DESIGNING AND DEVELOPING LEARNING APPS FOR ESL LEARNERS

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Abstract

In this paper, action research is used to investigate the possibility of integrating easily customized learning apps in teaching English language skills in the Foundation Program at Qatar University. A variety of approaches and processes for developing and integrating simple web-based interactive apps for ESL learners will be presented. An understanding of how to develop and design a simple m-learning app will be discussed. A variety of review materials, interactive, communicative tools could be implemented at this session. Using augmented-reality and reusable learning objects in designing learning activities will also be introduced in this workshop.

Keywords: TESOL, M-Learning, App design, Technology, MALL.

1. INTRODUCTION

Modern technology, social media and smart mobile devices have all reshaped education expectations and standards. Leaning styles, techniques and resources are all being re-examined by all educational stakeholders including teachers, researchers, educational managements, publishers and students. At Qatar University (QU), it is evident that most learners are equipped with modern technology devices including smartphones that has changed their perceptions about education and teaching and qualify them to more flipped type of classrooms. At the same time, learners now tend to use knowledge and practice its concepts instantly through wireless Internet on their mobiles and through social resources and apps. Similarly, teachers need to cope with this rapid change and be able to provide learners with more dynamic, interactive and appealing learning resources to guarantee motivation, involvement and language acquisition.

In terms of mobile learning (m-learning) several initiatives have been introduced in many parts of the world. Different contexts around the world offer different technology potentials and expectations. Many teachers think about these initiatives and possibilities with more interest in easily customizable or free electronic teaching and learning resources. In the age of open sources and shared learning, these have proved to be the most affordable, sustainable and powerful so far. In that respect, several mobile apps and m-learning customized solutions have been offered on the web. Most of these solutions use web-based techniques for learners to access resources and other interactive tasks over a wireless smart device over a browser. Most of them also support quick response (QR) codes which open doors for interactive augmented types of learning through electronic objects and other wearable digital devices.

1.1 Problem Statement

Most Foundation Program students at QU lack the English proficiency skills required for university life. They were placed as elementary to intermediate English language learners using an international web-based placement test (*Accuplacer©*) in the beginning of the admission period. Several studies and reports discuss this issue as a major concern and a source of hindrance of learners' academic development in their majors. This might also represent a major demotivating factor for many of them to obtain a university degree.

Hence, several studies and reports have been produced in the last few years to seriously address and overcome this problem. In this action research, different m-learning web-based apps were identified and used in an attempt to overcome this learning problem.

1.2 Research Questions

The following research questions have been identified in this particular context:

A. What type of m-learning apps could improve ESL skills in the Foundation Program?
B. Which m-learning apps could be beneficial for FP learners at QU?
C. Could m-leaning websites offer more language practice opportunities for Foundation Program students?

1.3 Summary

To respond to these research questions, action research will be introduced in one of the representing samples or groups in this population. The aim is to identify their learning implications on learners as well as their possible future potentials on learning and the learning environment. A detailed overview of the sample population, research method and literature review will be introduced in the next two sections.

2. LITERATURE REVIEW

Language learning and language acquisition are normally referred to providing suitable learning conditions including sociological, stimulating and personally relaxing atmosphere for learning, where individual differences and needs are considered, to produce dynamic teaching and learning opportunities [1]. In order for this sort of learning to take place, personalized learning might be implemented through mobile devices or smartphones applications. The fact that most, if not all learners, in that context carry at least one smartphones equipped with high-speed broadband wireless or 3G connections makes it possible to open doors and huge learning opportunities beyond the borders of the traditional classroom.

As an example, Web 2.0 journaling tools or blogs could be used by learners to develop their reflective discussions and dialoguing [2]. Another example is learning through social learning networks (e.g. *Lecture-sharing*) or the most-recent massive open online courses (*MOOCs*) as suggested by [3]. In this sort of learning, a huge exchange of media (video, audio and images) and personalized learning content takes place through dynamic web tools or modules as with blogs, wikis or groups.

