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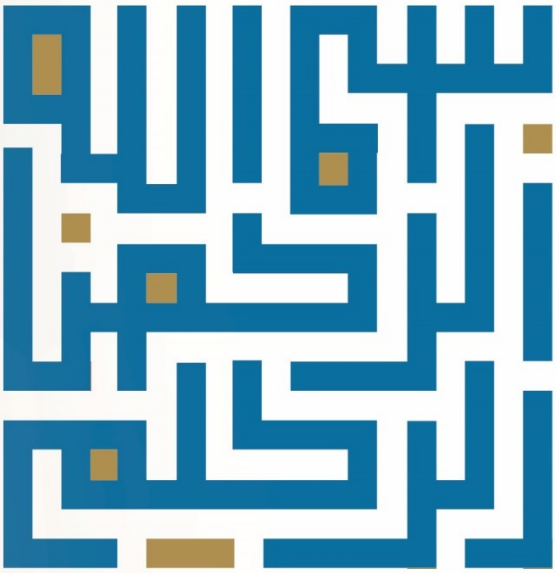

قواعد وضوابط النشر في المجلة

- أن يتسم البحث بالأصالة والجدية والإبتكار والإضافة المعرفية في التخصص.
- لم يسبق للباحث نشر بحثه.
- أن لا يكون مستلاً من رسالة علمية (ماجستير/دكتوراة) أو بحوث سبق نشرها للباحث.
- أن يلتزم الباحث بالأمانة العلمية.
- أن تراعى فيه منهجية البحث العلمي وقواعده.
- أن لا تتجاوز نسبة الاقتباس في البحث المقدم (25%) .
- أن لا يتجاوز مجموع كلمات البحث (12000) كلمة بما في ذلك الملخصين العربي والإنجليزي وقائمة المراجع.
- لا يحق للباحث إعادة نشر بحثه المقبول للنشر في المجلة إلا بعد إذن كتابي من رئيس هيئة تحرير المجلة.
- أسلوب التوثيق المعتمد في المجلة هو نظام جمعية علم النفس الأمريكية (APA) الإصدار السادس، وفي الدراسات التاريخية نظام شيكاغو.
- أن يشتمل البحث على : صفحة عنوان البحث ، ومستخلص باللغتين العربية والإنجليزية، ومقدمة ، وصلب البحث ، وخاتمة تتضمن النتائج والتوصيات ، وثبت المصادر والمراجع ، والملاحق اللازمة مثل: أدوات البحث، والموافقات للتطبيق على العينات وغيرها؛ إن وجدت.
- يلتزم الباحث بترجمة المصادر العربية إلى اللغة الإنجليزية.
- يرسل الباحث بحثه إلى المجلة إلكترونيًا ، بصيغة (WORD) وبصيغة (PDF) ويرفق تعهدًا خطيًا بأن البحث لم يسبق نشره ، وأنه غير مقدم للنشر، ولن يقدم للنشر في جهة أخرى حتى تنتهي إجراءات تحكيمه في المجلة.
- المجلة لا تفرض رسوما للنشر.

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ISLAMIC UNIVERSITY OF MADINAH

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❋ ترتيب الأبحاث حسب تاريخ ورودها للمجلة مع مراعاة تنوع التخصصات

الجامعة الإسلامية بالمدينة المنورة

ISLAMIC UNIVERSITY OF MADINAH

مراجعة منهجية لفعالية أدوات التعلم الإلكتروني في تدريس اللغة العربية لغير الناطقين بها في بعض الدراسات السابقة في هذا المجال

A systematic review of the efficacy of e-learning Tools in Teaching Arabic to non-native speakers in some previous studies in the field

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المستخلص

تزايد طلب غير الناطقين بلغة الضاد على تعلم اللغة العربية مؤخرًا. يأتي ذلك تزامنًا مع توظيف التعلم الإلكتروني في تعليم وتعلم اللغة العربية. وفي خضم ذلك كله، يتوجب البحث لتقييم ما إذا كانت طريقة التدريس هذه فعالة. لسد هذه الفجوة البحثية، تم تطوير سؤال بحثي وتحديد نطاق للدراسة. تم إجراء بحث منهجي عبر المقالات المتعلقة بالدراسات المنشورة من ٢٠١١ إلى ٢٠٢٢ في فهارس قواعد البيانات ومواقع مجلات محددة. شملت قواعد البيانات التي تم استخدمها APA SyncINFO وEmerald Insight وScopus. ولقياس حجم التأثير الإحصائي، تم اعتماد طريقة كوهين. حيث تم إجراء التحليل بواسطة تطبيق Review Manager 5.4 باستخدام نموذج تأثير ثابت. تم اعتماد قيمة احتمالية قدرها ٠,٠٥ كعتبة تأثير. أسفر البحث عن جمع ٢٦٦ مقالة غير مكررة. وبعد التقييم، ترشحت ثمانية منها فقط لتضمينها في هذه الورقة البحثية. كانت أربعة من هذه الدراسات المشمولة نوعية، والأربعة الأخرى كمية. تم تحليل البيانات المستخرجة من المقالات المشمولة بشكل موضوعي وبحثي. من المنظور الموضوعي، تم تقييم التعلم الإلكتروني بشكل إيجابي فيما يخص النجاعة، وسهولة الاستخدام، وتحسين التفاعل، ورضا المتعلم، وتحسين الدرجات الأكاديمية. وجاء حجم التأثير المحسوب ٠,٩١ (٩٥٪ CI، ٠,٥٦–٠,٢٧) عند مقارنة التعلم الإلكتروني بالتعلم التقليدي. وقد صب ذلك في صالح التعلم الإلكتروني. وفي تحليل آخر جرت خلاله مقارنة درجات الاختبار القبلي والبعدي، جاء حجم التأثير ٠,٢٤ (٩٥٪ CI، 0.58-0.10-) لصالح التعلم الإلكتروني. وبالتالي، تدعم نتائج هذه المراجعة المنهجية والتحليل لنتائج الدراسات استخدام أدوات التعلم الإلكتروني في تعليم اللغة العربية لغير الناطقين بها.

