Focus on ELT Journal
Vol 6, Issue 2, 2024
ISSN: 2687-5381

Evaluation of language learning apps used by undergraduates at Saudi universities

[a] Nojood Alwagdani **[b] Alaa Almohammadi**

[a] Lecturer, King Khalid University, Saudi Arabia, nalwagdani@kku.edu.sa
[b] Asst. Prof. Dr., King Abdulaziz University, Saudi Arabia, aaalmohammadi@kau.edu.sa

APA Citation: Alwagdani, N. & Almohammadi, A. (2024). Evaluation of language learning apps used by undergraduates at Saudi universities. *Focus on ELT Journal*, *6*(2), 14-37. https://doi.org/10.14744/felt.6.2.2

ABSTRACT

With the rise in mobile phone language applications, their popularity among English as a Foreign Language (EFL) learners has significantly grown. Despite the growing language app industry, there is limited research on the evaluation of these apps using a theory-driven approach. This study investigates the most frequently used language learning apps by EFL undergraduate students in Saudi universities and evaluates these apps based on the iPAC model. Data was collected using an online survey to determine the most commonly used language learning apps by EFL undergraduates and to examine the frequency and nature of language learning app usage. Then the most commonly used apps were evaluated using Burden et al.'s (2017) model (iPAC). Data from 129 participants revealed that Duolingo and Shadowing are the most common apps used by participants. The participants' perceptions of language learning apps are positive. Evaluating the apps using the iPAC model, it is found that they provide users with a personalized experience; however, neither app provides features for communication among learners. Duolingo's users can only post answers on a discussion board, and they cannot communicate through other means, such as chats, microphones, or cameras. Shadowing does not support communication among users, as oral or written discussions among learners are not provided. This study has theoretical and pedagogical implications. This study not only highlights specific gaps in-app functionality but also discusses broader theoretical and pedagogical implications, proposing a more integrated approach to language learning technology.

Keywords
EFL learners,
language learning apps,
MALL,
second language learning.

Article History

Received	:	28.09.2023
Revised	:	20.05.2024
Accepted	:	14.06.2024
Published	:	30.06.2024

Type
Research Article

Introduction

Mobile-assisted language learning (MALL) is characterised by employing personal and portable devices, such as smartphones and tablets, which allow new ways of learning (Kukulska-Hulme & Shield, 2008; Sandberg et al., 2011). MALL involves using applications available in mobile online stores, such as the App Store (iOS) and Google Play (Android). According to Statista (2020), there were approximately 218 billion mobile app downloads in 2020, and education was the third most common app category among users (Statista, 2019).

✉**Corresponding Author:** aaalmohammadi@kau.edu.sa

The growing availability of educational apps has resulted in an increasing number of studies that examine how effective these apps are (e.g., Ansari & Tripathi, 2017; Burston & Giannakou, 2022; Godwin-Jones, 2011; Rosell-Aguilar, 2017; Stockwell, 2012; Wang & Han, 2021).

Research on the use of technology in second language learning identifies the advantages of such use, including opportunities for increased communication, cooperative interaction, and autonomous learning. Niño (2015) argues that using different types of applications, such as ones based on collaboration, can aid traditional methods of learning a second language. Zhang & Zou (2021) reported that the use of technology in developing writing skills had a positive influence on how well students collaborated, developed their writing, and perceived their assignments. According to Alshabeb and Almaqrn (2018), learners' interest has witnessed a shift to using mobile applications to help them learn a language. As learners use different language apps as part of their learning process, it can be argued that both researchers and instructors (e.g., Kearney et al., 2020; Rosell-Aguilar, 2018) need tools to evaluate the effectiveness of these apps.

Mobile-assisted Language Learning (MALL)

Research indicates that MALL encourages learning with no limit to time or place (Power et al., 2014; Melzer et al., 2009). As the use of mobile devices increases, there is a possible increase in flexible MALL in the following years (Bano et al., 2018; Burden et al., 2017). MALL app design mostly relies on different educational theories, such as the constructivist approach, personalised learning, and learner autonomy (Ganapathy et al., 2016; Nami, 2020; Steel, 2012). In addition, current MALL research focuses on applications of the latest mobile technology, such as smartphone apps, rather than different types of mobile devices. For instance, Gonulal (2019) investigated the use of English learners of Instagram as a MALL tool and their attitudes towards it. He found that Instagram can help learners improve their language skills, particularly their vocabulary acquisition and communication skills. Moreover, research has pointed out the relatively positive influence of mobile applications on the language learning process in general (Chen et al., 2020; Lai et al., 2016; Naderi & Akrami, 2018; Rachels & Rockinson-Szapkiw, 2018). Khansarian-Dehkordi and Ameri-Golestan (2016) examined the impact of mobile learning on the acquisition and retention of vocabulary among Persian EFL learners. Employing an experimental design, the researchers assigned the experimental group to utilize the Line application in virtual sessions, while the control group received instruction through traditional methods. Results indicated that the experimental group surpassed the control group in the post-test, with participants also recognizing their own progress. Awada and Wang (2016), as well as Andujar (2016), investigated the efficacy of using WhatsApp for enhancing writing skills among EFL learners. Their findings suggested a positive impact on the performance of undergraduates. Additionally, Alkhudair (2020) investigated the effectiveness of MALL in EFL classrooms. Her study revealed a positive correlation between integrating MALL into classrooms and students' academic achievements. Furthermore, participants expressed favorable attitudes towards mobile learning, stating that they found it beneficial and advocated for its implementation in EFL classrooms.

However, it can be noted that most of the studies found in the literature focus on the effect of MALL on students' performance. Studies of the most common language learning apps

used by EFL students remain scarce, and they need further investigation, as it can give scholars and instructors a better understanding of the types of apps used by students (Nami, 2020). Additionally, most studies examined the use of apps and their effectiveness in language learning. However, the choice of these apps is mainly based on the skills they target rather than on an in-depth assessment of their overall quality. Therefore, the present study concentrates on evaluating these applications, emphasizing a thorough analysis of their functionality rather than solely on their intended type or focus.

Perceptions and Attitudes Toward Using Language Learning Apps

Several studies have investigated students' perceptions of language app usage and how they affect their learning. Examining students' perceptions of language apps offers valuable insights into user experience, learning outcomes, comparative analysis, and pedagogical considerations, informing the design, implementation, and optimization of app-based language learning tools. Nami (2020) examined undergraduates' choices and perceptions of language learning apps. The study revealed that most student participants use dictionary apps and vocabulary learning apps, with 11 out of 23 apps being vocabulary learning apps. The study also indicated a widespread consensus among undergraduate students regarding the potential efficacy of apps in enhancing various language skills, with 86.3% expressing agreement that apps have the capacity to enhance their vocabulary proficiency. These results are consistent with Ma's (2017) study, in which participants reported that e-tools, including eBooks, apps for listening and speaking, online dictionaries, and X (previously Twitter), help them learn English, particularly vocabulary. Deris and Shukor (2019) also investigated the use of vocabulary learning apps by ESL learners and their experiences with them. By implementing a phenomenological research design, the researchers examined the students' perceptions of these apps in a two-step process: a survey and an interview with participants. They found that students positively accepted the use of apps for learning new words, although that does not necessarily mean that actual learning is taking place. Participants were also satisfied with these apps, as they are convenient to use anywhere at any time. These apps helped them acquire new vocabulary items, thereby improving their academic performance in general.

Perception studies are complemented by experimental research investigating students' performance following the implementation of MALL. Al-Ahdal and Alharbi (2021) examined how students' perceptions aligned with test scores, showing performance improvements. Using a mixed-method approach, the researchers compared pre- and post-test outcomes across genders and gathered feedback via questionnaires from 80 participants over three months at two universities. Results indicated that the experimental group, utilizing mobile devices for collaboration, exhibited enhanced vocabulary retention post-intervention. Additionally, group performance notably improved, with more learners scoring closer to the mean value, while the control group showed no significant change, supporting the consistency between students' perceptions and experimental findings.

