

Smartphones in Learning Arabic by School Students: A Comprehensive Structured Review

Rosyawati Ab. Rahim, International Islamic University Malaysia, Malaysia
Radhwa Abu Bakar, International Islamic University Malaysia, Malaysia
Wan Azani Mustafa, Universiti Malaysia Perlis, Malaysia

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Abstract

This comprehensive, structured review examines the impact of smartphones on learning Arabic among school students. The increasing prevalence of smartphones in educational settings offers novel opportunities for enhancing language acquisition, yet their effectiveness in learning Arabic, a language with unique instructional challenges, remains underexplored. This study aims to acknowledge this gap by systematically reviewing existing literature to understand the role of smartphones in Arabic language education. The study's flow relies on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework. Advanced search techniques were employed on Scopus and Eric databases using the keywords "smartphones," "learn," "Arabic," and "school," yielding (n=27) relevant articles. These articles were categorized into three primary themes: (1) Technology-Enhanced Learning (TEL) and Its Impact on Education, (2) Language Learning and Teaching Strategies, and (3) Special Educational Needs and Inclusive Education. The expected results suggest that TEL, facilitated by smartphones, significantly enhances student engagement, motivation, and personalized learning experiences, thereby improving Arabic language proficiency. Additionally, Mobile-Assisted Language Learning (MALL) applications are anticipated to be effective tools in Arabic language instruction, providing interactive and accessible learning platforms. Furthermore, the review is expected to highlight the critical role of smartphones in supporting inclusive education, particularly for students with special educational needs, by enabling broader participation in language learning activities. The study concludes that integrating smartphones into Arabic language education can significantly enhance learning outcomes and promote educational equity and access.

Keywords: Smartphones, Learn, Arabic, School

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Introduction

In an era characterized by rapid technological advancements, the integration of smartphones into educational settings has shown potential in improving language learning experiences (Zou & Thomas, 2018). Many languages are taught across the globe. However, Arabic is one language that is significant due to its history, relevance as well as importance in social and cultural aspects. Yet, the rules and conditions are very hard for learners of Arabic, especially children in school, because learning Arabic requires mastering a complex script, complicated grammar, as well as a variety of dialects (A. Alkohrani, 2023; Al-Assaf, 2021; Albaqami, 2023). Against this background, this study investigates the facilitative role smartphones have in the acquisition of Arabic amongst students at school, aiming to contribute towards their language proficiency as well as intercultural competence. One significant and impactful advancement has been smartphone usage, which has taken root among students, signalling transformed learning through improper means. Mobile devices, including smartphones, provide a more dynamic learning experience compared to traditional classroom approaches that depend heavily on textbooks and lectures, as they allow learners to connect with Arabic skills on-the-go (Adnan et al., 2020; Juma et al., 2018). Whether through language learning applications, multimedia content, or online communities, smartphones provide students with access to diverse learning materials tailored to their individual needs and preferences.

The ability of smartphones to aid Arabic language learning is an act of independent learner as well as motivating the learner. Smartphones had control of the learning process over to the learner, allowing them to set their own learning objectives, monitor their own progress as well as pursue subjects of interest at their own speed. Such autonomy not only cultivates ownership and responsibility but also enhances intrinsic motivation, leading to more effective and holistic learning outcomes. Moreover, these smartphones also enable immersive as well as interactive learning experiences, which are useful for a complex language like Arabic (Elgamal et al., 2018). By having access to a wide array of features from voice recognition to multimedia content and gamified exercises, students can dynamically and engagingly interact with Arabic language materials, leading to improved comprehension, fluency as well as pronunciation. Furthermore, smartphones promote genuine communication and cultural exchange by connecting students with native speakers and other learners around the globe, allowing them to practice their language skills in real-world settings as well as foster intercultural awareness. The incorporation of smartphones within the Arabic language follows the direction of a wider pedagogical trend, which favours the inclusion of skills linked to digital literacy as well as capabilities needed in the 21st century. Whether this entails remotely collaborating with different classrooms or utilizing the myriads of online resources available today, educators can leverage technology in support of teaching languages while also promoting the invaluable critical thinking, communication, and collaboration skills associated with living in an improvingly connected as well as multicultural world (Mathis et al., 2016; Moyo, 2019). In addition, smartphones present valuable opportunities for differentiated instruction, enabling teachers to meet the diverse needs as well as learning styles of students through customized learning pathways and specific feedback.

Finally, smartphones can be considered an effective means of improving Arabic language learning among students in schools as they offer a flexible, interactive, as well as engaging platform that can be integrated with traditional forms of instruction. Utilizing the possibilities that smartphones offer, educators can facilitate the creation of autonomous learners with the linguistic as well as intercultural skills needed to function in an interconnected world. This

article will delve deeper into the various ways in which smartphones can be effectively integrated into Arabic language teaching and learning, drawing on research evidence and practical insights to inform educational practice and policy.

