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Developing an Android-Based Application for Arabic Grammar Learning Aligned with the Common European Framework of Reference (CEFR)

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Abstract

This research aims to develop an Arabic educational app that complies with the Common European Framework of Reference for Languages (CEFR) and can be downloaded from the Playstore. In addition, the study seeks to evaluate the authenticity, practicality, and effectiveness of Arabic language learning resources on the Android platform in accordance with CEFR standards. The approach taken in this application adheres to the research and development strategy known as the ADDIE model, which consists of five phases: analysis, design, development, implementation, and evaluation. This technique is applied to improve language skills by encouraging users to deduce correct answers using images, vocabulary, phrases, dialogues, grammar lessons, practice activities, quizzes, and puzzles presented in Arabic. All entry-level Arabic learning materials will be gathered in an application named "*Tashol*" which can be easily accessed and downloaded via the Playstore on mobile devices. As a result, this research is designed to support not only those learning Arabic but also anyone interested in gaining proficiency in the Arabic language. By utilizing the educational resource Tashol, learners can expand their vocabulary, memorize useful phrases, and understand the fundamentals of Arabic grammar, mastering materials at the A1 level to swiftly enhance their Arabic language skills. The results of this research indicate that the *Tashol* Android application includes A1 level Arabic learning resources, covering grammatical details, vocabulary enhancement, and relevant expressions, positioning it as a highly versatile educational tool readily available on the Playstore.

Keywords: *Android based Apps, Arabic learning, grammar learning, CEFR*

Introduction

In the last few decades, technology has transformed from a mere science fiction fantasy depicted in films to a crucial part of everyday life. The technology sector is flourishing, as tech innovations have streamlined processes, making them simpler, quicker, and more effective. The approach to education begins modestly, relying solely on educators' words and some written materials (Puasa et al., 2023). With the introduction of technology into education, teaching techniques have evolved, leading to enhanced quality of outcomes.

In Arab nations, the situation differs significantly. Essentially, the adoption of modern educational technologies remains constrained to fundamental and straightforward functions. In reality, it is even more disheartening that the majority of the programs in place are poorly executed and seldom utilized. Notably, as many studies have shown and through casual observations of children during playtime, it has been established that a significant number of children show a keen interest in new technology and its various applications (Almehes, 2024). This fascination not only altered the landscape of traditional childhood experiences but also gave rise to the multibillion-dollar video game sector.

Communication technology has experienced a significant transformation. The internet now serves as the foundation of contemporary life by linking individuals through devices like personal computers, tablets, and smartphones that are widely accessible and come with numerous features at reasonable prices. Furthermore, education reaps considerable advantages from this transformation, enabling educators to engage with their students via a personal or official website or through various smartphone applications (Sweidan & Darabkh, 2018).

The approach implemented is straightforward: students should be permitted to use tablets or laptops at school as educational tools, after which digital versions of textbooks are downloaded, and supplementary online materials should be offered. This provides the opportunity to present the subject matter innovatively through software simulations or animated videos, while also safeguarding children's backs from potential strain caused by carrying heavy bags filled with printed books (Yulianti et al., 2025). Additionally, assessments can take place online.

These modifications have moved away from conventional teaching techniques and introduced students to novel learning approaches that are effective, interactive, and engaging. Consequently, the integration of technology in education has emerged as a significant topic of interest for many, leading to numerous conferences dedicated to exploring this emerging trend on a global scale.

Method

This research is aimed at creating CEFR-aligned Arabic grammar instructional resources. This involves qualitative research utilizing the ADDIE approach, with findings presented through descriptive analysis. The ADDIE model consists of five phases for developing educational materials (Cahyadi, 2019). Researchers will progress through stages including analysis, design, development, implementation, and evaluation.

The analysis phase will determine the necessity of producing CEFR-oriented teaching materials for Arabic grammar by examining tasks, students, facts, and educational goals. The design phase entails the preparation of plans for developing Android-based learning application designs. This involves defining the competencies to be integrated into the Android system, the depth of content and questions associated with each item, and the evaluation methods.

The third phase is known as the development phase. This is when the concepts from the earlier two phases materialize through the modification of educational resources, which encompass examples, rules, exercises, and assessments, all aligned with the conceptual framework of CEFR-based teaching materials. The objective during this phase is to create or refine the teaching resources to align with the educational goals and select the most suitable types of test items to meet those goals. Additionally, in this development phase, experts also validate the created materials, leading to any necessary refinements.

The implementation phase is conducted to gather feedback and insights for enhancement. This part engages students in using CEFR-based Arabic grammar instructional resources, aiming for these materials to serve as effective solutions for teaching Arabic grammar appropriately.