Texting over mobile apps, social media chatting and interaction, and accessing and sharing situated artifacts and personalized and individualized contributions are all modern evolving forms of developed learning via m-learning. In that way, learners could heavily invest and practice major written language forms and conventions in an appealing and less challenging learning environment. They would be able to record their observations and relate their language learning to their real-life situations in a dynamic, instant and spontaneous manner. Consequently, communicative and meaningful learning opportunities are then created [4].

Reference [5] mentions three teaching techniques have been emphasized in that sort of learning with m-learning including:

- Authentic learning environments
- Situated meaningful learning
- Personalized learning

Other researchers have focused more on the type of mobile features and applications that could represent ESL learning resources in independent and self-study contexts. Some of the suggested tools include: (welcome notes for learners, SMS texting, learning modules over content management systems or CMS, reminder messages, interactive quizzes, assignments and other tasks, students' uploaded content and/ or images and teaching/ learning materials via web or CMS) [6]. More recent language learning and m-learning projects now focus more on synchronous communication, QR codes or augmented reality and learning over social networks or MOOCs [7]-[8].

In all these types of projects or experiments, several mobile operating systems and platforms have been introduced in each context. In the US and some parts of Europe, iPad and iPhone devices get more focus. Other countries have moved to the more open source supported OS (e.g. the fast growing Android OS). In all cases, the variety of devices and operating systems has pushed many researchers to adopt the new bring your own device (BYOD) notion in their experiments [9]. A major advantage of this notion is the fact that learners carry their preferred handheld devices and freely select which apps/ features to personalize in those devices. This would also mean less technical support or maintenance efforts for all parties.

For the sake of this study, a simply BYOD is implemented with the help of a free web-based mobile widget platform. The goal of using this platform is allow educators and teachers to provide easy to develop customized learning resources and other interactive tools via a mobile device and Internet connection. A

Winksite.com© is developed for that purpose along with several other apps. The majority of these apps introduced to learners are free. Two of them were prepared as part of two research grants to faculty at QU in two different colleges and programs [10], [11]. However, the all the apps introduced to learners were completely free.

3. METHOD

3.1. Samples

The sample population of this study is done on representing groups from the Foundation Program department of English at Qatar University. These undergraduate foundation students were placed with English proficiency level as *elementary to immediate* levels according to the university placement tests. They share the same socio-cultural background where Arabic is their native language. Some of them struggle with English as a medium of instruction while the majority of them suffer a lack of independent and common study skills. Most learners relate this phenomenon to the drawbacks in proper learning skills of the secondary education. Three representative groups of two female groups and one male group were used for this study. Each group consists of approximately 25 students.

These groups meet daily for 100 minutes where one class per week is a lab time. While the main university policy prevents students from generally using mobiles in class for personal purposes, several individual initiatives have taken place to introduce mobile learning on campus. Some of these initiatives include a funded experimental study, with mobile tablet devices. The study was presented to two groups in 2013. Another collaborative initiative was done as part of a big research grant between Qatar University and Athabasca University. The study was piloted in the Foundation Program this year. Other initiatives include introducing eLearning language components or content management systems (e.g., *MyEnglishLab or Blackboard*) through mobile apps.

As action research is mainly a formation of ongoing developmental cycles of data collection, improvement review of finings and further needs, this method was used in this study. This sort of "systemic change" could lead to organization change and development [12]. Moreover, action research could provide sufficient evidence of educational practice or development through the data and other ethnographic samples used [13]. Hence, this method is used in order to be able to achieve the following objectives:

- confirm the status of m-learning in the FP
- elicit data and recommendations required to provide a better understanding of m-learning needs and requirements in the FP
- provide an objective and authentic account of the research procedures and processes

The research technique chosen for this process was through informal observations as a rather qualitative source of data collection and a main technique in action research. This includes regular recording of the (duration, frequency count and interval recording of the target behavior being observed) [13].

Reference [14] outlines the major data collection methods associated with action research. They all fall under three "buckets" as they describe them (*observations, interviews and artifacts*) as in (table 1).