Literature Review

The study by Rohmah, Nur Sholihah, Basthomi, and Milal (2024) investigated the linguistic landscape at the Darussalam Islamic Educational Complex in Gontor, Indonesia. This research highlighted the prominence of English and Arabic languages in public signs as well, which was in line with the institution's given language policy to equip the students for their international encounters. The dominance of these languages, compared to that of Bahasa Indonesia and Javanese, emphasizes the pragmatic mindset towards education, valuing global readiness over the representation of local or national languages. The results underscored how such policies advance critical issues for education policies and policy from government more broadly as well as encouraged a dual focus on linguistic diversity as well as educational colonialism in the educational field. Meanwhile, the multilingual challenges in the classroom are further explored by Hagenars, van Heese, Vantieghem, and Stevens (2024) in Flemish schools, where teachers predominantly adopt a monolingual approach to facilitate Dutch language proficiency among students. Nevertheless, there is infrequent flexibility in order to embrace multilingualism when the person speaking the language is different from the original speaker, different context, or the purpose differs. The use of both approaches also drew attention to the fluidity of language policy in multicultural educational contexts, as well as the importance of headteacher in moulding these practices.

Within the framework of online learning amidst the COVID-19 pandemic, Bajamal, Anazi, Esheaba, and Hantira (2023) validated the Arabic version of the Positive/Negative Experiences of Parents for School-aged Students Assessment Scale. The psychometric assessment in this research revealed the exploratory factor analysis as well as internal consistency to support the scale's validity and reliability. These tools are vital for understanding as well as mitigating the effects of online education on parents and children across Arabic-speaking populations. Similarly, Rashid and Chehadeh (2023) focused on adapting chemistry experiments for visually impaired or blind students using assistive technologies like Sci-Voice Talking LabQuest. For instance, the research highlighted the importance of inclusive education by illustrating that through the employment of tactile tools and adaptive methods, BVI (Blind and Visually Impaired) students can engage in practical scientific work, thus enriching their learning experiences as well as access to education. Dreisbach and Mendoza-Dreisbach (2023) discussed the language policies outlined in the Bangsamoro Education Code, which integrates Arabic, English, and Filipino into the curriculum of the Bangsamoro Autonomous Region in Muslim Mindanao. Despite such provisions, the research acknowledged pertinent issues, which include the difficulties that students encountered with Arabic and English, along with the marginalization of non-Muslim Indigenous peoples. The study recommended policy improvements to increase educational practice language diversity as well as inclusion.

Rodríguez (2023) explored the understanding of numerical place value among first-grade students in Cali, Colombia, focusing on additive composition and numerical equivalence as key predictors. Using a quasi-experimental design, the research illustrated the function of these mathematical concepts for writing Arabic numerals correctly, and this interpreted about what instructional strategies are effective for early mathematics education. Alaoui and Elaachak (2023) described the development of a serious game in Arabic using the GLUPS

methodology to transform a traditional card-based game into a digital format. This illustrated the potentiality of serious games for enhancing learning as well as knowledge acquisition, especially in developing countries in which digital tools can greatly increase educational outcomes.

Gür and Öz (2023) investigated the perceptions of Arabic language learning among preparatory class students at Kilis 7 Aralık University using metaphors. Findings reflected varied perspectives of Arabic among students, ranging from hard to a better impression of the language. Such metaphorical realizations offered richer insights into students' personal experiences as well as the dynamics which mold their language learning. At the same time, Almjally, Howland, Good, and du Boulay (2023) analyzed the gestures of primary school children in Saudi Arabia as they explained programming concepts. Children's gestures reflected their conceptual understanding and were shaped by their right-to-left language directionality. This line of research advanced our understanding of embodied learning as well as the impact of gestures on teaching programming concepts to early learners. Ginzburg and Barak (2023) assessed the influence of Technology-Enhanced Learning (TEL) on students' motivation to learn science from a cross-cultural insight. The research highlights the importance of exploring new technological tools that can enhance engagement as well as motivation through culturally responsive practice in science education.

One major challenge is engagement and motivation that need to be fostered in science learning as a focus among elementary school students. The use of technology as digital sensors and data recorders, since they have been used, can clearly raise student engagement. A study by Makmur and colleagues (2024) focused on evaluating the motivation in learning science among elementary students from broad cultural backgrounds, revealing that the use of technology can bridge cultural gaps and increase motivation. The study found 2 approaches to TEL (divergent and convergent), both connected to increased student interest, relevance, enjoyment, as well as interaction across cultures. These results highlight the importance of harmoniously embedding technology into the educational context of science, improving cross-cultural experiences as well as processes of scientific endeavors. During the COVID-19 pandemic, many institutions have quickly adopted online systems for learning and teaching, this also impacted the world of foreign language education, especially in Islamic boarding schools.