The final stage focuses on adding value to the application, which includes the validation of the materials and the application systems carried out by specialists in their respective areas, aimed at making improvements and adjustments to ensure optimum outcomes and accountability (Hidayat & Muhamad, 2021).

Result and Discussion

The advancement of technology in the educational sector facilitates easier access to information, learning resources, instructional techniques, media, and infrastructure, as well as the assessment of achieving learning goals (Febriani & Nurdianto, 2018). The COVID pandemic has imparted numerous lessons, particularly regarding technology-driven education for remote learning and increasing our comfort level with digital tools (Hijriyah et al., 2022). In education, the program is tailored to meet specific needs and objectives to be accomplished throughout the learning period, incorporating current technology (Suri et al., 2021) to enhance interactivity (Maita & Adawiyah, 2023) and improve time efficiency(Taufik & Ariani, 2020).

The dedication and innovation of educators necessitate a focus on assessing and acknowledging the progression of students and their academic growth, allowing the curriculum to adapt to the learning preferences that students naturally gravitate toward, such as android-based learning (Hijriyah et al., 2022). Advances in technology have begun to create tools that can enhance and maintain users' enthusiasm for learning without disregarding their entertainment objectives alongside educational pursuits. Students engage in learning activities without feeling overwhelmed by the pressure of mastering the material, while still grasping the concepts being taught; conversely, technology-driven learning serves as a means to facilitate understanding of the subject matter (Abdelhamid et al., 2019).

The application of repetitive techniques results in a tedious experience for learners (Ratnawati et al., 2020). Methods that require enhancement include one-way lectures, question-and-answer sessions, and tasks. Each cohort tends to exhibit distinct learning preferences as the aforementioned approaches were effective for earlier generations but not for contemporary ones. Given that today's students are accustomed to technology, instructors must adapt their methods to improve learning quality while ensuring the fulfillment of educational objectives.

Challenges in acquiring Arabic, particularly in terms of *nahwu* and *sharaf*, arise not only from the students but also from the instructional materials, educational resources, and surrounding conditions. Students face issues stemming from varying educational backgrounds, a disinterest in learning, difficulty in finding conversation partners, and challenges in applying vocabulary according to established rules. Teaching materials often do not commence with foundational concepts. Issues with facilities include insufficient learning media. Environmental issues consist of the lack of obligatory Arabic use (Yunisa, 2022). The linguistic setting can be manifested digitally as an application.

Mastering Arabic grammar involves numerous linguistic rules that must be memorized prior to comprehension, resulting in a challenging experience for novice learners. The repetitive nature of the same material can lead to student disinterest, preventing integration with the study of related topics. This factor additionally presents new challenges in learning the rules of Arabic (Mahmuddin & Nur, 2020).

From the notes provided, students and educators must undertake efforts to address these challenges. The actions taken by students include memorizing Arabic vocabulary, practicing it, and dedicating time to participate in study groups. Educators' initiatives encompass providing motivation and encouragement for students to converse in Arabic within the school setting, utilizing media and teaching aids to facilitate the explanation of learning materials, and guiding students to engage in study groups (Yunisa, 2022).

There is an initiative to address the challenge of learning Arabic by enhancing motivation and interest in the study, focusing on frequent practice, optimizing lecture resources and tools, taking advantage of available educational facilities, and extending classroom hours (Qodri, 2020).

Android-based education enhances the learning experience by presenting educational materials in formats that students find relatable. This approach allows students to extend their learning beyond classroom hours, enabling them to revisit and engage with the content at their own convenience through an Android-based learning framework. The use of technology fosters a more interactive environment, and applications designed for Android can significantly support the educational process (Putri, 2019).

Technology is crucial in transforming challenging learning materials into more comprehensible formats, aiding in the conversion of abstract teaching content into tangible concepts (Al Huda, 2022).

In developing an Arabic morphology learning application for Android, the mobile platform offers portability and the ability to revisit sections of content that were not fully grasped, allowing users to progress to the next stage and level of learning (Uriawan & Hidayat, 2017). Media and education have become intertwined, especially with the emergence of Android-based technology. This form of media has become an integral part of students' daily activities in the era of 4.0.

This research on Arabic grammar learning, structured around the CEFR framework, offers a progression of learning stages that range from simple to complex, covering language that's frequently used in communication as well as less common yet essential knowledge. The unique aspect of this study is the curriculum design, rooted in the CEFR, which is accessible to individuals regardless of their educational background.

