Ajami-based Orthography Innovation for English Pronunciation Teaching: A Second-Phase Pilot Study

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Abstract

This study investigates the effectiveness of an Arabic-based ajami script as a pedagogical tool for teaching English pronunciation to adult Hausa and Kanuri learners who are literate in Arabic through intensive learning of the holy Qur'an and other Islamic theology texts. Building on a prior pilot study, this second-phase implementation involved learners from two proficiency levels at the Centre for Research in Qur'anic Studies, Yobe State University. Using a pre- and post-instruction design, the study evaluated learners' production of selected English consonants and vowels represented through adapted ajami orthography. Findings indicate that consonant acquisition was generally successful, particularly where stable sound-symbol correspondences were established. Vowel production was, to some extent, successful; however, it required iterative refinement of orthographic representations due to mismatches between Arabic phonological structures and English vowel complexity. The study demonstrates that ajami can significantly reduce orthographic ambiguity and support pronunciation learning, provided that systematic modifications and pedagogical scaffolding are applied. The findings contribute to discussions on orthographic innovation, cross-linguistic transfer, and literacy-based approaches to second language phonology.

Keywords: ajami, English pronunciation, cross-linguistic transfer, orthography

Introduction

This research reports on further piloting of an English pronunciation script developed using Arabic orthography, a system popularly known as *Ajami* – transliteration of English words by means of using Arabic scripts. This has been in use for centuries in Nigeria and other African and Asian countries. A preliminary investigation into the efficacy of using the Arabic-based *ajami*-script in teaching English pronunciation to Kanuri and Hausa L2 English learners in Damaturu was carried out and published in issue1/2 of volume 28 of the Journal of the Linguistic Association of Nigeria in December 2025 (see Muhammad-

Gombe & Gbeyonron, 2025). Educational demands often motivate the development of writing systems and adaptation as practical solutions for effective teaching and learning (Fishman, 1974; Coulmas, 2003; Grenoble & Whaley, 2006). In line with this perspective, the aim of the present study is to further pilot the ajamised material developed from Arabic script to determine how its usage improves and promotes learners' pronunciation. It is a continuation of the previous study, targeting specific learners of the English language at the Centre for Research in Qur'anic Studies of the Yobe State University, Damaturu, Nigeria. The learners involved in the study, who are mainly L1 Kanuri and Hausa speakers, had previously undergone Qur'anic studies through the Tsangaya system of education. Yahya (2018) notes that the system historically dominated much of northern Nigeria (see Aliyu & Umar, 2019; Fafunwa, 1977; Hoechner, 2013 for further details on the development of Tsangaya education in the region). It is important to note that the system originated from the Kanem-Borno Kingdom, encompassing present-day Borno and Yobe States as well as parts of Chad, Cameroon, and Niger Republic, before spreading further across other regions of northern Nigeria (Bukar & Mangari, 2020; Gazali, 2020; Jungudo & Ani, 2014).

It is quite a common norm to ajamise every language, using Arabic script, as evident in Iraq and Syria where Arabic language script is used to communicate in writing in Kurdish (Adamu, 2004). Many languages, including Hausa, have undergone ajamisation to serve as a means of written communication, transmitting messages, record-keeping, and documentation (Adamu, 2004; Bosso, 2010; Newman, 2000; Yalwa, 2013). Muhammad-Gombe & Gbeyonron (2025) argue that an *ajamised* English as an emerging system of writing English will help adult learners of English language that have knowledge of the Arabic script to learn English very fast. In addition, it will serve as a tool for checking the challenges generated by morphophonemic orthography in English.

Initial comparative analysis of English, Arabic, Hausa and Kanuri languages revealed that six English consonant phonemes /p; v; ʧ; ʒ; ŋ; ɹ/ are lacking in Arabic, while other six English consonants are also lacking in Hausa and Kanuri /θ, ð, v, ʒ, ŋ, ɹ/, although Kanuri is said to have a slightly similar velar nasal. In terms of vowel phonemes, English is the richest (with 20 vowels) compared to all the three languages. While both Arabic and Kanuri have only a set of six vowel phonemes, Hausa has a set of twelve vowel inventory, comprising five short monophthongs five long monophthongs and 2 diphthongs. All three English central vowels are missing in both Arabic and Hausa, while Kanuri has schwa vowel only (see Bulakarima & Shettima, 2012; Newman, 2000; Muhammad-Gombe & Gbeyonron, 2025) for further details).

