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FROM THE EDITOR

by **Jarosław Krajka**

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What is the future of CALL? The question posed at the beginning of the century by Mark Warschauer, Stephen Bax and many other scholars sparked a lot of interest, with suggestions ranging from Artificial Intelligence, virtual worlds, blended learning, digital whiteboard-enhanced pedagogy to normalized, invisible, technology-enhanced language teaching. Looking at the current issue of *Teaching English with Technology, A Journal for Teachers of English*, we can most probably give a different answer – the future of CALL seems to be, at least in the current moment, mobile-based learning in social media contexts. The amount of research into mobile-assisted language learning and the number of mobile apps for language learning start to prevail over more traditional computer-based programs. The traditional learning setup of lessons conducted in a language lab is more and more often replaced by BYOD (Bring Your Own Devices) smartphone-based instructional contexts. Opportunities for seamless integration of clickers such as *Kahoot!* in different moments of language lessons and increased interaction via social media (mainly *Facebook*) to maximize authentic language exchanges are shaping the language education of today.

At the same time, the future of CALL may be MALL-based virtual and augmented reality. Rather than virtual worlds such as *Second Life*, which seems to have lost at least some of its initial appeal, the availability of smartphones integrated with AR/VR devices opens interesting opportunities for language education. As the article by **Euan Bonner** (Japan) and **Hayo Reinders** (New Zealand) proves, a number of practical tasks and activities can be redefined and can be given a new dimension by the use of AR/VR.

The current issue of our Journal goes abreast with the focus on mobile use and social media interaction in language instruction. To start with, **Félix David Estrella Ibarra** from Ecuador shows how the use of *Facebook* for writing practice helps reduce the level of stress and anxiety while working online as well as lower students' affective filter.

The use of mobile devices with student response systems (also known as clickers) has been addressed in the article by **Mehmet Asmalı** from Turkey. The author showed how a 10-

week implementation of *Kahoot!* with the students of tourism and hospitality in the experimental group resulted in their better performance in comparison to the ones who responded to the same quiz questions without using *Kahoot!*.

“Investigating EFL Learners’ Perspectives on Vocabulary Learning Experiences through Smartphone Applications” by **Saman Ebadi** and **Saba Bashiri** from Iran reports upon the study which examined the effects of learners’ proficiency level and gender differences with regards to the use of the *Vocabulary Flashcards 2016* application. The users held favourable attitudes towards the application because it influenced their learning positively and provided them with both form and meaning-focused instruction, but they were dissatisfied with the app’s levels and authenticity.

A more general perspective on mobile language learning can be found in the contribution by **Natalia Mospan** from Ukraine, who investigated how university learners from Poland and Ukraine perceive effectiveness of mobile devices in the process of teaching and learning English.

The way modern technologies are to be integrated with regular classroom instruction is the topic addressed by **Lantip Diat Prasajo, Amirul Mukminin, Akhmad Habibi, Lenny Marzulina, Muhammad Sirozi, and Kasinyo Harto** (Indonesia). The authors examined the extent of ICT integration used by student teachers from a public university, concluding that despite good competency levels, experience in the use of technology and beliefs in benefits of technology-enhanced learning, language instructors still do not sufficiently integrate ICT in their teaching practices due to inadequate provision of technology.

“The effect of CALL-based tasks on EFL learners’ grammar learning” by **Jalal ed-din Alian, Farzaneh Khodabandeh, and Hassan Soleimani** from Iran shows how important it is to design CALL tasks in a proper way so that they have a motivating power and can trigger positive attitudes toward language learning. Computers made opportunities for participants to present various tasks enthusiastically, which led to increased practice opportunities.

Finally, motivation of learners was also addressed in a contribution “Nonlinear Dynamic Motivation-oriented Telecollaborative Model of Language Learning via Formulaic Sequences to Foster Learner Autonomy by **Akbar Bahari** (Iran). Empirical verification of a model of dynamic conceptualization of language learning in CALL context indicated improvement and confirmed effectiveness of NDM-oriented telecollaborative model’s strategies at sociolinguistic, ethnolinguistic, and psycholinguistic levels.

We wish you good reading!

IS FACEBOOK BENEFICIAL FOR WRITING PRACTICE? ECUADORIAN POLYTECHNIC STUDENTS SPEAK UP!

by **Félix David Estrella Ibarra**

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Abstract

The study was set to understand students' feelings when using Facebook as a platform for practicing writing skills. It could be determined that respondents appreciated and enjoyed working on Facebook. The general sense was that of having a low level of stress and anxiety while working online as their affective filter was reduced. Students were able to work at their own pace, anywhere they wanted, and they could communicate with each other, and the teacher if they had questions. The paired T-test resulted in a negative null hypothesis and, as a whole, the class improved by four percent.

Keywords: social media; Facebook; teaching writing

1. Introduction

Carlino (2012) believes that students do not write to the expectations of their teachers just because they do not know how to do it. The author explains that teachers, at any level, ought to think about activities in which learners can acquire new forms of making compelling arguments or write about the topics that are related to the field explored in the said activities. Ghodbane (2010) states learners usually write the way they speak. Therefore, they face problems when they try to express themselves systematically and logically. Cabrera et al. (2014) maintain that in a study conducted in Ecuadorian high schools, they could identify the use of grammar and vocabulary as a result of L1 interference as the areas that cause students most problems.

This is not the first time that the use of Facebook to improve students' writing skills has been researched, Bani-Hani, Al-Sobh, and Abu-Melhim (2014), Yunus and Salehi (2012), as well as Gamble and Wilkins (2014), have performed similar studies. They all recommend further study including the actions of a moderator who takes care of giving better input and including specific feedback on students' work. Following on their recommendations, this study was devised.

The study centers on the students enrolled at a polytechnic university in the city of Guayaquil. Learners were in the last course of the English levels which are required by their schools' curriculum. Students at this stage have already done other five additional courses, and they are at an intermediate level (according to CEFR). They meet their teacher twice a week and each class lasts for two hours. The primary teaching method used in the English classes is the Communicative Approach, although the heads of the department also encourage teachers to use cooperative and collaborative activities as well as flipping the classroom. There were 38 students registered in the course, most of whom (63%) were female. Their ages range from 18 to 25 years of age, and the most representative age group stands in the 20-21 years of age range.

2. Literature review

The Affective Filter theorizes the way certain factors relate to the success of the process of second language acquisition. Krashen (1988) categorizes the affective variables in one of three groups: motivation, self-confidence, and anxiety. Krashen explains that a student with non-optimal attitudes towards the acquisition of another language will have a high Affective Filter. Therefore, it is the job of the teacher to provide learners with an environment in which these variables are dealt with in such a manner that the filter is reduced efficiently. This reduction will, in turn, according to Krashen, allow learners to be in a better place to acquire the language more efficiently. Krashen's theory was one of the bases for the development of this study and lowering the students' affective filter using a tool they are familiar with was one of the aims of the intervention planned.

Once we can get students to feel more confident with their language use, it is a good idea to have a valid form of assessing their final products. One of the most commonly used analytical rating scales for writing pieces is the Composition Profile as devised by Jacobs (1981). This rating scale has five weighted factors. The first one is content, which has the most substantial weight of them all, while the other items are organization, vocabulary, language use and mechanics. Jacobs suggests that for reliability purposes two or three different raters should score each piece of writing, but working independently.

However, an assessment of students' work is not finished until we give them feedback. Written responses on students' writing, according to Leki et al. (1990), can have a positive or negative effect on how students see writing. It is a fact; she continues, that the response a writer receives might be crucial to them to keep writing or not. General comments given by teachers encouraging the work and suggesting revisions help to improve the content of the

composition. Responding to grammar and content either separately or at the same time, but in such a way that is not overwhelming to students, helps them improve when they are writing their assignments (Fathman and Whalley, 1990). Therefore, during the intervention, the present researcher took great care to the way the students received their feedback, putting special consideration to the positive feedback before pointing out any places for improvement.

It is in the last few years that people have gained access to computers both at their homes as well as in their educational contexts. This boost of availability of technology has aided Computer-Mediated Communication (CMC), which is any human communication that is supported by computer technology (Levy, 2006). The author goes further and states that we should be talking about CMC-based CALL (Computer Assisted Language Learning) as we can use e-mail and chat, as well as audio-graphics, video-conferencing, and mobile learning applications. Selwyn (2009) concludes that Facebook as a technology-mediated communication tool may well be an accompaniment to the traditional face-to-face classes.

Forkosh-Baruch and Hershkovitz (2012) see Facebook as having a huge potential for forming online communities of practice favoring informal learning for individuals who consume content as well as collaborate with others. Therefore, Facebook can be regarded as a place where learners can appreciate the benefits of collaborative learning, and it can link students with one another using networks whose nature is social and academic at the same time (Yunus et al., 2011). Shih (2011) investigated how the use of Facebook as a blended learning tool affected the learners' writing abilities when it was integrated with writing class instruction. During the experiment, the author explains, the intervention was successful as all the students in the analysis had significantly higher scores in the post-test they did. White (2009) determined that the creation of a Facebook group and the provision of weekly input gave learners a motivation boost and achievement in grammatical complexity was attained.

3. Methodology and data collection instruments

One of the very first things, before starting a study, researchers need to do is to establish the research paradigm. Additionally, one must define one's ontological and epistemological positioning. With these two principles in mind, the methodology to be used can be set. The constructivist paradigm, according to Guba and Lincoln (2005), complies with a relativist ontology assuming the existence of multiple realities. Creswell (2008) sheds some light on the ontological question and reports that reality is subjective and multiple, as it is the way the participants of the study see it. This is the knowledge that, with the results of the intervention,

was obtained. The epistemological positioning of this study, considering the paradigmatic and ontological stances described previously, is a constructivist one. The tradition chosen for this paper is action research, which, according to O'Brien (2001), is used in real situations as its focus is to solve practical problems. Action research, states Creswell (2012), collects data using quantitative, qualitative or both methods.

The first instrument used was a survey, which was adapted from the ones applied by Nolan (2011) and Karim (2015) in their studies of the academic use of Facebook in the English writing class. With this instrument, the participants' demographic data, their use of Social Networking Sites (SNS), as well as their perception of their level of English, were obtained.

The second tool was a semi-structured interview, composed of only six questions, which were adapted from the questionnaire used by Kamnoetsin (2014), given the demand from the graduate committee of the program of using a sample of 30 participants. This issue resulted in the researcher not being able to obtain as much data as it might have been desired. The questions asked participants to describe their experience of writing on Facebook, whether they wrote a lot or not and why. It also inquired about their opinions on the usefulness of the tutorials and asked them what they learned most during the intervention, whether they felt an improvement in their writing skills and finally what was their perception of the delivered feedback.

Another instrument used to gather data was a writing test, used as pre-and post-test, which is widely used for measuring change resulting from an educational intervention (Dimitrov and Rumrill 2003, Creswell 2008). The topic used came from past papers from the Preliminary English Test furnished by the Cambridge ESOL department website.

The last instrument was the Facebook page where the researcher posted the information the participants needed to read and practice further (<https://www.facebook.com/English.class.with.David.Estrella/>). Initially, the intention was to make use of a closed Facebook group to protect the participants' privacy, but Kamnoetsin (2014) reported several problems when setting up such a group. Therefore, an opened fan page was used. During the intervention time, the researcher input writing information accompanied by examples and an exercise, on every day the class met for regular instruction, several topics resulting from a needs analysis carried on the pre-tests. It is necessary to make clear that no other input was done during the face-to-face classes.

4. Research procedures, validity and trustworthiness

The researcher contacted the Academic Coordinator of the English Department at the University to be authorized to carry out the research. Once obtained, the participants received a class in which every single detail of the project was explained to them. Out of the forty-two students enrolled in the course, only thirty-five of them decided to take part in the project and signed the informed consent forms which were translated into Spanish just for the sake of complete understanding of the document.

The intervention consisted of four tasks participants had to do over four weeks. It started on July the fourth and ended on August the twenty-fourth. The first task was to answer the online survey posted on Google forms. In the second task students had to participate in the writing tutorials posted on the Facebook page twice a week. On most of the tutorials, the subject was dealt with via images, as this was one of the preferred media chosen by the participants on the survey. The writing tutorial was accompanied by one or two exercises they needed to do. The third task was the pre-writing test used at the beginning of the intervention to determine their writing abilities. Moreover, they had to do a second writing test after the writing tutorials had finished. The last task was to take part in the personal interviews.

This study deals with the issue of descriptive validity by relying on an accurate and solid account of the events that surrounded the study (Cohen, Manion and Morrison, 2007; Creswell, 2008). During the investigation, the different tools, namely a survey and interview questions were piloted, as suggested by Lincoln and Guba (1985). It was found during the piloting that both the interviews and the surveys had to be done in Spanish as the language used was, at times, too complicated for learners to respond to them without problems. Cronbach and Meehl (1995) say that it is necessary to provide for the validity of the test to have a statistical procedure run over the results. Therefore, the researcher used a Paired T-test to prove the null hypothesis. This kind of process, as explained by Creswell (2012), allows the researcher to claim for good construct validity. Throughout the completion of the different stages of the research, a peer de-briefer analyzed the various documents created and revised the transcripts of the interviews. While considering all the above mentioned, the reviewer challenged a diversity of issues which would not have been addressed without this intervention.

This research was based on several issues to account for trustworthiness. The first point falls in the category of credibility, as coined by Lincoln and Guba (1985), which relies on the confidence the researcher has in the truth of the data and conclusions reached with the research design. The extent of this credibility comes from the analysis performed over the

experiences related by the participants. Also, as above mentioned, several colleagues aided this researcher by looking at the different instruments. During these reunions, issues arose from questions and doubts the de-briefers had about the various sections. This researcher was able to resolve some of the concerns at that same moment, and others were kept for further review and inclusion in the final paper. This researcher believes that with this measure the quality of the investigation was improved. Additionally, reflexivity was tapped into, which Krefting (1999) theorizes as the proximity necessary to establish rapport with the informants so that they answer the researcher's questions more candidly. This relationship was being set every time respondents posted their responses on the Facebook page and the researcher commented, giving feedback on the accuracy of the postings as well as intervening sharing personal information with them. Furthermore, Lincoln and Guba (1985) and Krefting (1999) speak about transferability, saying that the researcher's responsibility is to make sure there exists plenty of information about the research, so the reader and researchers can make an informed decision on whether that data can be transferred to their realities. This researcher kept a great deal of information on everything that was done during all the stages of the investigation to account for this transferability of knowledge.

5. Discussion

The first question asked learners about their feelings when using Facebook to practice their writing skills. More specifically, it inquired whether it was beneficial or not for them. The average grade in the pre-test was eighty-one, while the post-test results averaged on eighty-five points. It is necessary to say that not all results were positive as twenty-six percent of the participants had an adverse change. These pre and post-test results were analyzed using the Paired T-test, as suggested by Creswell (2012). A point of caution when reading these results is that there was not an in-depth inquiry into the reasons for the variations in the grades obtained. This means that it is not one hundred percent certain that the positive results came as the sole consequence of the exposition of the participants to the sessions on Facebook. Therefore, it seems necessary to perform a more in-depth quantitative analysis of the correlation of the input done on Facebook and the errors or speech reported in the participants' writing tasks.

During the interviews, a question appeared whether the tutorials on Facebook were beneficial to them. A clear majority of the informants stated that Facebook allowed them not to worry about space or time as they do when they have to attend classes. "I don't have to worry about when or where I have access to the platform. I can be in my bedroom, or I can be

at the café doing homework. It is great because I can take advantage of my free time,” said student 1. Another participant explained she had enjoyed using the Facebook platform for class a lot because she already had it and used Facebook every day and she liked it when they had to go back and read their partners’ work and post positive comments. Some of her peers even dared to give her writing advice, she recalls. This assertion agrees with the results presented by Kabilan, Ahmad, and Abidin (2010).

The second inquiry proposed whether the continued use of Facebook to practice writing skills permits learners to increase their writing performance. There was evidence of the answer to this question by the results of the Paired T-test which, according to McDonald (2014), measures before and after observations of the same subjects, reviewing the null hypothesis. If the results of the test are lower than 0.05, the researcher can confidently say the null hypothesis can be rejected. The two-tailed critical P- value came to 0.0005, meaning we have sufficient evidence to reject the null hypothesis at a 5% level of significance.

The third question inquired about the types of input participants deemed as most attractive or appealing. In the survey, at the beginning of the term, participants identified images as their first choice of input, followed closely by video sources and in the third place – texts. The round sessions of interviews corroborate this information. The participants confirmed that they enjoyed using the platform and felt they learned and retained the information better every time they saw the tutorials with pictures to illustrate the different concepts or points.

The final research question addressed the emotional issue by asking if learners regard the use of the Facebook platform as motivational for their writing tasks. During the interviews, students responded about their general experience on Facebook, some of them described it as a positive experience. Student 23 commented that “using Facebook is not new or difficult and it makes me feel more comfortable than using the university’s platform. Although I was not a very active writer because I didn’t have a lot of free time, I liked coming to the platform and see what everybody else was writing, and I used that as help for my writing.” “When I saw your comments, very good or great work,” says student 3, “it made me feel good about myself because I was doing things correctly.”

Using the Facebook platform to practice writing skills proved to be a pleasant experience for students. Moreover, it functioned as a mediation tool between the student and the artifacts in the environment that will permit them to understand the cognitive activities. The fact that they were using a tool they use every day for their personal affairs made it easier for them to accept the work. Seeing their peers’ and teacher’s comments made them feel

confident about the things they were posting on the platform. Participants felt comfortable when they were writing their ideas on Facebook. As a result, the Affective Filter, as described by Krashen (1988) could be lowered, and their feeling of self-confidence was raised, and their written work performance also experienced a beneficial development.

6. Limitations of the current study and suggestions for further research

There were a few inhibitions when implementing this research project that should be mentioned. The first barrier in the study is the researcher's lack of experience in the research field, as this was the very first time such kinds of studies had been undertaken. Secondly, there was a time constraint considering all the teaching-related activities and the researcher's participation in the academic writing center of the department as well as the translation work done for the university. The interviews with the participants were yet another limitation. The researcher, who was also the teacher, conducted the discussions with the participants. This fact could affect the honesty of the responses and in turn the results of the study. It was thought at one point that the solution for this constraint might be to appoint a colleague from the center to do the interviews but again, time was against the project. A considerable limitation, regarding the interviews, was that the sample had to be a minimum of 30 participants, which meant the number of questions had to be reduced. This imposition resulted in a semi-opened conversation with the participants dealing with only six issues that at times were increased to 8 or 9 inquiries.

A new inquiry can take place but this time with teachers as it would be interesting to look at how they respond to the inclusion of Facebook in their teaching of writing. Knowing whether they would have a positive or negative attitude towards using SNS in their English language classrooms could aim at a potential broader use of the platform in the English class.

Since the present study was done focusing only on the students of one university in the city of Guayaquil, it lacks on population validity. Therefore, it is a good idea to encompass a larger sample, probably utilizing students from three or more higher education institutions in the city of Guayaquil. That way this new research could be proven for a generalization of the results.

Also, another investigation could be carried out with a quantitative tradition in mind, focusing on the input provided and the types of errors that are committed during the intervention stage, by the participants. In this paper, the analyst can look at the correlations that might exist between these two variables and how the treatment of such errors influences

the results of the participants' post-tests.

7. Conclusions

Considering the increasing importance of the role that social media play in the daily lives of college students in the digital era (Selwin, 2009), it becomes necessary to pay attention to the different ways teachers can use Facebook to enhance their traditional classrooms and include a bit of technology in them.

The results of the present research work have answered the central research question positively as participants broadly agreed they felt an improvement in their writing skills, which confirms the results obtained by Ibrahim (2013) and Kamnoetsin (2014). Participants in the study concurred that one of the benefits they gained from the Facebook platform is that they received much information promptly, and they enriched their knowledge by seeing each other's pieces of writing permitting them to better their writing tasks as well. Hence, the platform served as a useful channel for expediting writing practice and the result of the learning process.

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Appendix 1. Instruments used – Questionnaire for interviews

1. Can you describe your writing experience on the Facebook tutorial platform? (e.g. did you like it, is it difficult to write on Facebook platform?)
2. How did you do on the Facebook tutorial session? Did you write a lot? Why or why not?
3. What do you think about the tutorial sessions provided on Facebook? Did you like them? Why or why not?
4. What do you think you learned most from participating in the tutorial lab in terms of writing skills?
5. In your opinion, do you think writing on Facebook helps you improve your English writing skill, or do you think it impedes (make it worse) your writing skill? Why or why not?
6. What do you think of the feedback?

PS: This questionnaire was translated into Spanish so that students would feel more comfortable and their responses would be more candid.

Appendix 2. Instruments used – Writing test

Preliminary English Test: Writing Part 3 Practice Test

Question 7-8

Write an answer to one of the questions (7 or 8) in this part.

Name: _____ **Date:** _____

This is part of a letter you receive from an English friend.

For my homework project, I have to write about a special day that people celebrate in your country. Which special day should I write about? What information should I include?

Now write a letter, giving your friend some advice. Write about 100 words.