Table 1. Description of competencies at CEFR level in Arabic

No.	Level	Description
1.	A1	• Capable of comprehending and utilizing common phrases to convey fundamental needs. • Capable of presenting themselves to others and responding to straightforward inquiries regarding their identity, place of residence, acquaintances, and possessions. • Capable of grasping interactions with others provided that the dialogue is conducted at a slow pace and the speaking partner is prepared to assist with understanding.
2.	A2	• Capable of comprehending commonly used sentences and expressions pertaining to the most significant domains without delay (e.g., Fundamental personal and family details, retail, local geography, occupation). • Capable of communicating in straightforward and commonplace tasks that necessitate a basic and direct exchange of information on familiar and everyday subjects. • Capable of elucidating in straightforward language the characteristics of his personality and the contexts in which he engages directly.
3.	B1	• Capable of comprehending the principal arguments of straightforward standard input regarding topics frequently encountered in professional, academic, and recreational settings. • Capable of managing most circumstances that may emerge while traveling in regions where Arabic is spoken. • Capable of generating straightforward and coherent written content on subjects that are known or hold personal significance. • Capable of succinctly articulating experiences and occurrences, aspirations, expectations, and principles, accompanied by justifications and elucidations for viewpoints and intentions.
4.	B2	• Capable of comprehending the principal concepts of intricate texts pertaining to both concrete and abstract subjects, including analyses of technical matters within the domain. • Possessing the capacity to engage in interaction with a degree of fluency and spontaneity that facilitates seamless communication with native speakers, eliminating any potential tension for both parties.

		• Capable of generating lucid and comprehensive texts across diverse subjects while articulating perspectives on current issues that present the merits and drawbacks of an extensive array of options.
5.	C1	• Capable of comprehending the primary concepts of intricate texts on both tangible and abstract subjects, encompassing technical discourse within their field of expertise. • Possessing the capacity to engage in interactions with a degree of fluency and spontaneity that facilitates comfortable communication with native speakers, eliminating potential tension for both parties. • Capable of generating lucid and comprehensive texts on diverse subjects and articulating perspectives on current issues that outline the advantages and disadvantages of a broad spectrum of options.
6.	C2	• Capable of readily comprehending nearly all that is spoken or written. • Capable of synthesizing information from diverse oral and written sources, and adept at reconstructing arguments and narratives into a cohesive presentation. • Capable of articulating his thoughts spontaneously, eloquently, and accurately, differentiating more nuanced shades of meaning even in intricate contexts.

At level A1 Arabic grammar is sufficient for very simple interactions, for example as a tourist in an Arabic-speaking country. A1 levels will not be sufficient for any other academic or professional purposes. Arabic grammar learners are able to use the following expressions in accordance with their learning grammar rules, such as:

1. Being able to understand and use everyday expressions (*al-ibârat al-yaumiyah*) and phrases (*al-idhâfah*) is very basic for meeting the need for concrete types.
2. Be able to introduce your self (*al-ta'âruf*) and others and be able to ask and answer questions about personal information, such as where to live (*al-sakan*), known people, and items that he owns.
3. Be able to interact with others in a simple way as long as the interlocutor speaks slowly and clearly and is ready to help.

Although student progress will depend on the type of course and the student himself/herself, students are expected to reach A1 level Arabic in 60 to 80 hours of instruction with a duration of 1 hour of 60-minute meetings.

At the beginner level, the A2 level of Arabic is sufficient for the tourism field in an Arabic-speaking country and socializing with Arabic speakers, but the A2 level is not enough to develop deeper friendships. The A2 level of Arabic also allows you to interact with Arabic-speaking colleagues, but working in Arabic is limited to topics already known at the A2 level. A2 levels of Arabic are not sufficient for academic study or for listening to and reading most Arabic-language media (television, film, radio, magazines, etc.).

1. Be able to understand frequently used sentences and phrases related to directly related areas (for example: basic information about personal and family, shopping, local geography, and work).
2. Able to communicate in routine tasks that require a simple and direct exchange of information on common matters.

3. Can explain in simple terms aspects of the background, the surrounding environment, and things in the field of immediate needs.

At this level, students can state what is done (*astathî'u*) means 'I can' which is formally broken down into smaller sections for teaching purposes. This more detailed proficiency description can help you assess your own level of proficiency in Arabic, or help a teacher assess a student's level of proficiency. For example, someone at A2 level in Arabic will be able to do all the things that students do at A1 level. Although student progress will depend on the type of course and the student himself/herself, students are expected to reach an A2 level of Arabic in 200 cumulative hours of instruction. This is by looking at the condition of learning achievement results at level 1, previously.