Table 1. Data Collection Tools, Phillips, D., & Carr, K. (2010)

Observation	Interview	Artifact
note-taking/note-making	survey	student work
anecdotal records	questionnaire	internet postings
logs	attitude rating	portfolios
checklists	formal interview	student self-assessments
mapping	informal interview	test scores
shadowing	focus group	attendance records
digital photography	sociogram	
digital video and audio	multiple intelligence approaches	

Thorough an ongoing process of observing, planning, acting and reflecting, the project was implemented. The figure below (Figure 1) describes the spiral reflective nature of action research and how it could be generally designed [15]. In this study, several data collection methods were used for data collection including (observations through note-taking and a short online survey).

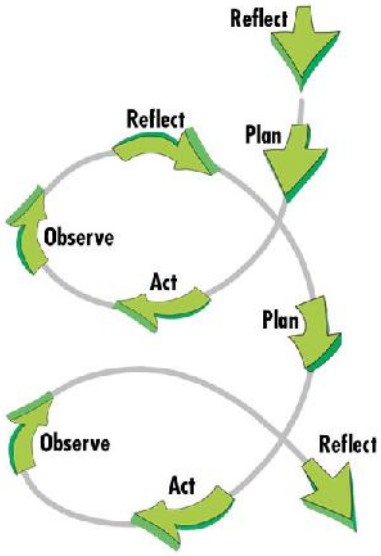


Figure 1. Action Research Cycles

3.2. Research Questions

The context described earlier along with the curriculum needs in the FP have all led to identifying the following research questions:

A. What type of m-learning apps could improve ESL skills in the Foundation Program?
B. Which m-learning apps could be beneficial for FP learners at QU?
C. Could m-leaning websites offer more language practice opportunities for Foundation Program students?

Table 2: Data Collection Matrix, Sagor 1992

Research Question	**Data Source # 1**	**Data Source # 3**
A. What type of m-learning apps could improve ESL skills in the Foundation Program?	Observation (note taking)	Short online survey
B. Which m-learning apps could be beneficial for FP learners at QU?	Observation (note taking)	Short online survey
C. Could m-leaning websites offer more language practice opportunities for Foundation Program students?	Observation (note taking)	Short online survey

3.3. Treatment

This action research has been implemented through different stages or cycles of *observing, planning, acting and reflecting*. The first phase took place in 2013 where the first m-learning project took place [16]. As a funded research project, students contributed as undergraduate researchers in the project. Mobile tablet devices were also offered to a representing sample group to examine and observe their use of m-learning in an English as a Second Language (ESL) context. Interesting findings were reported and presented about this first study. The focus of the first research phase (cycle) was to investigate the impact of certain mobile applications on students listening and speaking skills in ESL. Later, other two key areas have been identified; students writing and presentation skills. Initially, writing seemed to be a challenging language skill to be emphasized through m-learning. However, after reading through the literature and identifying key principles shared in the field, it seemed to be possible to facilitate students learning of all language skills through m-learning as will be described in this section.

In this study, it was evident that BYOD approach is the main solution possible due to the situation in that context. Hence, reference to more affordable and multi-platform apps was sought through the material design stage. This includes identifying application that could be used over different platforms/ interfaces. In the field of modern design, responsive websites have created opportunities for creating multi-platform

websites. Similarly, in mobile technologies, web-based applications have emerged as multi-platform mobile apps that could be accessed through different operating systems and smart devices. While they remain online, where the content needs to be downloaded, they offer great potentials for a possible unification of how mobile app data and resources are accessed and communicated across platforms. What is more interesting is the possibility for average and non-programming users to create, edit and customize interactive mobile content through such emerging platforms.

Several web-based mobile platforms have been reviewed before conducting this study. The appropriate tool that was identified is called *Winksite.com*©. This platform allows any user to create simple mobile content that could be easily integrated into any mobile devices with Internet connection. The platform allows a mobile preview screen to examine the content layout and design. This website also allows adding free interactive tools to an app (e.g., discussion forums, wikis, blogs, surveys, images, and videos). This makes it a powerful tool that could compete with big commercial content management systems in a more appealing way for learners.