On the other hand, some studies have focused on instructors' perceptions of using MALL in classrooms. For example, Alnujaidi (2021) examined EFL teachers' concerns about implementing MALL in classrooms, and he found regardless of teachers' age, gender, and years of experience, that participants were highly concerned about the informational, personal, and management stages more than using and implementing MALL for learning. Instructors were concerned about the privacy issues violated by language apps. However, they can recommend

other more ethical alternatives to students and educate them about the possible threats they may face while using apps in general (Orsini-Jones et al., 2013).

Evaluation of Language Learning Applications

With the fast spread of commercial mobile apps, the need for a selection tool for useful apps has increased (Son, 2016). Walker (2011) developed an evaluation rubric for mobile apps that contains five main domains: authenticity, feedback, differentiation, user-friendliness, and student motivation. Schrock (2011) provided a critical evaluation rubric in light of Walker's (2011) rubric. Her criteria included reporting, sound, instruction, support page, navigation, and modalities. Additionally, Vincent (2012) suggested a rubric that focuses on the purpose of using apps; it has seven main criteria: relevance, customisation, feedback, thinking skills, usability, engagement, and sharing. Most evaluation frameworks focused on apps' technical and pedagogical aspects (Rosell-Aguilar, 2017). Nonetheless, the social features of language apps are not always fully considered despite the importance of social interactions in language learning, as indicated by previous studies (e.g., Lee, 2015; Mori, 2014; Philip et al., 2014; Tatar, 2005). Thus, the current study employs Burden et al.'s (2017) Personalization, Authenticity, Collaboration (iPAC) model to evaluate language learning apps used by EFL undergraduates since learning is not separated from surrounding events such as interaction (Kearney et al., 2020).

Several attempts have been made to evaluate language learning apps using different frameworks. For example, Kim and Kwon (2012) investigated English learning mobile applications using Hubbard's (2011) "Integrated Framework for CALL Courseware Evaluation." They found that language apps have four main features: short language data information, cognitive language learning style, various modes of multimedia, and a lack of diversity of L2 approaches. They also found that smartphone language applications have some positive aspects, such as focusing on the learner's autonomy and language learning motivation. However, they noted that some points need improvement, such as incorporating collaborative learning and using authentic and socially oriented tasks. Similarly, Heil et al. (2016) evaluated 50 language learning apps that target various language skills designed for different age groups. They found that most apps adopt a behaviourist approach, despite the educational shift nowadays toward the communicative approaches to language learning. These findings align with Kim and Kwon's (2012) findings, in which most of the evaluated apps lack collaborative activities, thus adopting the behaviourist approach.

Chen (2016) investigated language learning apps designed for adults. The researcher created an evaluation rubric based on two language acquisition theories: social interactionist theory and Krashen's (1982) affective filter. The results show that there is no app that can address all adult learners' language needs; thus, learners may use various apps to enhance different language skills. Nevertheless, the study showed that language learning apps could provide several choices depending on the learner's needs. On the other hand, Rosell-Aguilar (2018) conducted a study on Busuu, a language learning app, and its evaluation by users. He found that most of the app's users were beginners, and they used it for their interests. Generally, users reported that using apps helped them improve their language knowledge, specifically their vocabulary knowledge. However, it should be noted that the method used by Rosell-Aguilar (2018) focused only on self-reports by the participants. On a similar note, Matthews and Burke (2019) conducted an evaluative study of language learning apps within the Task-based

Language Teaching approach (TBLT) (Doughty & Long, 2003). According to their teacher participants, the apps under investigation are not fully associated with TBLT methodological principles, and they need development.

Furthermore, Gunter et al. (2016) evaluated two language learning apps, Duolingo and Busuu, using Gunter et al.'s (2008) RETAIN (Relevance, Embedding, Transfer, Adaptation, Immersion, Naturalization) model. Although the RETAIN model is used for assessing educational games, the authors selected language learning apps because they both have a gamification element. They concluded that language applications lack some aspects like problem-solving and storytelling, which are found in most educational games. However, it can be noted that the researchers evaluated language learning apps that are not categorised as games using a framework designed to evaluate educational games. Thus, the final scores of both apps can be affected negatively, as the model was not quite applicable to the nature of the apps.

While many language learning apps have been assessed using educational frameworks focusing on their pedagogical aspects (e.g., Heil et al., 2016; Rosell-Aguilar, 2018), the evaluation of these apps using the iPAC model remains underexplored. The choice of a theory-driven rubric stems from the understanding that the language learning process is intertwined with environmental factors and interactions (Kearney et al., 2020). Therefore, employing the iPAC framework for app assessment can contribute to the existing literature, given that most evaluations primarily emphasize the apps' structure and technical attributes, as highlighted in the preceding discussion.

As highlighted by Kearney et al. (2020), the utilization of the iPAC model enables educators to make informed educational decisions regarding how apps can enhance teaching by emphasizing social interaction and the integration of tools conducive to learning. Moreover, while previous studies often select language apps for evaluation based on ratings from online stores, there is a gap in considering the apps actually used by users. Hence, the present study adopts Burden et al.'s (2017) iPAC evaluation model to assess the most popular apps employed by EFL students. This rubric encompasses three primary criteria: personalization, collaboration, and authenticity. These elements, as explained by Kearney et al. (2020), are briefly outlined below:

1) Personalisation:

[It] captures the extent to which m-learning involves students choosing the parameters of their learning activities with respect to time, pace, and location (i.e., agency) as well as the tailoring of the m-learning activity based on learning preferences and needs of the student (i.e., customization) (p.163).

2) Authenticity:

[It] was conceptualized with respect to two underlying dimensions: context and task…the context items capture the extent to which the time and place of the m-learning activities are suggested by the topic and create meaning for learners… with respect to task was captured by four proposed items. These items are reflective of m-learning that involves students' working like an expert, participating in real-world activities and engaging in activities related to everyday life (p.164).

3) Collaboration:

It "was considered with respect to two underlying sub-dimensions: conversation and co-creation (p. 164)." This suggests that the assessment of apps involves examining their

ability to facilitate social interaction (conversation) and collaborative creation of content (co-creation).

The Present Study

From the preceding discussion, it is evident that there is a scarcity of studies focusing on the prevalent apps utilized by EFL learners in Saudi universities. Therefore, the present study seeks to address two main objectives: a) explore the language learning apps used by EFL undergraduate students and their overall perceptions towards such apps, and b) assess the language learning apps used by EFL undergraduates using Burden et al.'s (2017) iPAC model to assess the effectiveness of these apps in language learning. The rationale behind assessing these apps is to provide a comprehensive investigation in addition to students' perceptions. This is an exploratory study, and the primary goal is not to determine whether these apps directly enhance learning outcomes. One strength of this study could be its comprehensive approach, which not only investigates students' perceptions but also evaluates the language learning apps using the iPAC model. While other studies may have reported on perceptions alone, this study adds value by providing a deeper analysis of the apps themselves, considering factors such as personalization, collaboration, and authenticity. This dual-focus approach allows for a more holistic understanding of the role and effectiveness of language learning apps among undergraduate English language learners in Saudi universities. Moreover, this study is unique in investigating EFL undergraduates' app selections, unlike prior studies that either focused on researcher-selected apps or apps not specifically designed for language learning. To achieve these objectives, the current study addresses the following research questions:

1) What smartphone language learning apps do EFL undergraduates at Saudi universities use?
2) What are the general perceptions of EFL undergraduates towards the language learning apps they use?
3) According to the iPAC model, what are the strengths and weaknesses of the language learning apps used by undergraduate English language learners?