Appendix 3. Instruments used - Survey

Survey

Section One: Demographics

1. **What is your gender?**
 - a. Male
 - b. Female
2. **What is your age range?**
 - a. 18-19
 - b. 20-21
 - c. 22-23
 - d. 24-25
 - e. 26-27
 - f. 28-30
3. **Are you originally from Guayaquil?**
 - a. Yes
 - b. No
4. **If you are not from Guayaquil, which province do you come from?**
 - a. El Oro
 - b. Esmeraldas
 - c. Manabí
 - d. Los Ríos
 - e. Chimborazo
 - f. Pichincha
 - g. Azuay
 - h. Other
5. **Which type of school did you go to?**
 - a. Public
 - b. Private
6. **Where did you first started studying English?**
 - a. In primary school
 - b. In secondary school
 - c. In the university
7. **How did you reach Advanced B?**
 - a. I did all the other subjects
 - b. I did the placement exam
 - c. I did some subjects and the placement exam
8. **Which semester are you in ESPOL at the moment?**
 - a. First
 - b. Second
 - c. Third
 - d. Fourth
 - e. Fifth
 - f. Sixth
 - g. Seventh
 - h. Eighth
 - i. Ninth
 - j. Tenth
9. **How long have you been studying English?**
 - a. 1 semester
 - b. 1 year
 - c. 2 to 4 years
 - d. More than 5 years
10. **Do you like English?**
 - a. Yes
 - b. No

Section Two: Use of Internet**1. How often do you use Internet?**

- a. Everyday b. Once or twice a week c. Once or twice a month

2. On average, how many hours per day do you spend on Internet?

- a. 1-2 hours b. 2-3 hours c. 3-4 hours d. More than 4 hours

3. What do you most like doing online?

- a. Chat rooms b. Blogs c. Music d. News
e. Gaming f. File sharing g. Shopping h. Social networking (Facebook)

4. How often do you use...?

- | | | | | | |
|--|----------|-------------------------|-------------|-----------------|---------------------------|
| | Everyday | More than
once a day | Once a week | Once a
month | Less than once a
month |
|--|----------|-------------------------|-------------|-----------------|---------------------------|

Chat rooms

Blogs

Music

News

Gaming

File sharing

Shopping

5. Where do you use Internet?

- a. Home b. School c. Cafeteria
d. Cyber café e. Friend's house f. Others

6. Do you use social networking sites?

- a. Yes
b. No

7. If your answer to question 6 is yes, how many hours per day do you spend on these sites?

- a. Less than one hour
b. One hour
c. Two hours
d. More than two hours

8. If your answer to question 6 is yes, which social networking sites do you use? Check as many as apply.

- a. Facebook
b. YouTube
c. Twitter
d. LinkedIn
e. Pinterest
f. Google+
g. Tumblr
h. Instagram
i. Reddit
j. Flickr

Section Three: Use of Facebook**Check the box that best indicates your level of agreement with the statement.****1. Do you currently have a Facebook account?**

- a. Yes
b. No

2. How long have you had your Facebook account?

- a. Less than one year
b. For a year
c. For two years
d. For three years
e. For more than three years

3. What posts do you think are more interesting? Check all that apply.

- a. Images
b. Texts
c. Videos

- d. Other people's content
 - e. Blog posts
 - f. Podcasts
4. Which of the following levels of agreement best describe what you think about the statements below?
Strongly disagree= 1; Disagree=2; Medium=3; Agree= 4; Strongly agree= 5
- a. Facebook helps me make more foreign friends
 - b. Facebook give me the opportunity to communicate with other people using English.
 - c. Facebook gives me the opportunity to exchange information in English regularly.
 - d. I receive useful information through Facebook for my everyday life.
 - e. With Facebook I get opportunities to write in English.
 - f. I can get familiar with the way to write in English when I use Facebook.
 - g. When I write in Facebook I try to use grammar correctly.
 - h. I realize I need to improve my writing when I use Facebook.
 - i. Facebook helps me improve my writing to communicate more effectively.
 - j. Facebook makes me understand the benefit of learning English to use it in real life situations.
 - k. I feel motivated to learn English when I use Facebook.
 - l. Facebook encourages English learning outside the classroom.
 - m. Facebook helps me visualize the objective I have to learn English more clearly.

LEARNING TO TEACH IN A DIGITAL AGE: ICT INTEGRATION AND EFL STUDENT TEACHERS' TEACHING PRACTICES

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Abstract

This study examined the ICT integration used by student teachers from a public university during their teaching practices in four high schools in Indonesia. This qualitative inquiry with a case study approach focused on video-based observations and focus group discussions as techniques of data collection. We utilized random sampling for the video-based observation and purposive sampling for the focus group discussion with 60 participants in the discussion and 10 classes in the observation. We organized our analysis and discussion around the field facts and participants' perceptions on the contexts whether or not the integration of ICT was carried out in their pre-teaching practices. Despite the fact that most participants who were student teachers informed that they had good competency levels and experience in the use of technology and believed that technology would have many benefits in improving their teaching performance, the findings of this study showed that they did not integrate ICT in their teaching practices. The major reason for this lack of technology use was the school condition. The findings can be a reference for the importance of a systematic and comprehensive development of method of the teaching practice in the 21st century to help the appropriate transition of student teachers, as they will become professional teachers in the future.

Keywords: ICT; technology use at schools; ICT integration in teaching

1. Introduction

ICT training has been a significant part of many teaching training in ensuring aspiring teachers are prepared in utilizing technology in their teaching (Gülbahar, 2008). Therefore, it is worth to analyze whether technology forms teachers' part of helping activities from the first time of teaching to change learning to suit the 21st century technology-oriented ways. Teaching practice, which is the first activity implemented to train future teachers before they are ready to be teachers, is the first spot to practice. This first chance for those teachers aims at establishing student teachers' own teaching philosophies and practices. Some researchers informed on why most teachers were not used to using technological devices and systems in their teaching activities because it was neither their original training nor their teaching habits when they begin to teach (Prensky, 2001; Rosenthal, 1999). Thus, when technology was first used, teachers faced difficulties and challenges. Verloop, Van Driel, and Meijer (2001) state that the cognitions of teachers cannot be switched easily because it needs years to form. However, technology would have potential for promoting teaching innovativeness through having important tools utilized to facilitate learning. Hence, it plays important roles in education these days.

Nowadays, most programs for teacher training around the world support technology-training components. Because of the training, today's student teachers are in an environment which is more supportive of integrating technology as part of their teaching compared to their predecessors. New teachers are not supposed to apply unnecessary teaching habits established by the predecessors (Yuksel & Kavanoz, 2011). They could easily introduce innovation to their teaching techniques to support technology use. Much research on the ICT application has been focusing on the investigation of teacher education programs to explain how much they prepare for the integration of ICT into their classes (Liu, 2012; Murley, Jukes, & Stobaugh, 2013).

However, limited studies specifically observed student teachers' transition when they go to the field of teaching on whether they implement the skills and knowledge they obtained from the technical training programs or not. This study focused on investigating the integration of ICT of English as a Foreign Language (EFL) student teachers from a public university during their teaching practices in four high schools in Indonesia. In this study, the following questions were posed:

1. How do student teachers integrate the use of ICT in their teaching practice?
2. What are the student teachers' beliefs in dealing with the ICT benefits in their teaching activities?

3. What are the hampering factors faced by student teachers in using ICT in their classrooms?

2. Review of literature

Some studies have documented the investigation of technology application carried out by student teachers. Plenty of research revealed that there is gross under-use of technology by student teachers in the teaching activity (Al-Ruz & Khasawneh, 2011; Liu, 2012). Mostly, the lack of technology use in the teaching and learning process has been included in studies of the field of teacher training program (Liu, 2012; Scheeler, 2008). Nowadays, it is crucial to integrate or relate the use of technology for newly recruited teachers or student teachers who will be teachers in the future when they go for teaching practice. Teaching in the 21st century has changed, as it requires people involved in education to manage the integration of technology in their classes to meet the requirements of current literacy standards (Kong et al., 2014). Oblinger and Oblinger (2005) state that a student who lives in the digital era has become mostly familiar with the use of technology, and this pertains also to student teachers.

However, technology integration has not always proven effective in terms of integration in either curriculum or teaching activity. It is believed that training effectiveness could increase the levels of teachers' competency in using technology in their teaching delivery (Koh & Frick, 2009). In some studies, the lack of limited trainings was a major factor in technology disintegration in teaching activity (Gibson & Oberg, 2004; Gülbahar, 2008; Liu, 2012; Vanezky, 2004). However, nowadays where most students are digital natives, technology has played important roles in the lives of the current generation (Kelly-McHale, 2013; Nishino, 2012; Vodanovich, Sundaram, & Myers, 2010).

Digital natives are characterized by high enthusiasm in using technology on a daily basis. This fact delivers reasonable expectations and hopes that these students more likely to integrate ICT into teaching activities. However, studies done by Allsop et al. (2009), Hadiyanto et al. (2017) and Lei (2009) indicated that most student teachers used technology applications and devices more on their personal use than on their teaching and learning activities. For example, Lei (2009) investigated student teachers' attitudes, beliefs, and technology experience and expertise and found that student teachers spent most of the time (80%) on social communication, with merely approximately 10% of that time for learning activities. Allsopp et al. (2009) conducted a study evaluating the influential effects of a computer initiative (one-to-one among the participants) in order to integrate systematic technology for undergraduate students in one education program. They found that most

participants integrated sorts of technology applications and devices maximally for their personal use outside the classrooms instead of using them in their teaching and learning activities (technology disintegration).

Some influencing factors of technology disintegration in pre-service teaching programs are self-efficacy, school culture, conflicting beliefs, and teachers' limited training (Al-Ruz & Khsaweh, 2011; Anderson & Maninger, 2007; Gibson & Oberg, 2004; Gülbahar, 2008; Koh & Frick, 2009; Liu, 2012; Niederhauser & Perkmen, 2010; Vanezky, 2004; Wang & Wu, 2015). In addition, Teo (2009), Yücel, Acun, Tarman, and Mete (2010), and Aslan and Zhu (2014) believed that besides those issues, supporting facilities, technology attitude, and computer anxieties were further factors leading to technology disintegration in pre-service teaching programs.

Competency levels in technology use have been in many studies linked to self-efficacy of educators (Wang & Wu, 2015). A study done by Al-Ruz and Khasaweh (2011) examined a model in which technology application carried out by the participants who were student teachers was in correlation with both university-based and school-based factors. They informed that in the integration of technology, self-efficacy played the most important role. Similar research done by such researchers as Anderson and Maninger (2007), Koh and Frick (2009), and Niederhauser and Perkmen (2010) revealed that self-efficacy has been the most important determiner of student teachers' willingness to utilize technological software and in their teaching and learning activities.

School culture is another factor influencing the lack of the use of technology in the classrooms by student teachers in their pre-service teaching. Inan and Lowther (2010) revealed that student teachers in their first-year teaching practice were required to learn the school cultures and the way to become teachers, which influences all activities in the teaching and learning process. Further, school culture plays a very important role in shaping new teachers or student teachers and their use of technology in the classrooms (Al-Ruz & Khasawneh, 2011). The school cultures are very significant to support the use of technology because they encompass such factors, as, for instance, school leadership's expectations, ICT technical and pedagogical support, attitudes and perceptions towards technology use, and ICT policies. The phenomenon happens because when the integration of technology is an element of the school culture, the teachers will not have isolated feeling in their efforts to apply ICT in the teaching and learning process. Therefore, for student teachers who do their teaching for the first time, the inclinations of the school cultures will help adopt or not adopt the ICT integration in their classrooms (Allan, Law, & Hong 2003). Also, Conway et al. (2005) who

investigated new teachers' challenges in technology integration found that the issues of time and validation need to be dealt with during first-time teaching. According to Conway et al. (2005), new teachers are often reluctantly afraid to neglect the norms or cultures they find in the school and to try new things including integrating ICT in their teaching activities. In another study, Gorder (2008) proves that teachers with experience have more opportunity with the use of technology and should be more willing to use it. The reason is that established teachers are more adaptable to the school cultures than new teachers. The established-teachers would have opportunities to be more creative than new teachers who are still trying to get accustomed to teaching and learning at school. This fact may help explain several thought-provoking results of findings obtained by some studies which revealed that new teachers of today, believed as more technology-savvy than that of their predecessors, do not use ICT in their teaching activities as much as expected (Allsopp et al., 2009; Lei, 2009).

Additionally, pedagogical belief is revealed as one of factors in the disintegration of ICT in classrooms (Ertmer, 2005; Kelly-McHale, 2013; Nishino, 2012). A meta-analysis done by Ertmer (2005) evaluating the correlation between teachers' pedagogical beliefs and their ICT integration found that it is meaningless trying to switch classroom practices in terms of technology application without addressing teachers' beliefs. Those things are difficult to verify since they are dealing with implied caution. However, they are possible to verify from the observation of people's action. The studies with observation approach conducted by Kelly-McHale (2013) and Nishino (2012) have shown that there have been the inconsistencies in this matter to various factors; teachers' limited theoretical understanding, conflicting beliefs, and the school culture (Kelly-McHale, 2013; Nishino, 2012).

Most of the previous studies were conducted with survey as the research methodology (Gülbahar, 2008; Kelly-McHale, 2013; Liu, 2012; Nishino, 2012; Vodanovich, Sundaram & Myers, 2010; Yeung, Taylor, Hui, Lam-Chiang, & Low, 2012). However, this study elaborated qualitatively with a case study approach utilizing observation and focus group discussion as the instruments of data collection. To comprehend the student teachers' use of technology or its limitation to be more elaborative and informative, observation would be appropriate to see the fact in the field. Focus group discussion would make the research more appreciative in terms of circumstances and information, which was directly obtained from student teachers.

3. Methodology

3.1. Design of the study

We utilized a qualitative case study approach to examine ICT integration by student teachers from one public university during their teaching practices in four high schools in Indonesia. A qualitative case study is an intensive and holistic description, explanation, and analysis of “a bounded system” (Merriam, 1998, p. 27) or phenomenon such as a person, a program, an institution, a process, a social unit, a group, and a policy (Mukminin, Kamil, Muazza, & Haryanto, 2017; Mukminin, Ali, & Fadloan, 2015). Furthermore, Merriam (1998) states that to investigate a topic of study that has not been studied intensively, an exploratory case study might become one of the approaches to be used as is the case with ICT integration by student teachers from one public university during their teaching practices in four high schools in Indonesia. Through scrutinizing a formerly understudied topic, qualitative scholars might have occasions for conducting a study on relevant issues and may provide a framework or foundation for other inquiries (Merriam, 1998; Prasojo et al., 2017; Mukminin & McMahon, 2013). For the purpose of our study, we decided to use a case study as our approach that would help us to examine ICT integration by student teachers from one public university during their teaching practices in four high schools in Indonesia.

3.2. Research context, sampling procedures and participants

The participants of this study were student teachers registered for the university’s 2016-2017 pre-service teaching program and all classes of the collaborated schools in the Province of Jambi. We used random sampling for the observations (10 classes) and purposive sampling for the group discussions. Finally, sixty student teachers were willing to get involved in this research consisting of 34 females and 26 males. The age-range of the participants was 19-29 years. The complete information about the participants can be viewed in Table 1.

Table 1. The distribution and information of participants

Discussion Group	No. of participants/ Gender	Age	Scale of Technology Familiarity		
			Very familiar	Familiar	Not familiar
G 1	5 males (M1, M2, M3, M4, M5)	20-23	6	3	1
	5 females (F1, F2, F3, F4, F5)				
G2	4 males (M6, M7, M8, M9)	20-22	8	2	0
	6 females (F6, F7, F8, F9, F10, F11)				

G 3	6 males (M10, M11, M12, M13, M14, M15) 4 females (F12, F13, F14, F15)	20-23	6	4	0
G4	4 males (M16, M17, M18, M19) 6 females (F16, F17, F18, F19, F20, F21)	20-25	5	5	0
G5	3 males (M20, M21, M22) 7 females (F22, F23, F24, F25, F26, F27, F28)	19-22	7	2	1
G6	4 males (M23, M24, M25, M26) 6 females (F29, F30, F31, F32, F33, F34)	20-23	8	2	0

3.3. Data collection and analysis

In our study, data collection consisted of a demographic background survey, video-based observations and focus group discussions. This study was done over one year from June 2016 to July 2017 with all participants. All participants completed a demographic survey consisting of two sections: personal demographic information (gender, age, semester, study program) and technology information (technology familiarity and length of time of technology use a day) as presented in Table 1. In addition, in the focus group discussions, we asked all participants to give their perceptions and opinions on the topic given and the integration of ICT in their pre-service teaching practice. The focus group discussions were recorded using smartphone. We set all group discussion protocols. We focused on the needs, influential factors, and problems faced on the ICT integration in teaching activity. All participants were involved in all focus group discussions according to their own group (e.g., focus group discussion 1 or G 1). Indonesian was used as the language of focus group discussions.

In this study, we also used video recordings to obtain the data because according to Sadalla and Larocca (2004), video recording is suitable for studying complex phenomena such as teaching practices, full of liveliness, and dynamism influenced by several variables simultaneously. For them, “video recording allows recording even fleeting and non-repeatable events, which are very likely to escape direct observation” (p. 423). The observation sessions were conducted to see the facts which happened in the field. Observation is a way to understand peoples’ behavioral figures to get data about a phenomenon on certain conditions (Creswell, 2007). The data from the recording were analyzed by putting the data into a computer program (Atlas TI), coding the data, and elaborating upon them. One researcher who happened to be a video editor did the process of coding. For the focus group

discussion data, analysis across and between the data continued when no thematic patterns remained. Although the student teachers came from different programs and with different supervisors, the obtained data were treated equally without focusing on special or particular technology use in the process of teaching.

In analyzing the qualitative data, we computerized and printed the data. First, we transcribed all of the data. Then we carefully read all the transcripts. In our study, all data were captured from the focus group discussions and observations were reread with the temporary lists of codes that had been made to inventory essential statements pertinent to the topic and to deepen understanding of our data among participants. After rereading all transcripts line by line, we coded the data to search final themes. Next, we translated them into English. Finally, we elaborated upon the data and presented them. We also did the review and examination for redundancies and connecting the data (Creswell, 2007). We held an integrating review on the data obtained.

3.4. Ethical considerations and trustworthiness

Our qualitative case study used human beings as key source of data. To protect our research participants who participated in this study, the ethical consideration (e.g., informed consent form) was applied. We also concealed such data as the places and the real names of participants through the use of pseudonyms. Also, participation in our study was voluntary. We asked every participant to sign informed consent forms before they got involved in this study and they were allowed to stop participating in this study whenever they wanted. Also, to deal with the trustworthiness of data and interpretations (Abrar et al., 2018; Creswell, 2007; Habibi et al., 2018; Mukminin et al., 2017), the findings and conclusions were returned to our participants to get their feedback. Moreover, thick and rich descriptions (Merriam, 1998) and narratives of student teachers' ICT integration during their teaching practices in four high schools in Indonesia were provided, including verbatim instances from the transcribed data.

4. Findings

This study examined the ICT integration by student teachers from one public university during their teaching practices in four high schools in Indonesia. Going through the video-based observations and focus group discussions, we identified three salient interrelated themes: ICT application, beliefs about technology integration, and hampering factors.

4.1. ICT application

Through video-based observations, we found that the majority of the participants never applied technology in their teaching activity. The fact that merely 12 participants integrated ICT in their teaching activity was interesting to analyze. Additionally, it was important to see that as many as 10 technology users were female participants.

Most of the technological devices used revealed from the observation were laptops and projectors. The teachers used both devices to facilitate presentation with some applications including Microsoft PowerPoint, PDF reader, Microsoft Excel, and Microsoft Word. However, the participants mostly used Microsoft PowerPoint. The presentations applied by the participants included texts, pictures, diagrams, pictures, and videos. A few of them used their smartphone(s) in the delivery of their lesson. The student teachers who used their smartphones made use of YouTube video, Google pictures, and textual references downloaded from some websites.

During the discussion sessions, the participants verbalized their experience in using technology devices and discussed their ability in using technology. They reported that they had received sufficient experience of the technology involvement of their learning time in the university. They said there were also two educational technology courses and other courses involving technology in the teaching and learning activity. As four participants revealed,

We attended classes of technology learning. In addition to that, some of our university's courses were taught using technology in its presentation. (M3)

In our learning time, we were asked to present our presentation using projectors and laptops. In one course, the teacher utilized social media, Facebook, Whatsapp, YouTube, and Telegram in delivering the lesson. (F29)

Here in the pre-service teaching program, our supervisor asked us to use social media telegram and Whatsapp in order to discuss, report, do assessment. It is very useful and could be efficient for the process of the supervision. The same thing can also be implemented in our teaching. (F15)

During our study, we were taught how to use technology and even given opportunities to practice how to use it in the lessons; we prepared lesson plans and made presentations. (M23)

The participants also claimed that they were quite skillful in using technology. They mentioned some technology devices and applications that they were accustomed to using on a daily basis like email, social media, and games. We found that they used technology for education, communication, entertainment, and business. Some of the participants reported as follows:

I think I have good ability using technology. I use my laptop to do my assignments and many applications in my smartphone like email, social media, and games every day. I like movies through Youtube and buying things through some e-commerce providers. (F2)

We are digital natives who are accustomed to using technology devices, computers, projectors, smartphones, and other tools. I communicate through email and social media using my smartphone. (MI5)

I am convinced I can use technology during my teaching activity. I have got enough information about the use of technology. Besides, we love using our gadgets. (F19)

In addition to the group discussion result, the data of demographic questionnaire also informed that 40 participants were very familiar with the technology use. Meanwhile, 18 participants were familiar and only 2 participants were not familiar with the use of technology.

4.2. Beliefs about ICT integration

In the focus group discussion, we asked the participants one by one whether they believe the ICT integration brings benefits in terms of improvement of teaching and learning in their classes. It was surprising that around 80% of participants (33 student teachers) had a strong belief that ICT had a positive impact on the teaching activities. They further believed that ICT could be media to foster students' knowledge and comprehension in learning. Technology, according to their opinions, could be a tool to attract more attention, give more cutting-edge information, invite students' activeness in the classrooms, deliver simplified concepts, make things more straightforward, provide information in many forms such as videos, pictures, diagrams, and texts. Some of the excerpts of the focus group discussions revealed that

I think technology can make our teaching and learning more fun and efficient in terms of time and materials. We used for example social media in our teaching practice, between supervisors and us, and it was very beneficial in saving our time discussing things. The same idea also could be applied in teaching the student in the schools. (M7)

Technology has many functions on our teaching. It could make students more active in the teaching and learning process. (F6)

I think I could conclude that technology is very useful. Technology such as internet can provide any information that we need. The information can be in many forms like video, pictures, news and others. (F16)

On the other hand, the rest (5 student teachers) in the focus group discussions indicated that they did not believe in the improvement of teaching and learning activity in their classroom influenced by the use of technology. They also mentioned that they disliked the ICT integration in their teaching activity both in the schools and in the campus. They thought that

using books and other conventional materials is still better than using technology. One participant summed up on this thing, “I am against my friends’ opinions, and I think technology will not have any significant influence to our teaching and learning activity. Using technology would just waste our time. Books, whiteboards, and chalk for me are still the best.”

4.3. Hampering factors

The culture and condition of the schools’ facility became the main concern revealed in the focus group discussions. They mentioned limited and broken tools, electrical instability, and poor classroom situations. In the observation of the classrooms situated in the schools, the projectors were not attached permanently. If teachers wanted to use them, they had to take them from cupboards situated in teacher offices. The participants also reported in the discussions that the school did not provide enough projectors for every class. In addition, they also claimed that some classrooms were not supporting the technology integration. Three of them shared their opinion in the following way:

The stability of electrical power should be considered. We have no enough sources like personal computer, projector, and other tools. However, the attempt to promote the integration of technology should be encouraged. (F14)

The facility is the thing that does not support the integration of technology in the classroom. Broken and limited equipment is one of the factors. (F34)

Sometime some tools are not working in some classroom, the socket [electric], projector cable, internet connection, and other tools. (M22)

All schools have been equipped with computers’ labs and free Internet connection. However, the participants could not utilize those facilities maximally. They argued that there were complicated processes or they had to wait for the labs’ schedule if they wanted to use them. The computers were not sufficient and the Internet connection was not stable. One of the participants said that the process of school’s labs booking was complicated. Some computers were even broken and sometimes they had to share computers. Another female participant informed she was dissatisfied with the school facility. In that school, the facility cannot be used anytime and the connection of the Internet is not good.

5. Discussion

This study informed that the participants had sufficient trainings and experiences. They were accustomed to using technology in their daily activity. In relation to teaching activities, most of them believed that technology brought about positive benefits to teaching. However, they

did not integrate technology in their teaching practice due to school conditions. This study informed that most participants did not integrate ICT in their teaching. The findings are similar to many other previous studies (e.g., Gibson & Oberg, 2004; Gülbahar, 2008; Liu, 2012; Scheeler, 2008; Vanezky, 2004). Only few of the participants used technology in their classes. The participants who integrated technology in their teaching mostly used Microsoft PowerPoint to deliver their presentation in the classroom. In addition, some students sometimes used Internet-based technology such as YouTube video, Google pictures, and textual references downloaded from some websites.