Teachers may enter content through a direct text page or by connecting to "RSS" feeds. The platform is also accessible through QR readers, which could add an easy augmented reality feature to the mobile site. When visiting the URL or QR code, the server determines your operating system and browser type and then leads you to the right screen dimensions. Users or students can easily subscribe to the mobile site or share it with other learners.

The big advantage of this platform is its ability to offer easily customized and published platform for sharing any content type (e.g., pagination, navigation, easy menus, responsive items). This was also supported with the social and other interactive tools. With over 250,000 unique monthly mobile users, this platform may represent a big change in the field of user-based mobile development, as was the case with Web 2.0 evolution.

Before working on the development of the mobile app, a detailed weekly supplementary material for the writing component of the course was designed (figures 2 and 3).

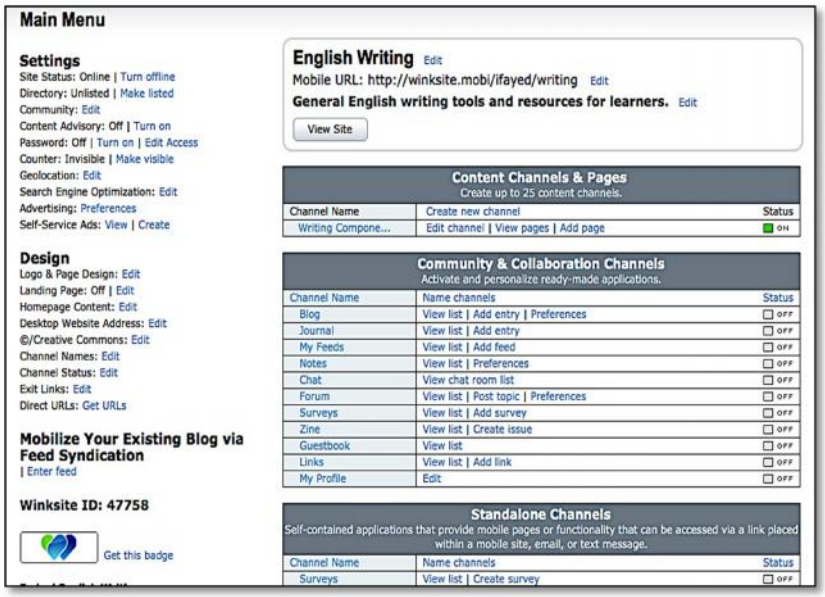


Figure 2. Mobile app development dashboard of features & pages

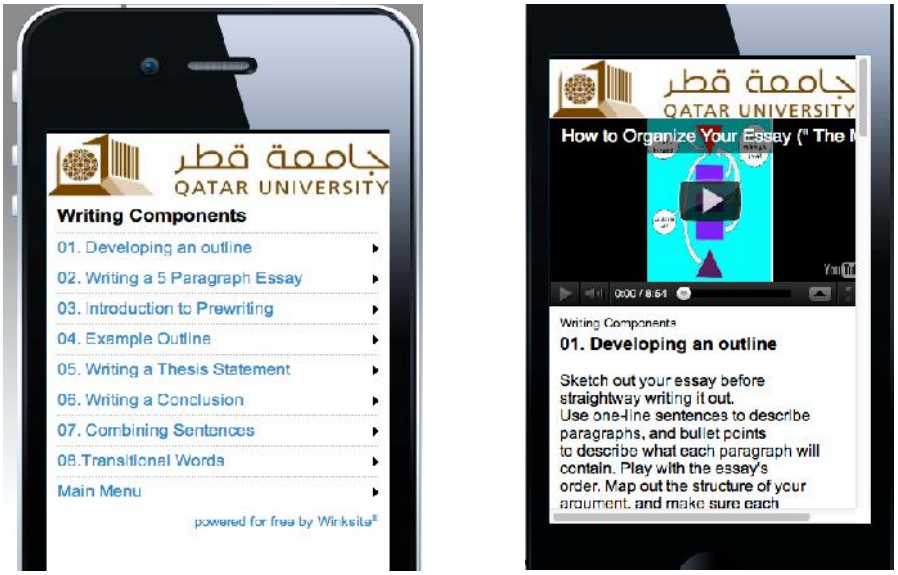


Figure 3. Winksite English Writing Mobile App Screenshots

The materials were offered as self-study materials or in the computer lab sessions. Each of the simple modules included in the app covered a new topic related to ESL writings skills with additional follow-up tasks and assessments. Additional language apps and tools were also integrated including:

