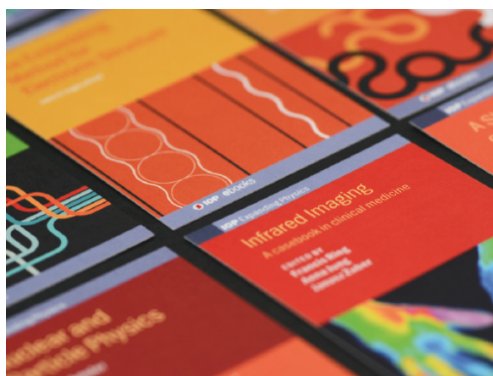


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# Smartphone applications for young English language learners

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**Abstract.** The advancement of technology has permitted the widespread use of mobile applications in English language education. Hence, the term mobile-assisted language learning or MALL appeared in the literature since the early 21<sup>st</sup> century. This paper highlights a study's report on the smartphone applications' pattern of learning English that is targeted for Muslim young English language learners (YELL). The authors decided to use systematic literature review approach to guide the mobile applications reviewing process. The availability of applications was first searched on Google Play using predetermined keywords that resulted in 250 mobile applications. Guided by the PRISMA model resulted in 26 smartphone applications that were finalised to be reviewed using the Analytical Framework of MALL. The findings demonstrated that smartphone applications are popular with vocabulary attainment that is crucial in the early stage of English language acquisition. Several interesting aspects may be explored further by including non-native Muslim YELL in MALL empirical findings, Islamic perspectives on the use of MALL for Muslim YELL's English language development and framework development for reviewing MALL befitting Muslim learners.

## 1. Introduction

The use of technology-based language learning has been broadly discussed for almost four decades. Based on the literature, the emergence of technology-based language learning started with the use of computer and thus the term computer-assisted language learning or CALL [1]. Two decades after that, more studies in technological assisted language learning and teaching were directed towards the use of mobile and hence the term mobile assisted language learning or MALL [2]. The rising number of studies in CALL and MALL indicated various benefits achieved such as improved language skills [3], enhanced teaching skills [4], independent and lifelong-learning [5], and vocabulary attainment [6] in various levels of education. This has been implemented in: higher education that includes the use of WhatsApp [7], in secondary education with the use of iPods [8], in primary education with the use mobile game-based applications [9] and in early education with the use of iPads [10].

Mobile phones are inseparable with their owners these days. Known as smartphones, they are equipped with various technical features such as sophisticated built in front and rear cameras, enhanced audio and visual display, touch screen enabled, huge memory capacity, improved processing system, internet-enabled and sleek designs, luring many prospects. These features have placed smartphones to be appealing to youngsters, and were reported to contribute positive development on their learning milestones [11].

However, less is known about the features of mobile applications for Muslim YELL. Hence, to allay this fear, there is a need to investigate this matter. This paper presents the results of an investigation on the features of MALL smartphone applications for Muslim YELL based on the following questions: 1)



What type of English language learning approach is used? 2) What topic of English learning is included as the content of mobile applications? 3) What are the technological features used in these mobile English language learning applications?

## 2. Mobile technology-based English language learning for YELL

The presence of technology-based English language instruction has enabled learning to occur more interactively with the integration of multimedia elements such as videos and animations. Some of the benefits of integrating mobile technology in English language learning are portability, accessibility, personalisation, social connectivity and increased learning motivations which empower English language instructors [12]–[14]. The use of smartphones (Android and iPhone), tablets (Android tab and iPad), personal digital assistants (PDAs) and MP3 or MP4 players are believed to enhance English language learning [11], [15].

Having considered the main studies from CALL, mobile learning (ML) and MALL, [16] Ten Principles for Mobile Language Learning are proposed. These principles are anticipated to support the designing as well as execution of MALL and related use of native mobile functionalities.

**Table 1.** Ten principles for mobile language learning.

Type of principle	Principle
organizational	Ensure quality
	Recognize and accommodate multiple stakeholders
pedagogical	Push, but respect boundaries
	Consider learners' cultures of uses
	Keep learning activities short
	Provide guidance and training
technological	Consider mobile devices' constraints
	Limit multi-tasking and distractions
	Consider language learning differences
	Ensure task fits the technology and vice versa

The three types of principles shown in table 1 namely organizational, pedagogical and technological serve as useful guidance in the adaptation of MALL for both the software developers and consumers. This is crucial to reduce the limitations and enjoy the benefits of the products in the MALL.

Past studies involving young learners as users of technology-based language-learning also mention CALL [17], MALL [18], use of e-books [19], Arabic alphabet learning [20] and language teachers' perceptions [21]. A more thorough investigation of second language learning with mobile technology is also compiled [22]. Most of the studies involve higher education learners (38%), primary education learners (27%), secondary school (12%), mixed groups (6%) and preschool (2%). Based on these figures, it shows a lack of empirical data involving YELL specifically in technology integrated language instructions.

