuals with Visual Impairments in Using Braille. *Semantic Scholar*. https://doi.org/10.46778/goputeb.1667160

GAExcellence. (2024). Effectiveness of "Abahata" Method for the Visually Impaired in Quran Braille. *International Journal of Multidisciplinary Outreach Excellence*. https://gaexcellence.com/ijmoe/article/download/481/398/1347

IQNA. (2023). *Nouakchott Blind Association: A Place for Visually-Impaired to Learn Quran*. https://iqna.ir/en/news/3483750

Khalid, M., & Mahmoud, S. (2019). *Quranic Braille Translator Framework (QBT)* (Number LP-FTSM-2019-004). https://www.ftsm.ukm.my/v5/file/research/technicalreport/LP-FTSM-2019-004.pdf

Martos, A., Kouroupetroglou, G., Argyropoulos, V., & Deligiorgi, D. (2014). Towards the 8-dot Nemeth Braille code. *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, *8547 LNCS*(PART 1), 533–536. https://doi.org/10.1007/978-3-319-08596-8_83

MAVIN. (2024). *Visually Impaired Muslims' Association Graduates Six Blind Qur'an Learners*. https://tribuneonlineng.com/visually-impaired-muslims-association-graduates-six-blind-quran-learners/

Mohd Zarif, M. M., Noornajihan, J., & Abdullah, M. N. (2014). Towards an Uthmanic Model of Quranic Orthography in Braille. *Global Journal Al-Thaqafah*, *4*(1), 41–48. https://doi.org/10.7187/GJAT532014.04.01

Noornajihan, J., Mohd Zarif, M. M., & Rosdi, M. N. A. (2013). The Teaching of Quranic Braille: Its Issues and Current Challenges. *International Journal on Quranic Research*, *4*(1), 1–14.

Noornajihan, J., & others. (2021). Analysis on Teaching and Learning of Vision Impairment Using Braille Quranic Mushaf. *Journal of Quranic Studies*. https://jqss.usim.edu.my/index.php/jqss/article/view/134

Rafiu, T. G. (2020). Teaching Braille Reading and Writing Skills to Learners with Visual Impairment. In R. A. Abilu (Ed.), *Educating Learners with Visual Impairment: A Holistic Approach* (pp. 85–93). Dele Odedele Press and Publishers.

Rasdi, M. N. A. (2023). Arising Issues due to the Inconsistency between the Pertis Braille Quran Mushaf and Mushaf al-Madinah. *Global Business and Management Research*, *16*(2s), 61–72. http://gbmrjournal.com/pdf/v16n2s/V16N2s-61.pdf

Roslaili, Y. (2025). Accessibility and Effectiveness of Qur'anic Braille Instruction for Blind Students: A Case Study at Bukesra. *Jurnal Ilmiah Al-Mu'ashirah*. https://doi.org/10.22373/jim.v22i1.28652

Sari, N., & Rahman, A. (2025). Inclusive Learning Strategy Based on Braille Modules: Case Study of Tahfidz Classes for Blind Students in Indonesia. *Cogent Education*. https://doi.org/10.1080/23312521.2025.2531811

Sulaiman, S., Rambli, D. R. A., & Zuki, F. S. M. (2015). Putting the tactile feedback to Quranic verses and tajweed rules. *ARPN Journal of Engineering and Applied Sciences*, *10*(23), 17996–18003. https://www.scopus.com/inward/record.uri?eid=2-s2.0-84953432256&partnerID=40&md5=df6e30f6df494af1501b0da9bb099bfb

The Unification and Development of Arabic Braille Font. (2002). *Conference Proceedings Held in Riyadh between 7th and 10th October 2002*. http://liblouis.io/braille-specs/arabic/

Willings, C. (2019). *Braille Instruction for Students who are Blind or Visually Impaired*. http://www.teachingvisuallyimpaired.com/