Findings revealed by previous studies (Allsop et al., 2009; Hadiyanto et al., 2017; Lei, 2009) indicated that 21st century students were digital natives or technology savvy and spent much time using technology in their everyday lives. In this study, the participants revealed similar information that they were quite skillful in using technology. They mentioned some applications that they are accustomed to using on daily basis. Some of the participants reported that they use technology for education, communication, entertainment, and business. Some major previous studies (Gibson & Oberg, 2004; Gülbahar, 2008; Liu, 2012; Vanezky, 2004) revealed that limited technology trainings and experience are the major reasons of technology disintegration in the pre-service teaching program. On the contrary, the findings of this study showed that there have been sufficient trainings and experience including experience they obtained from universities courses that brought technology into the classroom. In addition, the teachers were confident with technology in their teaching activities due to their experience and involvement in the use of technology. Similarly, some studies also revealed that technology training is not a factor hampering the integration of technology in teaching activity (Allsop et al., 2009; Hadiyanto et al., 2017; Lei, 2009).

Condition of the school facilities and school culture were the two hampering factors in technology integration faced by the participants. Limited and broken tools, electrical stability, and classroom situation are among the hampering. In addition, school culture is another factor. The participants claimed that there encountered complicated bureaucracy or they had to have long-awaited line to use the labs. One of the participants said that the process of school's labs booking was complicated, which is why most senior teachers did not use technology in their classes. This finding is in line with the results of some other previous studies (Allan, Law, & Hong 2003; Allsopp et al., 2009; Al-Ruz & Khasawneh, 2011; Lei, 2009; Conway et al., 2005; Gorder, 2008; Inan & Lowther, 2010).

6. Policy recommendations

The findings of this study informed that the establishment of ICT integration in the pre-service teaching programs among student teachers was a complicated task as participants needed more time to use it in their teaching practices. Even though student teachers were skillful, experienced and trained in terms of using technology, it did not mean that they would integrate technology in the pre-service teaching programs as this study informed. It is significant to create facilitating conditions to encourage the ICT integration. These conditions take various forms - both physical and theoretical. The existence of supporting technology resources is a foundation of the integration of any technology program including in the area of education. Nevertheless, the proper condition should be hand in hand with the culture and administration of the schools. The participants suggested that facilities and culture in the school could enhance the integration of ICT in education. It was recommended that all related stakeholders would take part in the improvement of facilities.

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AUGMENTED AND VIRTUAL REALITY IN THE LANGUAGE CLASSROOM: PRACTICAL IDEAS

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Abstract

This article aims to provide teachers with a practical introduction to the capabilities of augmented and virtual reality (AR/VR) in foreign language education. We first provide an overview of recent developments in this field and review some of the affordances of the technologies. This is followed by detailed outlines of a number of activities that teachers can use in any ESL classroom with access to smartphones or AR/VR capable devices. The article concludes with consideration of privacy concerns, and practical issues of classroom implementation.

Keywords: augmented reality; virtual reality; AR; VR

1. Introduction

Augmented and Virtual Reality (AR and VR) are increasingly common technologies. AR will be familiar to most readers in the form of digital games such as the popular *Pokemon Go* or travel apps such as *Lonely Planet Compass City Guides*. VR is most commonly associated with headsets like *Playstation VR* or *HTC Vive* that display immersive, virtual environments mostly used for gaming. Both technologies are constantly improving and reducing in price – seemingly with new products becoming available every day.

Besides their entertainment value, there is considerable benefit for their application in educational settings, some of it dating back many years (such as simulations for pilots and the training of surgeons). A number of studies have uncovered their potential in language learning as well, including the effect of AR on increasing motivation among college students learning English (Li and Chen, 2014; Lu, Lou, Papa & Chung, 2011), encouraging out-of-class Spanish language use (Holden & Sykes, 2011), to helping elementary school students more

deeply connect with classroom topics (Gadelha, 2018) through virtual reality. However, so far their use in language classrooms has been limited.

In this practical article we will give a brief overview of recent developments in this area, review some of the technology's affordances and give specific examples of how teachers without specialised technical skills can implement AR and VR in the classroom – and support learning beyond the classroom. We will conclude with a number of considerations around privacy, security, socio-economic concerns and practical issues of implementation.

2. An explanation of the technology

AR, VR, and the blending of the two, called mixed or extended reality, are umbrella terms for a range of location, motion and information technologies that enable enhancing reality with digital resources (in the case of AR) or the creation of entirely digital environments (in the case of VR), in which users interact with information and other users. Apps on smartphones that can display information about nearby buildings or trigger location-sensitive media are common examples of AR in use, while immersive 3D virtual worlds that encompass a user's entire field of vision using a dedicated headset are the most common type of VR experience.

VR has been used for decades in the form of flight simulators, so the technology is certainly not new. What has changed is that what was previously expensive, highly specialised and fixed to one location has now become cheap, available for general use and portable. This has led to a wider adoption in a range of settings, all the way from hospitality training to remote support of workers in dangerous environments such as in nuclear reactors and on the battlefield.

An everyday application of AR that is becoming increasingly popular is the use of AR apps that can add virtual objects into real-world physical spaces. Technicians can now provide remote assistance using *Vuforia Chalk* (<https://chalk.vuforia.com/>) by seeing a live-view of another user's environment and drawing on objects in the other user's physical space (see Figure 1). The *Ikea Place* app (<https://www.ikea.com/gb/en/customer-service/ikea-apps/>) is another example where for the purposes of interior design users can add virtual furniture to a real-world living room to see how it looks before purchase (see Figure 2).

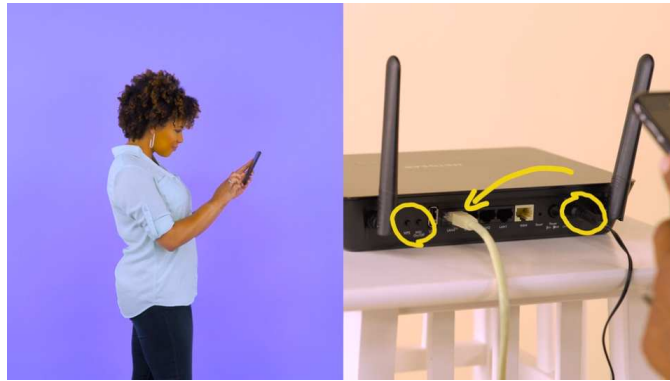


Figure 1. One user drawing into another user's physical space.



Figure 2. Placing location-anchored virtual objects into a real room.

Wearable AR devices are rapidly becoming more affordable and more widely available. Companies such as *Aryzon* (<https://www.aryzon.com/>) and *Myra* (<https://www.mirareality.com/>) focus on creating smartphone-powered devices for less than \$100USD, compared with more advanced headsets such as *Microsoft HoloLens* (<https://www.microsoft.com/en-us/hololens>), which currently (early 2018) retail for around \$3,000USD. As these devices become more widely adopted, the blending of physical and digital realities will become common. The same can be said for VR, as companies move from expensive dedicated headsets requiring powerful PCs or smartphones to smaller dedicated headsets that do not require any additional hardware such as the *Oculus Go* (<https://www.oculus.com/go/>) and *Lenovo Mirage Solo* (<https://www3.lenovo.com/us/en/arvr/>). It is also important to mention the contributions to accessible VR that *Google* has made with *Google Cardboard*, the simple VR device that supports most smartphones.

These dramatic reductions in price and increases in availability have opened up many more opportunities for education for both VR and AR. Examples include engineering education, where students have been tasked with manipulating virtual objects in real-world spaces via AR, with measurable and positive impacts on their spatial ability as a result (Martín-Gutiérrez, Saorín, Contero, Alcañiz, Pérez-López, & Ortega, 2010). AR has also provided educational support in history education, where learners can walk through an environment (such as a city), see artifacts from earlier times and observe how buildings and areas have changed over the years. *YouTube's* official 360-degree video channel, via the aforementioned cheap and widely available *Google Cardboard* headsets, have enabled teachers to take their students on virtual field trips using 360-degree videos to immerse them in diverse and informative environments. Another increasingly common use is in science classes, where learners can carry out experiments that would otherwise be dangerous or costly to organise. For example, students can 'mix' two substances to observe the effect in safe virtual environments.

In language education, AR has been used to get students to create campus tours (Reinders, Lakarnchua & Pegrum, 2015) or to get engaged in location-based games by walking around a town to find clues relating to a story (Holden & Sykes, 2011). Despite these and other interesting experimentations, it is safe to say that AR and VR have not yet in any way been widely taken up in primary, secondary or even university level language education. The purpose of this article is to demonstrate how AR and VR can be integrated into everyday language classrooms, without specialised technical skills. We will start by looking at some of the potential pedagogical benefits of AR and VR in education before introducing some practical ideas for teachers to try out.

3. The affordances of AR and VR for language education

Some of the most advantageous features of VR in classroom settings is its ability to reduce distractions. Gadelha (2018) states that "by blocking out visual and auditory distractions in the classroom, VR has the potential to help students deeply connect with the material" (p.40). There are no distracting classroom windows to stare out of when students are directly immersed into the topic they are investigating. This level of immersion also has the benefit of helping students make real world connections between the subject matter and their own lives. VR video content can help students make connections between the concepts they are studying and their effects on the world (Meyer, 2016).

One of the principal features of AR is that it comprises a set of *mobile* technologies, the affordances (potential benefits) of which for learning have long been acknowledged. Reinders and Pegrum (2017) draw on Klopfer et al.'s (2002) list of affordances for mobile learning and apply these to the field of language education. They discuss the benefits of *portability* to support learning that is not tied to one place and that can move between formal and informal settings (Lai, 2017). Secondly, they review the benefits of mobile technologies for facilitating *social interactivity*, enabling interaction and collaborative learning, the benefits of which for second language acquisition have long been recognised (see Chapelle 2001 and Warschauer 1997 for discussions within the realm of technology-enhanced language learning). Thirdly, they offer *context sensitivity* (they adapt to their location, for example by displaying content in a different language), which potentially makes it easier to provide opportunities for situated learning (Gee, 2004). Next, they offer *connectivity* and *access* to such resources as information, teachers and other learners, which has been shown to provide scaffolding and support experiential learning (Schwienhorst, 2012). Finally, they emphasise *individuality* (devices and mobile environments can be adapted to suit an individual's needs, interests and so on), which can help facilitate personalised learning (Benson, 2011).

One way in which AR and VR extend mobile technologies as they are mostly used at present is by involving the physical self in the interaction between virtuality and reality. Rather than engaging with resources at a cognitive level only, AR and VR support “embodied” and “extended” cognition, both of which emphasise the inextricable connection between the mind and the environment and “cognitive activity as grounded in bodily states and activities” (Atkinson 2010, p. 599). What these conceptions of cognition have in common is the role of the physical world in our thinking, and, by extension, our learning. For example, spontaneous gestures have been shown to support thinking and learning, and there is evidence that designed gestures, as well as manipulation of objects (e.g. on a screen or in a VR environment) can have an impact on learning (Segal, 2011). Beyond some experimental studies (e.g. Hwang & Cho, 2012, who investigated the use of portable vibrating bracelets to teach English intonation), there is limited research and application in the English language classroom (for possible ideas see Reinders, 2014).

In addition, AR can encourage learners to participate actively in (co-)constructing their learning environment, for example by posting comments or questions relating to a particular location, uploading photos of their experiences, and so on. Because the technology assists in-the-moment, it can support ‘just-in-time’ learning. In these ways, AR allows teachers to open up the classroom, provide remote assistance, and design activities that bridge formal and

informal learning contexts. Recent studies have shown that learners appreciate the addition of a physical element to their learning and not having to be tied to one location (Lindgen & Johnson-Grenber, 2016).

Research into the use of AR and VR in language education is still in its infancy, with most reports being of exploratory studies designed to investigate possibilities and student perceptions. Some early evidence of its potential comes from Holden & Sykes (2011), who describe the development and deployment of *Mentira*, a Spanish-language place-based game in which learners are required to go out into the local (Spanish-speaking) community to obtain information, find cues and solve quests. The authors found that engaging in out-of-class, authentic interaction, supported by technology and scaffolded through the game-like environment of *Mentira*, proved motivating to the students and showed considerable promise for further implementation. However, they conclude by saying that the design of innovative and meaningful learning opportunities requires more than new tools or artifacts.

In an example of a collaborative activity using AR, Reinders & Wattana (2014) describe students at a university in Thailand developing an augmented reality campus tour for future visitors. The real-world outcome and the physical aspect of the activity resulted in high student motivation and interaction and the authors argue that especially in a foreign language context this outweighed some of the additional time investment required to teach students how to use the technology.

We encourage language teachers to engage in their own exploratory practice and research and for this reason include a number of activities that draw on the affordances for language learning highlighted above. The activities below are all designed to be able to be used with minimal technical skill, and include practical activities that use AR and VR both within and outside the language classroom.

4. Practical examples for the language classroom

To give an idea of how an AR or VR activity might work in the classroom, a sample activity is first provided with worked-out steps for implementation. This details some of the decisions to be made and procedures to be followed, including which tools and apps to use. This also allows us to introduce some of the technical terms readers may not be familiar with. Following this, we offer short explanations for a number of further, practical activities; some supporting classroom-based study, others encouraging out-of-class learning. Each of these activities has been developed with high-school or university age students in mind and most are based on currently available, free and easy-to-use resources. A brief overview of the aims,

class time necessary and the resources that will be needed is provided and then followed by a brief overview of how the activity can be implemented.

4.1. Creating a Campus Tour

Aims: *Using English for Specific Purposes and practicing descriptive language*

Class time needed: *60-80 min*

Resources: *Wikitude, HP Reveal, Layar or Blippar, smart devices with cameras*

A relatively easy and fun way to introduce students to the affordances of AR is by having them create and share tours of their school/institution. This could be a tour for parents, for visitors, or for new students. This type of activity was successfully deployed by one of the authors of this paper at a university in Thailand, where students created a tour of academic services available to visiting professors (see above). Not only did the students enjoy the activity a lot, the resulting product (the tour) has been useful for the university in helping people new to the campus find their way.

First things first

The technology is not being used for its own sake, so the first step is to decide what the activity is trying to achieve. Is it to create opportunities for students to collaborate, discuss and negotiate? To learn to write instructional text types? Something else? Once the aim is chosen, it is time to make sure the technology and the activities created with them achieve it.

The technology

In essence, a tour activity involves the creation of information that visitors can see by looking at real-world objects through their cameras¹. For example, they might point their camera at an office in a building and learn that this is where IT support is offered from 08:00-17:00 six days per week, along with links to contact details. The object that results in the display of information is called a 'target' or 'trigger'. So, in the previous example, the IT building is what 'triggers' information to be displayed. The information can be anything, from text (opening times), pictures (of the staff who work there), links (to IT help files), to videos and so on. The act of pointing a camera at a trigger is called 'scanning'.

¹ At present this will involve mostly the use of smartphones, but with the advent of other devices, such as glasses and other wearables, additional tools may be available in the near future.

Targets or triggers do not have to be physical objects, though. They could, for instance, be pictures of objects. As an example, students could take photos of key buildings and put them on a poster. Visitors can then scan the pictures (the triggers) to learn what the buildings are. To develop such materials, use an AR creation tool, such as *Wikitude* (www.wikitude.com/) for location-based triggers, *HPReveal* (www.hpreveal.com/), *Blippar* (www.blippar.com/) or *Layar* (www.layar.com/) for image-based triggers. They all provide step-by-step tutorials on how to create content and share it with others online.

Step-by-step

Once the appropriate app has been chosen, it is time to prepare the class. Please remember that the procedures below are an example only. How the teacher introduces the activity will depend on the size of the class, how much pre-teaching students may need of new vocabulary, and so on – in other words, these are general guidelines only.

1. Divide the class into an even number of small groups. Each group creates either an academic themed (describing all academic services on campus) or a social themed tour (describing facilities such as canteens and sports).
2. Students brainstorm interesting and informative things to say about each of the locations.
3. Students then visit the locations and create their tour videos. They could also interview people at the locations to get more information to talk about.
4. While at the locations, students create triggers with their AR creation tools to display the video content. Some location-based AR services only provide services in certain countries or areas, so in this case create image-based triggers using of any flat object there, such as a sign or map (see Figure 3).
5. Show students how to create an account on one of the AR creation tools and how to upload their target images and attach their tour videos to the targets.
6. Students create a video that introduces the tour locations and where to find the targets that will start the tour videos.
7. Ask the groups to create a quiz with one question about each of the locations that can be answered by watching the tour videos.
8. For the final part of the activity, ask the groups to find another group with a different theme and take their tour, answering the quiz questions as they go.



Figure 3. A photo of a university map (left) used as a trigger to activate an introduction video (right) in *HP Reveal*

4.2. Giving and following directions

Aims: Practicing vocabulary such as location prepositions, and giving and receiving instructions.

Class time needed: 45-60 min

Resources: Wikitude, *HP Reveal*, *Layar* or *Blippar*, smart devices with cameras

Students can also use the *campus tour* procedure above to create activities focused on giving and receiving directions. Rather than creating videos related to the locations themselves, students can create videos explaining how to go from one place to another. Groups of students work their way to a common point, possibly in the form of a competition with the first team to arrive winning. Teachers can create the directions themselves or students can work together as a class to create a set of directions that another class would use.

4.3. More realistic presentation practice through 360-degree videos and VR

Aims: Practicing shadowing and improving presentation skill confidence

Class time needed: 20-30 min

Resources: Dedicated VR headset such as *HTC Vive*, mobile VR headset such as *Oculus GO* or *Google Cardboard* with VR capable smartphone, *YouTube*, headphones

Virtual Reality cameras (that take photos or film video in all directions simultaneously) and headsets can provide users with much more immersive experiences than watching a regular video. Online services such as *YouTube's* 360-degree video library, called *YouTube VR*, can take students to many different locations, providing them with a better understanding and spatial awareness of a location before a school trip, let them experience far-away locations and many more classroom activities.

One affordance of 360-degree videos and cheap VR headsets like *Google Cardboard* is being better able to practice improving presentation skills. Until now, the most common way students have often practiced for a presentation before a large audience has been to speak in front of a mirror or find some quiet space to recite their speeches while imagining an audience before them. With 360-degree videos and VR though, students can take advantage of the large quantity of 360-degree online presentation videos to practice giving presentations in front of actual audiences.

1. Using headphones, some mobile VR headsets, and the students' own smartphones, assign students a 360-degree presentation video to watch (either a suitable one found online or one made by the teacher).
2. Encourage the students to focus their attention on the speaker and listen to what they are saying and the gestures they use.
3. On the second viewing, students should attempt to shadow the speech given by the speaker and, if possible, try to copy their gestures.
4. For the third viewing, ask students to face the audience while shadowing and attempt to make eye contact with as many audience members as possible while doing so.
5. Finally, if students are preparing to give their own presentations, after the students have practiced trying to remember as much of their own speeches as they can, have them watch the video again, but this time mute the audio and ask them to recite their speeches to their virtual audience.

4.4. Creating community content maps for the local area

Aims: *Writing and reading reviews using target language in authentic contexts*

Class time needed: *45-60 min*

Resources: *Google Maps, any smart device or PC*

Online maps such as *Google Maps* (www.google.com/maps) provide opportunities to create community content layers that appear on top of their regular maps and are shareable with

other people. These layers provide additional information to, for example, special locations, user reviews, images and even directions to follow. For projects, students can design their own layers individually or as a class. At the end of the academic year, first year students can create map overlays that provide information to next year's students. These overlays can include tips on the best places to go, such as the best coffee shops in town or places to study quietly on campus, and the fastest ways to get there, along with images and information about each location.

A similar activity would involve prefacing this activity with field trips where students have to go and collect information about a particular building, person or topic. This could include going to a local museum, finding historical buildings around town, or locating (and perhaps interviewing) a particular person.

More directly related to what is covered in class, students can be asked to tag examples of certain vocabulary items located nearby, or even examples of the use of a particular grammatical feature (e.g. tagging locations with reviews to practice giving opinions). Students putting target language into use in authentic contexts such as their own local areas has been suggested to have significant learning benefits (Kukulska-Hulme & Bull, 2009). Teachers can also create this information themselves, and provide pictures, links, tips and even specific vocabulary items for students to study (Bo-Kristensen et al., 2009).

4.5. Location-based puzzle treasure hunts

Aims: *Understanding context clues, practicing listening comprehension and procedural language*

Class time needed: *45-60 min*

Resources: *HP Reveal, Google Maps, any smart device or PC*

Treasure hunts are a useful activity that can be enhanced with AR. While traditional language-focused treasure hunts often incorporate written clues hidden at each location, AR-enhanced treasure hunts can take advantage of the ability to also embed audio and video into the environment. This can provide the addition of speaking and listening practice to an activity that is traditionally focused on reading and writing.

In this activity, two teams are paired and given different instructions which they need to share to retrieve information from around the town (this could be limited to just one campus, for example) in order to find a hidden treasure. In order to get to the treasure,

students leave notes for the other team by tagging items with a recorded video that explains where to find the next video.

A treasure hunt can also involve location sharing. *Google Maps* now features the ability to let users track friends and choose whom to share their own location with². A variation of the treasure hunt is for one group of students to head out and for another to stay in class, tracking the first group's location (see Figure 4), and perhaps sending out instructions with tasks for the group to complete over *Skype* (<https://www.skype.com/>) or *Google Hangouts* (<https://hangouts.google.com/>).

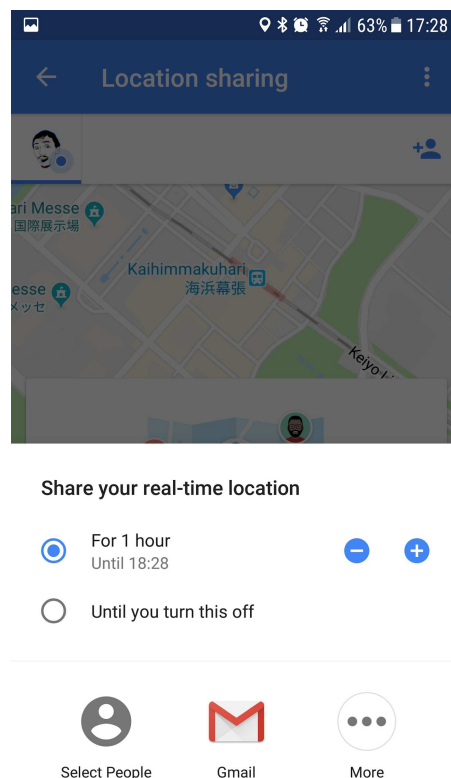


Figure 4. Users can limit who they share their location with and for how long

4.6. Providing instant-access supplementary materials for readings

Aims: *Providing faster students with additional activities and slower students with additional assistance without physically modifying materials*

Class time needed: *10-20 min*

Resources: *HP Reveal or Layar, a scanner, smart devices with cameras*

² <https://blog.google/products/maps/share-your-trips-and-real-time-location-google-maps/>

It is a common occurrence that some students finish an activity early while others are struggling to keep up. One way of dealing with this is to provide learners with the option of accessing additional information, based on their needs and/or preferences. AR services can make it easy for teachers to provide further explanations or additional exercises. By scanning the activity in the textbook, learners can access further resources online via links and videos embedded into the text itself. These resources could enable students for whom the content may be too easy to access additional tasks or more challenging questions (see Figure 5), while simultaneously assisting struggling students with translations of key vocabulary, a summary of a reading text, charts or diagrams to help explain difficult concepts.