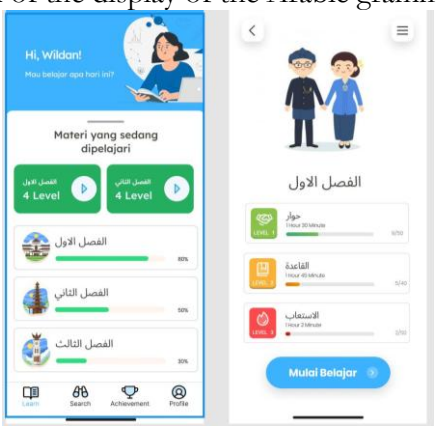
The learning materials at the beginner level include: *isim isyârah, isim istifhâm, isim nakirah* and *isim makrifah, isim mudzakkar* and *muannas, isim tafdhil, dhamîr munfasil, dhamîr muttashil, isim* plural, letter *jar* (preposition), letter *'athaf,* number, *fi'il mâdhi, fi'il mudhâri', fi'il amr*, information about time, description of place, *idhâfah*, nature of *maushûf*, number of *ismiyyah*, and number of *fi'liyyah*.

Learning Material Design

Android-based learning materials are designed based on the CEFR for beginner levels in the form of dialogues, reading texts, rules, repetition, and exercises. The dialogue is presented in a two-way form with simple sentences with current topics such as family, vacations, places to study, covid-19, and daily activities. In addition to dialogue, there is a form of reading the text using a combination of noun sentences (the number of *ismiyyah*) and verb sentences (the number of *fi'liyyah*) in a simple form.

The limit of simple sentences is a sentence that is not graded and does not have a sentence so that it is easy for beginner participants to understand. In a noun sentence consists of a subject (*mubtada'*) and a single predicate (*khabar*), while the form of a noun sentence in Arabic can have more than 35 different patterns. In a verb sentence presented in a simple form, it also consists of a predicate (*fi'il*) and a subject (*fâ'il*) or a predicate (*fi'il*), a subject (*fâ'il*), and an object (*maf'ûl bih*) in order. At the beginner level, the standard rules in learning Arabic avoid differences and exceptions that can only be understood by advanced level participants.

Figure 1. Design of the display of the Arabic grammar learning page



In learning Arabic grammar, grammar competence (*al-kafâah an-nahwiyah*) shows the ability of students to know several rules in the Arabic language in stages, both material and learning. The basic knowledge of CEFR *nahwu* begins with various words in Arabic and their sentence forms by avoiding differences and disputes in Arabic. Students need to know the types of *fi'il* (verb) which are divided into *mâdhi, mudhâri'* and *amr*), the types of isim (noun) in terms of number there are *isim mufrad* (single), *mutsanna* (double), and *jama'* (plural), the division of *isim* based on gender there are *isim mudzakkar* (male) and *isim muannats* (female), *isim* (noun) based on definitive and indefinitive types there are *isim ma'rifah* and *isim narikah*, as well as various types of noun that stand independently in their discussion; *isim dhamîr* (pronoun), *isim isyârah*, *isim maushûl*, and *isim istifhâm*.

Designing an Android application for the purpose of learning Arabic grammar based on the Common European Framework of Reference (CEFR) requires a comprehensive understanding of both linguistic pedagogy and mobile technology. At the beginner level, the CEFR emphasizes clarity, simplicity, and gradual progression. This means that the application must present dialogues, reading texts, and exercises in a way that avoids unnecessary complexity. For Arabic grammar, this involves introducing noun sentences and verb sentences in their most basic forms (Widodo et al, 2025). A noun sentence typically consists of a subject *(mubtada')* and a predicate *(khabar),* while a verb sentence consists of a verb *(fi'il)* followed by a subject *(fâ'il),* and sometimes an object *(maf'ûl bih).* By focusing on these fundamental structures, learners can build confidence before moving on to more advanced variations.

The pedagogical foundation of this design lies in the communicative approach promoted by CEFR. Grammar is not taught in isolation but embedded in meaningful contexts such as family, vacations, studying, or daily activities. For instance, a simple dialogue about going to school can illustrate both noun and verb sentences. This contextualization helps learners see grammar as a tool for communication rather than a set of abstract rules (Rachmawati et al, 2024). Research has shown that mobile learning enhances motivation and engagement, especially when learners are exposed to interactive features such as quizzes, repetition exercises, and instant feedback. The Android platform provides flexibility, allowing learners to access materials anytime and anywhere, which is crucial for beginners who need frequent exposure to the target language.