However, an investigation by a group of paediatricians from Philadelphia on the exposure and use of mobile devices by young children [23] found smartphone ownership at most households are 77%, and three-fourth out of 350 children surveyed had their own mobile device as early as four years old. It was also discovered that these toddlers were able to self-navigate their devices. Hence, this has raised concern over the use of MALL among Muslim YELL with the fact of easy accessibility of smartphone applications in the market.

## 3. Revised Hubbard's framework

The analytical framework of MALL [24] is a revision of Hubbard's widely used software review criteria which is a series of intensive work done for over three decades [25]–[27]. With the expansion of technology in instructions, the adaptation of the original work of Hubbard is also useful to guide the

evaluation of mobile applications in instructions as shown in Table 2.

**Table 2.** The analytical framework of MALL.

Content/design target
Target learners (age, interest, proficiency level)
Content (topic, organization, content size)
Learning styles (recognition, recall, comprehension, experiential learning etc)
Learning strategies (field-(in)dependent, deductive, inductive, collaborative/individual)
Procedure & approach (Pedagogy & SLA)
Activities (instructional, individual, facilitative)
Focus (linguistics, language skills, sociolinguistic)
Technological features
Multimedia (videos/graphics/sound/music/resolution size)
The exploitation of mobile potential (other functions, web 2.0 features)

The three aspects shown in table 2, content, approach and technological features are deemed useful in the reviewing process.

#### 4. Methodology

This section will explain the systematic review method employed in collecting and analysing the data. In data collection, the three steps involved were identification, screening and eligibility in identifying smartphone applications for Muslim YELL. This is elaborated as follows.

##### 4.1. Identification

Towards accomplishing the research objectives, keywords were established to identify and select the related smartphone applications. The keywords used on the Google Play database were English for Muslim kids which resulted in 250 smartphone applications. Then, this allowed for the next phase in the review.

##### 4.2. Screening

In order to search for suitable and related mobile language learning applications, the following criteria were established for the inclusion of smartphone applications to be reviewed:

**Table 3.** Inclusion and exclusion criteria.

Criterion	Eligibility	Exclusion
Subject area	English language learning	Other subjects
Language	English	In English
Target audience age	4-6 years old	Below 4 years old and above 6 years old
Device compatibility	Android only	iPhone only
Accessibility	Free access	Paid subscription
Ratings	> 4 stars	< 4 stars
Reviews	Yes	No
Install statistics	> 50,000	< 50,000

The number reduced considerably after applying the inclusion and exclusion criteria as in Table 3 to only 32 selected mobile applications. These excluded mobile applications are Islamic educational based applications and Islamic informational based applications. Some applications were anticipated for learning Arabic, *dua* supplications, games, Islamic quotes and Islamic applications directory which were not geared towards English language learning.

#### 4.3. Eligibility

The remaining smartphone language learning applications resulting from the screening process went through the third phase in systematic review, namely eligibility. This involved manual examination by the authors to ensure that all the smartphone applications fitted the predetermined criteria. After a thorough check, only 26 smartphone applications were found to be related to the research objectives and predetermined criteria.

#### 4.4. Data analysis

All the smartphone applications were analysed using thematic analysis in order to identify, organise, and offer categorization systematically. Both authors separately conducted the analysis before coming up with a consensus to reduce the issues of reliability and validity. Then, the data were further analysed into meaningful patterns or themes after the completion of the eligibility phase guided by the adoption of Kim's analytical framework of MALL to establish the themes. The adoption of CAQDAS software namely Atlas.ti (version 8) was useful to systematically organize the analysis.

### 5. Findings

This section will be highlighting the findings which addressed the three primary research questions.

#### 5.1. English language learning approach emphasised in smartphone applications.

Play-based learning induced with communicative language teaching was the most apparent approach in the reviewed smartphone applications intended for Muslim YELL. A lot of game-based activities indicated that the idea of playing such as learn and play, games, quiz, listen and guess game and activities, and magic box allowed facilitative language learning. Based on figure 2, this is one of the activities in the applications that apply game-based learning to YELL. Other language learning activity includes word to phrases level development. The activities with instructions to identify differences could be linked with cognitive demands as described in Bloom's taxonomy.

#### 5.2. Content of English language learning in smartphone applications.

The smartphone applications provide English language content that suits Muslim YELL's schemata as proposed in Piaget's theory of development. The contents of these smartphone applications are directed towards the development of first words, vocabulary, alphabet, spelling, grammar and conversational skills. The topic ranged variously from family, animals, colours, alphabet, numbers, shapes, fruits, food, body parts, transport, clothes, sports and vegetables. The topics and contents agree to the target learners' age, interest and proficiency level.

The listening activity shown in figure 1, is a good example to be used for Muslim YELL as it is wordless and only pictures are given. This supports children who are still in their pre-operational stage as in Piaget's development. Generally, most English language contents are developed to meet the needs of the children belonging to this age group. However, no attention was paid to include Islamic culturally context in the content of mobile apps as suggested in the pedagogical principles for mobile language learning which encourages the inclusion of learner's cultures.