الكلمات المفتاحية: أدوات التعلم الإلكتروني، تدريس اللغة العربية لغير الناطقين بها، مراجعة منهجية.

Abstract

The demand by non-native speakers to learn Arabic has been on the increase lately. This has been accompanied by the adoption of e-learning to teach and learn the Arabic language. In the midst of all this, research is required to assess if this method of teaching is effective. To fill this research gap, a research question was developed, and a scope of study defined. A systematic search for articles was done online for studies published from 2011 to 2022 in index databases and specific journal websites. Databases that were searched include APA SyncINFO, Emerald Insight and Scopus. To statistical measure the effect size, Cohen's d was adopted. Analysis was done in Review Manager 5.4 using a fixed-effect model. A p-value of 0.05 was adopted as the significance threshold. The search for articles yielded 266 non-duplicate articles. After study screening, only eight qualified for inclusion in this paper. Four of the included studies were qualitative, and four were quantitative. Data extracted from the included articles were analyzed in both thematic and Meta-analyses. From the thematic analysis, it was evident that e-learning was positively defined by usefulness, ease of use, interaction improvement, learner satisfaction and improved academic scores. The calculated effect size was 0.91 (95%CI, 0.56-0.27) when comparing e-learning to traditional learning. This was in favour of e-learning. In another analysis where pretest and post-test scores were compared, the effect size was 0.24 (95%CI, -0.10-0.58) in favour of e-learning. The findings of this systematic review and meta-analysis thus support the use of e-learning methods in teaching Arabic to non-native speakers.

Keywords: e-learning Tools, Teaching Arabic to Non-native Speakers, Systematic Review.

Introduction

The Arabic language is believed to have first appeared around the 9th century BC and was spoken by nomadic Arabs living in the Arabian Peninsula (Al-Huri, 2015; Mappr, 2022). Egypt bordered the Arabian Peninsula to the west, modern-day turkey to the right, and the Lebanon Mountains to the north (Lockman & Hourani, 1992). As of the present, the Arabic language has spread over the entire world. According to Eberhard et al., (2022) , time-sensitive linguistic maps are evidence of the contagious nature of the Arabic tongue. In this present era, 25 countries worldwide have declared Arabic to be the official or co-official language (Babbel. com & Lesson Nine GmbH, 2019a). Most of these countries are located in North Africa, the Arabian Peninsula, and the Middle East (Babbel. com & Lesson Nine GmbH, 2019a; Eberhard et al., 2022). With such a diverse geographical region coverage, native speakers, and counting immigrants, it then comes as no surprise that there are about 422 million native and non-native Arabic speakers in the entire world (Babbel. com & Lesson Nine GmbH, 2019a). According to Babbel. com & Lesson Nine GmbH (2019b) , this makes Arabic the fifth most spoken language globally. This is after Chinese, Spanish, English, and Hindi languages. Like any other global language, there are regions with higher concentrations of Arabic speakers than others. Countries like Egypt, Algeria, Sudan, Morocco, and Saudi Arabia have a recorded number of 102 million, 42 million, 40 million, 35 million, and around 30 million speakers, respectively (Eberhard et al., 2022).

As mentioned previously, Arabic has become a significant importance language around the world for millions of people that immigrated to places where the language is spoken and for billions of Muslims that seek to learn the language as an important part of their religion (Alsaiari, 2016). Consequently, it is rather important to develop further and more accessible strategies of teaching Arabic for non-native speakers to match the international education standards in language (Almelhes, 2016).

To achieve better strategies and international education standards of teaching, in addition to technology becoming a mayor playing role in teaching nowadays, this study comes to shed more light on the effectiveness of technology in teaching the Arabic language. Furthermore, the discussion and analysis on several studies that have investigated the use of technology in teaching Arabic to non – native speakers (Ali, 2019; Almelhes, 2016; Dewi et

al., 2021; Roslan & Sahrir, 2020; Wan Daud et al., 2019; Zainuddin, et al, 2020).

This study conducts a systematic review and meta-analysis approach to identify significant factors and issues influencing the effectiveness of using e-learning tools in teaching Arabic to non-native speakers.

Use of technology in learning

It can not be more correctly stated that technology has become a considerable part of the 21st century. Its applications are diverse and ranges from industrial uses to chores of everyday life (Courville, 2011; Raja & Nagasubramani, 2018; Shyshkanova et al., 2017). The education sector has also reaped from technological advancements and inventions. Academic research has been made faster and more efficient, due to easy access to literature material (Courville, 2011). Ghani et al., (2016) and Roslan & Sahrir (2020) reported that classroom work also has advanced, majorly due to the rollout and adaptation of online learning and online libraries. Speed and accessibility are two defining characteristics of e-learning (Kostromina & Gnedykh, 2015). Sadly, terms which cannot be used to describe traditional or classical means of teaching.