English vowel sounds /e/, /ʌ/, /ɜ:/, /ə/, /ei/, /ɑʊ/, /iə/, /eə/, and /ʊə/ appear not to have their equivalents in the normal Arabic script. This has in a sense created some challenges in the *ajamisation* project (Muhammad-Gombe & Gbeyonron, 2025, 76). This is due to the absence of their phonetic equivalent in Arabic. The absence of normal Arabic equivalent of the English consonant sounds: /p/, /v/, /ʧ/, /ŋ/ and /ʒ/ and the English vowels /e/, /ʌ/, /ɜ:/, /ə/, /ei/, /ɑʊ/, /iə/, /eə/, and /ʊə/

created some challenges in the process of ajami development. However, Muhammad-Gombe & Gbeyonron argue that challenges could be surmountable through script modification of the existing Arabic script to align and represent the sounds in question.

In the first pilot, the learners were drawn from the same group and their number was limited, while the current one adopted the use of two different levels of learners at the Centre for Research in Qur'anic Studies, Yobe State University, Damaturu. The procedure used in the first pilot is summarized below. Data from the pilot study were analysed descriptively by comparing participants' pre-instruction and post-instruction performance. Pre-instruction attempts, based on intuitive guessing from Arabic phonetic logic, were compared to post-instruction outcomes after exposure to ajamised and Roman-script words. Accuracy rates were calculated as percentages, and differences were interpreted in relation to phoneme-specific challenges (Muhammad-Gombe & Gbeyonron, 2025, p. 75). The procedure employed in the current piloting is provided in the methodology section below.

Tables 1, 2 and 3 summarise the proposed Arabic scripts and their English phonemic counterparts intended for English ajami development, as captured in Muhammad-Gombe & Gbeyonron (2025).

Table 1. English monophthongs with Arabic script as a pronunciation guide for Kanuri and Hausa Adult Learners of English in Damaturu, Nigeria.

/ɪ/	/ʊ/	/e/	/ə/	/ʌ/	/ɒ/	/æ/	/iː/	/uː/	/ɜː/	/ɔː/	/ɑː/
إ	أ	إَ	أ	أ	وُ	اَ	إي	أُو	إر	أواً	آ

Adapted from (Muhammad-Gombe & Gbeyonron, 2025)

Table 2. English Diphthongs with Arabic Script as a pronunciation guide for Kanuri and Hausa Adult Learners of English in Damaturu, Nigeria.

/ɪə/	/ʊə/	/eə/	/ɑɪ/	/eɪ/	/ɔɪ/	/ɑʊ/	/əʊ/
إي	وٗاَ	إيَ	آي	إي	وأيُ	أو	/أو /

Table 3. English consonants with Arabic script as a pronunciation guide for Kanuri and Hausa Adult Learners of English in Damaturu, Nigeria.

/p/ پ	/b/ ب	/t/ ت	/d/ د	/k/ ك	/g/ ڭ				
/f/ ف	/v/ ڤ	/θ/ ث	/ð/ ذ	/s/ س	/z/ ز	/ʃ/ ش	/ʒ/ ژ	/h/ ح	/tʃ/ تش
/dʒ/ ج	/m/	/n/ ن	/ŋ/ نْ	/l/ ل	/w/ و	/ɾ/ ر ّ	/j/ ي		

This study is guided by two research questions:

i. Is transliteration of English words using Arabic transcript efficient and supportive towards improving the learners – with Arabic script background – performance in English pronunciation? If so,

ii. Are there any performance differences between the learners' pronunciation of English words when presented in Roman orthography and those when presented in Arabic scripts?

2. Theoretical framework

The current research is positioned within blended theories of cross-linguistic influence/language transfer theory (Odlin, 1989), L2 status factor hypothesis (Bardel & Falk, 2007), and typological primacy model (Rothman, 2011). Proponents of cross-linguistic influence theory argue that a target language can be influenced by several languages previously learned by a multilingual speaker, including several factors such as borrowing, avoidance, transfer, interference, and overgeneralization across phonological, morphological and syntactic structures available to the learner. Bardel and Falk (2007), the proponents of the L2 status factor hypothesis, opine that a third language learner may be more influenced by their previously learned second language than on their first language. Rothman (2011), the proponent of typological primacy theory, opines that the degree of typological similarity determines the source of influence over the target language; structures of any previously learned language (either L1 or L2) that are most similar to that of the target language are transferred into the target language. As all these theories emphasise the influence of previously learned languages over a target language, they are suitable to guide the present study. Given that Arabic is not an L1 to any of the research participants, and that it was only learned after acquiring the L1 through the Tsangaya system, the research is positioned within the right linguistic theories.

3. Methodology

The research employee reading of a set of the English language word list, deliberately selected to test certain English consonant and vowel segments. A total of 22 native speakers of Kanuri and Hausa were recruited from Centre for Research in Qur'anic Studies, Yobe State University, Damaturu, Yobe State. All participants were adults aged between 18 and 30, with several years of instruction in Arabic language.