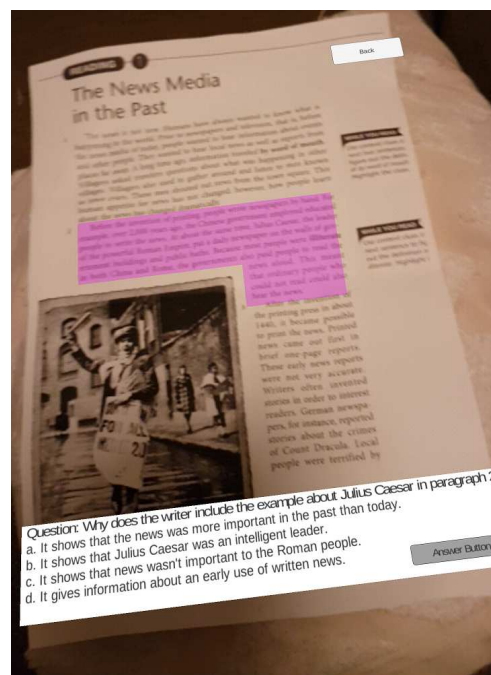


Figure 5. Questions added to the bottom of a text with the relevant paragraph highlighted

To achieve this, physically scan the desired page from the textbook (using a scanner or photocopier), convert it to a digital image and upload it to an AR service such as *HP Reveal* or *Layar*. Once uploaded, use the website tools to place the additional information on top of the page so that students can access it when they point their AR app cameras at the textbook activities.

4.7. Automatically assigning roles in information gap activities

Aims: *Using targeted language in a communicative environment with a focus on all members speaking equally*

Class time needed: *15-30 min*

Resources: *Layar or HP Reveal, smart devices with cameras*

Information gap activities (where learners are missing information they need to complete a task and need to talk to their team members to discover it) are a popular classroom activity. With AR, teachers have the opportunity to enhance these activities by exposing students to a wider variety of media to discuss. AR apps such as *HP Reveal* and *Layar* can provide teachers with the tools they need to quickly embed content such as videos, text, audio, websites and more into any image. After finding a few images related to the topic of the information gap activity, teachers can upload them to an AR creation tool and embed the desired content into each one. Once the images have been printed out on paper, they can be distributed to students who can then use their cameras to access the content and start explaining it to their group. Some examples of information gap activities include:

- **Vocabulary:** Presented with a paragraph of text missing key vocabulary, students have to collect sets of nouns, action verbs and adjectives from the AR targets and work together to place them correctly into the text.
- **Grammar:** Each AR target displays a set of key information related to a narrative, such as the tense, perspective, events etc. that students have to put together to understand the full context of the story.
- **Pragmatics:** when given a particular text type, such as a request or an apology, students collect the key components needed to word the letter correctly, by finding and sharing such information as the intended audience, the severity of the issue, the topic at hand and the level of politeness needed.
- **Communication:** each student can see some information about an object, such as a related image, a video, an audio recording or a 3D model. By sharing what they can see, they try and identify, for example, the purpose of the object they are looking at, or some information about it, such as who it belongs to, or what should be done with it.

4.8. Virtual reality video creation

Aims: *Providing students with new environments to express their creativity in language production focused role-playing activities*

Class time needed: *60-90 min*

Resources: *High-end VR Headset such as Oculus Rift and VR capable PC, projector, free copy of Mindshow*

For teachers with access to a high-end VR headset, asynchronous film creation programs such as *Mindshow* (www.mindshow.com/) can be useful in helping students express creativity in their language production in new and exciting ways. Students can create environments and then film themselves in it one after the other, layering each student's movement and dialogue onto the scene until a fully filmed, multi-actor scene is created. Students can custom-design scenarios that are enhanced by 3D virtual realia and props and create engaging videos to demonstrate language usage scenarios to their classmates. Airports, hotels, presentations, news reports, job interview scenarios and more can all be made and shown in class (see Figure 6).



Figure 6. A Mindshow news program scenario

4.9. Backchanneling with the teacher during classwork or homework

Aims: *Providing ways for teachers to measure understanding and gather feedback*

Class time needed: *5-15 min*

Resources: *Layar, HP Reveal, Google Forms, smart devices with cameras*

One common challenge faced by teachers is knowing how much of the class content is being understood. One method of monitoring student performance is backchanneling, where teachers request responses and feedback from students at key points during the lesson to gauge comprehension. AR opens up the ability to quickly distribute access to online questionnaires and feedback opportunities without having to add QR codes or web links to printed handouts. Digital image copies of handouts can be uploaded to any AR service and

have links to online forms embedded in them. Teachers can take entire units worth of material and embed backchanneling opportunities into the worksheets without needing to reprint the material with weblinks. Students simply use an AR app to point their phone cameras at the handout and access the backchanneling material.

Some of the many backchanneling opportunities that online questionnaires enable include presenting students with a few sentences after teaching them a new grammar point or vocabulary item and asking them to indicate which ones are correct or incorrect. For reading activities, comprehension questions can be administered or students can select from a list of keywords after skimming a short article. For writing, students can choose which thesis statement is most appropriate for a topic or place a number of essay paragraphs in order (see Reinders, 2014 for more on backchanneling).

To create these backchanneling opportunities in the classroom, scan or take a photo of the activities and use them as AR targets to take students to online forms where they can answer questions and provide responses. In *Layar*, *HP Reveal* or any online AR service that permits creating URL links from AR targets, simply create a link to a *Google Form* (<http://docs.google.com/forms/>) and change the settings as desired.

Students can also provide anonymous feedback on specific activities without teachers needing to create multiple forms. *Google Forms* supports pre-filling sections of the form automatically based on the URL used to access the form, allowing for teachers to auto-fill the name of the activity whenever a student scans an activity with *Layar* or *HP Reveal*.

To do this in *Google Forms*, after creating questions for students to answer, create a question with a short answer field such as “Which activity do you wish to talk about?” Then go to the “More” icon (three vertical dots) in the top right and select “Get pre-filled link.” Answer the above question in the form with the name of the activity that is going to be augmented and then click “Submit.” Now there will be a link that can be pasted into an online AR service, using the activity sheet/textbook page itself as a target and any time a student points their smartphone at that target, they will be automatically sent to that *Google Form* with the activity title pre-filled.

4.10. Orienting students to a reading topic through 360-degree videos

Aims: Familiarising students with a topic and providing them with vocabulary in context

Class time needed: 20-30 min

Resources: Cheap VR headsets such as Google Cardboard, student smartphones

Many textbooks are not particularly topical and the subjects can sometimes be discussed in very generic, impersonal terms. As a form of pre-reading or familiarizing students with a topic before classroom discussion, use 360-degree videos in *Google Cardboard* or other VR systems to fully immerse students in the subject at hand, using current resources. Check sites such as *YouTube* for “360-degree (topic)” and look for content that would be suitable for students. For example, on the topic of ‘separation’ there are some truly touching videos of the plight of refugees (see Figure 7) that are likely to spark a reaction from students.

Once students have watched these videos, ask them to write and discuss a few questions (Teeter, 2018):

- What aspects of the video affected you the most?
- What can be done to solve this problem/improve this situation?
- Share your ideas with a partner.



Figure 7. The short 360-degree video “Refugees” on the refugee situation in Syria

<http://scopic.nl/projects/refugees/>

5. Implementing VR and AR in teaching: Some considerations

Before deciding to use VR or AR, there are a number of important considerations. As with any technical innovation there is likely to be an investment on the teacher’s as well as the students’ part. How much time is likely needed for learning the technology and assisting students? In addition, do students have access to capable devices? If not, could they share between them?

In addition to these considerations, AR and VR raise important questions about privacy and security. Along with many of the usual privacy and security issues online, VR presents a few new issues that should not be overlooked. While online harassment is a known

problem in social spaces such as chat rooms or online games, VR poses new dangers. Harassers can enter another person's personal space and depending on the VR environment make it difficult or even impossible for that person to retaliate by pushing the harasser away or escaping without quitting the space altogether. In creative spaces, harassers can also physically destroy creations and generally make use of the space impossible. As a result it is important to make sure that students use password-protected social spaces and that the teacher monitors the students' interactions to avoid this becoming an issue.

One of the first concerns before asking students to use their own smartphones for these activities is to remember that the socio-economic situations for each student are different. Some students may not be able to afford a smartphone, or may have one with a cracked screen that can prevent them from using VR devices such as *Google Cardboard*. To mitigate this issue, it is recommended, specifically for VR, that students have a non-VR alternative available to them. This can be accomplished by the teacher casting their own VR experience via projector or television.

Due to AR's ability to be used by any user with a modern smartphone, teachers should be aware of the possible permissions that an AR app is granted when being installed on student phones. AR Social apps may access and keep an updated history of the users frequented locations for ad purposes, while more nefarious apps may request access to the phone's microphone or camera, or scan a user's browser history or access other sensitive content. It is important to do a background check online for each new app students are asked to install.

Another consideration is who has access to the data that these apps produce. Students need to be made aware of who has access to their personal information or location data when using the apps so they can be fully aware when choosing to use them. It should also be made clear who has access to any chat logs, questions, feedback or test data, where this data is stored, and if possible, how to remove it.

A student should feel safe taking part in any discussion activity, expressing an opinion, or admitting that they do not understand something, without fear of this information being used against them in class by either their peers or teachers, or it being shared with others outside the class.

Instructors need to be aware of pricing too when creating VR or AR activities for classes. While some services may be free when first used, they may have limitations that can prevent their use in the classroom. VR social spaces may require a per-user subscription fee after the first month of use or may ask for a fee to allow a larger number of users into the

same space at the same time. These kinds of limitations may not become apparent or come into effect until students are already using them in the classroom, so it is necessary to make sure to know the parameters of the free-to-use model that the service is providing.

For AR, one needs to learn the usage limitations of free online services and whether or not they have educator licenses available. These limitations may be there to encourage creators to sign up for paying accounts and as such may not come into effect until a certain number of users have viewed an AR target, or a number of free access days have passed. *HP Reveal* allows publishing the target online without payment but requests a monthly fee in exchange for additional content options and removing the need to subscribe to a creator's channel to activate the AR target. Services such as *Blippar*, *Augment* (<https://www.augment.com/>), and *Layar* all provide free educational licensing opportunities for teachers.

Finally, it is still early days for VR and AR with many companies trying to establish themselves as the best content creation service. While initially many of these companies may provide excellent free content, eventually their start-up investments may begin to evaporate and it can be expected that many of them will introduce more expensive price structures or reduce their free services. This is particularly a risk if a service offers a free education service and then finds education becoming a larger and larger part of their core user base.

Despite these challenges, it is clear that many exciting developments are taking place in the AR and VR space. As educators, it is important to learn about these developments, their risks, and – most importantly – their potential benefits for learning. As a way of linking formal with informal learning spaces, there is a lot to be gained from teachers experimenting with the many possibilities of these new technologies.

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THE EFFECT OF CALL-BASED TASKS ON EFL LEARNERS' GRAMMAR LEARNING

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Abstract

In modern language teaching institutions and schools, the proficient language teachers apply different kinds of tasks to teach some skills and sub-skills. In the current study, the researcher investigated the effect of two different tasks, namely Computer Assisted Language Learning (CALL)-based tasks and written questions tasks on students' English grammar learning. The researcher in the control group asked the participants to answer the written questions in their workbooks and the participants in the experimental group do their assignments using the computers. Based on the post-test results, both CALL-based and written question tasks had positive effects on the participants. The study supports the idea that motivating tasks can have positive results toward language learning.

Keywords: CALL; grammar; tasks; learners

1. Introduction

The teachers' interest in the role of tasks in foreign language teaching and learning is growing. Prabhu (1987) first proposed task-based approach and applied it in secondary school classrooms. In the literature, various definitions of pedagogical tasks have been provided that are different in scope and formulation (Branden, 2006). Samuda and Bygate (2008) define a task as "a holistic activity which engages language use in order to achieve some nonlinguistic outcomes while meeting a linguistic challenge, with the overall aim of promoting language learning, through process or product or both" (p. 69). In another definition by Ellis (2003), tasks are regarded as "... a work plan that requires learners to process language pragmatically in order to achieve an outcome that can be evaluated in terms of whether the correct or appropriate propositional content has been conveyed" (p.16). In sum, it is well-known that tasks are classroom activities, have a clear outcome, and can foster authentic language use. Beside tasks, nowadays many language learning institutions use technology in the process of language learning.

The world is progressing and the language learning context is not an exception to this progress. Unlike in the past when textbooks and whiteboards were the only instruments for

language learning classrooms, nowadays teachers use the computers or other related technologies to teach a foreign or second language. According to Chun, Kern, and Smith (2016):

technologies broadly include more traditional media and instructional resources including print media (textbooks, workbooks, literature), which include words, texts, illustrations, graphics, photographs; audio media (e.g., recorders and players in language labs); video media (e.g., film clips and films); writing media (paper and pen, typewriter); classroom technologies (black boards, whiteboards, overhead projectors). Newer media resources generally refer to computer-based (and now mobile) technologies, many of which are tied integrally to the Internet (p. 72).

Nowadays computers have become part of daily life and the question is no longer whether to use computers or not. Computers are linked to people's lives, jobs, and hopes. Computer-Assisted Language Learning (CALL) has influenced foreign and second language teaching and learning in many different ways. According to Hewer (2007), the use of technology in the form of computers is involved in CALL approach. In another definition by Beatty (2003), CALL is defined as "any process which a learner uses a computer and, as a result, improves his or her language" (p. 7). Al-Mansour and Al-Shorman (2012) list some advantages of CALL, namely development of critical thinking, authenticity, giving motivation to learners through animated objects.

As Linse (2005) states, there is a clear relationship between four areas of speaking, listening, reading, and writing. Progress in one of these skills can be a precondition and a step towards the progress in other skills. Both Ellis (2002) and Celce-Murcia (2002) state that, according to some studies, grammar knowledge leads to advanced accuracy and fluency among the learners of the second or foreign language. For Hudson and Walmsley (2005) uninteresting lessons of grammar make a counter productive sense towards grammar teaching and learning. Unfortunately, most of English language grammar classes are uninteresting and thus make students lose interest in learning grammar.

On the contrary, the current study uses some tasks to observe their results on the learners' amount of learning and motivation. In addition, the lack of studies about the effects of technology-based tasks like the computer on grammar learning gives more relevance to study their effects on grammar learning.

2. Literature review

There are some studies regarding the effect of task-based and CALL-based studies on language learning. In this section, the researchers declare some of the important ones.

2.1. Tasks in the language classroom

There are numerous studies about the nature of different tasks and the ways to sequence them (Bygate, Skehan & Swain, 2001; Robinson, 2005; Samuda, 2001; Skehan, 2001; Willis & Willis, 2007). Based on an action research by Ruso (2007) on the implementation of task-based language teaching, the increased participation from the students in the learning process was reported. Choo and Too (2012) state task-based teaching can motivate learners to learn the language. In another study by Lee (2005) the application of Task-based Language Teaching (TBLT) in a vocational high school in Taiwan over one semester resulted in improving students' creativity, social skills, personal relations, self-esteem, and positive perceptions. In a quasi-experimental study by Rahimpour (2008), it was revealed that the participants that followed the TBLT syllabus had better fluency in oral performance in story telling tasks than the control group that followed a structural syllabus. Hasan (2014) found that task-based activities result in speaking without hesitation. Two studies by Carless (2002, 2003) on Hong Kong primary schools show that factors such as sociocultural realities, proficiency level of learners and teachers' teaching beliefs can contribute to transforming TBLT into task-supported teaching.

Based on the aforementioned research, the current study aimed to bridge the existing gap by using two different tasks (CALL-based tasks and written questions tasks) to check whether these kinds of tasks had positive effect on grammar learning and which group obtain more accuracy in grammar learning.

2.2. Technology in language learning and teaching

Many studies have been done regarding the effect of CALL and technology on language learning. According to some (Abaylı, 2001; Shenton & Pagett, 2007; Kırkgöz, 2011) integrating technology in language learning can improve the motivation of learners and has a positive effect on their attitudes. Based on findings by O'Hara and Pritchard (2008), and Liu and Chu (2010) learners have positive attitudes towards CALL to learn the language. Nakata (2008) compared the different vocabulary learning methods on the attitudes of learners. The majority of the students who took part in computer-based training expressed higher overall satisfaction than the other groups. Chikamatsu (2003) surveyed the effect of the computer on writing quality and efficiency among intermediate level learners in Japan. The findings revealed that learners benefit from computer writing. Bayraktar (2002) investigated the effectiveness of computer-assisted instruction on students' achievement in secondary and college science education. The results show that both in tutorial and simulation models there

was a positive effect for computer-assisted instruction in comparison with traditional instruction.

Akbulut (2008) surveyed the attitudes of advanced proficient learners of English towards the effectiveness of CALL in Turkish university. The findings confirm that the participants had positive attitudes towards CALL, because they found computers to be helpful in sustaining “independence, learning, collaboration, instrumental benefits, empowerment, comfort, and communication” (p. 1). In another study by Tanyeli (2009), CALL showed an improvement in the reading comprehension skills of the learners. Abu Naba’h et al.(2009) investigated the effect of CALL on grammar learning, indicating that those students who learned grammar through the computer learned better than students who learned the same grammatical item using the traditional method.

However, Coniam and Wong (2004) investigated the grammar learning through chat while Zhang et al. (2007) investigated it through discussion forums. The results in both studies did not provide any evidence that CALL can facilitate grammar learning.

Most of these studies confirmed the superiority of CALL-based instruction on traditional language teaching, but all of them considered CALL as a method of learning, rather than a task. Meanwhile, nothing is said about the effect of CALL-based tasks on EFL learners’ grammar learning. In addition, they did not compare two different technology and non-technology related tasks to investigate the amount of success for EFL learners’ grammar learning. In the current study, the researchers investigate a mixture of CALL and tasks to see its effects on EFL learners’ grammar learning, with the following hypotheses:

- 1) CALL-based tasks have a better effect on grammar learning than the written question tasks.
- 2) Task-based activities have positive effects on EFL learners’ grammar learning.

3. Method

3.1. Participants

In the current study, there were two groups, one experimental group (CALL-based task) and one control group. Out of 140 students, based on the pre-test results, sixty homogeneous Iranian junior high school participants were selected. All the participants were male, native speakers of Persian, and with intermediate level of English language proficiency. In the pre-test, there were 40 multiple-choice questions on sentence structures. The mean and the standard deviation of the participants’ pre-test scores ($M= 32.18$, $SD=2.12$) were used as a

criterion for selection of the participants. Among 140 students, sixty participants whose mean scores were one standard deviation above or below the mean were chosen. The two groups included 30 students each. To assign the control and experimental group, the researcher used simple random sampling. In each group, there were 6 sub-groups. Before the intervention, the students were made aware of their roles in the study.

3.2. Design of the study

The design of the study was quasi-experimental. The researcher randomly assigned the participants to control and experimental groups in two different classrooms. At first, the researcher conducted a pre-test, and administered a post-test at the end of the study.

The researcher employed the following instruments:

- 1) **Tests.** In the current study, the researcher used two tests as pre-test and post-test which were designed and administered by the researcher. Each test was 40 multiple-choice items, with each item of a score of .5 point.
- 2) **Computer.** The participants in the CALL-based task group did their assignments at home in their sub-groups with the use of their computers and sent the assignments through e-mail or delivered it to the researcher in the CD format.

3.3. Procedures

The current study was conducted in 15 sessions. The treatment period was enough to teach the grammatical rules of the course (Simple Past Tense, Conjunctions, Present Continuous Tense, Irregular Verbs, Conditional Sentences, Possessive Adjectives,). The researchers administered a pre-validated grammar test to 140 junior high school subjects, aged 14 to 16 with the median age 15 to obtain homogeneous students. The pre-test contained 40 multiple-choice on grammatical rules, with each item of .5 point and the total score of 20.

Prior to the experiment, the researchers tried to give a general explanation of the process of the study. One of the researchers was an English language teacher in junior high schools. In all the groups, the researcher first addressed the importance of grammar to arouse the participants' motivation. Next, the researcher highlighted the rule he wanted to teach. The methodology of the classrooms was inductive. In this method, the researcher followed the following steps to teach grammatical rules of English as a Foreign Language:

- 1) A variety of examples about a given rule were presented without any explanation about how the rule works.

- 2) In the second step, the learners attempted to understand the grammatical rule of the lesson.
- 3) In the third step, the researcher asked the participants to share their understanding of the grammatical rules in front of the classroom.
- 4) In the final step, the researcher gave both groups some assignments based on their assigned tasks to fulfill for the next session.

The 30 participants in the CALL-based task group were divided into six sub-groups. They were asked to do their tasks using computers. For example, one sub-group made PowerPoint slides that illustrated the explanation of Simple Past Tense and another sub-group made a multimedia activity about the grammatical rules of the lesson. In addition, other sub-groups used programs such as Swish Max, e-Studio 7, etc. to do their assignments. All the learners were supposed to employ different kinds of program to do their tasks through computers. In the process of doing tasks, the researcher supervised them and guided them as needed. The learners should submit their tasks through the CD format or e-mail to the teacher. In addition, in the following session, the teacher presented the participants' tasks in front of the class and asked them to explain how they did their tasks.

Similarly, the participants in the control group included six sub-groups, with five students in each sub-group. The researcher taught the grammatical rules through the inductive method. After teaching and as a kind of task in the classroom, the researcher gave them photocopied written questions about the grammatical rules of the lesson. All the photocopied written questions were different and there was not a similar question among the sub groups. Similar to the experimental group, the participants did their tasks in sub-groups in the classroom and the researcher guided them as needed. The photocopied written questions included unscrambled sentences, filling the blanks, multiple-choice items, finding errors, and writing compositions. The learners had to complete those written tasks in their sub-groups. In the following session, the researcher asked the participants in each sub-group to come in front of the classroom and answer the written questions orally or on the whiteboard.

For 15 weeks, the participants performed their tasks according to their groups' arrangement. In the last session, the researcher took a reliable and pre-validated post-test to find out the effects of the tasks (CALL-based and written questions tasks) on the participants' grammar learning. The post-test consisted of 40 multiple choice items based on the covered grammatical rules in the course of study. Similarly to the pre-test, each item had .5 point and there was no negative score for wrong answers.

4. Results

In order to analyze the data, first, the researcher analyzed the descriptive statistics of pre-test. Next, independent sample t-test was used to compare the scores between the control and experimental groups.