On the other hand, Mhd Alkasirah et al. (2024) investigated the effects of this shift, applying the Taallum Website as an e-learning model. Studies have shown an increase in teacher engagement as well as teacher effectiveness in teaching Arabic and English post-COVID-19, and the t-test value was significant. Such delivered education aimed at not only retaining but also improving educational quality in challenging scenarios, as significantly distinguished from already existing as well as developing learning modules. In the realm of language education, vocabulary acquisition is pivotal for learners of Arabic as a foreign language. Mhd Alkasirah et al. (2024) developed a tool designed to measure Arabic vocabulary accomplishment through a digital storytelling-based application, which was validated by experts and tested for reliability among Malaysian secondary students. The instrument showed excellent content validity as well as internal consistency with a Cronbach's alpha value equal to .810. In particular, one study found that introducing digital stories resulted in a significant increase in vocabulary acquisition, providing tantalizing evidence for the potential of using technology in language learning contexts.

Translanguaging, the practice of using different languages throughout one or more subjects in educational settings, is growing in popularity as an approach to pedagogy. Eldjoudi (2024) explored its application in Algerian English as a Foreign Language (EFL) classrooms, where Arabic, Tamazight, French, and English are all used. Translanguaging was found to negotiate elements about social justice, and new English vocabulary was taught to students. It also improves the way students express themselves by expanding their language pools, their ways of expressing things, and their understanding of cultural contexts and diversity. Moreover, these results repeated the usefulness of translanguaging in terms of language learning, but they also revealed its crucial role in dealing with larger social problems in educational settings. At the same time, Elhakeem, Ibrahim, El-Maghraby, and Fouad (2023) addressed the lack of structured programs for enhancing Executive Functions (EF) in Egyptian children with learning disorders. The research used a mixed intervention based on “Executive Functions Training-Elementary” and “Promoting Executive Function In The Classroom” programs. Both EF and dyslexia assessments showed significant improvements after the intervention. This study illustrated the importance of structured programs by showing the improvement of tailored rehabilitation programs over general rehabilitation through the cognition as well as academic outcomes of children with learning disorders.

Gamification is emerging as an innovative approach to language teaching. For example, Ismail, Makhtar, Chulan, and Ismail (2023) developed a framework for implementing gamification in Arabic language education in Malaysia. This method was aimed to motivate learners by creating a gamified environment to enhance their listening, speaking, reading as well as writing skills. The authors cite studies linking gamification to motivation as well as performance. This framework of the model was part of the wider adoption of the principles of gamification into practice that attempted to improve the teaching and learning outcomes of learning a language. Alfakhry et al. (2023) provided an evaluation of the Learning Environment (LE) in Syria's largest medical schools, revealing significant deficiencies. Clinical-stage students reported lower perceptions of LE when measured using the Dundee Ready Educational Environment Measure (DREEM) inventory compared to pre-clinical students. The present study emphasized the urgent need for reforms of education in the field of academic as well as clinical competencies of medical schools in Syria. Indeed, the remedial actions for these shortcomings are imperative in improving the standard of medical education as well as preventing the possible migration of human resources.

Ismail, AlGhafari, and Ibrahim (2023) examined a peer-assisted learning approach to promote language concordance between physicians and patients in the United Arab Emirates (UAE). Their pilot program was designed to teach Arabic medical terminology to medical students, leading to significant gains in communication as well as confidence during clinical encounters. Student feedback also highlighted the importance of integrating local language training into medical curricula to improve patient care as well as satisfaction. Meanwhile, Alqaan and Qamar (2023) conducted a sentiment analysis with regard to Arabic tweets related to online learning amidst the COVID-19 pandemic. They used machine learning and Long Short-Term Memory (LSTM) methods to examine nearly 100,000 tweets and found that the sentiment regarding online education was considerably negative. To attain this, the research employed a combination of techniques such as SMOTE (Synthetic Minority Over-sampling Technique) to enable dataset balancing for working with a more reliable analysis. Additionally, it revealed how the public viewed online learning as well as highlighted the importance of enhancing online learning programs to prepare for future students and educators.

Material and Methods

Identification

Several essential steps in the systematic review process were undertaken to identify a significant amount of pertinent literature for this study. Initially, a few keywords were chosen, and then similar terms were identified utilizing thesauruses, dictionaries, previous research as well as encyclopedias. Once the search strings for the Eric and Scopus databases were established, all relevant terms were included (see Table 1). As a result, 208 publications were successfully gathered from both databases during the initial phase of the systematic review process for this research.

Table 1: The Search String

Scopus	TITLE-ABS-KEY ((smartphones OR "mobile learning" OR app* OR "online platform" OR digital) AND learn* AND Arabic AND school AND students) AND (LIMIT-TO (PUBYEAR, 2021) OR LIMIT-TO (PUBYEAR, 2022) OR LIMIT-TO (PUBYEAR, 2023) OR LIMIT-TO (PUBYEAR, 2024)) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (PUBSTAGE, "final")) AND (LIMIT-TO (SRCTYPE, "j")) AND (LIMIT-TO (LANGUAGE, "English"))
	Date of Access: May 2024
Eric	(smartphones OR "mobile learning" OR app* OR "online platform" OR digital) AND learn* AND Arabic AND school AND students)
	Date of Access: May 2024

Screening

During the screening step, the collected research items are evaluated for alignment with the predefined research question(s). Typically, content-related criteria are used in this phase, such as selecting items based on the topic of smartphones in learning Arabic by school students. At this stage, all duplicate papers are eliminated from the list. Moreover, the initial screening stage excluded 147 publications, leaving 61 papers to be examined in the second stage, relying on a variety of inclusion as well as exclusion criteria (refer to Table 2). Moreover, the primary criterion was literature (research papers), as it provides practical suggestions. This also included reviews, meta-analyses, meta-syntheses, books, chapters, book series as well as conference proceedings not part of the latest study. Additionally, the review was restricted to English-language publications and focused on a four-year timeframe (2021–2024). Ultimately, no publications were rejected due to duplication.