- Presentation skills app (Complete pilot course)
- QU Learn (listening and speaking with videos)
- Writing App (*Winksite* app)
- Dictionary (English/ Arabic or English/ English)
- Translation app (Vocabulary, audio, text translation, recording)
- Grammar app (*MyGrammarLab* resources)

3.4. Data Collection

In this study, both observation through note taking and informal a short online survey were used. Students in one group were observed over a period of 9 weeks in terms of their frequent use of mobile phones in class as well as the nature of usability. Students were invited to agree on a mobile use policy in the beginning of the semester (users' agreement), which was then shared on their Blackboard course.

In the beginning, the recording of observation was regularly recorded right after lab classes. For that purpose, observation of students' use of their own mobile phones with questions and inquiries about the applications they use took place. Students were encouraged to use the language apps presented for this study on different occasions or topic related discussions. For the writing follow-up they were asked to use the *Winksite* content to learn more about writing skills and components. They were also asked to pilot a new presentation skills app that was developed for that purpose by the college of Engineering. For the listening and speaking skills, they were asked to use the QU application if they are on Android or its web-based version. Finally, they used the new scanning feature in Google Translate app to read and comprehend different statements or vocabulary in their textbooks. As a self-study, they were asked to use the *MyGrammarLab* application in order to practice the grammar modules and units introduced in class.

Students were informed about their rights to voluntarily participate in the survey and other data collection methods prior to each activity. Only students who showed interest in participating were included in the data collection process. Their privacy and anonymity were both protected throughout the whole process.

A short close-ended survey of 6 items was used to collect data about students' use of these learning apps. The survey meant to verify their perceptions about their use in terms of (difficulty level, practicality, future use and benefit). Out of 25 students, only 22 agreed to participate in the survey, which took place using an online survey link. The responses of the survey were exported and converted into charts, as will be outlined in the analysis section below.

3.5. Data Analysis

The data collected from both the observations and survey show some findings about students' use of the English learning apps. A summary of each data collection item is introduced in the following two items;

3.5.1. Observations

First, the observations showed a great deal of engagement with mobile phones among these learners. As young adults of age 18-21 years, most of them are strongly connected to their mobile phones through emails, communication apps and other services. However, many of them were confused about the purpose of using mobiles in class. Generally, they see it as an acceptable but required activity. Despite the introduction of class rules and regulations regarding mobile use, several learners tended to use their mobile for personal purposes, which was distracting sometimes. Strict follow-up on regulations and motives for using this technology in class was required.

The second observation was the fact that these learners have different interests and needs in terms of m-learning use. It was obvious through time that some wanted to focus more on vocabulary resources while others focused on the presentation or writing apps. A few students wanted to try and use all these apps regularly all at once. A few of them needed some technical help about the different buttons and features of some apps. Interestingly, other students were able to show the teacher and their colleagues some additional/ advanced features in some apps (e.g. the Google Translation reading scanner feature).

3.5.2. Survey

The survey results exported from the online survey showed a variety of responses about the apps highlighted in this study (appendix 1). First, almost 72% of students used the listening, presentation and grammar apps. 81% of them showed interest in the translation and writing apps. Only 10% indicated that they never or rarely use the grammar, listening or presentation apps.

In terms of their perceptions about the benefits or usefulness of those apps, 90% to 95% of respondents think the translation and writing apps are very useful. Almost 72% of them believe the presentation, listening and dictionary apps are useful. Then, 67% find grammar app to be useful too.