4.1. The pre-test results

As evidenced in Table 1, descriptive statistics indicated the mean of control and experimental groups were 8.17 and 8.20 respectively. In addition, the distribution of data was normal, because the degree of Skewness and Kurtosis were between -2 and +2 for two groups.

Table 1. Descriptive statistics of the pre-test results

	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness	Kurtosis	Std. Error	Std. Error
Control	30	7	9	8.17	.699	.489	-.240	.427	-.831	.833
Experimental	30	7	9	8.20	.761	.579	-.362	.427	-1.141	.833

To find out the degree of significant difference between control and experimental groups, the researcher used independent sample T-test on the pre-test results. As can be seen in Table 2, the p-value was more than .05(.860), and the t-observed .177 was less than the t-critical, 2.04. Therefore, the participants were homogeneous and there was no significant difference in grammar knowledge between the control and the experimental groups on the pretest.

Table 2. Independent sample t-test between the control and experimental groups on the pre-test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2- tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper	
scores	Equal variance Assumed	.659	.420	-.177	58	.860	-.033	.189	-.411	.344

4.2. The reliability and validity of the post-test

The reliability and validity of pre-test and post-test were investigated by three English language instructors. At first, the researcher modified the pre-test and the post-test according to their recommendations about accuracy, clarity, and appropriateness of the instruments. Next, the researcher tested the usability of pre-test and post-test through a pilot study of 30 participants that had the same features as the participants in the control and experimental groups. To assess the reliability of post-test, the researcher used Cronbach alpha. It was 0.81, which indicates that the test was reliable.

Table 3. Reliability Statistics of Post-test

N	
Cronbach's Alpha	N of Items
.813	40

4.3. The post-test results

As can be seen in Table 4, the score analysis of the post-test results indicated the mean of experimental and control group were 17.45 and 15.60 respectively. In addition, the degree of Skewness and Kurtosis were between -2 and +2, therefore, the distribution of data is normal for experimental and control groups.

Table 4. Descriptive statistics of the post-test results

	N	Minimum	Maximum	Mean	Std.		Skewness	Kurtosis		
					Deviation	Variance		Std.	Std.	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Error	Statistic	Error
Control	30	9	13	15.60	1.174	1.386	.253	.427	-.550	.833
Experimental	30	16	19	17.45	.844	.713	-.293	.427	-.005	.833

Next, based on the post-test results, the researcher used the Shapiro-Wilk test to investigate the normality of distribution of two groups. Based on Table 5, the p-values of normality test were .406 and .257 for the control and experimental groups respectively. It can be claimed that two sets of scores are normally distributed because the p-values for both groups were more than selected significance, i.e. .05 for this study ($p > \alpha$).

Table 5. Shapiro-Wilk test of normality for two groups based on post-test results

	Statistic	df	Sig.
experimental group	.957	30	.257
control group	.965	30	.406

To compare the results of two groups based on post-tests, the researcher applied the parametric independent sample test. In addition, the researcher investigated the null hypothesis of the current study. As visible in Table 6 independent samples test showed significant difference in grammar learning between the two groups (experimental and control groups) on post-test with ($t = 25.869$, $p = .000$, $p < \alpha$); consequently, the null hypothesis of this study that using computer-based tasks does not improve grammar learning was rejected.

Table 6. Independent sample test to compare the post-test results in control and experimental groups

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Score	Equal variances assumed 4.460		.040	25.869	58	.000	1.850	.265	6.321	7.379

5. Discussion

Task-based language teaching is a pervading topic in foreign language research. Many studies demonstrated the positive relationship between using tasks and language learning, such as McDonough and Mackey (2000), Shehadeh (2001), Bugler and Hunt (2002), Mann (2006), Torky (2006), Karimi (2010), Korkgöz (2011), Hasan (2014), Choo and Too (2012). In addition, as claimed by Hubbard (2009), the researchers attempt to demonstrate the superiority of using computers over traditional language teaching. The current study proved that the participants in the experimental group (CALL-based task group) had better results than the control group (the experimental group mean=17.45, the control group mean=15.60). The findings of the current study are in line with Bayraktar (2002), Akbulut (2008), Tanyeli (2009), Abu Naba'h et al. (2009), Korkgöz (2011), Chikamatsu (2003), who indicated the superiority of CALL over traditional language teaching. Therefore, this finding can confirm the first hypothesis of the study that states that CALL-based tasks have a better effect on grammar learning than the written question tasks.

Based on the researchers' observations, the participants who took part in the experimental group had higher motivation to learn English grammatical rules than the control group. These supervisions are in line with Lochana and Deb (2006) and Richards and Rodgers (2001). The latter claim that the learners' success in completing the goals of the task can lead to learners' motivation increase. Lochana and Deb (2006) state task-based instruction helps learners in proficiency development and motivation. This can provide more evidence to support that the motivated participants performed better in the post-test. In addition, it was shown that the learners who took part in CALL-based tasks have a better interaction with

their peers and learn grammar more effectively. This is another piece of evidence to support Lopez's (2014) statement that performing tasks which are related to the learners' language course motivates them to learn more effectively and collaboratively.

In the control group, the participants' task was to answer the photocopied written questions. The participants in this group had lower results than the experimental group, but they had an acceptable progress for grammar learning (the mean of the pre-test= 6.99, the mean of the post-test=15.60). The progress of learners in both groups (the experimental and the control group) to learn grammar can confirm the principle of the sociocultural perspective that states that learning can be facilitated through the process of scaffolding in social interaction. Therefore, this finding can confirm the second hypothesis of the study that CALL-based tasks and written question tasks have positive effects on EFL learners' grammar learning. Based on the researchers' observation, the motivation of participants who took part in the control group was lower than in the experimental group. The lower result in control group can be linked to the motivation of learners. This finding is consistent with Wang (2010) and Ruso (2007). Wang (2010) states uninteresting lessons about the grammar result in a disengaged sense towards the grammar among the learners. In addition, Ruso (2007) states the uninteresting content of a course book cannot stimulate the interest of the participants. Both groups in the current study employed tasks for learning grammatical rules. It can be concluded that in process of learning a language all different varieties of tasks cannot be useful and the main difference between the tasks is the amount of motivation which they offer to learn a foreign language.

5.3. Pedagogical implications and directions for further research

It is suggested that content designers and teachers select the effective instruments for teaching and include more motivating practices inside the course book and curriculum program. As Ruso (2007) states, serious consideration should be given to using tasks and it is the responsibility of teachers to provide opportunities for learners to make use of content learned through tasks.

The next pedagogical implication of the study is related to group work. Doing tasks in groups can improve not only the learners' language skills and sub-skills, but also their social interactions. Improving teachers' experience with technology-based instruments for foreign language learning is another pedagogical implication for teachers and curriculum designers. Following Hubbard (2006), "many current language teachers have limited experience with CALL software from the learners' perspective and may be novices as well using technology

for teaching” (p.313). It is recommended that language teachers become familiar with computers and other technology-based instruments to employ tasks.

Applied linguistics research is not limited only to deciding whether technology is effective or not for learning. Rather, it seeks to know why technology is effective and how this contributes to a theory of language learning. The future research can investigate these issues more meticulously. While reviewing studies from 2001 to 2005, Stockwell (2007) concluded that “there still remains an element of failure to stipulate why a given technology was used in achieving learning objectives”. In addition, Felix (2005) and Hubbard (2005) state the poor quality of research in CALL. The current study only indicated the superiority of CALL-based tasks over the control group and nothing is said clearly about the advantages and disadvantageous of some technology and non-technology-based instruments in the process of language learning. In addition, further studies can investigate the effects of the students’ motivation toward learning a foreign language through computers.

6. Conclusion

The current study investigated the effect of CALL-based tasks on EFL students’ grammar learning. The researcher selected 60 homogeneous participants and divided them into experimental and the control group of 30 participants each. After the treatment, it was concluded that two groups had significant progress in grammar learning (control group mean=15.60, experimental group mean=17.45). In addition, based on the post-test results it was revealed that the participants in the experimental group (CALL-based task group) had better results than the control group.

Based on the researcher’s observations, it was noticed that the experimental group’s participants were highly satisfied with CALL-based tasks. The findings revealed that CALL-based tasks were helpful in students’ learning and motivation. The computers made opportunities for participants to present various tasks enthusiastically, which led to increased practice opportunities. On the contrary, based on the findings of the control group, it was revealed that the photocopied questions as a kind of task were not as effective because they did not trigger students’ motivation to learn grammar.

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NONLINEAR DYNAMIC MOTIVATION-ORIENTED TELECOLLABORATIVE MODEL OF LANGUAGE LEARNING VIA FORMULAIC SEQUENCES TO FOSTER LEARNER AUTONOMY

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Abstract

Exploring the ways to develop a comprehensive learner-friendly telecollaborative model of learning led to the introduction of nonlinear dynamic motivation-oriented model. To foster self-regulated learner autonomy, the model aims at recruiting the potential behind formulaic sequences for L2 comprehension-production in response to immediate processing demands as well as nonlinearity and dynamicity of motivational factors at individual level. Drawing on different theories and findings (e.g. complex dynamic systems, input processing model, motivational task processing model, etc.), the model presents a dynamic conceptualization of language learning to develop language skills in CALL context. To test the model and the validity of the suggested strategies, a mixed methods approach via questionnaire, interview and learner-self report was conducted in a term-long study among 47 EFL learners. The measures of performance taken before and after the intervention indicated improvement and confirmed the effectiveness of NDM-oriented telecollaborative model's strategies at three levels of sociolinguistic, ethnolinguistic, and psycholinguistic. The interview data reflected participants' positive attitude towards their perceived improvement over the duration of the intervention. The effectiveness of the model at recruiting formulaic sequences with respect to nonlinearity and dynamicity of motivational factors at individual level is the main implication of the study for CALL pedagogy.

Keywords: CALL; nonlinear dynamic motivation (NDM); learner autonomy (LA); formulaic sequence (FS)

1. Introduction

The present study was conducted to fill the gap of an applicable pedagogical framework (O'Dowd & Ware, 2009; Pegrum, 2009) by maximizing the institutional nature of telecollaborative L2 teaching-learning with respect to nonlinearity and dynamicity of motivational factors. To this end, nonlinear dynamic motivation (NDM)-oriented-prefabs were arranged for CALL context. The goal was to integrate the idea of ready-made frameworks with nonlinear dynamic motivation (Dörnyei & Ryan, 2015) within a process-

oriented paradigm (Basharina, 2007) instead of a product-oriented paradigm to foster learner autonomy. To provide processing benefits as a shortcut to L2 comprehension and production via formulaic sequences (FSs) and catering for nonlinear dynamic motivational factors of telecollaborative L2 learner, the model approached learner and learning from three dimensions: sociolinguistic (Candlin, 2000; Carter & Sealey, 2000; Kramsch, 2000), ethnolinguistic (Lewis, Chanier & Youngs, 2011; O'Dowd & Ware, 2009), and psycholinguistic (Chen & Plonsky, 2017; Long, 2007; Ziegler, 2016). To this end, frequently observed NDM-oriented formulaic sequences (FSs) in CALL were identified based on Myles & Cordier's (2016) hierarchical identification method and categorized into two sets of data (i.e. linguistic clusters and processing units with respect to NDM).

Instead of a static telecollaborative learning-teaching model, the goal of the study was to provide L2 learners/teachers with an applicable model that can be dynamically self-regulated in terms of the use of FSs. This was done in keeping with L2 learner groups' emergent motivational factors during telecollaboration at psycholinguistic, sociolinguistic, and ethnolinguistic levels. The rationale behind including FSs in the model was to enable telecollaborative learner to master the sociolinguistic function of the language (Ellis, 2005), to develop native-like idiomaticity (Wray, 2012), to raise awareness of the conventions (Yu, 2011), to facilitate language production by bypassing controlled processing of short-term memory (Wood, 2015), and to reduce learning burden (Durrant, 2008). The model creates proportionality between the telecollaborative L2 learner's motivational preferences and native speaker's preferences for certain FSs by encouraging self-regulatory measures for adopting FSs in line with dynamic motivational factors. While FSs encompass several aspects of language (e.g. semantic, syntactic), motivational factors encompass several aspects of L2 learner (e.g. affective factors), which shows their interrelated role in L2 learning. The proposed model consists of five elements (see Fig.1) integrated towards learner autonomy.

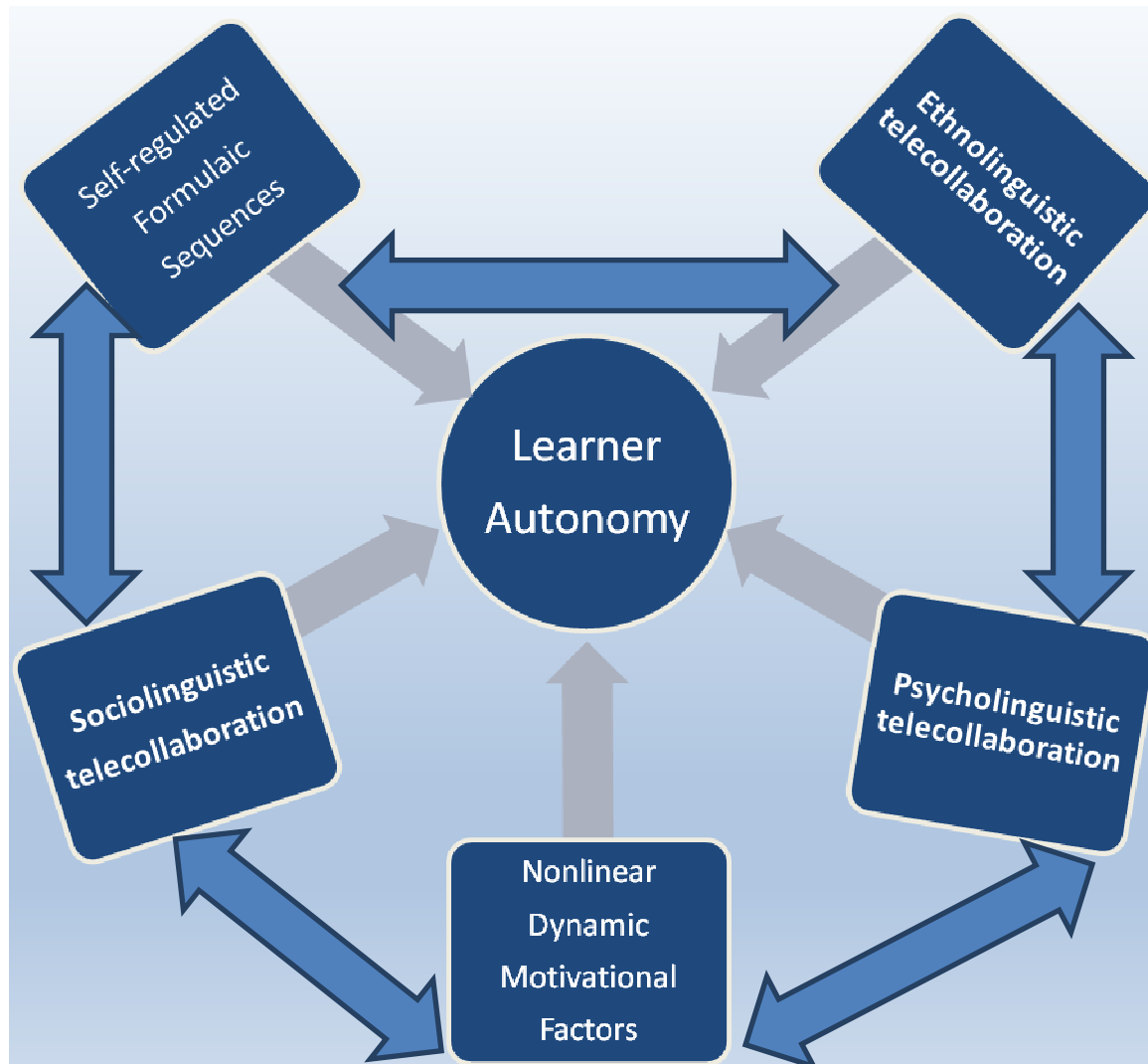


Figure 1. NDM-oriented model of formulaic sequences to foster learner autonomy

2. Sociolinguistic Dimension of Telecollaboration (SDT)

Examining the potential behind telecollaborative L2 teaching-learning with a focus on social perspective has led to studies reporting the significance of sociolinguistic factors in telecollaboration (Ware & Kramsch, 2005). Accordingly, SDT was highlighted in the proposed model to ensure the development of social skills via group work, team-building, building new connections, and sensitizing the telecollaborative learner group to each other's context (Dooly & Sadler, 2013; Fuchs, 2016). SDT emphasizes on commenting on each other's social values without violating interactional norms and expectations (House, 2010) by introducing conversational styles, contextualization cues, and listenership behavior. To address the sociolinguistic sources of online-telecollaboration-misunderstandings the present model proposes some NDM-oriented-socio-interactional prefabs (see Appendix A).

Accordingly, to foster learner autonomy in L2 learning-teaching (Chiu & Liu, 2013) the following SDT strategies are suggested to be proportionally integrated with FSs in keeping with nonlinear dynamic motivational factors identified at individual level to bypass analytical processing and foster self-regulation in telecollaboration.

Table 1. SDT strategies for the telecollaborative teacher

Encourage the use of communicative strategies to manage learning problems (Nakatani & Goh 2007) to develop critical understanding of telecollaborative tools
Include social and cultural factors to make learning an important and meaningful task for learners (Gay, 2010) and to create a social identity via social engagement via telecollaborative tools
Encourage learners to develop social presence by creating online community of learning to develop L2 learners' pragmatic competence via telecollaborative tools
Encourage the use of portfolios and learner diaries to facilitate learner reflection on online interaction via telecollaborative tools
Encourage discourse completion tasks with respect to social parameters (Golato, 2003) and nonlinear dynamic motivational factors to facilitate experiential learning and interaction
Develop learners' understanding of pedagogical affordances and constraints of social communication tools by synchronous tools and sociolinguistic tasks by commenting about each other's local social values
Provide scaffolded guidance via online tutorials concerning telecollaborative goals to move learners towards collaborative activities

3. Ethnolinguistic Dimension of Telecollaboration (EDT)

To expand the range of telecollaborative studies from the Western world scale (Murray, 2000) to international scale studies, the present study integrated EDT into the NDM-oriented model with a focus on intercultural aspect of telecollaboration in keeping with previous studies (Belz & Müller-Hartmann, 2003; Liaw, 2006; O'Dowd & Ritter, 2006; Ware & Kramsch, 2005; Ware, 2005). To avoid culture-related tensions and misunderstandings and to facilitate making communicative choices some self-regulated formulaic sequences were arranged in keeping with NDM and EDT to be applied in asynchronous interactions on L2 learners' dynamic topics of interest. EDT draws on the activity theory (Lantolf, 2000) to explore intercultural dimension of telecollaboration at two contextual layers of offline and online (Lam, 2000). To address the ethnolinguistic sources of online-telecollaboration-misunderstandings the present model proposed some NDM-oriented-ethno-interactional prefabs (see Appendix B). The following EDT strategies need to be dynamically and nonlinearly modified in keeping with identified motivational factors in telecollaborative learner group at individual level along with identified situation-bound formulaic sequences prior to the application.

Table 2. EDT strategies for the telecollaborative teacher

Encourage natural target language reproduction rather than echoing, imitating or slavish mimicry (Kim, 2011) to sensitize L2 learners to cultural differences before engaging them in online exchanges
Encourage ethnolinguistic tasks by commenting about each other's local cultural values
Develop intercultural competence among L2 learners in order to create an interculturally rich relationship
Avoid disrespecting social and cultural values which can causes students feel disfranchised
Inform L2 learners concerning the culturally different discourse genres to avoid online communication breakdown
Encourage participation in online intercultural asynchronous discussion forums to discuss cultural products and practices of the L2
Encourage trying new culture-oriented telecollaborative tasks via openness to cultural variety without imposing any value.
Inform students about cultural clashes and cultural taboos via informing learners about differences in interactional norms and expectations (House, 2010)
Include learner's cultural preferences in organizing culture-oriented telecollaborative tasks by introducing culturally-contingent patterns of telecollaborative interaction
Design culture-oriented tasks in line with nonlinear dynamic motivational factors along with linguistically rich telecollaborative interactions to introduce common causes of intercultural problems in advance

4. Psycholinguistic dimension of telecollaboration (PDT)

Following the social shift of the mid-1990s, Second Language Acquisition studies experienced the development of a variety of approaches including the psycholinguistic approach (Ortega, 2011) to enhance L2 learning-teaching via CALL. To address the psychological sources of online-telecollaboration-misunderstandings the present model proposed NDM-oriented-psycho-interactional prefabs (see Appendix C). The following PDT strategies are suggested to be dynamically and nonlinearly modified in keeping with identified motivational factors in telecollaborative learner group at individual level along with identified situation-bound formulaic sequences prior to the application.

Table 3. PDT strategies for the telecollaborative teacher

Consider nonlinear dynamic motivational factors at individual level before engaging L2 learners in online exchanges
Encourage hopeful thinking among the learners to change the present attitudes to shape positive thinking (Oxford, 2017) to see learning as an enjoyable process.
Encourage learners' control over learning management to ensure a learner-friendly instruction (Mercer, 2015) by developing agency
Encourage goal-directedness towards authentic complexity of learning (Oxford, 2017) by providing learners' with opportunities to manage their emotions, thought processes, and actions (Joe, Hiver & Al-Hoorie, 2017)
Develop agency by reinforcing belief in one's competence (Mercer, 2015) and begin with an elicitation rather than reformulation
Encourage learners to use textual blogs to voice their views with confidence (Golonka, Bowles, Frank, Richardson & Freynik, 2012)
Encourage blog-mediated tasks among L2 learners to liberate and empower L2 learners in online settings to foster learner autonomy
Integrate the pedagogical value of telecollaborative teaching with nonlinear dynamic nature of psychological characteristics of learners

5. Self-regulated formulaic sequences

To facilitate drawing on FSs in response to immediate processing demands (Wray, 2012) and nonlinear dynamic processing capacity of L2 learners Myles & Cordier's (2016) hierarchical identification method of processing units (PUs) was used. It suggests phonological coherence, semantic/functional unity, sequences learnt holistically, intraleaner frequency, and interlearner frequency as the criteria to identify PUs. NDM-oriented FSs identified in CALL are displayed at two parts: processing units (i.e. NDM-oriented multiword semantic/functional units in CALL) and linguistic clusters (i.e. NDM-oriented multimorphemic clusters in CALL). The criteria for identifying formulaicity in processing units were identified based on the following criteria: grammatical irregularity, lack of semantic transparency, specific pragmatic function, idiosyncratic use, specific phonological characteristics, inappropriate use, unusual sophistication, performative function. However, not all criteria need to be observed in a sequence to be considered as a formulaic sequence (Wood, 2015). The effort-saving processing quality (Wray, 2012), phrase level frequency (Tremblay, Derwing, Libben, & Westbury, 2011), facilitating effect of congruence in code switches in online processing (Titone, Columbus, Whitford, Mercier & Libben, 2015) and ubiquity of multiword units are among the qualities which justify their inclusion in a NDM-oriented telecollaborative model of L2 teaching-learning.