Table 2: The Selection Criterion in Searching

Criterion	Inclusion	Exclusion
Language	English	Non-English
Timeline	2021 – 2024	< 2021
Literature type	Journal (Article)	Conference, Book, Review
Publication Stage	Final	In Press

Eligibility

The final review sample is established after satisfying all inclusion as well as exclusion criteria. It is crucial to provide a detailed list of the research items in this sample so readers can see which items underpin the study's results. At the third level, known as eligibility, 61 articles were initially included. During this stage, all article titles as well as key content were meticulously reviewed to ensure they fulfilled the inclusion criteria and were relevant to the study's research aims. Consequently, 31 publications were eliminated because their titles and abstracts were insignificantly associated with the study's purpose, relying on empirical data. Ultimately, 30 papers were included for evaluation (refer to Figure 1).

Data Abstraction and Analysis

An integrated analysis was employed as an assessment strategy in this study to assess as well as synthesize a variety of research designs, specifically quantitative methods. The aim was to identify pertinent topics as well as subtopics. The data collection phase was the initial step in theme establishment. Figure 1 illustrates the meticulous analysis of 30 publications for statements or material pertinent to the present study's themes. Additionally, the authors reviewed substantial contemporary studies on the use of smartphones in learning Arabic by school students, examining the methodologies and research outcomes of these studies. The author then collaborated with co-authors in developing themes relying on the evidence within the study's context. Here, a log was maintained throughout the data analysis process to record any analyses, puzzles, viewpoints, or other thoughts related to interpreting the data. Furthermore, the authors then compared the findings to identify any inconsistencies in the theme development process. Any disagreements between concepts were discussed among the authors. The established themes were subsequently adjusted to assure consistency. Two experts conducted the analysis selection to determine the validity of the issues. The expert review phase ensured the clarity, significance as well as the appropriateness of each subtheme by establishing domain validity.