Methodology

Participants

This study initially gathered responses from 209 participants, predominantly undergraduate students at Saudi universities (96.2%). However, 80 respondents were excluded due to their self-reported non-usage of language learning apps, as their lack of experience with these apps might have skewed the reliability of their perceptions. Hence, the analysis was based on 129 responses. Table 1 presents the demographic characteristics of the participants. Regarding gender, the sample was predominantly female (96.9%), reflective of gender-segregated practices in Saudi universities, where the survey was primarily distributed on female-accessible campuses. Undergraduate students were targeted due to their compulsory English courses in most Saudi universities, suggesting their potential need for additional English learning support.

Ethical approval was obtained from the Department of Modern Languages and Literatures at King Abdulaziz University, and participation was voluntary with written consent obtained before survey completion.

Table 1. *Demographic Characteristics of Participants (n = 129)*

Participants Characteristics	*n*	%
Gender		
Female	125	96.9
Male	4	3.1
Age		
18	7	5.4
19	3	2.3
20	27	20.9
21	32	24.8
22	27	20.9
23	12	9.3
24	12	9.3
25	5	3.8
26	1	0.7
27	0	0
28	3	2.3
English Level		
Beginner	30	23.2
Intermediate	61	47.2
Upper Intermediate	29	22.4
Advanced	9	6.9
College		
Preparatory Year	9	6.9
Arts and Humanities	52	40.3
Media and Communication	23	17.8
Business Administration	26	20.1
Language and Translation	4	3.1
Law	5	3.8
Computer and Information Technology	3	2.3
Science	5	3.8
Engineering	2	1.5

Materials

Data was collected in two stages. The first stage involved an online survey to determine the two most commonly used language learning apps by EFL undergraduates. The second stage involved using Burden et al.'s (2017) model (iPAC) (see Appendix 3) to evaluate the apps that EFL learners use. iPAC was chosen because it tackles a socio-cultural aspect of educational

apps instead of other rubrics used to evaluate their technical and educational aspects. Socio-cultural aspects include personalisation, authenticity, and collaboration.

An Arabic online survey was developed using Google Forms and distributed among EFL undergraduates at several Saudi universities. A translated version of the survey is provided in Appendix 1. It was designed to determine the commonly used language learning apps to learn English and learners' perceptions of them. Survey items were written and adapted from relevant surveys in the literature (e.g., Nami, 2020; Rosell-Aguilar, 2018). It consisted of three main sections: demographic data on participants' gender, age, college, university level, whether they specialised in English or not, whether they were students at Saudi universities or not, and language proficiency level. The second section included ten items: nine multiple-choice questions and one open-ended question in which respondents chose the apps they used to learn English, the skills they learned using these apps, whether they used the free version of the apps or not, and whether they faced difficulties while using the apps or not. However, the focus of each app, such as speaking or vocabulary skills, was not restricted. As Nami (2020) suggested, students' preferences for apps can be understood regardless of the app's emphasis. Thus, the apps mentioned in the survey were concerned with different language skills: speaking, listening, reading, and writing. The third section consisted of six statements that tested students' attitudes toward language learning apps, including enjoyability using these apps, whether they thought apps helped them improve their language level, ease of using apps, whether they preferred to include apps as part of English courses, willingness to use apps in the future, and whether they thought that there were better alternatives to learn a language. These six statements were introduced with a 5-point Likert scale (*strongly agree* = 5, *agree* = 4, *neutral* = 3, *disagree* = 2, *strongly disagree* = 1). Students' perceptions of language apps were analysed based on their answers in the survey; however, the comments section was not included, and participants filled out the survey without written or oral feedback.

The survey was piloted first, prior to sending it out. Ten undergraduates were asked to answer the pilot survey and suggested modifications. Respondents reported that, in question 8 (What language skills do you like to learn using language learning apps?), they sometimes wanted to learn more than one skill using apps. For example, they would like to learn grammar and vocabulary simultaneously. Thus, the question was modified from a one-choice answer to a multiple-choice answer. Then, the modified version of the survey was distributed online over two weeks, from 24 March 2021 to 6 April 2021.

The two most common apps used by participants were accessed, reviewed, and evaluated according to Burden et al.'s (2017) iPAC model. It has three criteria: personalisation, authenticity, and collaboration. The first author evaluated the apps under investigation, Duolingou and Shadowing, after accessing and navigating them. The evaluation process followed Kearney's et al. (2020) rubric in which each feature of both apps was assessed (out of 3) according to iPAC categories (see Table 4).

Results

Language Apps Used by Undergraduate Students

This section addresses the first research question, which is the most common apps used by participants. Table 2 shows the number of users and each app's popularity percentage, as mentioned in the survey, according to participants.

Table 2. *Most Common Language Applications Used by Participants (n = 129)*

Application	Frequency	%
Duolingo	107	82.9
Shadowing	22	17.1

Table 2 shows the two most commonly used apps among participants: Duolingo (82.9%) and Shadowing (17.1%). Of the total number of users (*n* = 129), 107 students reported using Duolingo, while 22 students used Shadowing. According to the survey results, the participants' two most selected language skills were speaking (89.1%) and vocabulary learning (65.9%), among other skills. A full list of other apps mentioned in the survey can be found in Appendix 2.

Students' Perceptions Toward Language Learning Apps

Descriptive statistics were used to examine students' perceptions of the language learning apps, with participants' survey responses analyzed using SPSS. This section explores the mean score, standard deviation, and percentage of responses on a five-point scale, aiming to probe students' attitudes towards using these apps. Most participants strongly agreed that they enjoyed using language apps and found them fun. Interestingly, the participants' answers to this statement ranged from *strongly agree* (41.08%) and *agree* (46.5%) to *neutral* (12.4%). However, *disagree* and *strongly disagree* were not selected. As for the second statement, participants generally agreed (45%) that using language apps helps them improve their language (mean is 3.78), while some of them disagreed (6%) with the statement. Most participants agreed with the ease of using language apps. Interestingly, most participants (73.6%) reported that they did not face difficulties while using the apps. Thus, such findings indicate that apps are convenient, as most users have no difficulties navigating them. The mean for the fourth statement was 4.22; hence, most participants agreed to include language apps as part of the English curriculum. Nevertheless, around 7% of participants disagreed with this statement. The fifth statement concerns the possibility of using language apps in the future. Most students reported that they agreed that they would continue using language learning apps in the future (M = 4.13). However, 63.5% of participants agreed that there are better ways to learn English other than apps (see Table 3).

Table 3. *Descriptive Statistics on Participants' Perceptions of Language Learning Apps*

Survey Items	Mean	SD	%		
			(Strongly) Agree	Neutral	(Strongly) Disagree
a) Using language learning apps is fun.	4.29	0.675	88%	12%	0
b) Using language learning apps helps me improving my language level and learn better.	3.78	0.901	67%	26%	8%
c) Using language learning apps is easy and simple.	4.18	0.765	78%	22%	0
d) I prefer including language learning apps as part of the English language courses.	4.22	0.962	75%	18%	7%
e) I will continue using language learning apps in the future.	4.13	0.887	78 %	17%	5%
f) There are better ways to learn English (e.g., books, institutes, websites, etc.).	3.91	0.927	64%	31%	5%

Note. n = 129

Evaluation of Language Apps according to the iPAC Model

Burden et al.'s (2017) iPAC model has three main categories: collaboration, personalisation, and authenticity, with three sub-categories under each main category. The highest score for each sub-category is three, resulting in a maximum score of 27 for the whole rubric. The two most common apps used by participants are evaluated according to the rubric, as discussed below.