Table 4. Multiword semantic/functional units in CALL

No.	Multiword semantic/functional units in CALL	Definition	Criterion
1	Back button	A button at the top of a Web browser used to go back to the previous Web page.	Idiosyncratic use
2	yoyo mode	When computer alternates several times between being up and being down	Idiosyncratic use
3	Eye candy	Extra graphics/images included on a Web page to make it look better (e.g. This Web site has too much eye candy going on, doesn't it?)	Lack of semantic transparency
4	Classroom	The classroom software is a superset of the office set which is used in computer classrooms	Lack of semantic transparency
5	PING or ping	Internet program used to determine whether a specific IP address is accessible or online.	Idiosyncratic use
6	Rant-and-rave	Passionate talk about something. To rant implies negative feelings about something, while to rave implies admiration for somebody/something.	Lack of semantic transparency
7	spammin'	Aimless speaking on a mishmash of topics (e.g. was he spammin' you about his ancestors?)	Lack of semantic transparency
8	Hot spot	Places with wireless Internet connections.	Specific pragmatic function

9	Mommy-save	Indiscriminate clicking of 'Save' without choosing a folder to store the document (e.g. Did you mommy-save them in the Word folder?)	Idiosyncratic use
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Multimorphemic clusters are frequently co-occurring units of conventional expression which are semantically/syntactically irregular (Myles & Cordier, 2016). Multiword semantic/functional units being stored whole in interlocutors' lexicon or being highly automatized provide a processing advantage for interlocutor(s). The dynamicity and nonlinearity of using FSs by different speakers (Wray, 2012) enable L2 learner group to conduct collaborative tasks while saving effort in processing and achieving interactional functions during telecollaboration.

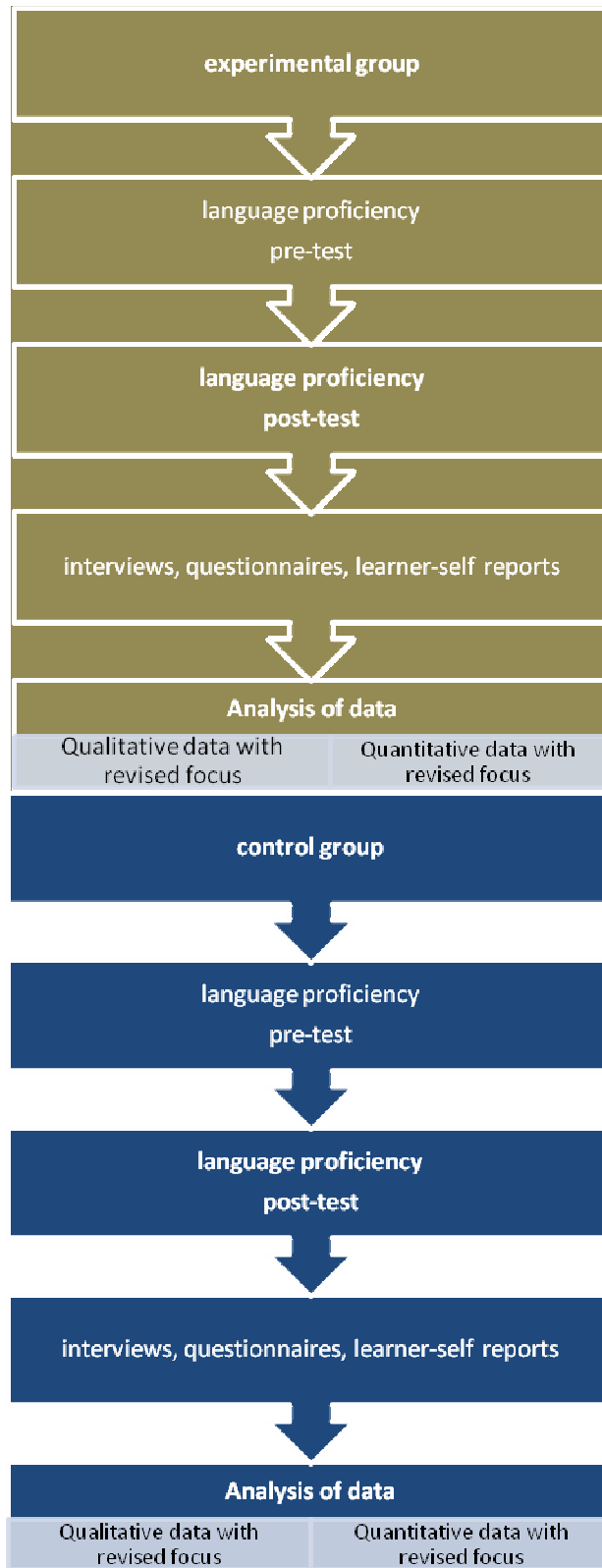
Table 5. Multimorphemic clusters in CALL

No	Multimorphemic clusters in CALL	Definition	Criterion
1	biobreak	To say that you need to take a bathroom break.	Inappropriate use
2	webinar	A presentation delivered online	Lack of semantic transparency
3	Google	To run a search to find out about somebody/something	Specific pragmatic function
4	defrag	To optimize hard drive, which implies some much needed R&R, (e.g. I need to have a quiet drink and defrag)	Lack of semantic transparency
5	meatspace	The real world opposed to cyberspace	Lack of semantic transparency
6	opt-out	To request to be removed from online program (e.g. why don't you opt out if you don't want to receive further emails?)	Specific pragmatic function
7	PDFing	To turn a document into an Adobe PDF	Specific pragmatic function
8	shelfware	Worthless software that remains in the shrink-wrapped box on the shelf	Lack of semantic transparency

Saving effort in processing and achieving interactional functions are among the main functions of FSs which along with observing nonlinear dynamic motivational preferences of L2 telecollaborative learner in a single multilayered model would foster learner autonomy by facilitating self-regulation. The proposed model instead of emphasizing on a single aspect of telecollaboration such as intercultural communicative competence (O'Dowd & Ware, 2009) has integrated psycholinguistic, sociolinguistic, and ethnolinguistic dimensions into a comprehensive NDM-oriented telecollaborative model.

6. Model testing

To test the effectiveness of the model and its translatability into actual telecollaborative setting, a mixed methods approach was conducted among 33 female and 14 male English learners (with the average age of 22.3 years old and $SD=1.4$) during a language learning term (thirty 90-minute sessions). Incorporating computer assisted instruction into the design, the participants were randomly assigned into experimental group (18 female and 9 male) and control group (15 female and 5 male). To investigate the relationship between NDM-oriented telecollaborative model and developing language proficiency several strands of data collection were employed (see Fig.2) in response to the research questions.



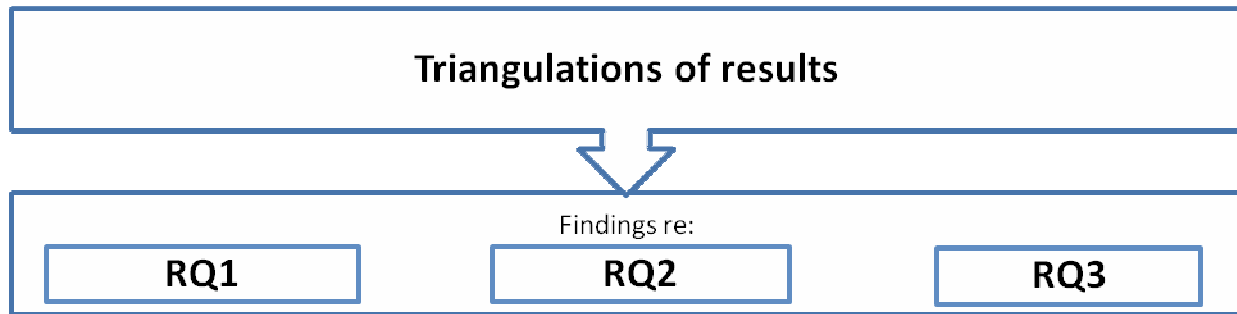


Figure 2. Visual representation of testing NDM-oriented telecollaborative model

A paired samples t-test was conducted to compare the language proficiency scores of the experimental and control groups from pretest to posttest (see Table 1).

Table 6. Paired samples statistics

		Paired Samples Statistics				
		Mean	N	Std. Deviation	Std. Error Mean	
Pair 1	Experimental pre	68.1481	27	3.47191	.66817	
	Experimental post	84.7778	27	8.37273	1.61133	
Pair 2	Control pre	68.7000	20	3.14726	.70375	
	Control post	68.6000	20	3.80305	.85039	

There was no significant difference in scores of the experimental ($M=68.82$, $SD=3.55$) and the control ($M=68.10$, $SD=3.47$) groups on the pre-test; $t=0.718$, $p=0.818$. This shows the equivalent language proficiency of the participants before the experiment. However, the experimental group ($M=84.77$, $SD=8.37$) displayed significant performance over the control group ($M=68.60$, $SD=3.80$) on the post-test; $t=-29.69$, $p=.000$. Based on the obtained results it can be argued that students who received treatment based on the model developed more prominently in language proficiency than those who received ordinary schedule of the classroom.

Table 7. Paired samples test

		Paired Samples Test							
		Paired Differences			95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	Experimental pretest - posttest	-16.62963	8.81933	1.69728	-20.11844	-13.14082	-9.798	26	.000
Pair 2	Control pretest - posttest	.10000	4.90864	1.09761	-2.19731	2.39731	.091	19	.928

To elicit the required data NDM-oriented telecollaborative model's questionnaire was prepared. It is a 12-item survey developed by the author to examine three major categories of values, attitudes and beliefs of the L2 learners towards the model as part of the CALL syllabus. The alphas are presented in keeping with (Wigfield & Guthrie, 1997) alphas in Table 8. The subscales (Values, Attitude, and Beliefs) had reasonable reliabilities ranging from .70 to .88.

Table 8. Reliabilities for the questionnaire's Subscales

Subscale	Number of Items	Reliability
Values	4	.76
Attitudes	4	.88
Beliefs	4	.70

The descriptive statistics show that most of the participants had positive opinions ($M=1.84$) on the efficiency of the model in the CALL context. To elicit the required data for the third research question, the participants voluntarily chose one of the instruments (i.e. NDM-oriented telecollaborative interviews or learner-self reports) depending on their diverse course timetables. The interview was a 9-item survey developed to examine the efficiency of the model's strategies at three levels of sociolinguistic, ethnolinguistic, and psycholinguistic as reflected in participants' responses. To determine the internal consistency reliabilities of the subscales in the present study the 9 subscales were subjected to a reliability test (see the results in Table 9).

Table 9. Reliabilities for the interview Subscales

Subscale	Number of Items	Reliability
sociolinguistic	3	.75
ethnolinguistic	3	.70
psycholinguistic	3	.86

The results of the interviews and learner-self reports revealed that the majority of the respondents had a positive opinion on the efficiency of the administered treatment based on NDM-oriented telecollaborative model under CALL.

Table 9. Subjects' self-reports on the effectiveness of NDM-oriented model

Level	Skill			
	Speaking (%)	Listening (%)	Reading (%)	Writing (%)
Strongly agree				
Agree	33	31	28	27
Slightly agree	36.5	41	37	36.5
Slightly disagree	22	21	20	21.5
Disagree	4.5	6	7	9
Strongly disagree	3.5	0.5	7	5
	0.5	0.5	1	1

The total $M=1.08$ of the elicited responses serves as evidence of the success of the suggested strategies to improve language proficiency in CALL context. Such a big number of positive opinions on the efficiency of the suggested strategies not only reflects the perceived convenience (i.e. perceived usefulness and perceived ease of use) on the part of the learner, but also calls for more rigorous attention on the side of the scholars to delve more into the applicability of this model as part of the general L2 instruction.

The findings confirm a greater tendency on the part of female participants of the study towards NDM-oriented telecollaborative model compared to male participants, which is consistent with the findings reported by previous studies for the significance of the relationship between gender and motivation (Ivey, 1999; McQuillan, 1997). To capture different dimensions of the proposed model, methodological triangulation of the data was conducted with respect to the research questions. The triangulation of the elicited data from qualitative and quantitative methods supported the validity of the suggested strategies. This finding can serve as evidence of the conceptualization of the model and the rationale to apply it in CALL contexts.

7. Final thoughts

To guide learners towards their ZPD via telecollaboration without denaturing language (Atkinson, 2002) the proposed model recruited and integrated related findings in three dimensions of sociolinguistic-, ethnolinguistic-, and psycholinguistic-oriented studies. Drawing on the latest related theories and developments in L2 learning-teaching, the model has highlighted non-linear dynamic motivation as a new perspective for future CALL programs for language skill development. Implementing the proposed model under CALL context confirmed the validity of the suggested strategies to develop language proficiency. To ensure the purposefulness of the activity, catering for non-linear dynamic motivation at

individual instead of group level is considered as the assessment criterion for the effectiveness of the model. The observed benefits of applying the model during the model testing support its application in future CALL programs. The main pedagogical implication of the study is the effectiveness of integrating the model along with nonlinear dynamic motivation to facilitate learning in the ever-evolving CALL contexts to improve language skills. Pedagogically, the proposed model with a focus on nonlinear dynamic motivation facilitates learning in keeping with the prevalent trend of CALL, as described by Clifford & Granoien (2008), where learning is considered as informational construct. Accordingly, the study has important implications for English language teachers who avoid CALL affordances for a variety of reasons such as the lack of an applicable model with a focus on language skills. The use of the model under CALL context not only expands learners' in-class and out-of-class exposure to authentic language which ensures sustainable learning, but also caters for diverse range of motivational factors among the learners which creates a learner-friendly context.

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Appendices

Appendix A. NDM-oriented-socio-interactional prefabs

The following prefabs are easier for the telecollaborative L2 learner in terms of processing because of the interactional functions which are highlighted from a sociolinguistic perspective to reinforce association of the meaning, form and content.

Function	Clusters (2 word sequences-6 word sequences)
Thanking	Thank Tom for me; thanks for lunch; thanks a million; thanks for calling, etc.
Apologizing	I apologize; I do apologize; apologize to him; I truly apologize, etc.
Offering	I got an offer; make an offer; I like your offer; I accept your offer; etc.
Requesting	I have a request; consider my request; I don't do requests; I came at his request; I can't ignore his request; etc.
Commanding	I was in command; take command; who's in command of; he's back in command; we are under his command; etc.
Bargaining	I am satisfied with the bargain; hunt for bargains when you shop, it's a bargain; I got a bargain; we made a bargain; it's a real bargain etc.
Inviting	Am I invited; who invited you; were you invited, we are all invited, etc.
Competing	I can't compete; you can't compete with; I compete in ski races, etc.
Teaming	Team up with him; what a team; there's my team; he's on the team, etc.
Socio-commenting	
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Appendix B. NDM-oriented-ethno-interactional prefabs

Function	Clusters (2 word sequences-6 word sequences)
Greeting	They greeted me; I greeted everyone; he greeted us warmly, etc.
Baptizing	I was baptized Mary; he was baptized a catholic, etc.
Partying	Let's party; I hate parties; it's your party; we were partying, etc.
Socializing	They don't lie to socialize; he's fed up with socializing, get out and socialize more; it leaves me little time to socialize, etc.
Thanksgiving	Happy thanksgiving; have a nice thanksgiving, etc.
Praying	Let's pray; pray for me; did you pray; I'll pray hard, etc.
Dancing	Let's dance; keep dancing; dance with me; let's go dancing, etc.
Singing	Let's sing; sing along; keep singing; sing us a song, etc.
Clothing	Wear warm clothes; change your clothes; get your clothes on, etc.
Ethno-commenting. . . .	

Appendix C. NDM-oriented-psycho-interactional prefabs

Function	Clusters (2 word sequences-6 word sequences)
Sympathizing	I sympathize with you; I do sympathize with you, etc.
Envy	I envy her; you'll be envied; I really don't envy you, etc.
Humiliating	How humiliating; I'm so humiliated; that's humiliating, etc.
Motivating	I am motivated; are you motivated; I wasn't very motivated, etc.
Worrying	I do worry; I never worry; should we worry; that worries me, etc.
Thinking	Think that it; you should think; because I think; well I think, I think so, etc.
Enjoying	I enjoy chatting; just enjoy it; let's enjoy it; enjoy your meal, etc.
Disgusting	You disgust me; Tom is disgusted; it was disgusting, etc.
Crying	Don't cry; I won't cry; did she cry; we all cried, etc.
Laughing	Don't laugh; stop laughing; I hear laughing, etc.
Imagining	I can imagine that; you are imagining it; I can't imagine that, etc.
Psycho-commenting . . .	

INTEGRATING TECHNOLOGY INTO ESP CLASSES: USE OF STUDENT RESPONSE SYSTEM IN ENGLISH FOR SPECIFIC PURPOSES INSTRUCTION

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Abstract

This paper presented the results of an experimental study investigating the impact of clicker use through a smart phone application called *Kahoot!*. Despite positive results of clicker use in the existing General English literature, the impact of clicker use has not been examined in the field of ESP. To address this issue, this study investigated the effectiveness of clickers by comparing pre-test and post-test scores of a control and an experimental group and the scores of male and female participants in the experimental group. The results of a 10-week implementation of clicker use with the students of tourism and hospitality department in the experimental group indicated that while post-test scores were significantly higher for the experimental group than for the control group, there was not a statistically significant difference between the post-test scores of male and female participants in the experimental group. Implications for teaching ESP with the help of technology and suggestions for further research were also provided.

Keywords: Clicker; mobile technology in language teaching; student response system; English for specific purposes; *Kahoot!*; gamification

1. Introduction and background to the study

English for specific purposes (hereafter ESP) is considered as an approach to teaching and learning of English as a foreign language (Hutchinson & Waters, 1987). However, in contrast to other pedagogical approaches, the entire course, its content and objectives are based on the specific needs of target learners (Lesiak-Bielawska, 2015). ESP emerged as a subcomponent of language teaching with the need of an international language due to the unstoppable rise of technology and commerce. In addition, the shift in language teaching from grammar to actual use of language in specific situations was also a significant factor for the emergence of ESP (Hutchinson & Waters, 1987). Especially these facts called forth the need of a language for real communication in ESP, which conforms with the constructivist learning perspective supporting the idea that language learners should engage in activities fostering real life use of language rather than memorizing rules (Hart, 2003).

Due to considerably changing nature of language from one context to another, i.e. tourism, commerce, engineering, medical, so and so forth, the activities employed and the materials used in ESP classes in these specific fields should be meticulously chosen through considering learners' needs and wants. Because of the challenge in doing this, ESP teachers tried to integrate technology in their classes and eventually ESP pedagogy was affected by the use of technology (Lesiak-Bielawska, 2015). When all spheres of life are either positively or negatively affected by technology, language learning and ESP have not been spared from the significant changes. This process was inevitable due to the advancements in technology and language teachers' wish to fully integrate computer and mobile phone technology in language learning process (Warschauer & Healey, 1998) because the development of new technologies and language learning have always kept abreast (Vukićević-Đorđević, 2015). Specifically, integrating technology in ESP curriculum provides students with a lot of learning opportunities and advantages ranging from providing interactive and communicative activities related to their professions to tools for giving feedback and self-evaluation on that specific context (Butler-Pascoe & Wiburg, 2003).

These advantages include the use of benefits of technology through computer-assisted language learning in ESP instruction, development of ESP materials, and the design of ESP courses (Butler-Pascoe, 2009; Dashtestani & Stojković, 2015). With the development of technology use in ESP classes, practitioners of ESP started using several tools, multimedia packages, and internet sources to promote ESP learners with the real use of target language in situations (Arnó-Macía, 2012). In addition, communicative and interactive activities specific to several professions and specific input for students' interests in the related field are among the merits of technology use in the field of ESP. Technology use in ESP also provides students with the strategies to learn languages for specific purposes, task-based and collaborative learning activities, content-based authentic materials, and tailored learning environments to students' own needs (Dashtestani & Stojković, 2015). However, teachers' way of teaching is another factor determining benefits of technology use in language classes mentioned above, in that an authoritarian way of teaching and strict control of students' behavior may not contribute to students' use of smart technologies (Hovhannisyan, 2016).

At the same time, practitioners' use of technology has provided researchers in the field of language learning and teaching with opportunities to be more aware of the language used in professional and academic communication and further implications of technology in ESP classes (Arnó-Macía, 2012). Moreover, technology, specifically mobile learning and related

devices, made it possible for the students with different learning styles to actively participate in the learning process in today's classrooms (Albadi, 2016).

Therefore, several researchers conducted studies to explore the effects of technology use in both general language and ESP classes, such as the use of wikis (Hadjiconstantinou & Yerou, 2012), blended learning in listening (Kavaliauskiene, 2011), Twitter mobile application as a source of authentic and communicative learning (Albadi, 2016), multimedia use (Dayag, 2016), and the effects of slideshow-supplemented lecture and virtual learning environment (Have & Corcoran, 2008). Apart from these, Chliaras (2014) also mentioned interactive whiteboards, document cameras, student response systems, lecture capture systems, digital projectors, and wireless and projection keyboards as the new tech devices used in ESP classes especially in higher education context.

One of these technologies, student response system (also known as clickers, audience response system, and personal response system) provides students with opportunities to answer questions in class through handheld devices called as 'clickers' or 'key pads' in the USA and 'handsets' or 'zappers' in the UK (Laxman, 2011). Though mostly preferred in large classes and educational settings, small institutions and classes also employ these systems (Caldwell, 2007). Despite popular use of clickers in General English classes (e.g. Akbatogun, 2014; Çelik, 2015; Laxman, 2011) and in many other disciplines, such as economy (Elliott, 2003), chemistry (Chen & Lan, 2013), engineering, and computer science (d'Inverno, Davis & White, 2003), there is a paucity in the literature concerning the investigation of the use of this technology in ESP context. This fact is the first impetus behind this research.

Additionally, the need for ESP is increasing day by day due to international exchanges, interaction, globalization, and the need of qualified employees. Therefore, this has led to the fact that more and more people are needed to know not only General English but also extensive vocabulary and communicative use of the language on various specific fields, such as politics, science, tourism, etc. (Beshaj, 2015). This need is even more urgent and critical in tourism sector in Turkey, where, with the rapid growth of international tourism since the 1980s, tourism industry has had serious problem of well-educated and well-trained work-force (Kusluvan & Kusluvan, 2000). Knowing the language in the relevant area of expertise is crucial for the employees to be referred as 'qualified employee' in international context. Especially in the field of tourism, a foreign language speaker would be more comfortable in his/her position if he/she has a good control of the specific language used. However, despite the growing number of English speakers, still a noticeable deficiency in employees' English for tourism can easily be observed in Turkey.