Similarly, regarding language development, they rated the translation and writing apps the highest 95% & 85% followed by the presentation skills app 82%. They through grammar is not very useful 13.64%. Additionally, they found the vocabulary and writing apps to be the easiest to use. The presentation app came after that 54% and finally grammar 22%.

Finally, about their intention to use these apps for learning in the future, 50% indicated they are will all the apps to learn. 36% said they would use only the dictionary, translation or writing apps. Whereas, 27% referred to the presentation app, but 18% mentioned the grammar app.

4. CONCLUSION

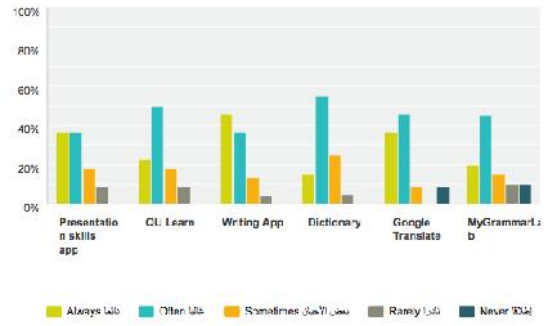
While it is hard to make clear judgments about the use or attitude of m-learning in ESL context or other learning aspects, it is still possible to say that this kind of learning carries huge potentials for individual learners and institutions. As with any new technology or innovation, clear policies and regulations are needed. Further training and support to both learners and faculty is required. Clear understanding of the technology and the background instructional design aspect could add crucial details to the material development process. Additionally, crossing the barrier between complicated programming, traditional material design and future instructional design seem to be possible than ever with new technologies like the one described for this study (*Winksite*). Further studies on the social elements of m-learning and social apps may add important details about how learners communicate and the nature of their second language acquisition through m-learning.

APPENDIX

Appendix 1: Survey results and charts

Which of these apps do you use the most?

Answered: 22 Skipped: 0

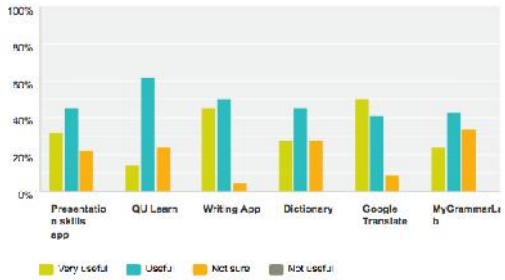


	Always دائما	Often غالبا	Sometimes أحيانا	Rarely نادرا	Never إطلاقا	Total
Presentation skills app	36.36% 8	36.36% 8	18.18% 4	9.09% 2	0.00% 0	22
QU Learn	22.73% 5	50.00% 11	18.18% 4	9.09% 2	0.00% 0	22
Writing App	45.45% 10	36.36% 8	13.64% 3	4.55% 1	0.00% 0	22
Dictionary	15.00% 3	55.00% 11	25.00% 5	5.00% 1	0.00% 0	20
Google Translate	36.36% 8	45.45% 10	9.09% 2	0.00% 0	9.09% 2	22
MyGrammarLab	20.00% 4	45.00% 9	15.00% 3	10.00% 2	10.00% 2	20

Comments (0)

Rate those apps in terms of their benefits to you:

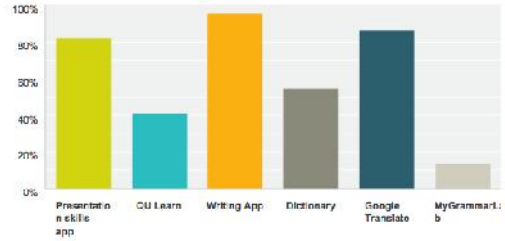
Answered: 22 Skipped: 0



	Very useful	Useful	Not sure	Not useful	Total
Presentation skills app	31.82% 7	45.45% 10	22.73% 5	0.00% 0	22
QU Learn	14.29% 3	61.90% 13	23.81% 5	0.00% 0	21
Writing App	45.45% 10	50.00% 11	4.55% 1	0.00% 0	22
Dictionary	27.27% 6	45.45% 10	27.27% 6	0.00% 0	22
Google Translate	50.00% 11	40.91% 9	9.09% 2	0.00% 0	22
MyGrammarLab	23.81% 5	42.86% 9	33.33% 7	0.00% 0	21

Which of these apps helped you develop your language skills?