Sampling technique

A purposive sampling strategy was utilised to ensure that participants had similar educational backgrounds and could read aloud in English. This sampling method ensured access to participants who had already received Arabic literacy through Islamic religious books such as the holy Qur'an and Hadith (words of the holy Prophet Muhammad peace be upon him).

Data Collection Procedure

Reading Task: Participants were asked to read two sets of the word list (list 1: 21 words & list 2: 45 words) comprising the target English consonants and vowels. The list was designed to include all monophthongal and diphthongal vowels of English, with a focus on the vowel length distinction.

Following the reading task, the researchers observed how the proposed/developed material was accepted at the piloting stage. The participants were engaged in negotiating the articulation of certain symbols, mainly vowel letters. This allowed for the observation of naturalistic vowel usage outside the influence of written prompts.

Word list: week 1

/Should, within, mother, thank, too much, I am fine, my bed, card, seat, mouth, boy, lose, sought, not, phone, enough, tough, laugh, mathematics, six, box/

A list of 21 English words written in Roman and ajami forms presented to the learners.

Should	شُد	Too much	تُومَتش	seat	سِيت	sought	سُوآت	Tough	تَاف
Within	وذِن	I am fine	آی أم فَاين	mouth	ماوث	not	نُوآت	Laugh	لَاف
Mother	مَذَ	My bed	مَای ب.د	boy	بُوأی	phone	فَون	Mathematics	مَاثِماتِكس
Thank	ثَنك	card	كَآد	lose	لُوز	enough	إنَف	Six	سِكس
Box	بُوأكس								

The following list of 45 words was presented to the learners in two stages: (1) in normal Roman spelling and (2) in ajamised form. The words were initially presented to the learners in Roman spelling forms, while the learners were asked to pronounce them or read them aloud. The realisations were recorded and transcribed. In the second stage, ajamised forms of the words were presented, and learners were again asked to read them aloud.

Word list: week 2

/hot, not, book, foot, cup, fun, head, bed, face, say, weight, price, time, night, mouth, cow, go, so, show, sought, saw, law, talk, car, park, half, school, moon, tool, key, seat, meat, near, hear, bear, square, fair, care, cure, pure, sure, learn, bird, word, her/

حoت	ن o ت	بُك	فُت	كَپ	فَن	ح. د	ب. د	ف.يس	س.ي
و.يت	پرَاپس	تاپِم	ماوُث	كاو	غوْ	سوْ	سõت	س õ	ل õ
و.يت	تõك	كآ	پآك	حآف	سكُول	مُون	تُول	تُول	كِي
سِت	مِيت	نِيَ	حِيَ	بِيَ	سكو.يَ	ب.يس	كِيَ	كَوَ	پُوَ
شُوَ	لنّ	بدّ	ودّ	حآ					
د Oغ	ل Oت	شُود	فُت						

As reported in the first pilot study (Muhammad-Gombe & Gbeyonron, 2025), the researchers recruited adult Hausa and Kanuri learners of English who had earlier received Arabic literacy through extensive Qur'anic and other Islamic theology texts.

These participants were students of years 1 and 2 of the Centre for Research in Qur'anic Studies, Yobe State University, Damaturu. First, participants were asked to read aloud a word list written in English roman script, and this was followed by presentation of similar word lists but written in Arabic script. Their pronunciation while reading was recorded for subsequent assessment. Upon careful assessment, the researchers observed and identified some differences between their pronunciations of the sets of word list written in two different scripts.

Learners were given a pre-test where, they were asked to pronounce the English words written in Roman script. Each utterance was recorded and marked/assessed in respect of the expected accuracy. The ajamised English words were presented to the participants, and the pronunciation of the words was elicited from them at the onset of an English lesson. The researchers piloting the material confirm the correct pronunciations, correct the incorrect ones and record their performances in the task. Their performance in guessing or attempting to pronounce the ajamised words even before the teaching began were recorded. This was compared with the result of the post-test where they were asked to pronounce the English words written in Roman script.

Recording Setup

All recordings were made in their lesson classes using a Zoom H4n digital audio recorder with an external lapel microphone, capturing high-quality 44.1 kHz, 16-bit audio.

Transcription and Data Preparation

Recordings were transcribed phonetically using narrow IPA transcription. Particular attention was paid to vowel qualities and durations, especially in contexts of known L1 interference (e.g., the substitution of long vowels with short equivalents).

Data Analytical Approach

The analysis was primarily qualitative and auditory, focusing on the segmental features of English, both consonants and vowels as articulated by the participating learners. Vowel productions were compared with standard British English targets, using the Well's (1982) vowel sets.