#### 5.3. The technological features of smartphone applications.

Learning English via smartphone applications is enhanced with colourful graphics, videos and audios suitable with the operating system ability of a smartphone. However, these features are limited to the minimum requirements of smartphone devices. As shown in figure 3, Android version 4.1, also known as "Jelly Bean" with its releases by Google in 2013, is accepted. Thus, it shows that the apps do not require a sophisticated version of Android. This is to accommodate more users to be able to enjoy its apps which agree with the technological principles for mobile language learning.

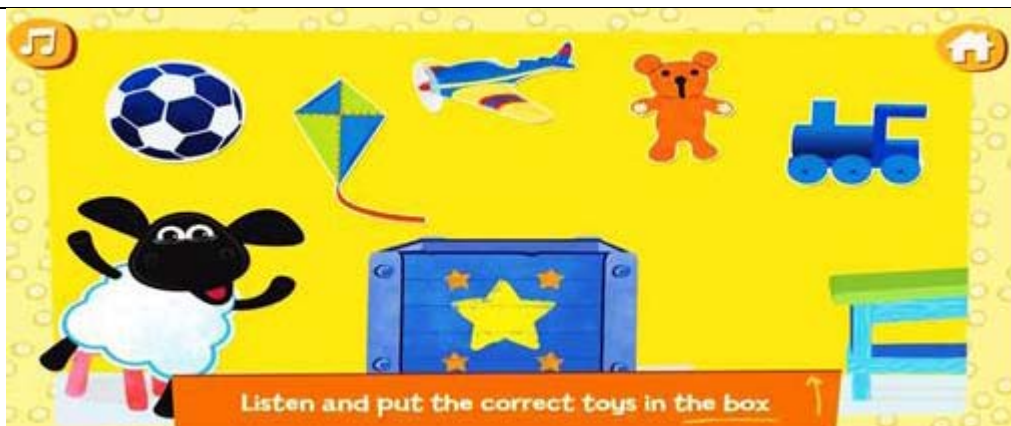


Figure 1. Simple instructions in one of the listening activities.



Figure 2. Using game-based learning in one of the applications.

<b>Updated</b>	<b>Size</b>	<b>Installs</b>
October 1,2019	13M	1,000,000+
<b>Current version</b>	<b>Requires Android</b>	<b>Content rating</b>
1.30	4.1 and up	Rated for 3+
<b>Interactive Elements</b>	<b>In-app Products</b>	<b>Permissions</b>
Users interact	RM4.40 per item	<a href="#">View details</a>

Figure 3. One applications minimum mobile operating system requirement.

## 6. Discussion

The findings may lead to a better understanding of the features of smartphone applications intended for Muslim YELL towards English language learning. Children aged 4-6 years old are still developing their early literacy skills. Hence, most approaches, contents and technological features of MALL shown the suitability of that target age group. This aligns with the ten principles of mobile language learning except for the consideration of learners’ cultures such as Muslim learners. Another possible answer towards this trend is perhaps it is motivated by other motives of the development of smartphone applications such as commercial value [28].

Previous studies indicated that the use of MALL has motivated children in English language learning to a greater degree. However, this might also be the case for Muslim YELL but lacking in empirical studies. Some parents left positive remarks to the developers indicating their satisfaction on their child’s learning progress. The overwhelming download statistics reached over 1,000,000 times were also observed during the review. Some methods highlighted were the formation of basic vocabulary, native speakers voicing, colourful interface, motivating reward system and child-friendly visual tips to enhance children’s English learning experience. The methods matched with the

pedagogical principles as well as the analytical framework of MALL as in table 2.

The current research design seems to be advantageous compared to the majority of studies on MALL in terms of the adoption of systematic review method which is regularly associated with reviewing past studies and literature across many disciplines. Despite the success demonstrated, this work suffers from a number of limitations - notably related to the inclusion of only one database namely Google Play in searching for smartphone applications. A larger dataset might ensure adequate representation of MALL intended for Muslim YELL. Another limitation is the exclusion of other English learning smartphone applications that do not match our inclusion criteria. Perhaps, the inclusion of these smartphone applications may offer greater insight into the features of smartphone applications for Muslim YELL.

## 7. Conclusion

In conclusion, this paper has shown that the study is nevertheless a valuable contribution to the field. It suggests that there are many smartphone applications available for English language learning for young children aged 4-6 years old but these apps do not specifically meet the needs of Muslim YELL. Nevertheless, the applications comply with Kim's Analytical Framework of MALL and the framework is useful for MALL applications evaluation based on the current authors' experience. However, the efforts in employing MALL for Muslim YELL ought to be done in the right manner, as children need adult supervision in guiding them to maximize their learning experience, especially when dealing with foreign ideas. Additionally, with the abundance of smartphone applications available, it is the responsibility of teachers and parents to carefully evaluate and judge smartphone applications in terms of the approach, content and technological aspects to suit Muslim YELL. Hence, it is undeniable that the evaluation of a smartphone application is an important consideration before its employment for Muslim YELL to ensure its effectiveness in English language learning.

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