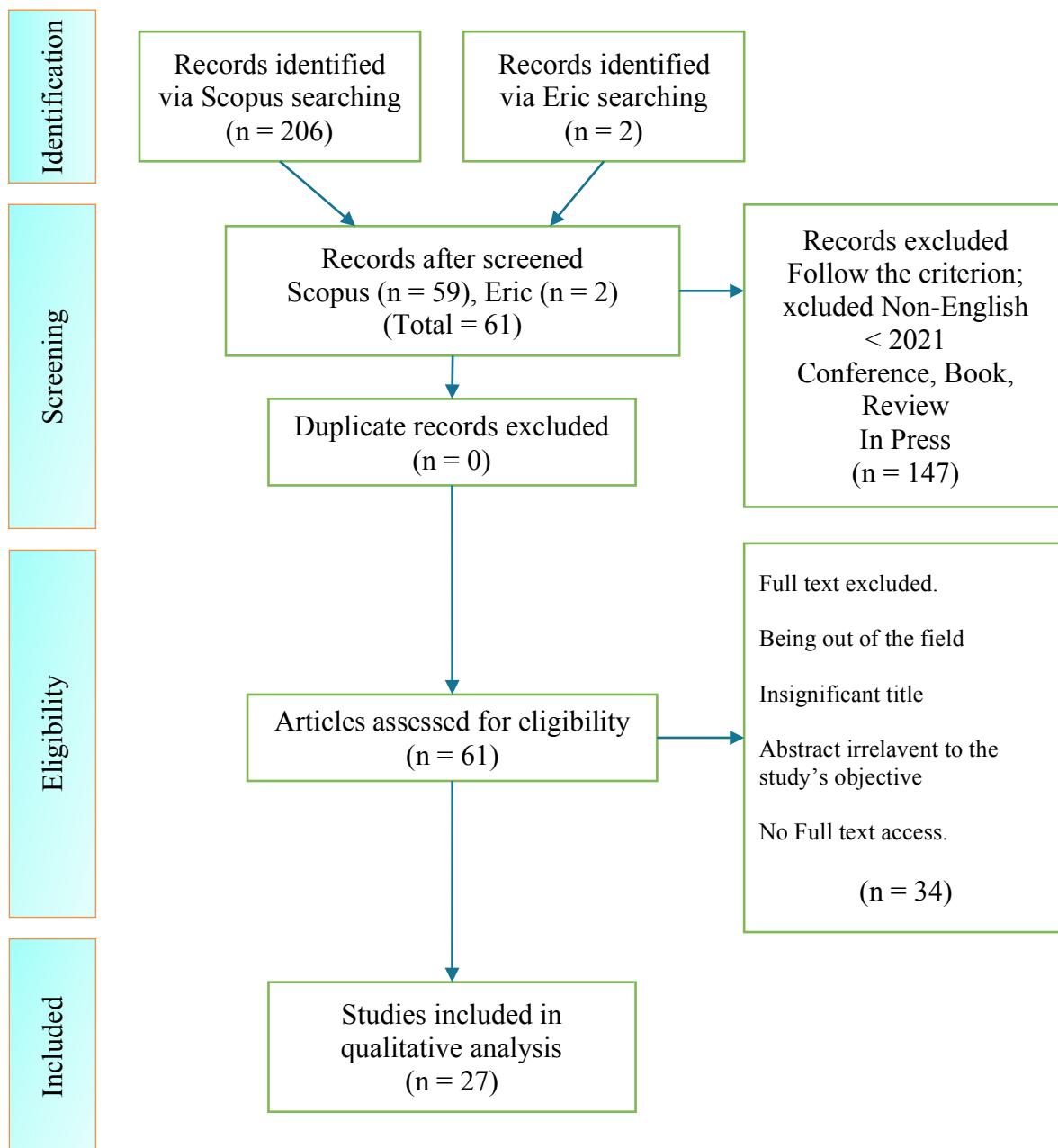


Figure 1: Flow Diagram of the Suggested Searching Study (Moher, Liberati, Tetzlaff, Altman, & The PRISMA Group, 2009)

Results and Findings

With access to smartphones, which most of the school students learning Arabic use, it has become one of the most necessary tools for any school student who starts learning Arabic these days because of its ease of use, interactivity as well as high access to educational content. It makes language learning apps, online courses, as well as access to multimedia content easy and as convenient as studying Arabic at any place and time. Using these apps, interactive tasks such as games, quizzes, as well as audio-visual methods, make learning specific and to the point, thus, too efficient. In the process, self-paced learning encourages autonomous learning. In addition, smartphones make it easy to interact with peers and native speakers via social media and messaging apps, which can aid in language practice as well as cultural exchange. With personalized learning experiences and cost-effective access to

diverse educational materials, smartphones significantly enrich students' Arabic language education, promoting both proficiency and enthusiasm for learning. All articles were classified relying on three main themes: TEL and its impact on education (10), language learning and teaching strategies (12), special educational needs, and inclusive education (5) (Table 3).

Table 3: The Research Article's Findings Based on the Proposed Search Criterion – Theme 1: Technology-Enhanced Learning (TEL) and Its Impact on Education

Authors	Title	Year	Journal	Methodology	Finding and Advantages
Sawaftah and Almobasher	The Impact of Using iPads in Teaching the 3D Shapes Textbook Unit and Promoting Spatial Visualization and Achievement in Mathematics among Eighth-Grade Students	2021	International Journal of Science, Mathematics and Technology Learning	Quasi-experimental study	iPads enhanced students' mathematical achievement and promoted spatial perception.
Alrige, Bitar, Al-Suraihi, Bawazeer and Al-Hazmi	MicroWorld: An Augmented-Reality Arabian App to Learn Atomic Space	2021	Technologies	Design science research paradigm	MicroWorld allows students to visualize chemical elements in 3D and simulate chemical reactions, evaluated through the A-SUS.
Mustafa, Mustafa, Zriqat and Althebyan	MIRNA: Adaptive 3D Game to Assist Children's Distance Learning Difficulties; Design and Teachers' Intention to Use	2023	International Arab Journal of Information Technology	Empirical investigation, qualitative analysis	Teachers have a positive attitude towards MIRNA and intend to use it for online learning.
Aljabri, Chrouf, Alzahrani, Alghamdi, Alfehaid, Alqarawi, Alhuthayfi, and Alduhailan	Sentiment analysis of arabic tweets regarding distance learning in Saudi Arabia during the covid-19 pandemic	2021	Sensors	Sentiment analysis, machine learning classifiers	The study achieved high accuracy (0.899) in sentiment classification using Logistic regression with specific feature extraction techniques.
Mohamad Alakrash and Abdul Razak	Education and the fourth industrial revolution: Lessons from COVID-19	2022	Computers, Materials and Continua	Purposive Sampling, Qualitative Study	During the lockdown, education experienced a digital transformation as teachers transitioned to technology-based teaching methods. Educators encountered difficulties such as managing virtual classrooms, ensuring