The lexical sets developed by Wells (1982) are used to provide the segmental description of the English of these groups of learners. Using Wells' lexical sets was not intended to regard the pronunciation of these learners as deviations from or failures to emulate Received Pronunciation, from which the lexical sets derive. Wells' scheme is only utilised for reference, as an accepted descriptive framework.

4.0. Experiment 1 Results: Consonants

As earlier stated, the research intended to test the learners' performance with the newly developed Arabic-based English ajami in articulating some target English consonant phonemes. Although the project generally aims to cover all English consonants, the experiment focuses more on the four dental fricatives and labio-dental fricatives, whose equivalents are lacking in the target learners' native languages (L1), but are present in Arabic, which was learned as a second language through Islamic theology. Thus, four English consonants /θ/, /ð/, /f/, and /tʃ/ were selected in assessing the target

learners' pronunciation performance. For the consonants, they were more successful and accurate compared to the vowels. Vowels required negotiations between the research and the participant learners. The four English consonants: /v/, /ʒ/, /ŋ/ & /ɾ/ were left out in the analysis due to their absence in both Arabic and Nigerian languages, while the other sixteen English consonants have /s, z, ʃ, dʒ, b, p, t, d, k, g, h, l, n, m, w, j/ and have their equivalents in the learners' native languages, and Arabic language, although /p/ is absent in Arabic.

4.1. Dental fricatives

4.1.1. Voiceless Dental fricative

At the onset, the voiceless dental fricative was invariably realised as a voiceless alveolar plosive [d] when presented to the learners in roman orthography in two English words "thank" and "mouth", while it was mainly realised as the native variant, as evident in the three English words in Table 4. The target dental fricative sound occurs word-initially, medially and finally. Both level participant learners were more accurate in articulating it word-initially in the word "thank", while level 2 learners were again more accurate even word-finally in the word "mouth". However, both groups were less accurate in the word "mathematics". This was suspected to be as a result of confusing the Arabic orthographic symbol of the voiceless dental fricative /θ/ with that of alveolar plosive /t/, where only one dot mark distinguishes the two.

Table 4.

Target phoneme	Examples	Realisation	Ajamised form	Percentage of realisation
/θ/ → [t] [θ]				
Level 1	Thank	[θank]	ثَنك	10/11 (91%)
Level 2				9/12 (75%)
Level 1	Mouth	[mauθ]	ماوث	7/11(64%)
Level 2		[mauθ]		11/12 (92%)
Level 1	mathematics	[maθimatiks]	مَاثِماتِكس	2/11 (18%)
Level 2				5/12 (42%)

4.1.2. Voiced Dental fricative /ð/

The voiced dental fricative was also realised as voiced alveolar stop [d] when presented to the learners in roman orthography, while the learners successfully realised the voiced dental fricative as native variant. Most of the participants were accurate when presented with its Arabic equivalent in the ajami writing system. Table 5 indicates that learners of level of 2 were 100% accurate in realizing the voiced dental fricative, while learners of level 1 were 82% accurate.

Table 5.

Target phoneme	Examples	Realisation	Ajamised form	Percentage of realisation
/ð/→ [ð]				
Level 1	Within	[wiðin]		9/11 (82%)
Level 2				12/12 (100%)

Level 1	mother	[maða]		9/11 (82%)
Level 2	mother	[maða]		12/12 (100%)

4.2. Labio-dental fricatives

4.2.1. Voiceless Labio-dental fricative

The voiceless labio-dental fricative /f/ was successfully realised by the learners, as the majority of them realised it accurately. This phoneme is common across languages, but its inconsistency in spelling confuses L2 English learners to the extent that each word with /f/ phoneme but spelled differently needs to be learned separately and independently, making a generalized rule challenging. As shown in Table 6 below, for instance, digraphs <gh> and <ph> representing the phoneme are only taught independently.

It is worth reporting that five of the six female learners of Level 1 mainly realised the voiceless labio-dental fricative as voiceless bilabial stop [p], while only one male learner took a similar pattern by realising it as [p].

Table 6.

Target phoneme	Examples	Realisation	Ajamised form	Percentage of realisation
/f/→ [f]				
Level 1	Enough	[inaf]	إِنَف	5/11 (45%)
Level 2				10/12 (83%)
Level 1	Tough	[taf]	تَاف	5/11 (45%)
Level 2				10/12 (83%)
Level 1	Phone		فَون	5/11 (45%)
Level 2				10/12 (83%)

4.4. Voiceless Post-alveolar Affricate

The voiceless post-alveolar affricate was not realised accurately by the majority of the learners. As evident in Table 8, the English phrase too much indicated least performance compared to all other target consonant phonemes. The sound is lacking in Arabic; there is therefore no symbol representing it either orthographically or phonemically. Arabic teachers/applied linguists combine /t/ and /ʃ/ to represent the sound in both classical Arabic and ajami writing system. The participant learners realised it as an independent syllable [tiʃ] rather than its target pronunciation. This phoneme therefore needs extra care, in addition to its transliteration, to scaffold its teaching and learning.