Traditional teaching is frequently categorized by mental passivity, but the student's focus is usually low. As Dočekal & Tulinská (2015) reports, lack of focus may be attributed to one-way communication during teaching. This is an aspect that e-learning has moderately managed to do away with by promoting interactions during the study. These interactions are student-students interactions, student-teacher interactions, and most importantly, student-content interactions (Zainuddin et al., 2020). Just as Dočekal & Tulinská (2015) and Kostromina & Gnedykh (2015) write in their papers, the internet makes it possible for both students and teachers to peer connect (Adewole-Odeshi, 2014; Goddard, 2002; Ng, 2015). According to Goddard (2002) , they can share ideas, which leads to them learning new skills and improving on existing ones. Besides communications and linking ideas, the internet makes it possible for teachers or tutors to employ different teaching methods and tools in conveying academic skills to students (Goddard, 2002; Hashim, 2018; Wood et al., 2005). Online academic learning and virtual school networks, e. g., libraries, have made it possible for apprentices to access different learning resources. To this effect, some scholars have even stated that a person can learn by themselves without a dedicated teacher or tutor with such access. In their study Lai et al. (2015) stated that independent

online learning can now be termed a significant step for successful language learning.

Use e-learning in teaching and learning Arabic

Like any other academic sector, traditional Arabic learning is slowly being replaced by technology-centered learning (Cloete, 2017; Hashim, 2018). The development of Arabic learning applications and websites has drastically improved. Also, there has been an increase in the number of online Arabic tutors for those willing to learn the Arabic language (Abedalla, 2015). Subscription apps and websites like uTalk, Memrise, Alkunuz, Busuu, Drops: Arabic, and Mindly have been at the forefront of this academic revolution. Shaalan & Talhami (2006) stated that this new breed of innovations has emerged to improve the accessibility of learning Arabic. In his research paper, Abedalla (2015) refers to mobile-assisted learning as a huge help and better means of disseminating Arabic language skills. This is true for both the native and non-native speakers of the Arabic language. Such innovations mean that tools and applications, can be used inside and outside classrooms, either in a formal or informal setting (Abedalla, 2015; Moghazy, 2020; Dewi et al., 2021; Panagiotidis, 2018). This flexibility and accessibility of use give students freedom and motivation to learn. These factors are two of the most essential student characteristics when dealing with e-learning (Dočekal & Tulinská, 2015; Hicks, 2011).

By now, research has clarified the penetrative nature of online technology. It has been seen that e-learning had been adopted by educational stakeholders to teach Arabic to non-native learners. The question then arises on the effectiveness of e-learning. Despite being speedy and accessible, can e-learning be trusted to produce the same academic impact as traditional learning? Will it even, in a way, produce a better understanding of the Arabic language?

The report by Dočekal & Tulinská (2015) described the use of online technology to teach Arabic as two-sided, the paper acknowledged the use of e-learning to improve the effectiveness of teaching and learning but also pointed out that teachers and learners must first acquire the required skills to use and operate gadgets and learning platforms; this point was also on by Tseng & Yeh (2019). For those who have had earlier exposure to technology, like students from the European and western countries, this appears easily done (Dewi et al., 2021; Ritonga et al., 2021) but, for students from developing countries, this presents a challenge. Baticulon et al., (2021) and Regmi &

Jones, (2020) termed accessibility to digital hardware and an internet connection as other barriers.

Assuming that accessibility to e-resources by learners is guaranteed, we again have to question if the method is effective enough when used for teaching or learning Arabic. The effectiveness of using online resources has been an item of research since the late 20th century (Roslan & Sahrir, 2020; Wan Ab Aziz Bin Wan Daud et al., 2019; Zubaidah et al., 2021) , this has been in the hopes of understanding what aspects of e-learning work for and against the student. Roslan & Sahrir (2020) reported that online Arabic learning is diverse since it uses different methods, mediums, and platforms. It will thus be impudent to judge the effectiveness of an online language game based on the demerits of an online video tutorial. Hence, the nutshell concept cannot be an acceptable way of stating the efficacy of online Arabic learning. In a broader view, problems arise when technological learning systems become less adaptive, monotonous, and less-individual centered (Roslan & Sahrir, 2020; Ritonga et al., 2021). It even becomes more challenging when some online Arabic tutors and apps are regarded to lack flexibility and creativity in disseminating Arabic language skills. Davis & Fullerton (2016) argued that for online learning to be effective it has to considerate the socio-cultural setting and personal traits of the target learners. To add on this point, Godwin, (2015) , stated that an effective online language learning focuses on improving the student's abilities in four language skills. These are listening, speaking, reading, and writing.

Even though the effectiveness of this e-learning remains questionable, (Dočekal & Tulinská, 2015) it remains the most accessible means for foreign speakers to learn Arabic. It has hence gained popularity among non-native Arabic speakers over the past years.

Purpose of the study

Various studies, systematic literature reviews and meta-analyses have either qualitatively or quantitatively assessed the efficacy of digital technological in improving student learning outcomes. Some of these studies found a significant positive correlation, some found a negative correlation, and some found no effect. It can be assumed that the results varied due to varying study scopes, limited, or broadened by their research question and the availability of eligible literature.

This paper is objective and focuses on the e-learning tools used by non-native speakers to learn Arabic. The effectiveness of online digital technology use is explored and questioned in this systematic review and meta-analysis. The target population of this paper is non-native or foreign speakers.

Research question: Are e-learning tools for teaching Arabic to non-native speakers effective in the opinions of some pervious studies' authors? And why?

Method

Literature search and selection criteria

To answer the research question, a systematic search for articles was done online for studies published from 2011 to 2022. Index databases and specific journal websites were searched. Databases that were searched include APA SyncINFO, Emerald Insight and Scopus. The inclusion criteria stated below was applied.