Shamir-Inbal and Blau	Facilitating Emergency Remote K-12 Teaching in Computing-Enhanced Virtual Learning Environments During COVID-19 Pandemic - Blessing or Curse?	2021	Journal of Educational Computing Research	Qualitative Research, Nation-wide Online Samples, Grounded Theory Approach	stable Internet connections, overcoming insufficient preparation and low digital proficiency, and addressing students' mental health concerns. Teachers' experiences revealed 1,822 statements: 580 reflecting challenges (pedagogical, technological, organizational) and 827 reflecting benefits of ERT. The analysis also uncovered 415 pedagogical strategies used in distance learning.
Asbulah, Sahrim, Soad, Rushdi and Deris	Teachers' Attitudes Towards the Use of Augmented Reality Technology in Teaching Arabic in Primary School Malaysia	2022	International Journal of Advanced Computer Science and Applications	Quantitative Methodology, Survey Questionnaire, Data Analysis using SPSS version 26	The research found that teachers' readiness to incorporate augmented reality technology in Arabic instruction is at a moderate level. However, attitudes and knowledge, especially among veteran teachers with little IT experience, were still low, affecting their enthusiasm for technology integration in teaching.
Al-Qatawneh, Alsalhi, Eltahir, Althunibat, Jaradat and Aljarrah	Effects and Perceptions of Mobile Learning in Higher Education	2022	Emerging Science Journal	Quasi-experimental design, Case Study, Achievement test and questionnaire, Data analyzed using SPSS.	The experimental group demonstrated significantly better scholastic achievement and more positive attitudes toward mobile learning compared to the control group.
Ginzburg and Barak	Technology-Enhanced Learning and Its Association with Motivation to Learn Science from a Cross-Cultural Perspective	2023	Journal of Science Education and Technology	Sequential Mixed-Methods Research Design	The study surveyed science teachers and 109 sixth-grade students from Israel as well as the USA, revealing cultural differences in motivation and identifying two phases of technology-enhanced science learning.

Aljarf	Differential Effects of the iPad on First and Second Language Acquisition by Saudi Children during the COVID-19 Pandemic	2021	Online Submission	Survey-Questionnaire	The study found iPads are more effective for young children learning languages than older ones, primarily for educational apps on English, Arabic Alphabet, Quran, numeracy, arithmetic, and animals, but may expose them to inappropriate language.
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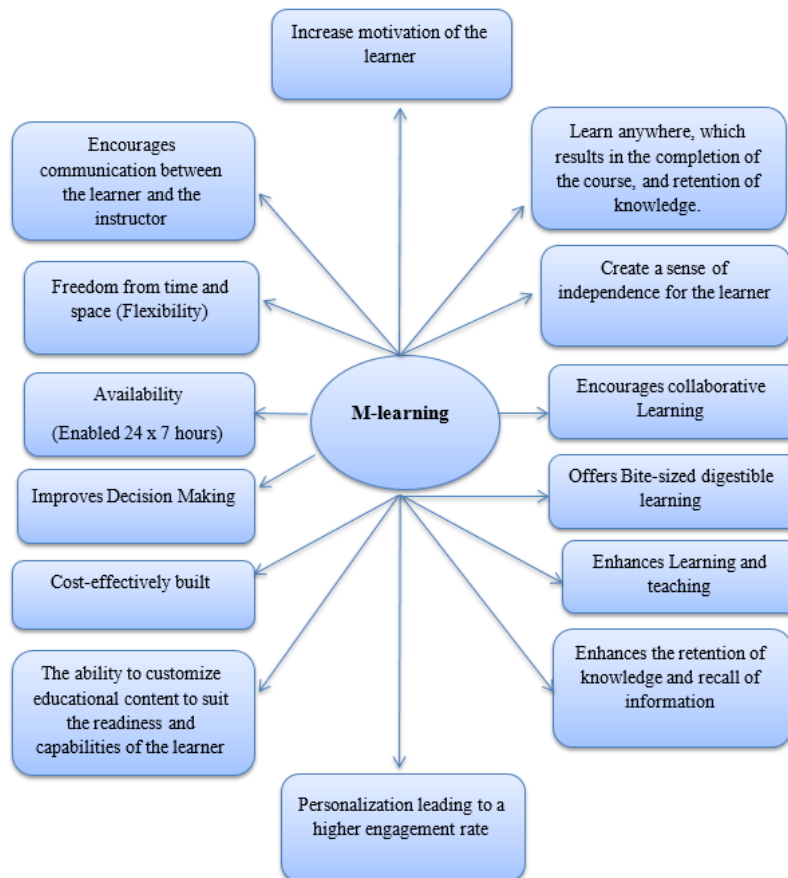


Figure 2: Features and Benefits of M-Learning (Al-Qatawneh et al., 2022)