Table 8.

Target phoneme	Examples	Realisation	Ajamised form	Percentage of realisation
/tʃ/→ [tʃ]				
Level 1	Too much	[tumatiʃ]		1/11 (9%)
Level 2				3/12 (25%)

5.0. Experiment 2 Results: Vowels

As regards consonants, the research aims to empirically test and assess the performance of articulation of the English vowels written in Arabic orthography by the target learners who had acquired Arabic literacy before learning the English language. Three vowel phonemes: /ə, ɜ: ʌ/ were intentionally left out of the analysis due to their absence in Arabic and the complexity of their articulation; the ajami Arabic script is unlikely to have any positive impact on their pronunciation.

The findings reveal anticipated and unanticipated realisation of the vowels. For instance, some of the developed vowel symbols initially presented to the learners attracted unanticipated pronunciation, resulting in the substitution of such vowels by the researcher during subsequent lessons.

5.1. Monophthongs

5.1.1. The English KIT, FOOT, TRAP vowels

The English KIT, FOOT and TRAP vowel equivalents in Arabic are the main or primary vowels in Arabic represented as FATHA, KASRA, and DAMMA. They are very common and familiar to Arabic literates or Qur'anic reciters. Arabic words are derived from using such vowels. We therefore utilized them in deriving ajamised vowels that sound similar to the other English vowels, whose equivalents are absent in Arabic or the native languages of the target users of the ajamised English words' material. The Arabic ي and ,و whose equivalents in English are /j/ and /w/ have been used in deriving many of the non-existing English vowels, particularly the English diphthongs in this case, while the long English monophthongs have been derived using the Arabic elongation symbols õ and ي.

5.1.2. Lot /ɒ/ → /ؤ أ/ → /o/

This vowel is one of the target vowels during the piloting. Initially /ؤ أ/ was proposed to represent the lot vowel /ɒ/ in the transliteration, using Arabic ajami, but substituted with /o/ due to its rejection during the piloting. An agreement was reached between the researchers and the participating learners to adopt vowel letter /o/. The use of /ؤ أ/ as lot vowel was not successful as the learners' realisation attempt did not align with the predicted realisation. Majority of them realised it differently as back high rounded [u] rather than the target [ɒ]. This was observed in four different words (hot, not, dog, pot) presented to the learners on the class board. Having observed that, the researchers had to devise another symbol familiar to the learners in a subsequent lesson the following week by revising the transliteration of the target words. The rejected Arabic vowel letter was substituted with letter <o> in the transliteration, and this worked well, as the learners' realisation of the words had aligned with the target /ɒ/. In other words, learners who realised نُوأت as [nu.at] later realised it as [nɒt] when transliterated as نوت. This implies the acceptability of the adopted vowel letter into the Arabic script used for the ajamised English words. Table 9 provides evidence of the initial and the second realisation of the target vowel.

Table 9.

		Level 2 Learners	Level 1 Learners
Words	**Writing style**	**Roman & % of realisation**	**Roman realisation & its%**
Box	Roman <box>	[bu.aks] 2/12 (17%)	[nu.at] 5/11 (45%)
Not	Roman <not>		
		Ajami realisation & its %	**Ajami realisation % its %**
Dog	Ajami / غO د /	[dɔg] 5/5 (100%)	
Hot	Ajami / حوت /		[hɔt] 6/6 (100%)

5.1.3. THOUGHT /ɔ:/ → / أُوأُ/ → / /õ/

The force vowel is also another target vowel whose equivalent is lacking in both Arabic and Kanuri languages. There is therefore no available phonemic or orthographic symbol to be adopted for representing it. We initially proposed / أُوأُ/ in developing the ajami material. However, this was unsuccessful due to unpredicted realisation from the learners during the elicitation. The learners had a different realisation /u.a] for it, as shown in Table 10 below. Having observed this, the vowel letter <õ>, along with the elongation symbol on top, commonly used in the Warsh style of Qur'anic recitation, was subsequently introduced to the learners as a substitute. This vowel /õ/ was derived to substitute the initial one. Learners' pronunciation attempts revealed better performance in their realisation, where words such as sought were accurately pronounced with correct vowel quality and elongation, as shown in the table.

Table 10.