Inclusion criteria

Articles had to be written in English and published between 1st January 2011 and 1st January 2022. The articles had to be focusing on the effectiveness of e-learning tools in teaching Arabic. The use of the internet, online tools or virtual networks in teaching Arabic had to be the study intervention. The learners or students had to be non-native speakers.

There was a dilemma in the inclusion of Malaysian studies that did not report if the study participants were native or not. According to the World Atlas, Malaysia's native and official national languages are Bahasa Malaysia (Malay) , Mandarin, and Indian (Chepkemoi, 2020). The failure among all mentioned studies to state Arabic language as a native language in Malaysia was adopted to mean that Arabic language is foreign or non-native to Malaysians. An assumption was also made among Malaysian studies that all study participants were of Malaysian origin and were learning Arabic as a second language. This assumption was for studies that did not specify the nationality of study participants but were done in Malaysia.

Adopting this assumption does not mean that this paper overlooked the linguistic relationship between Malay and Arabic (Middle East Eye, 2015; Versteegh, 2020; Ozay, 2011; Haron et al., 2010). But since they are considered entirely different languages in most cases, this paper decided to acknowledge them as different languages.

Procedure

Data extraction

There was a possibility of studies being both quantitative and qualitative from the used inclusion criteria. Data retrieved from both study types were author, year of publication, study design, study region, the number of participants, the theme or objective of the study, the learning platform or method used, the language skills being studied/evaluated, and the method used for evaluation. This data was extracted into a study descriptor table.

Statistical data were also extracted from quantitative studies. These data were mean scores, standard deviation, and the number of participants in the experimental (taught using e-learning) and control (taught using traditional means) groups.

Statistical analysis

The statistical measure of effect size was taken to be Cohen's d. The use of the standard mean difference in this type of meta-analysis was considered the best option. Meta-analysis was carried out in Review Manager 5.4 using inverse-variance (Mean and standard deviation values) and a fixed effects model. A p-value of 0.05 was adopted as the significance threshold.

Results

Search results

The search for articles yielded 371 articles, with 105 of them being duplicates. The titles and abstracts of the 266 non-duplicate articles were screened, and 201 of them were excluded because they did not involve Arabic e-learning by non-native speakers. The remaining 65 articles were read in full, and only eight qualified for inclusion in this systematic review and meta-analysis. The other 57 excluded articles did not report on the effectiveness of e-learning, either in descriptive or statistical ways. Four of the included studies were qualitative, and four were quantitative. The study selection process was presented using a PRISMA flow diagram (Page et al., 2021).

Study data

Author and year	Study design	Theme of the study	Study region	Participants	Learning platform	Study areas	Evaluation method
Qualitative studies							
Ghani & Wan Daud (2017)	Descriptive quantitative study	to explore the acceptance of e-learning Arabic language among non-native speakers	Sultan Azlan Shah University (USAS) , Malaysia	100 Diploma students in Islamic Studies	e-learning in general	user acceptance of e-learning	Questionnaires
Ghani et al. (2016)	Descriptive qualitative study	to measure the effectiveness of using websites to learn Arabic for tourism purposes	MARA Poly-Tech College (KPTM) , Kelantan Darul Naim, Malaysia	43 students	web-based learning	Learners' satisfaction and motivation in using websites	using questionnaires and observation
Zainuddin & Sahrir (2014)	Research article	to explore how an online video tutorial may improve an existing literacy training	International Islamic University Malaysia, MALAYSIA	14 Arabic Advanced Level students	Online Video Tutorial Using Screen Capture Software	Unspecified, general performance	Questions where the total mark for each test is 10
Zainuddin et al. (2020)	Research article	to examine the effectiveness of using WhatsApp as a tutorial platform for Arabic language learning	Universiti Sains Islam Malaysia (USIM)	40 Arabic language lifelong learners	WhatsApp mobile application	Successful stories in integrating WhatsApp mobile application	interview questions
Quantitative studies							
Alsaleem (2018)	quasi-experimental design	to explore the effect while using YouTube videos to improve the speaking skills of non-native Arabic speakers	The World Islamic Sciences and Education University (WISE University) , Amman-Jordan	40 students	YouTube videos	Speaking skills	A Speaking skills' rubric

Author and year	Study design	Theme of the study	Study region	Participants	Learning platform	Study areas	Evaluation method
Baioumy et al. (2018)	descriptive quantitative study	to know the effectiveness of video stories on YouTube on the listening and speaking skills of non-native Arabic speakers	the Faculty of Islamic Contemporary Studies, University of Sultan Zainal Abidin in Malaysia	20 students	Video Stories on YouTube	Listening and Speaking skills	listening and integrated speech skills test
Roslan & Sahrir (2020)	quasi-experimental design	to examine the effectiveness of ThingLink tool on developing Arabic skills among non-native speakers	a public university in Malaysia	30 students at the beginner level	an Online Arabic Visual Dictionary (OAVD) created using ThingLink	perceived usefulness, perceived ease of use and vocabulary achievement of the student	The Vocabulary Knowledge Scale (VKS) and modified TAM questionnaires
Wan Daud et al. (2019)	quasi-experimental design	To examine the effectiveness of e-Al-Munawwar website in improving a student's Arabic language proficiency	University Malaysia Kelantan (UMK) , Malaysia	60 students	e-Al-Munawwar website	General proficiency assessed in understanding, application , and analysis	A questionnaire with a total mark of 100.