Table 4: Theme 2: Language Learning and Teaching Strategies

Authors	Title	Year	Journal	Methodology	Finding and Advantages
Yitzhaki, Tannenbaum, and Shohamy	'Shared Education' and translanguaging; students at Jewish and Arab schools learning English together	2022	International Journal of Bilingual Education and Bilingualism	Analysis of Lessons' Transcripts, Coding System.	The study involved sixth-grade students from Jewish and Arab schools, revealing rich interactions among English, Arabic, and Hebrew, highlighting both positive and negative outcomes.
Alhabshi and Abdelaziz	Developing a Multimodal Interactive Learning Environment to Enhance the Reading Comprehension of Grade 4 Students in the UAE Public Schools	2022	International Journal of Learning, Teaching and Educational Research	Developmental and design-based research approaches guided the study. The MILE was designed using the Four Components of the Instructional Design model (4C/ID) and validated in a public school in Abu Dhabi, UAE.	The MILE program significantly improved reading comprehension skills among Grade 4 students, particularly low-level committed students, with retelling as well as paraphrasing skills being easier to develop.
Altakhaineh, Sulaiman, and Alhendi	Teaching English Grammatical Collocations to Arabic-Speaking EFL Learners	2021	International Journal of Technologies in Learning	Employed a pre-test and delayed post-test approach with 40 EFL tenth-grade students in Amman, Jordan, divided into two groups: Group A (treatment - overhead projector with guessing games) and Group B (control - printed dictionaries). Paired sample t-test was used for data analysis.	Teaching through an overhead projector with guessing games significantly improved the learning of collocations compared to traditional printed dictionaries. The most challenging collocation type was identified as noun + preposition due to vocabulary gaps and L1 interference.
Alabdulaziz, and Alhammadi	Effectiveness of Using Thinking Maps Through the Edmodo Network to Develop Achievement and Mathematical Connections Skills Among Middle School Students	2021	Journal of Information Technology Education: Research	The study used a quasi-experimental design with 49 experimental and 53 control groups, comparing pre-test and post-test scores. Recommendations include conducting training workshops and preparing Edmodo guidelines.	The study discovered a significant improvement in accomplishment as well as mathematical connection skills among students using Edmodo thinking maps compared to traditional methods, emphasizing the need for

Ismail, Yusop, Pisal, Radzi, Atoh, Chulan, Ismail and Zaki	Monitor Model Theory as a Solution to Overcome the Problem of Mastering Arabic Grammar Among Students in Malaysia	2022	Theory and Practice in Language Studies	This paper explored the issue of Arabic grammar mastery among Malaysian students and the use of Monitor Model Theory to address this issue, examining the development of the Arabic language, curriculum, and learning methods. Secondary sources review.	professional development for teachers. This paper aimed to enhance teaching methods for Arabic grammar, thereby improving students' understanding and reducing learning errors.
Ismail, Makhtar, Chulan and Ismail	A Model Framework for the Implementation of Gamification in Arabic Teaching in Malaysia	2023	Theory and Practice in Language Studies		The gamification approach has been proven effective in improving Arabic language mastery among students in Malaysia.
Ritonga, Pahri, Rahmawati, Tambak, Lahmi, Handayani and Riyadi	Strategies for developing tarkib arabic exercises instruments for strengthening the understanding of yellow book	2021a	International Journal of Entrepreneurship	Qualitative method with critical analysis approach.	Providing various training increases the ability as well as motivation of students to understand the yellow book. Here, selecting training models is crucial.
Ritonga, Purnamasari, Budiarti, Lahmi, Nurdianto and Zulfida	The management of arabic language and the yellow book curriculum planning at islamic boarding schools in respond to the freedom to learn education system	2021b	Journal of Management Information and Decision Sciences	Qualitative method with critical analysis approach.	The Yellow Book and Arabic learning system lack continuous planning and evaluation; changes are required in learning objectives, resources, methods, and media, integrating ICT.
Alhamami and Almelhi	English or arabic in healthcare education: Perspectives of healthcare alumni, students, and instructors	2021	Journal of Multidisciplinary Healthcare	Alumni records, questionnaires (instructors and students).	GPA prediction linked to English proficiency program grades; EMI presented challenges affecting academic outcomes in healthcare education.
Ritonga, Widodo, Lahmi, Budiarti, Annova and Zubaidah	Arabic Learning Orientation in Mahad and Islamic Boarding Schools, and its Relevance to the Need for Human	2021c	International Journal of Early Childhood Special Education	Quantitative approach.	Graduates from Ma'had excel in speaking but are weaker in reading and writing; Islamic boarding school graduates excel in

	Resources with Language Skills in the Globalization Era				reading and writing but are weaker in speaking.
Akmaliyah, Hudzaifah, Ulfah and Pamungkas	Child-friendly teaching approach for arabic language in indonesian islamic boarding school	2021	International Journal of Language Education	Descriptive analysis.	Formal teaching of Arabic at Darunajah Islamic Boarding School aligned with child-friendly values across educators' interactions, materials, and learning processes.
El-Mneizel, Alakashee, Bettaher, Ayyat and Al-Gharaibeh	The Impacts of Lughati for Smart Education Initiative on Students' Acquisition of Arabic Language Skills at the Kindergarten Stage	2023	Information Sciences Letters	A study was conducted using a quantitative research approach, with a sample of 100 children and 100 teachers from the Emirate of Sharjah, including 50 experimental and 50 control groups participating in the Lughati Smart Education program.	The study revealed significant differences in analysis, reading skills, concepts, structure as well as achievement tests for students attending the Lughati program but no significant difference in writing skills. Teachers discovered the program helpful in developing language proficiency, reading, spelling, and handwriting. Recommendations include implementing the program across all states and public schools, linking it to Ministry curricula, and regularly updating it.