One of the challenges in teaching Arabic grammar is its inherent complexity. Arabic has a rich morphological system with multiple verb forms, noun genders, and definiteness distinctions. At the beginner level, however, CEFR recommends avoiding exceptions and focusing on core rules. Learners are first introduced to the three main verb types—*mâdhi* (past), *mudhâri'* (present), and *amr* (imperative)—and the basic noun categories of *mufrad* (singular), *mutsanna* (dual), and *jama'* (plural). They also learn about gender distinctions between *mudzakkar* (masculine) and *muannats* (feminine), as well as definiteness through *ma'rifah* and *nakirah*. By gradually layering complexity, learners can develop a strong foundation without being overwhelmed. Albassam and Zaharudin (2023) found that mobile learning apps for Arabic grammar in Saudi Arabia improved

motivation and enjoyment when lessons were scaffolded according to CEFR levels, demonstrating the importance of structured progression.

Instructional design principles play a crucial role in ensuring that the application is effective. Dialogues must be presented in two-way forms with simple sentences, reading texts should combine noun and verb sentences, and grammar rules must be explained clearly without advanced exceptions. Repetition is essential, as it reinforces patterns and helps learners internalize structures. Practice exercises should provide opportunities for learners to apply rules in different contexts, with immediate feedback to correct errors. Takallam, an Android application developed to enhance Arabic literacy, showed that multimodal features such as audio, text, and visuals significantly improved learners' comprehension and retention (Rachmawati et al, 2024). This suggests that integrating multimedia elements into grammar learning apps can make abstract rules more tangible and accessible.

Technology integration further enhances the learning experience. Android applications can incorporate speech recognition to allow learners to practice pronunciation and receive feedback. Gamification elements such as points, badges, and levels can motivate learners to continue practicing. Adaptive learning systems can adjust the difficulty of exercises based on learner performance, ensuring that each learner progresses at their own pace (Hassan & Rashid, 2021). Offline access is also important, especially in regions with limited internet connectivity. These features align with CEFR's emphasis on learner autonomy and self-directed study, fostering independent learning habits that are essential for language acquisition.

Despite these advantages, several challenges must be addressed. The complexity of Arabic grammar means that even simplified rules can be difficult for beginners. Cultural relevance is also important, as dialogues and texts must reflect learners' contexts to be meaningful. Technical limitations may arise, as not all learners have access to high-end devices. Assessment is another challenge, as measuring grammar competence requires reliable evaluation tools (Kukulska-Hulme, 2020). To overcome these challenges, developers should collaborate with language educators, linguists, and instructional designers. Pilot testing with learners can provide valuable feedback for refinement, ensuring that the application meets the needs of its target audience.

Looking ahead, the integration of artificial intelligence into mobile learning opens new possibilities. AI-powered tutors can provide personalized explanations, detect errors in grammar usage, and suggest corrective feedback. Augmented reality could be used to contextualize grammar learning in immersive environments, such as virtual classrooms or cultural simulations (Al-Said & Al-Khalifa, 2023). These innovations would further align Arabic grammar learning with CEFR's communicative and interactive goals, making the learning process more engaging and effective.

Designing Android applications for Arabic grammar based on CEFR requires a learner-centered approach that prioritizes simplicity, context, and engagement. By combining dialogues, reading texts, rules, repetition, and exercises, learners can gradually build grammar competence (Alshammari 2020). Mobile learning enhances accessibility and motivation, while CEFR ensures structured progression. With careful

design and integration of technology, Arabic grammar learning can become more effective, enjoyable, and aligned with global language standards.

Conclusion

Arabic grammar learning for beginners based on CEFR presents material in stages according to the achievements of each A1 and A2 level. In each material, learners provide limitations on the material that can be taught, not all discussion materials are taught to students, but the learning of the material is delivered gradually. Android-based learning materials make it easy for students to learn anywhere and anytime according to the student's willingness, so it is very flexible and dynamic. There are 21 titles of learning materials provided in android. Each material consists of conversations, rules, deepening, and practice questions. The existence of a conversation is important because the CEFR framework is structured based on a communicative learning framework from two directions.

In addition to the structured materials and staged delivery, the development of this Android application also reflects the broader vision of integrating technology with language pedagogy. By aligning Arabic grammar learning with CEFR standards, the application ensures that learners not only acquire grammatical competence but also develop communicative skills that are relevant to real-life contexts. The gradual exposure to dialogues, rules, and exercises allows learners to internalize grammar naturally, while the mobile platform provides autonomy and flexibility that traditional classroom settings often lack. Over time, this approach is expected to foster learner confidence, encourage independent study habits, and create a sustainable pathway toward higher proficiency levels. Thus, the application is not merely a digital tool but a pedagogical innovation that bridges modern technology with classical Arabic learning traditions, offering a dynamic and accessible solution for beginner learners worldwide.

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