Characteristics of studies

This paper analyzes data extracted from 4 qualitative and four quantitative studies. Six out of the eight studies were done in Malaysia. Learning platforms that were assessed are e-learning in general (Ghani & Wan Daud, 2017) , web-based learning (Ghani et al., 2016; Wan Daud et al., 2019) , online video tutorials like YouTube (Alsaleem, 2018; Baioumy et al., 2018; Zainuddin & Sahrir, 2014) , whatsApp mobile application (Zainuddin et al., 2020) and online visual dictionary (Roslan & Sahrir, 2020). Alsaleem, (2018) , Baioumy et al., (2018) , Wan Daud et al., (2019) and (Zainuddin & Sahrir, 2014) assessed the language proficiency of participant students. The other studies focused on the views of students and teachers, and how online learning had impacted their academic lives and achievement. These studies reported on learner preferences and experiences.

Analysis

This research paper used both thematic analysis and meta-analysis to look at the effectiveness of online learning in teaching the Arabic language to non-native speakers. The areas that showed positive results from online Arabic learning are reported from the teacher's and students' points of view. The effectiveness of online learning was evaluated from teacher/expert feedback, student/learner feedback, and academic test scores.

General effect: Summary

All the included eight studies agreed that online learning was effectiveness in teaching Arabic to non-native students, though there were slight variations in significance of results, (Alsaleem, 2018; Baioumy et al., 2018; Roslan & Sahrir, 2020; Wan Daud et al., 2019) all the studies agreed on its effectiveness. Alsaleem (2018) reported that YouTube was effective in improving the speaking skills of non-native learners. Wan Ab Aziz Bin Wan Daud et al., (2019) reported that the use of technological tools, especially online resources, was positively impactful on the students' learning motivation. Zainuddin & Sahrir (2014) reported that the use of videos produced using screen capture had a positive impact on the students' performance. The analysis conducted by Zainuddin et al. (2020) , showed that WhatsApp mobile application though have not efficient in delivery, did have a positive significant effect to those learners who engaged in its use. Ghani & Wan Daud, (2017) favored the use of e-learning in delivering effective language learning. In the study by Roslan & Sahrir, (2020) among those who had used the Online Arabic Visual Dictionary (OAVD) , there was a recorded improvement in language vocabulary where the results were statistically significant. In the study by Baioumy et al., (2018) the experimental group scored significant higher in test than the control group which meant that the intervention applied (YouTube videos) , was effective in improving the learners listening and speaking skills. Also, Ghani et al. (2016) supported that using websites was beneficial in learning the Arabic language.

Teacher or tutor feedback

This measure of effectiveness was only studied by Zainuddin & Sahrir (2014). The academic staff termed the use of online video tutorials as brilliant, thoughtful, and applicable. Moreover, the ease and speed of its use was praised compared to written lengthy step-by-step instructional manuscripts.

Student feedback

To understand how learners perceived the impact brought about by online Arabic learning, feedback from students was evaluated in this systematic review.

Perceived Usefulness

Learners in Zainuddin & Sahrir (2014) , Zainuddin et al., (2020) , Ghani & Wan Daud, (2017) , Roslan & Sahrir, (2020) , and Ghani et al. (2016) agreed on the perceived usefulness of online Arabic learning. This usefulness was accredited to content delivery amount (Ghani & Wan Daud, 2017; Roslan & Sahrir, 2020; Zainuddin et al., 2020) , and delivery of easy-to remember content (Zainuddin & Sahrir, 2014).

81.4% of respondent in Ghani et al., (2016) perceived websites to be useful in learning Arabic. In evaluating the effect of the Online Arabic Visual Dictionary which had been developed using the Thinglink app (Roslan & Sahrir, 2020) , there was a 64.34% agreement that the dictionary was useful. This was agreement mostly on the aspect of learning new vocabulary, where 76.6% of respondents agreed that the app had helped them to learn new Arabic vocabulary and 56.7% reported that they had significantly improved their vocabulary. In the same study, 66.7% of the respondent said that they considered the 0VAD to be useful not just as at temporary strategy, but also to learn Arabic in the long run (Roslan & Sahrir, 2020). This is less than the 79% agreement level on long-term use of online technology reported by (Ghani et al., 2016).

In general view, however only 46.7% (Roslan & Sahrir, 2020) and 83.8 % (Ghani et al., 2016) reported that online resources had helped to improve their language skills.

Perceive Ease of use

The ease of using online resources to learn Arabic among non-natives was limited by the skills of the learner (Zainuddin et al., 2020; Ghani & Wan Daud, 2017) and to some extent affected by aspects of the user-platform interface i. e., flexibility, and user-friendliness (Roslan & Sahrir, 2020). Students in Zainuddin et al., (2020) stressed on the need of online material to be user-focused and presented in an easy to understand way that was quick and memorable. Resource accessibility was termed as a major influence on how learners perceived the ease of using online learning platforms (Ghani & Wan Daud, 2017; Roslan & Sahrir, 2020; Ghani et al., 2016).

In the study by Zainuddin et al., (2020) all the learners were positively recipient to WhatsApp being used for delivery of content since they were very much familiar with it. 78.53% of respondents in Roslan & Sahrir, (2020) agreed that OVAD was easy to use, and 100% of students in Ghani et al., (2016) preferred using websites to learn compared to traditional means. 77% of the sample in Roslan & Sahrir (2020) perceived that learning was made easy using OVAD while using the ThingLink application.

Ghani et al., (2016) reported that most students (53.5 % of the learners) often used websites to engage in learning activities and 67.5 % of the students enjoyed learning Arabic language through the internet. One of the major contributors to such acceptance as cited by Ghani et al. (2016) was due to ease of access from gadgets such a laptops, desktops, and mobile phones.