Target phoneme	Examples	Realisation	Ajamised form	Percentage of realisation
/ɔ:/→ [u.a]				
Level 1 learners	Sought	[su.at]	سُوآت	0/11 (0%)
Level 2 learners				1/12 (8%)
Level 2 learners	saw	[sau]		2/9 (22%)
Level 2 learners	law	[sau]		2/9 (22%)
Correct realisation using another vowel symbol				
Level 1 learners	sought	[sɔ:t]	سõت	3/5 (60%)
Level 2 learners	saw	[sɔ:]	سõ	6/6 (100%)
Level 2 learners	law	[lɔ:]		6/6 (100%)

5.1.4. DRESS /e/ → / إَ/ or / ·/ → [a] /e/ → [·]

A dot symbol before or after a consonant was initially proposed to be a monograph for a dress vowel, and this was presented to the learners in words such as 'bed'. However, none of the learners guessed the target vowel. They mostly realised it as

[a]. The researcher subsequently introduced the same dot mark underneath consonants and elicited their pronunciation. Most of them were successful in pronouncing it as [e], as evident in Table 11. During a feedback session, the researchers and the learners engaged in discussions followed by negotiating the meaning of the newly developed writing symbols.

Imala vowel (a dot underneath a consonant symbol such as ·̣d) is familiar to the learners due to their knowledge of it in their Warsh style of Qur'anic recitation. The dot was intended for /e/ vowel in between consonants of after consonants, but almost all of them could not pronounce it as planned/targeted. When revised to occur underneath the consonants in Arabic script, the learners pronounced it accurately and confidently as [e]. The researchers explained that the dot (imala) still retains its phonetic realisation, which is similar to dress, existing in both Kanuri and Hausa. Applied linguists in this field may decide to either use the dot underneath any English consonants to derive a syllable such as /se/, /le/ or /we/ in words such as set, let or when. Otherwise, to maintain the lining up of symbols in English, dot can be lined up on the same line with the English consonants as <d·> or <w·n/, but this has to be supported with further explanation to the users of the material either in class by the teachers of or self-explanatory in self-access ajamised English material.

Table 11.

Target phoneme	**Examples**	**Realisation**	**Ajamised form**	**Percentage of realisation**
/e/→ [a]				
Level 1	bed	[bad]	ب·د	
Level 2				
Correct realisation using another new vowel symbol				
Level 1	bed	[bed]	ب·د	
Level 2				

5.2. Diphthongs

5.2.1. FACE /ei/ → / إي / → /ي ·/

In the second week, ajamised forms of the words face, say and weight were presented to the Level 2 learners using / إي/ as the ajamised vowel, and those of the words "shake", "made" and "laid" were presented to the Level 1 learners. However, the initial Arabic letter

Table 13.

	Words	**Realisation**	**Ajamised form**	**Percentage of realisation**
Level 1 learners	shake	ʃeɪk	شـيك	5/6 (83%)
	made	meɪd	مـيد	4/6 (67%)
	laid	leɪd	لـيد	5/6 (83%)
Level 1 learners	rain	reɪn	رين	5/6 (83%)

	raze	reɪz	ريز	6/6 (100%)
	weight	weɪt	ويت	5/6 (83%)
	day	deɪ	دي	6/6 (100%)
Level 2 learners				
	weight	weɪt	ويت	9/11 (82%)
	day	deɪ	دي	10/11 (91%)
Level 2 learners	shake	ʃeɪk	شيك	11/11 (100%)
	face	feɪs	فيس	10/11 (91%)

5.2.2. PRICE /ai/ → / آي /

The words "price", "time" and "night" were presented to the learners twice, initially in Roman script, and subsequently in Arabic script. Evidence from the results of articulating three English words as shown in Table 14 indicates that the learners were more accurate while using the Arabic-based ajami script.

Table 14.

	Words	**Ajami**	**Roman realisation & its %**	**Ajami realisation & its %**
Level 1 learners	price	پرَايِس	2/6 (33%)	[praɪs] 4/5 (80%)
Level 1 learners	time	تايِم	5/6 (83%)	[taɪm] 5/5 (100%)
Level 1 learners	night	نايت	3/6 (50%)	[naɪt] 5/5(100%)

5.2.3. NEAR /ɪə/ → / يَ ِ /

The Near vowel was initially realised by some of the learners (33%) as [ije], ending in [e], when reading the three words "hear", "bear" and "near", written in Roman scripts. However, their articulation improved to 100% when the words were presented in Arabic script, as shown in Table 15.

Table 15.