In order to train students to make them attain their future goals in tourism field, students receive ESP classes at hotel management and tourism vocational high schools, tourism and hospitality services programs at 2-year vocational schools (short-cycle associate degree), and tourism faculties in Turkey. However, students especially at tourism and hospitality services programs at 2-year vocational schools are mostly disinterested in ESP classes due to several reasons, such as low level of General English proficiency, lack of suitable materials and books, and lack of motivation and desire to learn. One way to address this issue and recapture learners' attention is to create a game-like educational atmosphere (Fotaris, Mastoras, Leinfellner & Rosunally, 2016). The reason behind this idea is that despite optimum attention span for learners is around 10 minutes in the classroom (Hartley & Davies, 1978), people's attention can be kept at high levels for hours by video games (Green & Bavelier, 2007). Therefore, concepts, such as 'epic win' and 'instant gratification' in video games are claimed to be the key factors in learners' success (Fotaris et al., 2016).

One of the methods that trigger these feelings for the students in the class is clickers. Studies measuring the impact of clickers on students' learning and involvement in the classroom activities have already provided positive results (e.g. Akbatogun, 2014; Barnett, 2006; Fotaris et al., 2016; Siau, Sheng & Nah, 2006; Trees & Jackson, 2007; Yourstone, Krave & Albaum, 2008). However, despite increasing popularity and use of gamification of education through several techniques including use of clickers in different disciplines, it has not been integrated into ESP classes. Hence, the current experimental study aims to contribute to the field of gamification in language education through investigating the impact of clickers on students' language development studying tourism and hospitality management by involving a control and an experimental group with pre and post-tests. This study will therefore address the following research questions:

- To what extent and how does the use of clickers impact students' learning in ESP classes?
- How do male and female participants differ in benefitting from the clicker use in the experimental group?

2. Literature review on gamification and clickers in language education

In today's education, the problems that students face, such as underachievement and behavioral as well as emotional difficulties, have never been so serious and they eventually lead to dropouts for many students (Battin-Pearson, Newcomb, Abbott, Hill, Catalano & Hawkins, 2000). This dramatic end is a process of student disengagement, alienation,

tardiness, absenteeism, and failure in classes (Finn, 1989). This fact is in connection with the basic tenets of constructivism, which claims that knowledge cannot be translated to a passive receiver (Bunce, VandenPlas & Havanki, 2006). In line with this fact, if the students are kept passive in the class with the implementation of traditional teaching methods, students get bored, they do not come to classes, and finally they drop out.

However, the situation is not the same for all learning conditions. Despite the current abundance of the distracters for the students, such as the Internet, mobile phones, social media, and many other activities, if appropriate materials and technology are employed, students do not experience alienation in their learning conditions and especially some of them promote excitement, stimulation, and engagement in the process of learning leading to meaningful learning (Admiraal, Huizenga, Akkerman & Dam, 2011). Moreover, students' active participation and engagement in this process positively influences their academic performance (Emerson & Taylor, 2004). Gamification of the target topic and the teaching method mostly through technology is one of the methods to make students active and to extent their normal attention span in classes. Unlike overwhelming impact of complex and traditional learning, successful gaming environments created in the classes provide students with instant gratification and short-term wins (Fotaris et al., 2016).

One of the key actors of gamification techniques in establishing the active participation of learners in classes is clicker, which is a system allowing students to respond to multiple-choice questions using a remote control device (Kay & LeSage, 2009). The devices used are mostly small transmitters students use to transmit their choices by pressing appropriate buttons (Simpson & Oliver, 2006). In this system, students answer multiple choice or similar-formatted questions, which are prepared before by the instructor and projected on a screen, by pressing on a clicker and their responses are transmitted to a receiver attached to a computer (Bergtrom, 2006; Fies & Marshall, 2006). Clickers make it possible for the instructors to assemble or disassemble broad subjects into component structural elements and ideas. Therefore, use of clickers promotes interactive and contextual learning (Bergtrom, 2006). They are mostly effective in the redesign of the larger classes through changing the teachers' teaching styles and learners' learning styles (Bergtrom, 2006).

This system helps teachers not only to keep students active in the class but also to easily assess students' understanding of topic covered in the class and to provide remedial instructions to correct students' misunderstandings (Laxman, 2011). Besides, with the provision of students' responses' immediate display, students also have the chance to receive immediate feedback on their responses (Laxman, 2011). Despite its so-called complex nature,

most clicker systems are easy to use with the need of only a computer, a projector for the teacher's use, and clickers which can be replaced with mobile phones with the applications developed for classroom use for students especially in higher education institutions. Therefore, this easy use frees instructors from doing the technical works and allowing concentration on the topic (Parsons, 2005). According to the nature of this system, when the students click in their response for the questions, the results are mostly anonymously displayed in many formats according to the preference of the instructor (Kay & LeSage, 2009). However, it may also be linked to specific students. Moreover, some applications like *Kahoot!* allow students to join the system with their preferred nicknames.

The characteristics of the new generation students with the technological advancements, who are savvy in using technology to meet their needs, and the inadequacy of traditional passive learning, constitute the philosophical underpinnings of this system (Laxman, 2011). One of the advantages of the use of clickers is that it does not require the radical alteration of the physical classroom facilities (Gan, 2011). These advantages of clickers brought out abundance of studies conducted in different settings and disciplines (e.g. Chen & Lan, 2013; d'Inverno et al., 2003; Elliott, 2003). Language teaching and learning as a field requiring active participation of the learners also benefited from the use of clickers in General English classes (e.g. Akbatogun, 2014; Çelik, 2015; Laxman, 2011; Prieto, 2014; Schmid, 2007; Schmid, 2008). Akbatogun (2014) proved the positive impact of clickers in English as a second language class when compared with the classic lecturing style. Çelik (2015) also provided positive results for the use of clickers in developing vocabulary acquisition of the learners as well as increased engagement and concentration of students, better quality feedback for both instructors and students, and increased cooperation and competition among students. Schmid (2007) also found that this voting system worked well as a pedagogical tool for students and teachers to check their performance, to develop closer social relations in class, and to check their progress without getting embarrassed. Schmid (2008) also emphasized the interactivity appeared as a result of the use of voting system. On the other hand, Prieto (2014) was the only researcher who found out negative results in terms of the effect of clickers through comparing it to classic method of teaching in investigating reading ability of Spanish as a second language.

Despite the positive results that appeared as a result of most of the studies investigating the use of clickers in language teaching, some researchers' perspectives were different (e.g. Anthis, 2011; Beaty, Gerace, Leonard & Dufresne, 2006). Firstly, Anthis (2011) claimed that it was not the clicker but the questions provided within this system that

created the main impact on students' learning. She found out that the students who answered the same questions asked with the classic method performed better. In a similar vein, Beatty and others (2006) supported the idea that the questions preferred in this system should have a specific pedagogic purpose and should differ from the classic questions.

The overall agreement is that the integration of mobile applications like *Kahoot!* is regarded as a phenomenal success through contributing positively to foreign language learning (Albadi, 2016). Even though the use of clickers has already been investigated in General English classes, it has not been examined in ESP classes so far. Particularly, how it affects students' learning in ESP classes in the field of tourism and potential differences between genders were among the issues investigated in the present research.

3. Methodology

This experimental study employed a pre-test and post-test design with two intact classes (control and experimental). To assess the effect of clickers on students' learning of ESP, despite the lack of random selection, intact classes were the most ecologically sound setting for this research in the case of implementing a new clicker technique (Mackey & Gass, 2005).

3.1. Setting and participants

This research was conducted at a state university in Turkey with the participation of students enrolled in the department of tourism and hospitality services. Students are admitted to this program either by their scores obtained at a national entrance exam or by the placement of the Student Selection and Placement Center without receiving any scores at this national exam in Turkey. This university offers a 4-hour General English class in the first year and another 4-hour class of English for Specific Purposes in the field of tourism in the second year at this 2-year vocational school where graduates receive a short-cycle associate degree at the end of the program.

Students participate in both General English and ESP classes for 14 weeks in both first and second semesters with a total of 28 weeks for each class in an academic year (112 hours of General English and 112 hours of ESP class). Students receive General English class at the elementary level in the first year. A pre-intermediate level ESP book called *Travel and Tourism* is followed in ESP classes in the second year. This course book is designed in line with the specific needs of students studying in this department and it is also accompanied by sixty minutes of video that contains all the dialogues filmed in actual locations. The ESP course content mainly deals with various areas of work in tourism field, such as travel agency,

the airport, the hotel, the bar, the restaurant, and the tour guide. A written mid-term and a final exam are conducted for the assessment in both General English and ESP class for each semester.

When this research was conducted, there were 2 tourism and hospitality department classes in this institution. One group including 24 students with equal numbers of male and female participants was regarded as the control group, whilst the other group with 19 students including 6 females and 13 males was regarded as the experimental group. Participants' ages in both group ranged from 19 to 22. Both classes were taught and assessed with the same materials and examinations by the same instructor both in General English and in ESP classes.

3.2. Design of the study and clicker use in the experimental group

First of all, a pre-test including a total of 76 questions prepared in line with the first 10 units of the ESP book was conducted in both control and experimental classes. The questions were in the multiple-choice format. The topics covered in these units were all related to the first 10 units of the ESP book as illustrated in Table 1. These topics were taught in each week separately in both classes. The flow of the course in both classes involved watching the video of the core dialogue several times, which was followed by the teaching of new words/lexical items for each unit. Open-ended questions about the dialogue, grammar topics for each week that students would need in their work place, such as expressing wants politely, responding to a complaint, or tag questions, identification of the problem regarding the topic of each week in the short videos, and guided role play activities were the main elements of ESP courses in both classes.

Secondly, though both classes were taught in the same way, a different procedure was implemented in the experimental class. Students in the experimental class were required to download the *Kahoot!* application to use as the clicker in this study. It is one of the most popular clicker applications running on any device with a web browser. It also has a smart phone application. *Kahoot!* provides instructors with the detailed report of the overall performance of the students for each week and test, which involves percentages of the total correct and incorrect answers, feedback of the students in a Likert style, and individual analysis of each participant's correct and incorrect answers as well as their answer time in seconds.

All students had smart phones equipped to work with this program. Following the same procedure in experimental class in each week, students were provided with the pin

number that allowed them to join the game. Normally users are free to choose their own nicknames in using *Kahoot!*; however, the students were instructed to log in with their own names in order to specify the points of each student and declare the winner of the day to celebrate. While using *Kahoot!*, students needed to watch the screen reflected through the projector for questions because the questions did not appear on their phones. They chose answers by clicking on the colorful figures on their smart phones' screen. After each question, students could see whether they answered right or wrong on both their device and on the screen (see Figure 1).

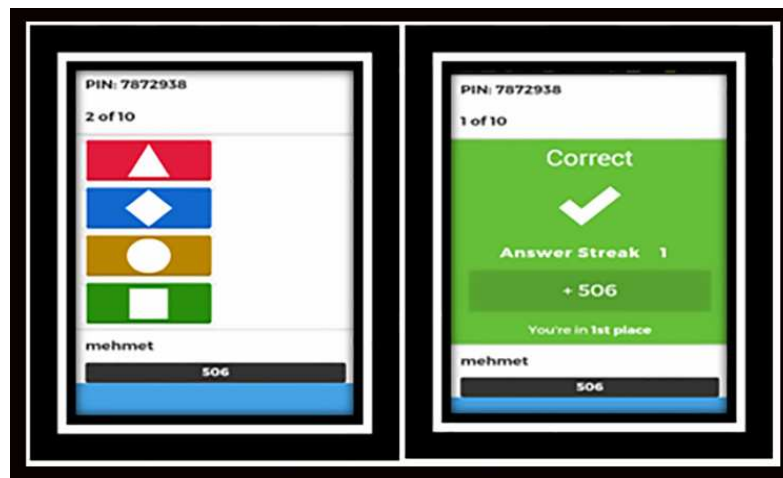


Figure 1. Screenshots of students' mobile phone

Students were also scored according to the time they provided the answer, in that the faster correct responses received higher scores. The program also provided a list of the students according to their scores after each question on the screen, which made them more enthusiastic about the next question. The questions were supported with pictures (see Figure 2) or with videos from YouTube (Figure 3).

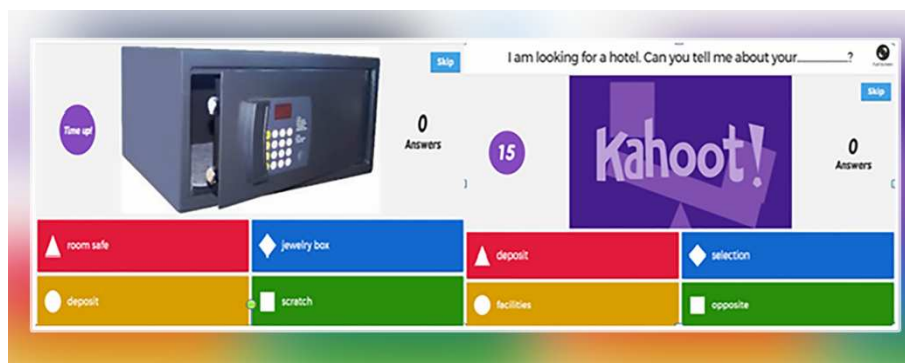


Figure 2. Screenshots of teacher's screen for picture and filling-in the gaps questions

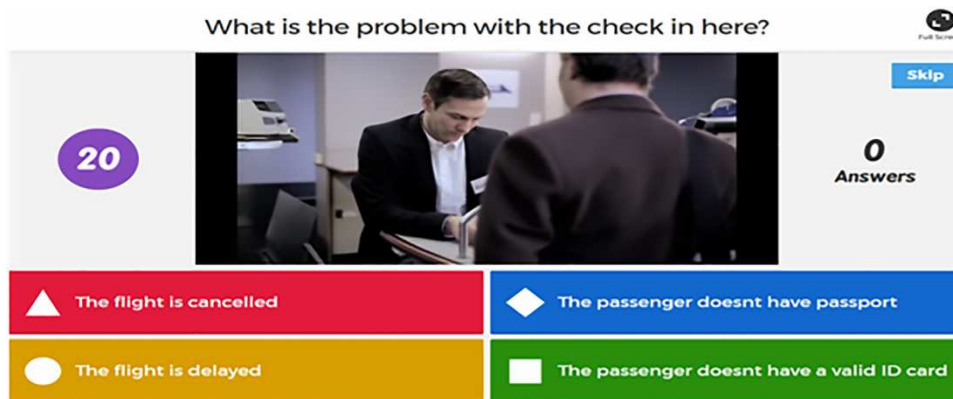


Figure 3. Screenshots of teachers' screen for video questions

Kahoot! allows instructors to use the videos from YouTube by starting and ending up at any second they wish. After the students watched the video, the time allocated to answer started, which was 20 seconds for each question in this study. This system also provides instructors with the total correct and incorrect answers with the students' individual and overall class percentages as well as each student's responses for each question. The topics taught through the weeks were provided in the list below in Table 1.

Table 1. The distribution of topics for each week and the number of questions answered via clickers

Week	Topic	Number of questions
1 st	Advising on itineraries	15
2 nd	Helping with flights and reservations	18
3 rd	Assisting with hotel reservations	10
4 th	Checking in	14
5 th	Providing landing information	10
6 th	Dealing with lost luggage inquiries	10
7 th	Taking and turning down reservations	10
8 th	Checking in at reception	10
9 th	Explaining a room's facilities	11
10 th	Dealing with complaints and problems	10

The ESP class in the control group included the same topics as well with the same teaching method except for the implementation of the clicker system. The words, grammatical structures and pictures used in the experimental group were also available either in the activities on the book or the worksheets provided by the instructor in the control group, which means the same questions answered by the experimental group through clicker use were answered by the control group as well. The same videos used in the experimental group were watched by the control group. However, they responded to the questions orally. The pictures reflected on the board through projector in the experimental group were printed out on

worksheets for the control group to name them by choosing right one among the multiple choices.

There were three types of questions. The first type included questions with pictures. The main aim was to make students choose the right option among four alternatives. Depending on the topic of each unit, several pictures were provided, such as escalator, luggage claim area, fitness center, different hotel staff and departments, etc. Students were required to choose the item among four alternatives that reflected the picture in 20 seconds. The second type of questions were video-based. Students watched a video about each topic. After they watch the video, they were required to answer questions about the dialogue that took place in a specific scene, such as the problem occurred during check-in procedure, customers' complaint to the manager, or the help of the officer for the lost luggage. Four alternative responses were provided in the form of sentences and students chose among them. The last and the most common type of questions were classic multiple-choice questions without a visual element. A sample question for this type of question is: 'I cannot find my jewellery box. It is'. The options were: 'fixed, repaired, missing, looked'. Students were required to choose the right word among four alternatives for these questions. As mentioned earlier, these questions were responded through *Kahoot!* by the students in the experimental group. However, the students in the control group responded the same questions either orally or on worksheets.

Finally, a post-test, which had the same questions with the pre-test, was conducted at the end of the 10-week implementation of clicker use in both experimental and control groups.

3.3. Data analysis

Due to the small sample size and lack of random sampling, which were not suitable conditions for using *t*-test, non-parametric tests were employed for the analyses in this study (Tailor, 2005). Therefore, in order to compare the pre-test and the post-test scores of control and experimental groups and to find out whether there was a significant difference between them, the Mann-Whitney U test was run. The same test was also employed for the analysis between the two genders in the experimental group in comparing their pre-test and post-test scores as well. In order to find out the difference between the pre-test and post-test scores of the experimental group and the difference for the same tests between the genders in the experimental group, Wilcoxon Signed Rank Test was employed, which "instead of comparing the means, in order to rank and compare, turns the values into two different time periods (time

1 and time 2) and compares whether there is a difference between them or not” (Kalaycı, 2010, p. 104).

4. Findings

First of all, a pre-test was administered in the very beginning of the study to find out the current knowledge of the two groups regarding the topics provided in Table 1. The mean scores are presented below in Table 2.

Table 2. Mean scores of the pre-test showing experimental and control groups' performance

Test	Groups	
	Experimental (n=19)	Control (n=24)
Pre-test	48.95	42.70

Despite the slight difference between the experimental and the control groups in terms of pre-test mean scores, the Mann-Whitney U test was also run. The results indicated no significant difference between the experimental (Mdn = 50) and the control group (Mdn = 42.10), $U = 161.500$, $p = .103$. Hence, both groups were statistically equally knowledgeable about the pre-test questions, which was also used as the post-test at the end of a 10-week implementation of clickers with the experimental group.

Before providing the results of the statistical analyses, in order to offer insight about the overall performance of the participants in the experimental group during the 10-week implementation of the clicker, students' correct and incorrect answers as well as the average time they used to answer the questions are illustrated in Table 3.

Table 3. The details of the students' performance in the experimental group

The implementation	Total correct answer (%)	Total incorrect answer (%)	Average score (according to Kahoot! scoring)	Average time taken to answer	
				Correct answers (seconds)	Incorrect answers (seconds)
1 st week	78.35	21.65	7896	5.01	6.05
2 nd week	80.37	19.63	7562	4.36	5.59
3 rd week	80.37	19.63	7413	4.62	5.13
4 th week	78	22	6578	4.21	4.87
5 th week	58	42	5211	5.68	6.06
6 th week	80.37	19.63	7413	4.62	5.13
7 th week	75.47	24.53	8281	4.05	6.23
8 th week	75.86	24.14	7802	3.11	3.39
9 th week	71.82	28.18	8685	3.01	3.17
10 th week	67.95	32.05	6892	3.26	3.99
Averages of the 10 week	74.61	25.39	7555.5	4.00	5.16

It becomes apparent with Table 3 that students' average time to answer the questions decreased both for the correct and incorrect answers while their responses' accuracy was almost stable. It is also an interesting finding that students' average time to answer was always higher in incorrect answers, which means when students spent more time on the questions that they answered incorrectly.

Following the overall performance of the students in the experimental group, in order to answer the first research question regarding the difference between the control and the experimental group in terms of the post-test scores, the Mann-Whitney U test was employed and the results showed the post-test scores were significantly higher for the experimental group (Mdn = 63.15) than for the control group (Mdn = 46.05), $U = 142.000$, $p = .035$. Although the average score of the control group was lower than the experimental group in the beginning of the study, the Mann-Whitney U test results indicated no significant difference between them. Considering the two groups' statistical equality in the beginning, results also indicated that use of clickers in the experimental group for a 10-week period elicited a statistically significant change in students' performance in ESP classes according to Wilcoxon Signed Rank Test results comparing the potential differences between pre-test and post-test scores of the experimental group, $Z = -3.66$, $p = .000$. Of 19 students in the experimental group, 17 students performed better in the post-test. The average mean score was 61.35 for the experimental group. This score was 44.45 for the control group. The low post-test scores of the students in the control group did not exhibit a statistically significant difference when compared with their pre-test scores, $Z = -1.707$, $p = .088$.

The second research question of this study was concerned with the potential differences between male and female students in benefitting from the clicker use in the experimental group. The same methodology was followed for the analysis, which started with a pre-test indicating the difference between the knowledge of the male and female students in the very beginning.

Table 4. Mean scores of the pre-test showing male and female students' performance in the experimental group

Test	Experimental Group	
	Male (n=13)	Female (n=6)
Pre-test	50.29	46.57

The Mann-Whitney U test results did not indicate a statistically significant difference between the male (Mdn = 50) and the female (Mdn = 46.71) students, $U = 27.500$, $p = .622$.

Considering the equal levels of male and female participants in the experimental group, the same test was run one more time to find out the difference between the scores of these two genders in post-test scores. The results revealed that there was not a statistically significant difference between the male and the female students in the experimental group, $U = 23.500$, $p = .373$. The medians of the male (63.15) and female (53.94) students were slightly different from one another.

The results of the Wilcoxon Signed Rank Test conducted to find out the difference between the pre-test and the post-test scores of both male and female participants indicated that while male participants' median post-test scores were statistically significantly higher than their median pre-test scores ($Z = -3.110$, $p = .002$), those of female participants were not statistically significantly higher than their median pre-test scores ($Z = -1.625$, $p = .104$). Although only one student in each group could not perform better in the post-test, males showed much better performance with a median score of 63.15 compared to females (53.94).

5. Discussion

The results of this study indicated that the students using clickers in ESP classes in the field of tourism performed better than the ones who responded the same questions without using clickers. Despite the lack of evidence in the field of ESP, the results of this study lend support to the findings of several studies in the existing literature in the field of General English in terms of clickers' positive contribution to language performance of the learners (e.g. Akbatogun, 2014; Çelik, 2015; Laxman, 2011; Prieto, 2014; Schmid, 2007; Schmid, 2008). Although the in-depth data were not gathered from the experimental group regarding their views of using clickers, it may be possible to claim that game-like atmosphere in the class, the feeling of winning and instant gratification provided by clickers may be significant factors increasing learners' participation and success in ESP classes.

Despite the lack of studies specifically investigating the effect of use of clickers on the foreign language performance of males and females in ESP classes, some studies focusing on the attitude and tendency of both genders to use clickers in the classes were in line with the results of the present study (Gök, 2011; Stav, Nielsen, Hansen-Nygård & Thorseth, 2010). The results indicated that male students had more positive attitudes toward the use of clickers (Gök, 2011) and that they had a higher tendency to feel that clickers stimulated them in the class (Stav et al., 2010). The results in the current study showed that, despite the lack of significant difference in the post-test results between the genders, males performed significantly better in the post-test compared to their pre-test scores. This may be due to male

students' interest in technology and technological games or their enthusiasm to win in the games. Depending on the existing literature, the males' increased performance in the post-test may be linked to their positive attitude toward the use of clickers or the stimulating effect of clickers for the males in the class.