Duolingo

Collaboration has three sub-categories: online communication among learners, creating or modifying digital content, and sharing digital content. In Duolingo, users can communicate with each other; however, their communication is quite limited. They only have a discussion board where they can post their answers or questions to other users. They can record their pronunciation of short sentences, but they cannot communicate through a microphone or camera. Therefore, it scored 2 out of 3 for this aspect. For the ability to modify digital content, the app scored 1 out of 3, as users cannot create or modify digital content together. In relation to sharing digital content while using this app, such as screen sharing, Duolingo scored 2 out of 3, as it does not provide learners with online sharing of content. However, users can only share their progress with their instructors if they use the Duolingo classroom version. Thus, the total score of the collaboration category was 5 out of 9.

The second main category is personalisation. It also has three sub-categories: learners' control over the activity, learners' customisation of the app, and learners' unique access to certain content. Users can access designed content based on their personal preferences. Regarding users' control of the app, Duolingo scored 2 out of 3, as learners have the option to learn according to their topics of interest, e.g., food, travel, or hobbies. However, they cannot fully control the content according to their preference since their choice of activities is relatively limited. For instance, users can choose their favourite topics but cannot choose the type of activities they can access (e.g., multiple-choice questions, translation, or speaking tasks). Learners can also access the app settings. For example, they can activate voice recognition if they want to do so. They can also control sound effects and notifications. Therefore, it scored 3 out of 3 in this aspect. On the other hand, the app provides learners with relatively similar information or tasks, such as translation or speaking activities. Nevertheless, they cannot access unique content designed only for them. Thus, the app scored 2 out of 3 in this sub-category. The total score for the personalisation aspect was 7 out of 9.

The third aspect is authenticity; it also has three sub-categories, including the possibility of participating in real-life activities, the practical use of the app by users, and the app's relevance to real life. Duolingo promotes relatively relevant content for learners, as they can use what is learned in everyday life. However, the app does not promote collecting actual data from experts or authentic settings. Thus, the app scored 2 out of 3 in this sub-category. In addition, it supports the use of technical features, such as links to discipline-specific tools like converting speech to text and vice versa, and it scored 3 out of 3 in this domain. However, the app promotes irrelevant settings for learners as some activities include isolated words or sentences that users practice out of context in which users practice isolated words and sentences. Technical features such as augmented or virtual reality are not supported. Thus, it scored 1 out of 3 in the third sub-category, and the total score for authenticity was 6 out of 9. Overall, the Duolingo app scored 18 out of 27 according to the iPAC model (see Tables 4 & 5).

Shadowing

The collaboration category consists of three sub-categories: in-app communication among users, users' modification of content, and sharing content. The app does not support communication among users, as it only focuses on the learners and their performance on a given task. Oral or written discussions among learners are not provided; therefore, the app scored 1 out of 3 in this area. Also, learners cannot create or modify the app content; hence, it scored 1 out of 3 in this sub-category. In addition, users cannot share or exchange content in the app, and it scored 1 out of 3 in this area as well. Thus, the total score for the collaboration category was 3 out of 9. However, the app promotes some personalised technical features that allow users to adjust some settings according to their preferences. For instance, learners can hide a transcript to practice by listening to the audio only. Hence, the app scored 2 out of 3 in this area. Users' customisation of the app is limited, as they can enable microphone or voice recognition. Therefore, it scored 2 out of 3 in this domain. On the other hand, learners are not provided with "unique content" designed according to their level or interest (Burden et al., 2017), as Shadowing provides the same content for all learners in which all the app's users share all tasks.

Thus, it scored 1 out of 3 in this sub-category, and the total score for the personalisation aspect was 5 out of 9.

Table 4. *Evaluation of Apps Selected by Participants according to iPAC Main and Sub-categories*

iPAC Categories	iPAC Sub-categories	Duolingo Scores (Out of 3)	Shadowing Scores (Out of 3)
1. Collaboration	Learners talking with peers online	2	1
	Learners working together to create/modify digital content	1	1
	Learners sharing/exchanging digital content online	2	1
2.Personalization	Learner choice/control over the activity	2	2
	Learner customization of the app	3	2
	Learner access to unique information tailored to them	2	1
3. Authenticity	Learners' participation in real-life activities	2	3
	Realistic use of the mobile device by learners, similar to real-world experts	3	2
	Opportunities for students to learn in a realistic learning space, relevant to the topic/real-life	1	1

As for authenticity, Shadowing provides learners with restricted real-life usages of language since the content only consists of President Obama's final State of the Union speech in 2016. Thus, it scored 3 out of 3 as it has authentic content, and learners can access actual data. The app also supports limited device use; however, this usage is not similar to that of experts. Learners can have access to authentic content, which is a political speech given by an expert who is the former US president, and they can imitate what is said in that speech. The app scored 2 out of 3 in this domain. Although the app has authentic content, it can be decontextualized to some extent, as the content of political speeches can be difficult to apply in everyday life situations. The app scored 1 out of 3 in this area, and the general score was 6 out of 9 in the authenticity category. Overall, Shadowing scored 14 out of 27 according to the iPAC model. Tables 4 and 5 summarise the evaluation results for both apps.

Table 5 *Evaluation Results of Apps Selected by Participants*

iPAC Categories	Duolingo	Shadowing
Collaboration	5	3
Personalisation	7	5
Authenticity	6	6
Total (Out of 27)	18	14

In summary, both apps received "moderate" overall scores based on the iPAC model. However, Duolingo outperformed Shadowing in collaboration and personalization. Regarding authenticity, both apps demonstrated similar scores.

Discussion

The current study addresses three primary research questions. The first question investigates the most frequently used apps by EFL learners. Findings reveal that university students predominantly utilize Duolingo and Shadowing, with Duolingo showing significantly higher usage than Shadowing. The prevalence of Duolingo among the study's participants is not surprising, given its status as one of the most widely recognized educational apps among learners. According to Statista (2022), approximately 8.6 million users downloaded the app in 2022. Duolingo offers free access to language learning materials, making it easily accessible to learners. The app provides instructions in the learners' first language (L1) and covers various language skills, including reading, vocabulary, grammar, listening, and pronunciation. Activities include tasks such as written and oral translation, sentence arrangement, dictation, word/sentence translation, and speech repetition. Upon completing activities, users receive immediate feedback on their performance. Additionally, Duolingo customizes training plans based on users' proficiency levels and preferences, prompting them with reminders to complete daily tasks.

The popularity of Duolingo as a language learning app has also been found in previous research. Munday (2016) stated that most students find Duolingo a convenient, helpful, and fun app. Nushi and Eqbali (2017) argue that the app can foster students' motivation since they can achieve daily goals and feel accomplished. Therefore, students' choice of Duolingo, as one of the most commonly used apps, can be based on the nature of the app itself. They can use it to learn different skills, and it is enjoyable and easy to use, as found in Gadanecz's (2018) and Loewen et al.'s (2019) studies, which focused on Duolingo's entertaining nature and flexibility. In his study that investigated the effectiveness of Duolingo for English language learners, Krashen (2014) reported that the majority of participants "strongly agree" that they were satisfied with using Duolingo. In García Botero et al.'s (2019) study, language learners believed that Duolingo is suitable for their personal needs and academic preferences.

Participants favored Shadowing over other language learning apps largely because most reported using apps to enhance their speaking skills. Engaging in Shadowing not only aids students in speaking but also sharpens their listening abilities. Users play a video, attentively listen to the speakers, and then replicate what they've heard into their microphones. To ensure

pronunciation accuracy, the app provides feedback. Shadowing was designed specifically to refine learners' pronunciation using a technique where they mimic an English speaker based on provided content. According to Kurniawan et al. (2019), apps based on shadowing techniques, such as Shadowing, can motivate students by providing them with direct feedback to check their answers immediately. Foote and McDonough (2017) also stressed that practising shadowing tasks can improve students' performance. Additionally, the app provides students with authentic content they try to imitate; hence, their preference for the app can be attributed to these features. These findings are in line with Nguyen et al. (2018), who highlighted the importance of authentic content in EFL learners' speaking.