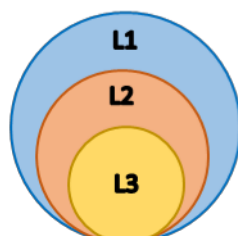


Figure 3: The Process of Mastering the Arabic Language (Ismail et al., 2022)

Table 5: Theme 3: Special Educational Needs and Inclusive Education

Authors	Title	Year	Journal	Methodology	Finding and Advantages
Al-Bustan, Al-Thuwaikh, Rajab and Al-Ghareeb	Behavioral, Emotional and Cognitive Self-Regulation of Children having Disabilities in Arabic Mainstreamed and Specialized Middle-School Classrooms in Kuwait	2021	International Journal of Early Childhood Special Education	A study involving 56 Kuwaiti students from 6-9 grades discovered significant differences in emotional self-regulation, with children with learning disabilities performing better in mainstream classrooms.	The study indicated that girls in specialized classes exhibited lower behavioral self-regulation compared to boys, and mainstreamed children with learning disabilities also had lower scores. However, by grade 9, children in specialized classrooms showed improvement in self-regulation skills, which was influenced by the services provided and the necessity for teachers to receive training in emotional self-regulation.
Turan and Fansa	Problems Experienced of Migrant Children in Learning Turkish	2021	Milli Egitim	The research involved 160 Syrian 4th graders from eight primary schools in the Reyhanlı district of Hatay province, using a descriptive survey model to understand the challenges they face in Turkish learning and analyzed using the SPSS program for statistical analysis.	The study highlighted that Arabic-derived words in Turkish aid Turkish learning, but students struggled with written expression. They can translate Arabic texts and express thoughts in Turkish sentences, but Turkish lessons are necessary. Syrian migrant students struggled with vowels and consonants while they could vocalize the "d" sound. The research suggested further studies on speaking skills and voice-over techniques.

Ihbour, Anarghou, Boulhana, Najimi and Chigr	Mental health among students with neurodevelopment disorders: Case of dyslexic children and adolescents	2021	Dementia e Neuropsychologia	This study aimed to assess self-esteem, anxiety, and depression in dyslexic Arabic-speaking children and adolescents and described psychiatric comorbidities in these subjects compared to non-dyslexic peers. Two hundred five students from Beni Mellal-Khenifra, Morocco, participated using Taylor's Self-Assessment Scale, Beck's Depression Questionnaire, and Coopersmith Self-Esteem Inventory.	Dyslexic individuals exhibited higher anxiety, depression, and self-esteem, with higher psychiatric comorbidity rates, emphasizing the need for a multidisciplinary approach in dyslexic rehabilitation care.
Elhakeem, Ibrahim, El-Maghraby and Fouad	Application of a rehabilitation program for executive functions in a sample of Egyptian children with a learning disorder	2023	Egyptian Journal of Otolaryngology	This study aimed to implement a comprehensive, evidence-based intervention program for Egyptian children with learning disorders to improve EF skills. The program used a multimodality approach, adapting the "Executive Functions Training-Elementary" and "Promoting Executive Function In The Classroom" programs to test their effectiveness in rehabilitation.	The study significantly improved EF and dyslexia scores in Egyptian children with learning disorders. An Arabic rehabilitation program tailored for EF difficulties proved effective in enhancing both deficits. Nevertheless, additional research is needed to compare this program with other conventional interventions.

Bishara	Association between Phonological and Morphological Awareness and Reading Comprehension among Special-Education Children in Arab Elementary Schools	2022	International Journal of Disability, Development and Education	This is an observational study that uses quantitative analysis to analyze data.	Higher Arabic morphological as well as phonological awareness positively impacted reading comprehension in special education learners, confirming the importance of these factors in enhancing reading skills.
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Discussion and Conclusion

In conclusion, the text highlights the positive impact of technology, like iPads and MicroWorld, on students' academic achievement and teachers' attitudes toward online learning. It also emphasizes the challenges teachers face during the digital leap in education, including managing virtual classes and addressing students' mental health.

This text presents selected positive and negative instances of interactions in English, Arabic, and Hebrew among sixth-grade students from Jewish and Arab schools. It also discusses the effect of the MILE program on improving reading comprehension, the role of guessing games in teaching collocation, as well as the value of training on Edmodo thinking maps for teachers. The paper also attempts to improve Arabic grammar teaching techniques, facilitating the mastery of Arabic in terms of gamification, as well as addressing the lack of planning and assessment continuity in Arabic learning systems. In addition, the text relates the claim about EMI in health higher education, the healthcare student graduate quality among Colleges, and the child-friendly values of formal Arabic teaching in Darunajah Islamic Boarding School. Last but not least, the research suggests that the Lughati program should be rolled out in every state and public school to improve language skills as well as spelling.

It is emphasized that specialized classrooms and services are important for advancing self-regulation skills, as they tend to be weaker in children with special needs, and Turkish lessons are imperative to improve written expression in Arabic-speaking Turkish learners, while dyslexic people experience anxiety and depression at a higher rate. This will be the efficacy of an Arabic rehabilitation program for EF challenges in children from Egypt.

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