Student interactions

The role played by student's social interaction is not to be taken lightly. How a learner associates to himself, peers and to the teacher/tutor has been proven in research to have an impact on the students' academic achievement. The effect percentage is even way larger when the learner is in a new environment. This systematic review thus presents a light summary to show how online learning affects student interactions, which in turn affect the students' academic performance.

The effect on student-student, student-content and student-teacher interaction was clearly reported by Zainuddin et al., (2020). The theme also slightly came up in Alsaleem, (2018) , Baioumy et al. (2018) Ghani & Wan Daud, (2017) , and Roslan & Sahrir (2020).

Online learning especially using WhatsApp and virtual networks was attributed to increased communication between students. The students were able to express ideas among themselves and to correct each other when a language mistake was made (Ghani & Wan Daud, 2017; Roslan & Sahrir, 2020; Zainuddin et al., 2020). Students were also able to improve their interaction with teachers. They were able to get personalized guidance and feedback from tutors at any convenient time (Roslan & Sahrir, 2020; Zainuddin et al., 2020). Online learning was also partly praised in terms to its content-delivery, learners said that through online learning they were able to access an enormous volume of language content (Alsaleem, 2018; Baioumy et al., 2018; Zainuddin et al., 2020). Such amounts of content can be stated to

be tedious to acquire, using the traditional modes of learning or teaching (Zainuddin et al., 2020).

The academic achievement of the student was reported to increase at the end of the study Zainuddin et al., (2020) , partly due to the aforementioned interactions.

Student/user satisfaction

Out of a possible score of 5, user satisfaction scored 3.64 in a study by Ghani & Wan Daud, (2017). There was a positive attitude (3.98/5) towards e-learning. Ghani et al., (2016) reported a motivation level of 74.4%, due to the use of online resources. 62.4% of respondent in Ghani et al., (2016) reported being satisfied with the way in which online learning was used to disseminate skills on the Arabic vocabulary.

Academic Scores

When compared to teacher and student feedback, academic test scores can be informally referred to as the "holy grail" of measuring the effectiveness of a learning intervention. Online Arabic learning may receive positive reports from both teacher and learners, but all these means absolutely nothing if the language proficiency of the student does to increase. This systematic review thus gives a brief descriptive report on the effect of Arabic e-learning on the student's academic scores.

Academic achievement was studied by Alsaleem, (2018) , Baioumy et al., (2018) , Roslan & Sahrir, (2020) , Wan Ab Aziz Bin Wan Daud et al., (2019) , and Zainuddin & Sahrir (2014). All the studies except, Zainuddin & Sahrir (2014) used a quasi-experimental design which means that participants were randomly allocated to either a control or experimental group. The experimental group received Arabic e-learning as the intervention and the control group was taught using the traditional method. Both groups received a pre-test and post-test that enabled the effectiveness of Arabic e-learning to be compared to Arabic traditional learning.

Brief-summary

In the studies by Alsaleem, (2018) and Baioumy et al., (2018) , the results showed that the experimental group had outperformed the control group by significant margins. This was in the assessment of speaking skills (Alsaleem, 2018) and both speaking and listening skills (Baioumy et al., 2018).

In the study by Wan Ab Aziz Bin Wan Daud et al., (2019) , the mean pretest scores were 55.36 and 55.95 for the experimental and control group respectively. The mean post-test scores increased significantly for the experimental group, to record at 83.62.

Zainuddin & Sahrir (2014) reported that 87.5% (12) of the learners had improved their scores from pre-test to post-test, after receiving Online Video Tutorials as the study intervention.

Participants in Roslan & Sahrir, (2020) showed a mean increase of 6.533 points from pre-test to posttest. This was in the evaluation of their Arabic vocabulary knowledge.

The academic test score results of Alsaleem, (2018) , Baioumy et al., (2018) , Roslan & Sahrir (2020) , and Wan Ab Aziz Bin Wan Daud et al., (2019) are summarized in the table below.

Study	Group	N	Pretest score (SD)	Posttest score (SD)
Alsaleem (2018)	Experimental	40	10.45 (2.375)	5.90 (1.837)
	Control	40	7.28 (2.937)	5.80 (1.951)
Baioumy et al. (2018)	Experimental	21	6.321 (4.609)	31.857 (8.294)
	Control	20	6.433 (3.4761)	19.742 (7.886)
Roslan & Sahrir (2020)	Experimental	30	54.07 (15.335)	60.60 (16.117)
Wan Ab Aziz Bin Wan Daud et al. (2019)	Experimental	30	55.36 (3.18)	83.62 (5.61)
	Control	30	55.95 (3.13)	53.65 (3.55)

Effect-size analysis

The presentation of results as in the above table made it possible for an effect-size to be pooled from all included studies. The standard mean difference (Cohen's d) was employed in this paper's meta-analysis to estimate the effectiveness of using e-learning in teaching Arabic to non-natives. Analysis was first done using posttest scores for the control and the experimental groups. Another analysis using only results from the experimental group was done, this was the pretest-posttest effectiveness analysis. A positive effect size was taken to mean that e-learning had a positive impact on the academic scores of learners.

Control-Experimental groups' posttest scores

The pooled effect size of e-learning on academic scores, compared to traditional learning was 0.91 (95%CI, 0.56-0.27). The results were statistically significant with a p-value of <0.00001 and a z-value of 5.02. All the included studies had a positive effect size.