	Words	**Ajami**	**Roman realisation & its %**	**Ajami realisation & its %**
Level 1 learners	hear	هِيَ	4/6(67%)	[hɪjə] 5/5 (100%)
Level learners	bear	بِيَ	4/6 (67%)	[bɪjə] 5/5(100%)
Level learners	near	نِيَ	4/6 (67%)	[nɪjə] 5/5(100%)

5.2.4. SQUARE /eə/ → / إيَ / → / يَ ·/

For the square vowel, both groups of learners were more accurate in pronouncing the words written in ajami Arabic scripts, as shown in Table 16.

Table 16.

	Words	**Ajami**	**Roman realisation & its %**	**Ajami realisation & its %**
Level 1 learners	square	سكو.يَ	4/5(80%)	[skweja] 6/6 (100%)

Level 2 learners	fair	ف.يَ	0/6 (0%)	[feja] 4/5(80%)

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.2.5. CURE /ʊə/

For the cure vowel, both groups of learners were more accurate in pronouncing the words written in ajami Arabic scripts, as shown in Table 17.

Table 17.

	Words	**Ajami**	**Roman realisation & its %**	**Ajami realisation & its %**
Level 1 learners	sure	شُوَ	0/6(0%)	[ʃuwa] 4/5 (80%)
Level 2 learners	cure	كُّوَ	0/6 (0%)	[kuwa] 3/5(60%)

5.2.6. MOUTH /ɑʊ/

The articulation of mouth vowel also indicates that both groups of learners were more accurate in pronouncing the words written in ajami Arabic scripts, as shown in Table 18.

Table 18.

	Words	**Ajami**	**Roman realisation & its %**	**Ajami realisation & its %**
Level 1 learners	mouth	ماؤث	[mos] 3/6 (50%)	[mauθ] 5/5 (100%)
Level 2 learners	cow	كاو	[kow] 2/6 (33%)	[kau] 5/5(80%)

5.2.7. GOAT /əʊ/

The articulation of goat vowel also indicates higher rate of performance in reading the ajami Arabic scripts, as evident in Table 19.

Table 19.

	Words	**Ajami**	**Roman realisation & its %**	**Ajami realisation & its %**
Level 1 learners	go	غوْ	[go] 0/6 (0%)	[gəu] 3/5 (60%)
Level 2 learners	so	سوْ	[so] 0/6 (0%)	[səu] 4/5(80%)

Discussion

This research has investigated the performance of Arabic-literate learners in pronouncing the English consonant and vowels written in Arabic scripts, aiming to empirically determine the effect of learner's acquired Arabic language literacy (orthography, writing and speaking skills) in shaping their accuracy in articulation English phonemes. Consonant acquisition was relatively straightforward, particularly for sounds with close equivalents or those that could be systematically adapted. The intended vowel articulation posed some degree of challenges, reflecting the complexity of English vowel systems. The

refinement of vowel scripts through cross orthographic strategies underscores the importance of learner feedback in developing effective instructional materials. The discussion is guided by the study's three research questions earlier presented.

(1) Is transliteration of English words using Arabic transcript efficient and supportive towards improving the learners – with Arabic script background – performance in English pronunciation? In relation to the first question, the findings from both experiment 1 and 2 revealed higher pronunciation performance in reading the English words written in ajami-based Arabic scripts compared to the pronunciation of words written in Roman scripts. The participant learners of both groups were more accurate in both consonant and vowel production when reading the ajami-based English words. Findings from the Roman scrip-based test revealed the learners' inability to articulate the English dental fricatives, further indicating complete absence of their realisation, in words such as *within* and *thank* when written in Roman orthography.

(2) Are there any performance differences between the learners' pronunciation of English words when presented in roman orthography and those when presented in Arabic scripts? The findings relating to this question indicate that learners were more accurate and successful in pronouncing the words written in ajami Arabic script than articulating words written in Roman script. Level 2 learners outperformed their Level 1 learner counterparts in accurately articulating the target sounds, particularly when written in Arabic-scripts. However, the results of articulating the words written in Roman script indicate divergent performance between the two groups. At some points, both groups equally performed in pronouncing dental fricatives written in Roman orthography, and cross performance is also observed where Level 2 learners were more accurate at one point, they were also less accurate at another point.

Theoretical implication

The findings of the study contribute to the adopted theories: cross-linguistic influence/language transfer theory (Odlin, 1989), L2 status factor hypothesis (Bardel & Falk, 2007) and typological primacy model (Rothman, 2011), confirming that orthographic familiarity facilitates second language pronunciation learning. Learners leveraged their knowledge of Arabic script to interpret ajami representations, thereby supporting positive transfer and underscoring the influence of an additionally learned language rather than learners' native language alone.