Answered: 22 Skipped: 0

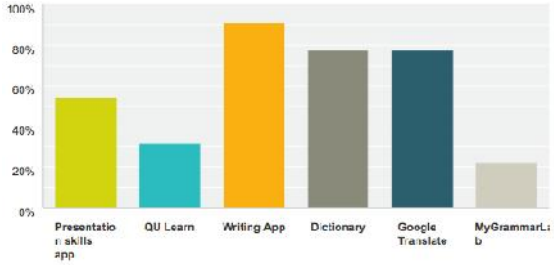


Answer Choices	Responses	
Presentation skills app	81.82%	18
QU Learn	40.91%	9
Writing App	95.45%	21
Dictionary	54.55%	12
Google Translate	86.36%	19
MyGrammarLab	13.64%	3

Total Respondents: 22

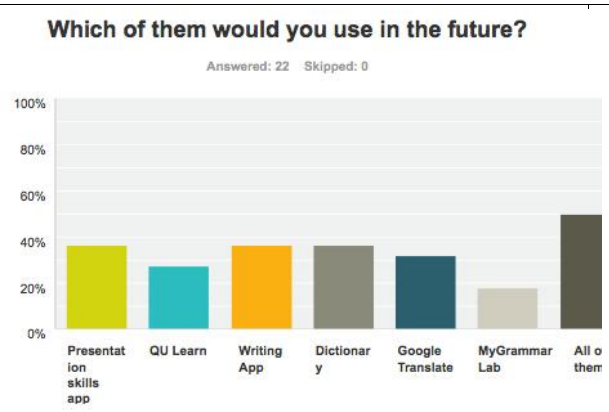
Which of them were easy to use?

Answered: 22 Skipped: 0

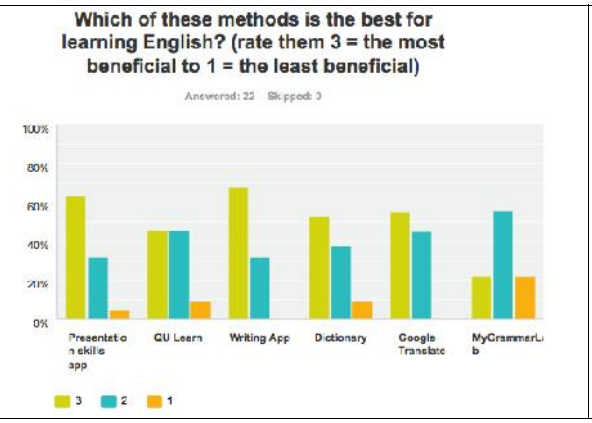


Answer Choices	Responses	
Presentation skills app	54.55%	12
QU Learn	31.82%	7
Writing App	90.91%	20
Dictionary	77.27%	17
Google Translate	77.27%	17
MyGrammarLab	22.73%	5

Total Respondents: 22



Answer Choices	Responses	
Presentation skills app	36.36%	8
QU Learn	27.27%	6
Writing App	36.36%	8
Dictionary	36.36%	8
Google Translate	31.82%	7
MyGrammarLab	18.18%	4
All of them	50.00%	11
Total Respondents: 22		



	3	2	1	Total
Presentation skills app	63.64% 14	31.82% 7	4.55% 1	2
QU Learn	45.45% 10	45.45% 10	9.09% 2	2
Writing App	68.18% 15	31.82% 7	0.00% 0	2
Dictionary	52.38% 11	38.10% 8	9.52% 2	2
Google Translate	55.00% 11	45.00% 9	0.00% 0	2
MyGrammarLab	22.22% 4	55.56% 10	22.22% 4	1

ACKNOWLEDGMENT

TBA..

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