The positive value was interpreted to mean that e-learning had a positive impact on academic scores. The use of e-learning to teach Arabic to non-natives would lead to better understanding of the Arabic language.

Experimental groups' pretest-posttest scores

The pooled effect size of e-learning on academic scores when comparing pretest scores to posttest scores was 0.24 (95%CI, -0.10-0.58). The results were not statistically significant with a p-value of 0.16 and a z-value of 5.02. All studies, except Alsaleem (2018) reported a positive effect of e-learning from pretest to post test.

The positive value was interpreted to mean that e-learning had a positive impact on academic scores. The use of e-learning to teach Arabic to non-natives would lead to better understanding of the Arabic language.

Discussion

Both the thematic analysis and meta-analysis showed that using e-learning compared to classical means is more effective (Alsaleem, 2018; Baioumy et al., 2018; Ghani & Wan Daud, 2017; Ghani et al., 2016; Roslan & Sahrir, 2020; Wan Daud et al., 2019; Zainuddin & Sahrir, 2014; Zainuddin et al., 2020). Both meta-analyses, control-experimental groups' posttest scores and experimental groups' pretest-posttest scores, produced positive effect sizes, in favor of online Arabic learning. The results for pretest-posttest were not statistically significant, despite being positive. This meant that e-learning will have a positive effect on the academic scores of learners, but not always. Several circumstances are still very capable of affecting the positive impact (Ghani et al., 2016; Roslan & Sahrir, 2020; Zainuddin & Sahrir, 2014). These were also in a way evident during thematic analysis, when some of the respondents did not approve to the use of some e-learning tools. An example is in the study by Zainuddin et al., (2020) where some of the learners felt that WhatsApp mobile application is meant for social interactions not for learning. They stressed, on the point that even though they easily interacted with teachers, the conversations weren't as yielding as they would have been, if done face-to-face. An analytical reason for this variation might be because Alsaleem (2018) reported a negative effect size from pretest to posttest. This however can be overlooked in the light that Alsaleem (2018) reported a positive effect for e-learning in comparison to traditional learning.

It can hence be concluded that the positive effect found in this paper, rational and well caused. These findings can be explained by the attributes that are possessed by online learning platforms, which are not present in classical/traditional methods (Alsaleem, 2018; Baioumy et al., 2018; Kira &

Saade, 2006; Roslan & Sahrir, 2020). These are notably ease of access (Ghani & Wan Daud, 2017; Ghani et al., 2016; Zainuddin et al., 2020) , ease of use (especially among the younger generation) (Alsaleem, 2018; Baioumy et al., 2018; Ghani & Wan Daud, 2017; Ghani et al., 2016; Roslan & Sahrir, 2020; Wan Daud et al., 2019; Zainuddin & Sahrir, 2014; Zainuddin et al., 2020) , flexible (Baioumy et al., 2018; Ghani & Wan Daud, 2017; Wan Daud et al., 2019; Zainuddin et al., 2020) , user-friendliness and reliable (Wan Daud et al., 2019; Zainuddin & Sahrir, 2014; Zainuddin et al., 2020). Other factors are the ease of using the e-learning platforms (Ghani & Wan Daud, 2017; Ghani et al., 2016; Wan Daud et al., 2019) and ability to combine it with another learning medium (Zainuddin & Sahrir, 2014; Zainuddin et al., 2020). Platforms that were reported as being used both in classroom setting and outside the classroom were more preferred by study respondents in Alsaleem (2018) and Ghani & Wan Daud, (2017). Another e-learning attribute was ease of communication. In the report by Zainuddin et al., (2020) , student-student and student-teacher interactions were an important factor on why some students would prefer to use online learning and why others would prefer not to. This paper also noticed that using already familiar apps like YouTube (Alsaleem, 2018) and WhatsApp (Zainuddin et al., 2020) increased the motivation to learn among students. It may be because students felt a sense of familiarity in using these applications. Also adopting oneself to use a familiar platform for a new task is a lot easier that having to learn how to use an entirely new platform (Kira & Saade, 2006; Martin et al., 2020). All the above points are brought into view by Alsaleem, (2018) , Baioumy et al., (2018) and Zainuddin et al., (2020) , who states that if education is presented in an easy, fun, and interactive manner, the academic outcomes ought to be positive.

On the other side, there also were reported barriers accessing e-learning, low levels of acceptance, (Ghani et al., 2016) lack of digital hardware, (Alsaleem, 2018; Ghani & Wan Daud, 2017) and internet connectivity (Alsaleem, 2018; Wan Daud et al., 2019; Zainuddin & Sahrir, 2014) as a major hindrance. This calls for a prior assessment of leaner situation before any Arabic language tutor opts to adopt e-learning to teach their students. If e-learning is adopted when the above barriers still exist, then e-learning may not be as effective as it is meant to be. The outcomes of such a situation will be contradictory to the findings of this paper.

Conclusion

This research paper sought to examine the effectiveness of using e-learning in teaching Arabic to non-native speakers. To do so, a research

question was formulated and search for eligible articles done. Data extracted from the included articles were analyzed in both thematic and Meta analyses. From the thematic analysis it was evident that e-learning was ascribed to usefulness, ease of use, interaction improvement, learner satisfaction and superior academic scores. This was from the point of view of both students and teachers. The calculated effect size was 0.91 (95%CI, 0.56-0.27) when comparing e-learning to traditional learning which was in favor of e-learning. In another analysis, pretest and post test scores were compared showing the effect size was 0.24 (95%CI, -0.10-0.58) in favor of e-learning. The findings of this systematic review and meta-analysis, thus supports the use of e-learning methods in teaching Arabic to non-native speakers.