Conclusion

The study demonstrates the potential of ajami as both a pedagogical and research tool in second language phonology. The study also highlights the potential of cross orthographic systems, as the incorporation of Roman elements alongside Arabic script proved effective in certain cases, suggesting that strict adherence to a single script may not be necessary – or even desirable, but flexible mixture of approaches is beneficial in applied contexts. Ajami-based orthographic adaptation proves to be viable tool for improving English pronunciation among learners with Arabic script literacy. While

consonant acquisition benefits from phonemic transparency, vowel representation requires careful design, testing its efficacy on each learner group, and negotiating the script before final adaptation. Transparent, consistent and universal scripts available in English and Arabic and which have one-to-one correspondence in learners' native languages can be maintained for immediate adaptation across all target regions. For instance, consonants such as /t/and /d/ are found in English, Arabic and virtually all Nigerian languages; the adaptation of their Arabic scripts / ت / and /د / for application when teaching Arabic-literate learners across all regions is realistic. Material development that draws on familiar elements such as from Qur'anic recitation suggests that pedagogical innovation is most effective when it builds on existing linguistic knowledge.

Pedagogical implications for English teaching in the context of Arabic-literate learners

Although the present research focused primarily on promoting English pronunciation through the use of Arabic script within the ajami writing system, the approach can be extended to other branches of English language learning, particularly semantics and pragmatics. This extension is important in order to facilitate not only pronunciation but also comprehension of meaning. Consequently, instructional materials of this nature should incorporate aids that support the teaching and comprehension of meanings associated with target words, phrases, and grammatical structures.

Furthermore, ajamised instructional materials should be expanded into self-access course books that are easily accessible to learners and capable of promoting independent engagement through self-correcting texts, activities, and tasks (Sheerin, 1989). Such proposed course books should include the most common and frequently used English words required for communicative purposes. To further scaffold learners' success in both pronunciation and meaning comprehension, Harmer (2007) argues that images serve as useful teaching aids for facilitating comprehension, while Thornbury (1999) emphasises the role of dialogue in promoting the use of natural language. Since learners' understanding of the functional use of language can only be effectively achieved through exposure to meaningful texts rather than isolated lexical items (Thornbury, 1999; Ur & Swan, 2009), it is therefore essential to extend ajamised vocabulary into authentic texts in order to promote more effective language learning.

The four English consonants /v, ʒ, ŋ & ɾ / whose equivalents are lacking in both Arabic and leaners' native languages (L1) will require additional explicit pedagogy to complement the adaptation and implementation of Arabic-script-based English language material.

Limitation of the study

Although the material and method are efficacious and have strong potential, they also have some limitations as outlined below.

(1) The material cannot be used by monolingual English teachers in their language classes; likewise non-Arabic literate learners cannot understand the content of the materials.

(2) Phonemes absent in both Arabic and the learners' L1s required additional instructional support, highlighting the limits of orthographic solutions alone.

Recommendations:

(1) As recommended by Muhammad-Gombe and Gbeyonron (2023), given the large number of informal Tsangaya schools and students currently undertaking Qur'anic education across villages, towns, and cities, such materials and teaching techniques should be introduced into these schools for adaptation, rather than relying solely on the limited number of students enrolled at the Centre for Research in Qur'anic Studies, Yobe State University. Although the Tsangaya educational system traditionally focuses on Arabic, it remains feasible to incorporate English into the system because of its local, national, and international significance and its increasing importance as a lingua franca among business communities and Muslim pilgrims during the Hajj pilgrimage in Saudi Arabia.

(2) Given that the similar Tsangaya educational system is now widespread in Hausa-speaking regions and across core north-western Nigeria, it becomes highly significant to extend language materials of this nature throughout northern Nigeria, perhaps including the south-western Yoruba-speaking states. Such expansion would contribute to promoting the learning and use of English pronunciation, which has long been characterised by non-native L1-based and other socio-phonetic influences

(3) We call on authorities, especially the management of Almajiri Board of Nigeria to act fast in adopting this kind of materials and ensure immediate implementation of it. It is the responsibilities of the Federal Government of Nigeria to impose a centralized policy that can mandate the use of ajami not in writing local/indigenous languages alone but English.

(4) While the adaptation is highly recommended across several states and regions of northern Nigeria, where large numbers of Arabic-literates live, this, however, should be handled with caution, as adaptation in any given state or region will require pre-adaptation testing and assessment to identify its unique peculiarities. This needs not only an introduction of the new symbols to target learners but includes negotiating and acceptance of certain sections of the alphabets between the teacher and the students. This ensures flexibility and an open-door policy of positively engaging the students to understand the significance of the new English teaching and learning materials in improving both their listening and speaking skills.

(5) Finally, authorities should also engage applied linguists from all regions to develop standardized ajami-based English orthography and digital learning resources for effective promotion.

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