Another significant finding from the current study is that participants predominantly used apps to enhance their speaking abilities (89.1%) and vocabulary knowledge (65.9%), among other skills. The preference for speaking skills over writing could stem from the participants' primary objective of learning English, with 72.1% indicating that it is for academic or professional purposes. Given that many of their classes and future job interviews may require English proficiency, particularly in oral communication, participants may opt for self-learning through apps. Additionally, the perceived lack of oral skills practice in EFL classes, as noted by some researchers, could further drive students to seek additional speaking practice through apps (Al-Ghazali & Qaid, 2019; Shahini & Shahamirian, 2017; Yang, 2014). Both Duolingo and Shadowing cater to these needs, focusing on speaking and vocabulary skills, allowing learners to practice pronunciation while simultaneously learning word meanings. Despite the higher usage of Duolingo compared to Shadowing, participants expressed their intention to improve speaking skills through apps, even though Shadowing specifically emphasizes speaking activities. This discrepancy between intention and behavior aligns with previous research, indicating that learners may not always align their app usage with their stated learning goals (García Botero et al., 2019).

The desire to develop vocabulary skills is in line with previous research that shows that EFL students mostly use apps to learn vocabulary (Ajisoko, 2020; Nami, 2020; Rosell-Aguilar, 2018; Zhang & Pérez-Paredes, 2019). However, participants of the current study reported that they learn English for educational and work purposes; thus, their choice of speaking skills over the others can be affected by their purpose of learning in addition to the lack of oral skill practice in classes, as shown in the discussion mentioned above. Interestingly, improving grammar and writing skills was not popular among participants. This finding concurs with Zhang and Pérez-Paredes' (2019) results, in which they showed that Chinese learners did not see the purpose of using language apps linked to the development of grammar and writing abilities.

The second research question this study aims to examine is how EFL learners perceive the usefulness of using language learning apps. One of the key findings of the current study is students' positive attitudes toward language learning apps and their potential to improve language skills. These findings are consistent with several previous studies on learners' mobile learning attitudes (e.g., Ma, 2017; Nami, 2020). Another interesting finding is that students generally agreed that they enjoy using language apps and find them easy to use. This is in line with Zou & Yan's (2014) findings that Chinese learners found using apps to learn a language enjoyable and less stressful. This can be attributed to the gamification features included in these apps. As noted by Kurniawan et al. (2019) and Hamari et al. (2018), gamification can positively affect students' performance and behaviour. The present study is also in line with Deris and Shukor's (2019) and Zou and Li's (2015) studies, in which there is a general satisfaction among

English learners with language apps, and they consider them a convenient option that can be used anywhere and anytime.

Students also reported that language apps helped them improve their English; these findings are similar to many studies in language learning with apps (e.g., Brown et al., 2012; Castañeda & Cho, 2016). Additionally, most students expressed a preference for instructors to incorporate language apps into English courses. This finding is intriguing, as some empirical research (e.g., Ahmed & Nasser, 2015; Ng et al., 2020) has found a positive correlation between mobile learning and students' academic performance. The inclusion of language apps in English courses can inspire students' interest in using these apps when combined with traditional teaching methods while also addressing safeguarding and privacy issues.

Although students expressed interest in language learning apps, they reported a preference for other sources of learning English, such as reading books or attending language institutes, with around 64% of participants indicating this preference. These findings are partially consistent with Zou and Yan's (2014) study, where participants favored traditional learning methods. This preference for traditional tools may stem from their familiarity with paper-based resources from their early school experiences, making them feel more comfortable using these methods. As Khansarian-Dehkordi and Ameri-Golestan (2016) highlighted, technological tools cannot entirely replace traditional techniques; however, they can be integrated into the curriculum alongside traditional language teaching methods. Therefore, combining apps with traditional techniques can enhance students' learning experiences, as approximately 75% of the current study's participants supported including apps in English language courses.

The third question examined how the two most commonly used apps among EFL students were rated for language learning using the iPAC model (Burden et al., 2017). The results demonstrated that both apps scored "moderate" according to the iPAC model, but Duolingo scored higher than Shadowing in collaboration and personalisation. Nevertheless, they had the same scores in authenticity. This can be attributed to the nature of Duolingo, as it provides learners with more opportunities to collaborate in a relatively personalised experience. Learners can communicate through a discussion board and have more options to customize the app according to their preferences.

On the other hand, communication among learners in Shadowing is quite limited since there are no technical features that support in-app collaboration among users. Personalised features are also limited compared to Duolingo, as the former only allows users to customise some features, such as hiding the transcript or accessing voice recognition, as shown in the evaluation section above. However, other preference options, such as accessing new content or activities, are not supported in Shadowing. The current study's findings are in line with Chen (2016) and Gunter et al. (2016), in which Duolingo scored higher than other apps according to different frameworks. Additionally, the main objective of Duolingo and Shadowing is language learning. They also aim to develop speaking skills as they provide learners with speaking activities, as discussed above. However, they lack communication among users, as Nushi and Eqbali (2017) noted. This finding is consistent with Cheng and Kim (2019), who stressed that the main problem with language apps is related to communication among users.

Conclusion

This study presented an analysis of the use and perception of mobile language learning applications among EFL undergraduate students in Saudi universities. By focusing on the two most prevalent apps, Duolingo and Shadowing, and incorporating the iPAC model as our evaluative framework, we highlighted the collective student experience in using mobile learning apps to learn English. The participant cohort, while expressing a positive perception towards these apps, particularly their personalized approach, has also highlighted a notable deficiency in communicative features, which are essential to comprehensive language learning. Interestingly, students expressed a preference for traditional methods of English language learning, highlighting that educators might consider blending language apps with conventional teaching methods to cater to the different preferences of students—both app users and non-app users—in classroom activities. Importantly, instructors also need to consider safeguarding issues as apps may violate students' privacy. Both Duolingo and Shadowing offer strengths in user personalization. However, they fall short in communication features: Duolingo has limited interactive capabilities, and Shadowing provides none. To mitigate these limitations, it may be beneficial for learners to utilize multiple language learning apps.

This study has theoretical and pedagogical implications. The theoretical implications of our findings suggest the necessity of evolving language acquisition models to accommodate mobile learning, particularly with the rise of new AI applications that may support language learning. Practically, the results advocate for a blended teaching methodology that leverages the strengths of language apps while embracing the dynamic interaction of classroom settings. With new technological advancements, language learning apps will serve to complement student's learning experiences, and educators should be aware of how students view these apps and how these apps are rated from pedagogical and technical perspectives. Thus, more research should be carried out to evaluate not only the effectiveness of these language-learning apps but also explore the longitudinal effects of app-based language learning on academic outcomes. It is also recommended that app developers address these limitations to maximize the utility of their applications. In terms of assessment frameworks, while Burden et al.'s (2017) model offers a suitable tool for evaluating educational apps across diverse age groups, alternative frameworks are also valuable. As emphasized by Kearney et al. (2020), frameworks focusing on the pedagogical and technical facets of apps can complement the iPAC model (Burden et al., 2017) in educational app evaluations.

Our study, while providing valuable insights, is not without limitations. The reliance on student perceptions, though critical, is inherently subjective and self-reported, potentially introducing bias. There is a need for more experimental research designs that can objectively measure the efficacy of language learning apps against traditional learning metrics. Such studies could better measure the actual impact of app usage on language proficiency. Additionally, the study does not investigate variables such as the amount of time spent using apps, specific features used, the context in which the apps are employed, and how students perceive language learning apps. These factors could significantly influence the effectiveness of the apps and student perceptions.

Disclosure Statement

No potential conflict of interest was reported by the authors.