Recommendation

From the reviewing of data in included studies, this paper gives the following recommendations:

i. This paper used only 4 quantitative studies in its analysis, hence this paper recommends that more quantitative and qualitative research studies should be done with non-native Arabic online learning as the subject of research. This will increase the field, of available research and make results of future meta-analysis papers more grounded. This recommendation agrees to that made by Zainuddin et al., (2020).

ii. In implementing online learning for Arabic, tutors should make sure that learners are ready for the implementation before going ahead to replace classical learning (Baioumy et al., 2018). The characteristics of the learner e. g., availability and native language, should also be considered (Alsaleem, 2018).

iii. After the rollout of an e-learning platform, the teachers should do a follow-up to see how the learners are coping (Alsaleem, 2018). The areas of strain among leaners should be resolved when possible.

Implication on study

Technology is rapidly changing, and the effect that it had 5 years ago is not the same in measure as it has today. It thus goes without saying that any paper evaluating an aspect on technology needs to be well updated. This paper analyzed data from 8 studies, all of which are published later than 2013. The findings of this paper can thus be considered as time considerate. This research paper solves the stated research question with an aspect of "time-inclusivity" in the results.

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Appendix

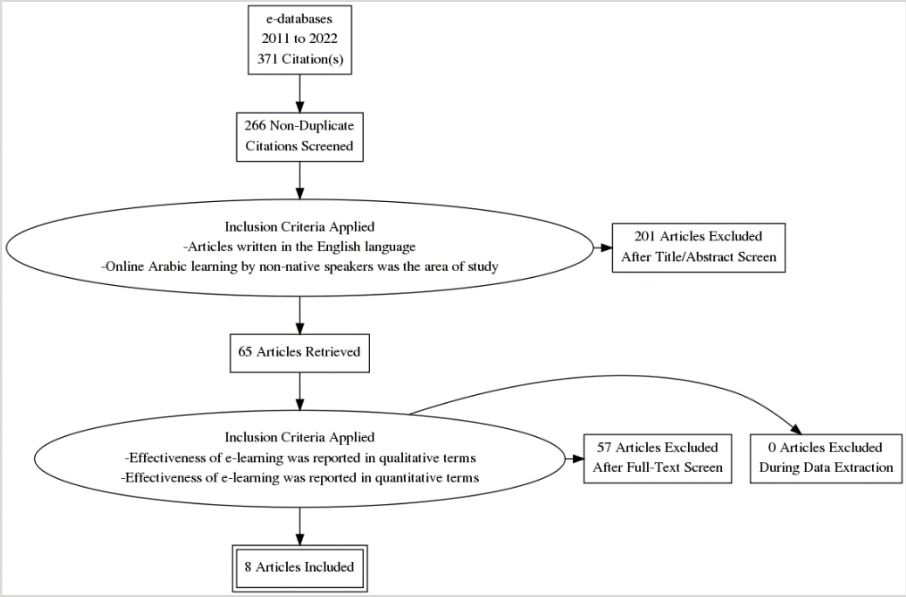

Figure 1: PRISMA flow diagrams.

Note: The PRISMA flow diagrams show the study selection process.

Table 1: Effect size

Effect size	Interpretation
Negative	e-learning has a negative effect on learners academic score
0	e-learning has no effect on the learners academic score
Positive	e-learning has a positive effect on learners academic score
0-0.2	Effect is low
0.2-0.9	Effect if moderate
>0.9	Effect is high

Note: The table shows how the pooled effect sizes in this paper were interpreted.

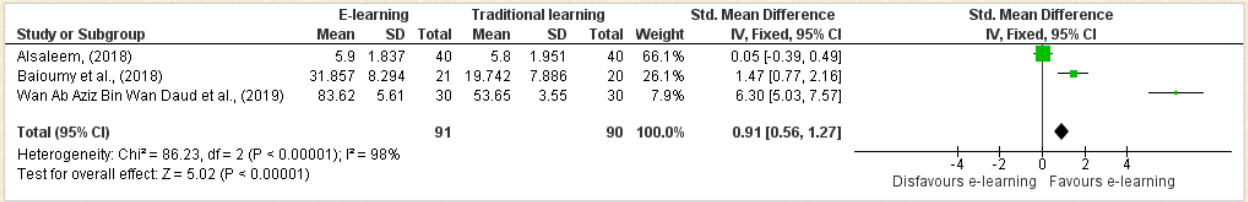

Figure 2: Control-Experimental groups' posttest scores

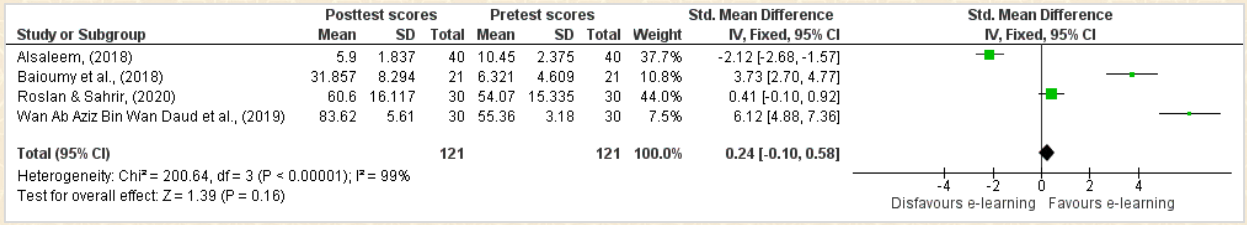

Figure 3: Experimental groups' pretest-posttest scores

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