References

Ahmed, K., & Nasser, O. (2015). Incorporating iPad technology: Creating more effective language classrooms. *TESOL Journal*, *6*(4), 751-765. https://doi.org/10.1002/tesj.192

Ajisoko, P. (2020). The use of Duolingo apps to improve English vocabulary learning. *International Journal of Emerging Technologies in Learning (iJET)*, *15*(7), 149-155. https://doi.org/10.3991/ijet.v15i07.13229

Al-Ahdal, A. A. M. H., & Alharbi, M. (2021). MALL in Collaborative Learning as a Vocabulary-Enhancing Tool for EFL Learners: A Study Across Two Universities in Saudi Arabia. *SAGE Open*, *11*(1). https://doi.org/10.1177/2158244021999062

Al-Ghazali, S., & Qaid, A. M. (2019). Speech and articulation rates of speaking fluency by Yemeni EFL learners. *Language in India*, *19*(2), 1-15. Retrieved from http://www.languageinindia.com/feb2019/abeeryemenieflllearners.pdf

Alkhudair, R. Y. (2020). Mobile assisted language learning in Saudi EFL classrooms:

Effectiveness, perception, and attitude. *Theory and Practice in Language Studies*, *10*(12), 1620-1627. https://doi.org/10.17507/tpls.1012.16

Alnujaidi, S. (2021). Adoption of mobile assisted language learning (MALL) in Saudi Arabian

EFL classrooms. *Journal of Language Teaching and Research*, *12*(2), 312-323. https://doi.org/10.17507/jltr.1202.13

Alshabeb, A., & Almaqrn, R. (2018). A study of EFL Saudi students' use of mobile social media applications for learning. *Arab World English Journal (AWEJ) Special Issue on CALL*, *(4)*, 214-226. https://doi.org/10.2139/ssrn.3226723

Andujar, A. (2016). Benefits of mobile instant messaging to develop ESL writing. *System*, *62*, 63-76. https://doi.org/10.1016/j.system.2016.07.004

Ansari, M. S., & Tripathi, A. (2017). An investigation of effectiveness of mobile learning apps in higher education in India. *International Journal of Information Studies and Libraries*, *2*(1), 33-41.

Awada, G., & Wang, S. (2016). Effect of WhatsApp on critique writing proficiency and perceptions toward learning. *Cogent Education*, *3*(1). https://doi.org/10.1080/2331186X.2016.1264173

Bano, M., Zowghi, D., Kearney, M., Schuck, S., & Aubusson, P. (2018). Mobile learning for science and mathematics school education: A systematic review of empirical evidence. *Computers & Education, 121,* 30–58. https://doi.org/10.1016/j.compedu.2018.02.006

Brown, M., Castellano, J., Hughes, E., & Worth, A. (2012). Integration of iPads into a Japanese university English language curriculum. *The JALT CALL Journal*, *8*(3), 193-205. https://doi.org/10.29140/jaltcall.v8n3.141

Burden, K., Kearney, M., & Hopkins, P. (2017). iPAC App Evaluation Rubric. Retrieved from http://www.mobilelearningtoolkit.com/uploads/5/6/0/9/56096707/appevaluationinstrumentfinalrubric.pdf

Burston, J., & Giannakou, K. (2022). MALL language learning outcomes: A comprehensive meta-analysis 1994–2019. *ReCALL*, *34*(2), 147-168. https://doi.org/10.1017/S0958344021000240

Castañeda, D. A., & Cho, M. H. (2016). Use of a game-like application on a mobile device to improve accuracy in conjugating Spanish verbs. *Computer Assisted Language Learning*, 29(7), 1195-1204. https://doi.org/10.1080/09588221.2016.1197950

Chen, H. H. J., Yang, C. T. Y., & Lai, K. K. W. (2020). Investigating college EFL learners' perceptions toward the use of Google Assistant for foreign language learning. *Interactive Learning Environments*, 1-16. https://doi.org/10.1080/10494820.2020.1833043

Chen, X. (2016). Evaluating language-learning mobile apps for second-language learners. *Journal of Educational Technology Development and Exchange (JETDE)*, *9*(2), 3. https://doi.org/10.18785/jetde.0902.03

Cheng, J., & Kim, H. J. (2019). Attitudes towards English language learning apps from Korean and Chinese EFL students. *English Teaching*, *74*(4), 205-224. https://doi.org/10.15858/engtea.74.4.201912.205

Deris, F., & Shukor, N. (2019). Vocabulary learning through mobile apps: A phenomenological inquiry of student acceptance and desired apps features. *International Association of Online Engineering, 13(7),* 129-140. https://doi.org/10.3991/ijim.v13i07.10845

Doughty, C. J., & Long, M. H. (2003). Optimal psycholinguistic environments for distance foreign language learning. *Language Learning & Technology, 7(3),* 50–80.

Foote, J. A. & McDonough, K. (2017). Using shadowing with mobile technology to improve L2 pronunciation. *Journal of Second Language Pronunciation*, *3*(1), 34-56. https://doi.org/10.1075/jslp.3.1.02foo

Gadanecz, P. (2018). The nature of positive emotions via online language learning. In 2018 9th IEEE International Conference on Cognitive Infocommunications (CogInfoCom), 197–204. IEEE. doi:10.1109/CogInfoCom.2018.8639965

Ganapathy, M., Shuib, M., & Azizan, S. N. (2016). Malaysian ESL students' perceptions on the usability of a mobile application of grammar test: A case study of ESL undergraduates in University Sains Malaysia. *3L: The Southeast Asian Journal of English Language Studies*, *22*(1), 127–140. http://doi.org/10.17576/3L-2016-2201-10

García Botero, G., Questier, F., & Zhu, C. (2019). Self-directed language learning in a mobile-assisted, out-of-class context: Do students walk the talk? *Computer Assisted Language Learning*, *32*(1-2), 71-97. https://doi.org/10.1080/09588221.2018.1485707

Godwin-Jones, R. (2011). Mobile apps for language learning. *Language learning & technology*, *15*(2), 2-11. https://doi.org/10.1080/09571739085200341

Gonulal, T., 2019. The Use of Instagram as a Mobile-Assisted Language Learning Tool. Contemporary Educational Technology, 10(3). https://doi.org/10.30935/cet.59010

Gunter, G. A., Campbell, L. O., Braga, J., Racilan, M., & Souza, V. V. S. (2016). Language learning apps or games: An investigation utilizing the RETAIN model. *Revista Brasileira de Linguística Aplicada*, *16*(2), 209-235. https://doi.org/10.1590/1984-639820168543

Gunter, G. A., Kenny, R. F., & Vick, E. H. (2008). Taking educational games seriously: Using the RETAIN model to design endogenous fantasy into standalone educational games. *Educational Technology Research and Development*, *56*(5), 511-537. https://doi.org/10.1007/s11423-007-9073-2

Hamari, J., Hassan, L., & Dias, A. (2018). Gamification, quantified-self or social networking? Matching users' goals with motivational technology. *User Modeling and User-Adapted Interaction*, *28*(1), 35-74. https://doi.org/10.1007/s11257-018-9200-2

Heil, C. R., Wu, J. S., Lee, J. J., & Schmidt, T. (2016). A review of mobile language learning applications: Trends, challenges, and opportunities. *The EuroCALL Review*, *24*(2), 32-50. https://doi.org/10.4995/eurocall.2016.6402

Hubbard, P. (2011). Evaluation of courseware and websites. *Present and future perspectives of CALL: From theory and research to new directions in foreign language teaching* (pp. 407–440). CALICO.

Kearney, M., Burden, K., & Schuck, S. (2020). Evaluating education apps from a sociocultural perspective. In *Theorising and implementing mobile learning* (pp. 129-151). Springer. https://doi.org/10.1007/978-981-15-8277-6_10

Khansarian-Dehkordi, F., & Ameri-Golestan, A. (2016). Effects of mobile learning on acquisition and retention of vocabulary among Persian-speaking EFL learners. *CALL_EJ*, *17*, 43-56.

Kim, H., & Kwon, Y. (2012). Exploring smartphone applications for effective mobile-assisted language learning. *Multimedia-Assisted Language Learning*, *16*(1), 31-57. https://doi.org/10.15702/mall.2012.15.1.31

Krashen, S. (1982). *Principles and practice in second language acquisition*. Pergamon.

Krashen, S. (2014). Does Duolingo "trump" university-level language learning? *International Journal of Foreign Language Teaching*, *9*(1), 13-15.

Kukulska-Hulme, A., & Shield, L. (2008). An overview of mobile assisted language learning: From content delivery to supported collaboration and interaction. *ReCALL, 20(3)*, 271–289. https://doi.org/10.1017/S0958344008000335

Kurniawan, H. C., Sitohang, B., & Rukmono, S. A. (2019, March). Gamification of mobile-based Japanese language shadowing. In *2019 International Conference of Artificial Intelligence and Information Technology (ICAIIT)* (pp. 215-219). IEEE. https://doi.org/10.1109/ICAIIT.2019.8834678

Lai, C., Yeung, Y., & Hu, J. (2016). University student and teacher perceptions of teacher roles in promoting autonomous language learning with technology outside the classroom. *Computer Assisted Language Learning*, *29*(4), 703-723. https://doi.org/10.1080/09588221.2015.1016441

Lee, M. S. (2015). Implementing the sociocultural theory while teaching ESL. *SPACE: Student Perspectives About Civic Engagement, 1(*1*)*, 28–35.

Loewen, S., Crowther, D., Isbell, D. R., Kim, K. M., Maloney, J., Miller, Z. F., & Rawal, H. (2019). Mobile-assisted language learning: A Duolingo case study. *ReCALL, 31(*3*),* 293–311. https://doi.org/10.1017/S0958344019000065

Ma, Q. (2017). A multi-case study of university students' language-learning experience mediated by mobile technologies: A socio-cultural perspective. *Computer Assisted Language Learning, 30*(3-4), 183–203. https://doi.org/10.1080/09588221.2017.1301957

Matthews, J., & Burke, R. (2019). Listening to teachers' voices: Evaluating language learning apps with a task-based language teaching framework. *Language Teaching Research Quarterly*, *12*, 16-36

Melzer, A., Hadley, L., Glasemann, M., Günther, S., Winkler, T., & Herczeg, M. (2009). Iterative design of mobile learning systems for school projects. *Technology, Instruction, Cognition & Learning*, *6*(4), 235–251.

Mori, M. (2014). Conflicting ideologies and language policy in adult ESL: Complexities of language socialization in a majority-L1 classroom. *Journal of Language, Identity & Education, 13(*3*),* 153-170. https://doi.org/10.1080/15348458.2014.919810

Munday, P. (2016). The case for using Duolingo as part of the language classroom experience. *RIED: Revista Iberoamericana de Educación a Distancia*, *19*(1), 83-101. https://doi.org/10.5944/ried.19.1.14581

Naderi, N., & Akrami, A. (2018). EFL learners' reading comprehension development through MALL: Telegram groups in focus. *International Journal of Instruction, 11*(2). https://doi.org/10.12973/iji.2018.11223a

Nami, F. (2020). Educational smartphone apps for language learning in higher education: Students' choices and perceptions. *Australasian Journal of Educational Technology*, *36*(4), 82-95.

https://doi.org/10.14742/ajet.5350

Ng, S. F., Azlan, M. A. K., Kamal, A. N. A., & Manion, A. (2020). A quasi-experiment on using guided mobile learning interventions in ESL classrooms: Time use and academic performance. *Education and Information Technologies*, *25*(6), 4699-4719. https://doi.org/10.1007/s10639-020-10191-7

Nguyen, T. H., Hwang, W. Y., Pham, X. L., & Ma, Z. H. (2018). User-oriented EFL speaking through application and exercise: Instant speech translation and shadowing in authentic context. *Journal of Educational Technology & Society*, *21*(4), 129-142.

Niño, A. (2015). Language learners perceptions and experiences on the use of mobile applications for independent Language learning in higher education. *IAFOR Journal of Education Special Edition, 73-84.* https://doi.org/10.22492/ije.3.se.05

Nushi, M., & Eqbali, M. H. (2017). Duolingo: A mobile application to assist second language learning. *Teaching English with Technology*, *17*(1), 89-98.

Orsini-Jones, M., Brick, B., & Pibworth, L. (2013). Practising language interaction via social networking sites: The expert student's perspective on personalized language learning. In *Computer-assisted foreign language teaching and learning: technological advances* (pp. 40-53). IGI Global. https://doi.org/10.4018/978-1-4666-2821-2.ch003

Philip, J., Adams, R., & Iwashita, N. (2014). *Peer interaction and second language learning*. Routledge. https://doi.org/10.4324/9780203551349

Power, R., Cristol, D., & Gimbert, B. (2014). Exploring tools to promote teacher efficacy with mLearning. In *International Conference on Mobile and Contextual Learning* (pp. 61-68). Springer. https://doi.org/10.1007/978-3-319-13416-1_7

Rachels, J. R., & Rockinson-Szapkiw, A. J. (2018). The effects of a mobile gamification app on elementary students' Spanish achievement and self-efficacy. *Computer Assisted Language Learning*, *31*(1-2), 72-89. https://doi.org/10.1080/09588221.2017.1382536

Rosell-Aguilar, F. (2017). State of the app: A taxonomy and framework for evaluating language learning mobile applications. *CALICO journal*, *34*(2), 243-258. https://doi.org/10.1558/cj.27623

Rosell-Aguilar, F. (2018). Autonomous language learning through a mobile application: A user evaluation of the Busuu app. *Computer Assisted Language Learning, 31(*8*),* 854–881.

https://doi.org/10.1080/09588221.2018.1456465

Sandberg, J., Maris, M., & De Geus, K. (2011). Mobile English learning: An evidence-based study with fifth graders. *Computers & Education*, *57*(1), 1334-1347. https://doi.org/10.1016/j.compedu.2011.01.015

Schrock, K. (2011). *Critical evaluation of a content-based iPad/iPod app*. *http://www.ipads4teaching.net/uploads/3/9/2/2/392267/evalipad_content.pdf*

Shahini, G., & Shahamirian, F. (2017). Improving English speaking fluency: The role of six factors. *Advances in Language and Literary Studies, 8*(6), 100-104. https://doi.org/10.7575/aiac.alls.v.8n.6p.100

Son, J. B. (2016). Selecting and evaluating mobile apps for language learning. In *The international handbook of mobile-assisted language learning* (pp. 161-179). China Central Radio & TV University Press.

Statista. (2019). Most popular Apple App Store categories in November 2019. https:// www.statista.com/statistics/270291/popular-categories-in-the-app-store/

Statista. (2020). Number of mobile app downloads worldwide from 2016 to 2020. https://www.statista.com/statistics/271644/worldwide-free-and-paid-mobile-app-store-downloads/

Statista. (2022). Leading language learning apps worldwide in February 2022 by downloads. https://www.statista.com/statistics/1239522/top-language-learning-apps-downloads/

Steel, C. (2012). Fitting learning into life: Language students' perspectives on benefits of using mobile apps. In M. Brown, M. Hartnett, & T. Stewart (Eds.), *ascilite 2012: Future challenges, sustainable futures* (pp. 129-151). Massey University.

Stockwell, G. (2012). Working with constraints in mobile learning: A response to Ballance. *Language Learning & Technology*, *16*(3), 24-31.

Tatar, S. (2005). Classroom participation by international students: The case of Turkish graduate students. *Journal of Studies in International Education, 9(4),* 337-355. https://doi.org/10.1177/1028315305280967

Vincent, T. (2012). Educational App Evaluation Rubric. Retrieved from https://www.ocali.org/up_doc/ho_3_pp-rubric3.pdf?1557548866

Walker, H. (2011). Evaluating the effectiveness of apps for mobile devices. *Journal of Special Education Technology*, *26*(4), 59-63. https://doi.org/10.1177/016264341102600405

Wang, Z., & Han, F. (2021). Developing English language learners' oral production with a digital game-based mobile application. *PLoS ONE 16(*1*)*: e0232671. https://doi.org/10.1371/journal.pone.0232671

Yang, Y. I. (2014). Is the speaking fluency strand necessary for college students to develop in the EFL class? *Theory and Practice in Language Studies, 4*(2), 225-231. https://doi.org/10.4304/tpls.4.2.225-231

Zhang, D., & Pérez-Paredes, P. (2019). Chinese postgraduate EFL learners' self-directed use of mobile English learning resources. *Computer Assisted Language Learning*, 1-26.

https://doi.org/10.1080/09588221.2019.1662455

Zhang, R., & Zou, D. (2021). Types, features, and effectiveness of technologies in collaborative writing for second language learning. *Computer Assisted Language Learning*, 1-31.

https://doi.org/10.1080/09588221.2021.1942068

Zou, B., & Li, J. (2015). Exploring mobile apps for English language teaching and learning. In F. Helm, L. Bradley, M. Guarda, & S. Thouësny (Eds), *Critical CALL – Proceedings of the 2015 EUROCALL Conference,* Padova, Italy (pp. 564-568). Research-publishing.net. https://doi.org/10.14705/rpnet.2015.000394

Zou, B., & Yan, X. (2014). Chinese students' perceptions of using mobile devices for English learning. *International Journal of Computer-Assisted Language Learning and Teaching (IJCALLT), 4*(3), 20-33. https://doi.org/10.4018/ijcallt.2014070102

Appendix 1

The Survey

Evaluation of Language Learning Apps Used by Undergraduates at Saudi Universities

The purpose of the present study is to look for smartphone English learning applications used by Saudi EFL undergraduate students at Saudi universities in order to evaluate them afterwards. Please answer the following questions. Filling this survey will not take more than 10 minutes and all of your answers will be treated privately and used for research purposes only. Participating in this survey is completely voluntary and you can withdraw at any point. Thank you for your cooperation and we appreciate spending part of your time to participate.

Nojood Alwagdani
Email: nojood-alwagdani@hotmail.com

- **Gender**:
Male – Female

- **Age**:
18 – 19 – 20 – 21 – 22 - 23 – 24 – 25 -26 – 27 – 28 – 29 - 30

-Are you a student at a Saudi University?
Yes – no

- **College**:
Business Administration – Arts and Humanities - Science – Engineering – Architecture – Medicine – Medical Science – Law - Dentistry – Pharmacy – Tourism- Design – Media and Communication – Computer and Information Technology – Education – Nursing – Languages and Translation – Other:

-University Level:
Preparatory Year– Level 1 – Level 2 – Level 3 – Level 4 – level 5 – level 6 – level 7 – level 8

-Are you specialized in English Language?
Yes – No

-English language level:
Beginner – intermediate – upper intermediate – advanced

Please answer the following questions:

1- Do you install English learning applications on your device?
Yes – No

2- If yes, choose the most frequent one(s) you usually use. (Select all apply.)
Doulingo – Busuu – Memrise – Beelinguapp – RosettaStone – Babble – Drops: Language learning- Lingvist: Learn Languages fast- Voscreen – Say hi – Shadowing – other:

3- Do you use the premium version of the app(s)?
Yes – No

4- If yes, why do use the premium version of the app(s):
The content in the premium version is better
The support in the premium version is better
Good price for a valuable content
To avoid the ads

5- If no, why don't you use the premium version of the app(s):
The price isn't good

I prefer using language leaning apps for free
I don't know about the premium version

6- What is the operating system of your smartphone?
iOS – Android – other

7- Why are using English learning app(s)?
Personal interest – for studying/work – for travelling – to communicate with family/friends –

8- What are the skills that you learn using English learning app(s)?
Vocabulary – Grammar – Reading skills – Writing skills – Listening skills – Speaking skills

9- Do you face difficulties while using English learning app(s)?
Yes – no

10- If yes, what are the difficulties that you face while using these apps?
The app freezes suddenly – the app is difficult to use – the app is not updated

11- To what extent do you agree with the following statements:
a) Using language learning apps is fun.
Strongly agree – agree – neutral – disagree – strongly disagree.
b) Using language learning apps is easy and simple.
Strongly agree – agree – neutral – disagree – strongly disagree.
c) Using language learning apps helps me improve my language level and learn better.
Strongly agree – agree – neutral – disagree – strongly disagree.
d) I will continue using language learning apps in the future.
Strongly agree – agree – neutral – disagree – strongly disagree.
e) I prefer including language learning apps as part of the English language courses.
Strongly agree – agree – neutral – disagree – strongly disagree.
f) There are better ways to learn English (e.g., books, institutes, websites, etc.)
Strongly agree – agree – neutral – disagree – strongly disagree.

Appendix 2

Language Applications Used by Participants (n = 129)

Application	Frequency	%
Duolingo https://apps.apple.com/sa/app/duolingo-language-lessons/id570060128	107	82.9
Shadowing https://apps.apple.com/sa/app/shadowing-english-speaking-exercise/id1182789540	22	17.1
Voscreen https://apps.apple.com/sa/app/voscreen-learn-english/id907906083	18	14
SayHi https://apps.apple.com/sa/app/sayhi-translate/id437818260	13	10.1
Beelinguapp https://apps.apple.com/sa/app/beelinguapp-language-learning/id1225056371	9	7
Babble https://apps.apple.com/sa/app/babbel-language-learning/id829587759	7	5.4
Drops https://apps.apple.com/sa/app/drops-language-learning-app/id939540371	7	5.4
RosettaStone https://apps.apple.com/sa/app/rosetta-stone-learn-languages/id435588892	6	4.7
Memrise https://apps.apple.com/sa/app/memrise-easy-language-learning/id635966718	5	3.9
Busuu https://apps.apple.com/sa/app/busuu-language-learning/id379968583	5	3.9
Other	8	6.2

Appendix 3

iPAC Evaluation Model (Burden et al., 2017)[1]

	3 The features of this app have the potential to enable:	2 The features of this app have the potential to enable:	1 The features of this app have the potential to enable:
COLLABORATION	Learners talking with peers online	Limited online peer discussion	No online peer discussion
	Learners working together to create/modify digital content	Limited opportunities for learners to work together to create/modify content	No creation/modification of content together
	Learners sharing/exchanging digital content online	Limited opportunities for learners to share/exchange digital content	No opportunities for learners to share/exchange digital content
PERSONALISATION	Learner choice/control over the activity	Restricted learner choice/control over the activity	No learner choice/control. External control only
	Learner customisation of the app	Restricted access to app settings or preferences	No possibilities for learner to modify/personalise the app. 'Once size fits all'
	Learner access to unique information tailored to them	Similar/identical information provided to all learners	No access to personalised information for learners
AUTHENTICITY	Learners' participation in real-life activities	Restricted realism and relevancy in activities	Artificial activities only
	Realistic use of the mobile device by learners, similar to real-world experts	Restricted real-world use of mobile device by learners; only similar to experts in a small way	Contrived use of the mobile device by learners, unrelated to discipline/real life
	Opportunities for students to learn in a realistic learning space, relevant to the topic/real-life	Restricted opportunities for learning in a realistic learning space, relevant to the topic/real-life	Learning in a decontextualized learning space, unrelated to the topic/real-life

[1]Excerpt taken from Burden et al. (2017). iPAC App Evaluation Rubric Retrieved from: http://www.mobilelearningtoolkit.com/uploads/5/6/0/9/56096707/appevaluationinstrumentfinalrubric.pdf