Although it may not be quite right to relate students' success in the experimental group completely to the use of clickers, students perform much better due to its impact on learners to be fully engaged with the topic and the method of teaching. The results indicating overperforming of the experimental group provided strong support for the use of clickers in ESP classes as a tool to enhance their learning. Specifically, the case of students studying ESP at tourism and hospitality services programs at 2-year vocational schools in Turkey mostly poorly perform in ESP classes due to their low English proficiency and lack of convenient materials. Therefore, the use of clickers may be a key factor in increasing their performance by eliminating these debilitating aspects.

Students regularly use their smartphones around the campus for several reasons, such as communication and entertainment. This device also plays the role of a significant distractor for the students' learning in the classes as well. For this reason, in order to turn this negative factor into a pedagogical tool, *Kahoot!* may take the stage as students have comfort to use technology for their learning. Although the results cannot be generalized to the entire population of students studying in tourism and hospitality department due to the diverse nature of these students, the experimental group's performance offer significant insights into the effectiveness of using clickers, specifically *Kahoot!*.

6. Limitations of the study and final conclusion

This study presented some limitations which need to be addressed in further research. First of all, the participants of this study were composed of two intact classes regarded as control and experimental groups. Thus, larger sampled and randomly assigned groups may be employed with the inclusion of a delayed post-test in further research. Moreover, the results of this study were limited with the overall language performance of the ESP students in the field of tourism. However, the data regarding the average time to answer the questions, students' attitude and motivation as well as their willingness to take part in communication and activities in ESP classes may provide significant results for the researchers in this field. In addition, longitudinal effects of the use of clickers and students' as well as instructors' views may also be investigated in order to offer a better insight.

As a final remark, clickers may be used as a supplementary tool to enhance performance of ESP learners in the field of tourism and hospitality. Taking the results of the present study into account, course designers and authors responsible for creating ESP books may benefit from clicker use in the iTools sets of the books by allocating more clicker use instead of providing just videos of the related topics. Considering the effectiveness of using clickers in the results of this and many other studies, ESP teachers may be urged to use them in their classes.

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MOBILE TEACHING AND LEARNING ENGLISH – A MULTINATIONAL PERSPECTIVE

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Abstract

The purpose of this paper is to examine how effective mobile devices are in the process of teaching and learning English through the perspective of university students. The research is aimed at finding out whether using mobile apps for learning purposes, in particular, for learning English is of interest for students and look at potential ways of learning the language. It also aims at exploring potential of educational applications downloaded to students' mobile phones in terms of their integration into the classroom activities at university for the purposes of learning English. To fully conceptualize the research in mobile teaching and learning, the authors addressed the mentioned problem by using Google Forms. An online questionnaire was created and sent to students with responses collected in an online spreadsheet and was further analyzed by the authors. 102 representatives from 16 countries who study at 4 universities located in Poland and Ukraine took part in the survey. To link the reported mobile device use obtained from the questionnaire and its actual use for language learning the follow-up interviews for the subset of students were conducted with the relevant conclusions drawn. The issue of using mobile devices in the process of university study as an educational tool was investigated and proposed to potentially expand perceptions of tutorial experience of how we view teaching and learning English.

Keywords: mobile teaching and learning; mobile devices; educational apps; university students

1. Introduction

The importance of learning English nowadays is indisputable. Many scientific articles and studies of individual scholars as well as those of recognized international organisations are devoted to this topic (Council of Europe, 2001; Berns, 1995; Zimmerman, 1997; de Caro, 2009; LaVelle, 1996; Tan, 2016). There are different ways of teaching and learning English. When it comes to the traditional methods they are still adhered to in many universities and schools and often boil down to teacher-centred classroom environment and memorization.

However, nowadays technical devices significantly contribute to our perception of the surrounding world, how we share knowledge and learn enabling us access the required information sources on an on-going basis. We enjoy unprecedented instant access to

expertise, from informal cooking lessons on *YouTube* to online university courses. Every day people around the globe are absorbed in exciting new forms of learning, and yet traditional schools and university systems are still struggling to leverage the many opportunities for innovation in this area (Fabio, 2012).

In our era of technology and the Internet digital aids provide more opportunities for teaching and learning English. Using various technical means has been gaining more and more relevance in the recent years. As it is stated by UNESCO, mobile technology is changing the way we live and it is beginning to change the way we learn (UNESCO, 2017).

Using smartphones for the learning purposes has a number of advantages and beneficial aspects including independency of learning, creating your own curriculum and a schedule of studies, etc. Learning can unfold in a variety of ways: people can use mobile devices to access educational resources, connect with others, or create content, both inside and outside the classroom (UNESCO, 2017). Using mobile devices and apps helps learn English on the go and contributes to making progress in that.

2. Literature review

Much research is devoted to the topic under the present study (Segev, 2014; Norton, 2014; Lynch, 2015), etc. For the purposes of our research, we are going to provide an overview of the literature produced in the past decades and make a synthesis of current thinking in the field.

The term ‘Computer Assisted Language Learning’ (CALL) became established in the early 1980s and is highlighted in a number of works (Levy, 1997; Warschauer, 1996; Gimeno-Sanz & Davies, 2010; Felix, 2008; Hong, 2010; McMurry, Williams, Rich & Hartshorn, 2016). Apart from volumes and journals on the shape of CALL, there are a number of other initiatives in teacher education that demonstrate a growing interest in the use of technology in teaching and learning English (Thomas and Reinders, 1988; Thorne & Smith, 2011; Dubois & Vial, 2000; Smith & Craig, 2013; Jewitt, 2001; Hubbard, 2013; Akobirov, 2004). Many recent studies also explore the said topic by looking at specifically instructed use of technology for completing language tasks and how these instructions are interpreted with more spontaneous, self-initiated use of technology resources (Dooly, 2018), finding out how learners of English use electronic dictionaries with regard to pronunciation practice and improvement (Metruk, 2017).

Currently mobile-assisted language learning (MALL) is a rapidly growing field. Researchers discuss curricular options for the assimilation of mobile devices into settings of

formal learning (Pachler, Cook & Bachmair, 2010), as well as investigate the relevant learning theories underpinning the current mobile apps for English speaking learning and the pedagogic features of these apps (Guo, 2014). Also, previous studies focused on using particular mobile applications in learning a language (e.g., *Duolingo*), exploring the possibilities this app offers for learning a second language (Nushi & Hosein, 2017). Since this app tends to be selected by the majority of the students who participated in the survey below, this is why we paid special attention to the available research in this field as well.

However, the evaluation of using mobile apps for English learning from language learners' perspective is still at the early stage. Most studies investigating the use of mobile devices in language instruction in higher education look at its effectiveness from the perspectives of language professionals and researchers. There are not many studies uncovering the students' perspectives on using the mobile technology. However, the students' input regarding how they perceive mobile apps in their learning process seems to be valued and is to be considered essential for implementation of any instructional intervention. Therefore, in the light of current learning theories this study intends to analyse and evaluate the modern mobile devices and how effective they are for teaching and learning English through the perception of the university students – both based on their declared perception and in practice.

3. Methodology

In this study, we employed a mixed method approach: quantitative (statistical analysis of questionnaire data) and a qualitative analysis of the received replies to address the assumptions under research.

3.1. Objectives and research context

As mentioned above, we explored perceptions of learners of English as a foreign language on using mobile technology in the process of language learning and teaching.

In this paper, the author seeks answers to the following research questions:

1. How do students use mobile apps and educational technology tools inside and outside the classroom?
2. To what extent do they use them?
3. What mobile apps do they prefer?
4. What suggestions do they have regarding using the above for the purposes of learning English?

5. To what extent do the students find their language learning is enhanced by the use of the said technologies in practical terms?

The significance of the study is supported with the assumptions as follows:

- the received findings will make up the basis and support decisions for introducing mobile devices into the process of mastering the language;
- the expected conclusions will help adjust the university approach to teaching and learning in general and English, in particular, through implementation of the initiatives;
- the interpretation of the obtained results will contribute to the creation of the future research design for deeper investigation of the area.

The data under analysis are the responses from the participants for over a period of 14 months (the first *Google Forms* reply was received on February 26, 2017 and the practical use of the mobile learning and teaching English was reviewed on April 22, 2018), which included online and offline communication as well as follow-up interviews completed by the participants.

3.2. Design and procedure

The research was done according to the following step-by-step plan:

Step 1. Creating a questionnaire

Step 2. Disseminating the questionnaire among students

Step 3. Collecting data through the *Google Forms* with their further processing

Step 4. Conducting a follow-up interview with a subset of the students

Step 5. Reviewing the actual use of educational mobile devices/technology tools in language learning against the reported technology use (obtained from the questionnaire data)

Step 6. Analysing the findings and coming up with conclusions on using the mobile device in the teaching and learning English process

As a data collection instrument a survey questionnaire was developed which incorporated questions aimed at finding out some relevant information on the students' habits, opinions and preferences. The research was conducted using *Google Forms*, which were embedded at the beginning of the study to serve as an instrument for creating customized forms, sending them out to students and tracking all their responses in one place.

The students received an email containing instructions related to their participation in the survey as shown in Appendix 1. The questionnaire (Appendix 2) offered the participants a series of open-ended and multiple choice questions. When completed, the questionnaire was

automatically sent to a *Google Drive* research folder, which made it possible to monitor the students' responses. Participation in the survey was on a volunteer basis with 156 students invited to take part in it. As a result 102 participants from 16 countries took part in the survey.

The sampling included the students from several higher educational establishments of Ukraine and Poland:

- University of Economy in Bydgoszcz (Wyższa Szkoła Gospodarki w Bydgoszczy), Poland;
- KROK University of Economics and Law, Ukraine;
- Kyiv National Linguistic University, Ukraine;
- Institute of International Relations Kyiv National Taras Shevchenko University, Ukraine.

Some of the participants of the survey were the researchers' students, others were contacted by the peer colleague from the Institute of International Relations Kyiv National Taras Shevchenko University, Ukraine.

As regards Step 4, conclusions regarding beneficial aspects of the approach in the context of teaching and learning English were drawn based on the findings received through collecting and analysing the survey data.

Step 5 was incorporated into the research procedure to create a link between the modern technology use reported by the students and its actual deployment in the language learning process. For this purpose a subset of the students who make up one group and study law at KROK University of Economics and Law, Ukraine, was randomly selected and contacted by the researcher as part of the tutorials. The subset included 8 participants. In order to make it more meaningful and practically anchored the students received practical tasks including preparing *PowerPoint* presentations on a required topic related to their specialty, reading texts containing professional lexis, translating separate sentences from Ukrainian into English and vice versa. All the exercises mentioned implied applying educational mobile apps and digital technology tools including web-surfing, using online and offline dictionaries, etc. Afterwards, a follow-up interview was conducted with the same subset of the students, which allowed the respondents to express their views in their own ways (the aggregated results are shown in Appendix 3). The current study generated a large amount of data and the follow-up interview was designed to revisit and crosscheck answers to some key questions in our aims. This step enabled the researcher to make certain conclusions regarding practical application of the declared educational mobile devices and technology tools reflected in Step 6.

4. Results and findings

After data analyses were completed, results were presented in Tables with comments on the most important aspects. The information is given in percentage. The results of the questionnaire are subdivided into the following sections:

- Background information
- Habits and opinions in using mobile apps for learning languages
- Preferences and interests in using mobile apps for learning purposes
- Crosscheck of responses to different questions of the survey
- Investigation whether the language learning is enhanced by the use of mobile apps
- Suggestions regarding using mobile devices for learning English

4.1. The background information

A great majority of the students who participated in the survey as volunteers were between 16 to 20 years old (64.6%). At the same time only 12.9 % were middle-aged ones who were over 25 up to 38. Availability of such an age category of respondents is due to the fact that extramural students also took part in the study and their age varied greatly.

As it can be seen in Table 1, a great majority of students who participated in the survey came from subjects on International Information and English Philology.

Table 1. Subjects in which the students are enrolled

Subject under study (the specialty)	%
Economics	7.8
English Philology	14.7
English translation	5.9
Export-oriented Management	3.9
Finance	4.9
International Business	8.8
International Communication	3.9
International Economics	3.9
International Information	24.5
Law	6.9
Tourism and Recreation	3.9
Other	11.0

When it comes to the gender of the respondents there is a significant difference between its male and female participants as 61.8% of the volunteers were female students as opposed to 38.2% of male students. This is so because in the Philology department the number of female students has always been higher. However, at the same time the percentage of male students enrolled in the degrees related to Information Management and International Information, in particular, is traditionally not equivalent to that of female students as predominantly male students choose this area of studies.

As the survey embraced students from different countries the authors wanted to list the countries involved and also the proportion of the respondents from them. Most of the students who answered the questions (75.5%) were from Ukraine, almost 7% and 4% were from Poland and Turkey respectively, 2.0% from India, while 12.0% were from other countries (Azerbaijan, Brazil, Cameroon, Cyprus, Democratic Republic of Congo, India, Moldova, Namibia, Nigeria, Russia, Saudi-Arabia, Syria, Ukraine, Poland, Turkey and Zambia).

The authors knew for sure that all the students participated in the study had access to their smart phones. That fact was supported with their responses as 98% of the respondents answered positively to this question.

4.2. Habits in and opinions about using mobile apps for learning languages

The students were asked how much time they used their mobile devices during a day. It was found out that almost 13% normally use the mobile device 5 hours a day. Almost 11% of the respondents spend all day using these devices. Almost 9% devote 4 hours to using the gadgets. 7% do it for not longer than 2 hours a day. Around 6% declared that they dedicate 10 hours and another 6% reported that they devote 6 hours and yet another 6% claimed that they do it 3 hours a day. As it can be seen in Table 2 the average time the students spend using the mobile devices is, as expected, quite high among the university students. Of course, part of the stated time is dedicated to pure communication purposes such as phone calls, but as we suppose yet a certain percentage of this time could be used to practice English skills.

Table 2. Average time the students use their mobile devices a day

Average time the students use their mobile devices a day	%
1-5	48.9
4-8	4.9

6-10	22.6
12-20	6.0
All day	10.8
No answer	2.9
Other	3.0

In relation to the time spots when students use their mobile devices, if we exclude using them for pure communication purposes, 43.1% of them said that they predominantly do it in the evening. 23.5% stated that this is mostly the afternoon time when the students use their devices. The details are shown in Table 3.

Table 3. Time spots when the students use their mobile devices (apart from calling)

Time of day/night	%
All day	10.8
All day long when I have free time/ use it instead of computer	2.0
At night	9.8
In the morning	6.9
In the afternoon	23.5
In the evening	43.1
Other	4.0

It was interesting to find out where mobile devices are mostly used by students having an idea in mind that the students spend a lot of time travelling to and from between home and the university. This is why it was assumed that a high percentage of them would choose the public transport among other answers suggested. In fact, as it can be seen in Table 4 only 14.7% do use their mobile devices mostly in the public transport. The majority of student poll (38.2%) answered that it is home, more than a quarter of respondents stated that it is the university. Based on the data obtained it is believed that applying mobile devices for educational purposes has a great potential due to the fact that the most frequent places where the students use them are convenient places for learning.

Table 4. The places where mobile devices are mostly used by the students

The places where mobile devices are mostly used by students	%
Everywhere	12.8
At home	38.2

In the public transport	14.7
At work	2.0
At the university	26.5
At cafes, coffee shops or the like	2.0
At home, at the university, in the public transport	2.0
All of the options	2.9

The students were also asked if they have any mobile applications downloaded to their mobile devices and use them for learning purposes. 76.5% answered positively to this question, around 10% were undecided while 13.7% claimed they did not use mobile apps for learning.

4.3. Preferences for and interests in using mobile apps for learning purposes

We also focused our attention on finding out which areas of expertise the students are mostly interested in when learning through their mobile apps. According to Table 5 below 26.5% of those who participated in the survey were interested in languages. Another 9.8% and 4.9% reported English vocabulary and translation respectively as the centre of their main interests. This means that we can benefit from the students' interest in linguistics and encourage them to use their mobile devices for learning purposes in the course of the university lessons. It is also worth mentioning here how diverse the students' interests were, encompassing not only economics and finance, but also social studies, international business, MBA, science, psychology, classical music, art, history, photography, teaching, international relations, news, fashion, law, accounting, marketing, as well as games and so on. Table 5 below gives information on the major areas of expertise the students are mostly interested in.

Table 5. Areas the students are mostly interested while learning through their mobile apps

Areas of expertise	%
Languages	26.5
English vocabulary	9.8
Translation	4.9
Learning foreign languages, communication skills, teaching skills, current events analysis	3.9
Grammar	2.9
Everything	2.0
None	2.0
I can't give an answer	11.8
Other	37.0

It should be pointed out that the English language skills are among those practiced by the students when using educational applications downloaded to their mobile devices for 76.5% of the respondents.

We asked the students how much time they devoted to learning English through the mobile apps. As it can be seen in Table 6, most students (33.3%) devote 10-15 minutes a day to learning English, 20.6% spend 30 minutes and 19.6% dedicate 1 hour a day to the language. If we summarize the above information we can see that 73.6% devote 10-60 minutes a day to learning English.

Table 6. Time devoted to learning English through the mobile apps

Time devoted to learning English through the mobile apps	%
10-15 minutes a day	33.3
30 minutes a day	20.6
1 hour a day	19.6
1 hour a week	4.9
All day	2,9
From time to time	1.0
I don't learn English	1.0
I don't use apps for learning English	3.9
No answer	2.0
Other	9.9
Rarely	2.0

For the research purposes we asked the students what mobile applications they use for learning English. 15.7% said that they do not use any and 11.8% did not give their answer. The rest use various ones including *Lingualeo*, *Reverso context*, *Lingvo*, *Memrise*, *Busuu*, *Google Translate*, podcasts, different dictionaries, *Multitran*, *TED*, *ABBY Lingvo*, *Lingvo Live*, *CNN*, *Facebook*, *YouTube* and others. As the obtained data show the most popular app is *Duolingo*. The students also use *Memrise* quite often. *Lingvo* and *Lingualeo* are popular ones as well among those students who use mobile apps for learning English.

We also found it useful to see what apps are used by the respondents in the connection with their language proficiency level. *Duolingo* as well as *Memrise* (15.8%) are chosen by those who claimed to have advanced language skills in 31.6% cases. At the same time, beginners and elementary students tend to use *Lingvo* and *Google/Google Translate* (22.2% each).

As regards gender, *Duolingo* again turned out to be the most popular one with 18.4% of the male participants claiming to use it while *Memrise* was the second choice of the students (5.3%). It is interesting to point out that the statistics presented in terms of using mobile apps by the male students is less than the average, i.e.18.4% is less than 20% for *Duolingo* as well as 5.3% is less than the average of 12% for *Memrise*.

At the same time the female students used a wider variety of the mobile apps for language learning purposes. Female respondents also preferred *Duolingo* to other mobile apps. The use of mobile apps by female participants is higher than the average with 23.4% for *Duolingo* and 17.2% for *Memrise* against the said average of 20% and 12% respectively.

Those students with the advanced level of proficiency train various skills through mobile apps like communication (36.8%), reading (31.6%) and listening (15.8%) while beginners and elementary students mainly work on their grammar skills (98%). This question was of a particular importance as it aims at finding out what types of skills that they would mostly like to practise through the mobile devices and the results obtained matched our expectations. As it can be seen in Table 7 communication is the main focus for almost one third of those who participated in the survey (29.4%). We presume nowadays having solid skills of speaking English is a must for those who are concerned about their career, for those who love active travelling which implies interaction with people, etc. The results of the study confirmed that the students are aware of that fact. The same percentage of the respondents voted for grammar and reading – 22.5%, 10.8% answered that listening is a skill they mostly practise and almost 5% of them are interested in enriching their vocabulary. This information should be used in practice by the teachers if they are aimed at applying contemporary technical instruments for teaching English in the classroom.

Table 7. Language skills the students mostly practise through their mobile apps

	%
Communication	29.4
Reading	22.5
Writing	2.0
Grammar	22.5
Listening	10.8
Vocabulary	4.9
Grammar, vocabulary	1.0
All skills in the list	2.9
Other	4.0

As it was mentioned before we found it useful for the purposes of our research to crosscheck responses given by individual respondents to different questions. Thus, we analysed what language skills male and female students were mainly interested in. Most male respondents prefer communication and grammar skills with 34 and 26 % respectively.

When it comes to female students, they have a wider variety of the skills they are interested in as compared to the male students. As the statistics shows, they mainly focus on communication, reading and grammar. Some also state that they practise all language skills using their mobile devices.

4.4. Investigation whether the language learning is enhanced by the use of mobile apps

We also asked the students if they believe that using mobile apps for learning English on a regular basis will contribute to improving their language skills. A great majority of them answered positively (77.5%), only under 9% negatively, while 13.7% were undecided. This shows the potential of the usage of mobile devices for educational purposes.

As regards the students' willingness to use educational mobile apps as part of practical English classes at the university on a periodic basis, 77.5% were in favour of it, 13.7% against while under 9% could not decide.

The participants were also asked to evaluate their level of English. As it can be observed in Table 8, 30.4% of them are intermediate students, meaning there is some room for their English skills improvement.

Table 8. The students' level of English

The students' level of English	%
Advanced	18.6
Upper-intermediate	29.4
Intermediate	30.4
Pre-intermediate	12.7
Elementary	6.9
Beginner	2.0

4.5. The students' suggestions regarding using mobile devices for learning English

Finally, the students shared their thoughts, ideas and suggestions regarding using mobile devices for the purposes of learning English, which are given along with the researchers' comments in the Table 9 below.

Table 9. The students' suggestions, thoughts and ideas

No	The student's statement	The researchers' comment
1	It would be useful if the apps used for learning English reminded you about the progress you've made as well as the time when to carry out some revision. Also, it would be nice if the apps designed were available for Windows Mobile platform as well.	The ideas expressed by the student are important to consider from technical point of view as they imply hints on what is to be introduced to the apps used for learning English by software developers. This information regarding the technical features of apps and operating system used among students is to be considered because it may contribute to designing and implementing of apps as educational resources in the classroom.
2	Slow voice.	As we presume this suggestion is also related to technical improvements of apps, in particular, of those that are aimed at polishing listening skills and/or enlarging vocabulary.
3	It's good for kids. I use it during my private tuitions with my preschool-age students.	As we can see the student is working as a teacher of English for preschool-age students and is using mobile apps for teaching purposes in practice.
4	Update the apps with new content part of famous movies enabling us to choose what they say.	This suggestion is also connected with technical characteristics of educational apps and contains a useful idea for soft developers to be taken into account.
5	Phones are useful for translation, it's good to learn words, read articles and listen to news.	The present comment gives another proof that the use of mobile technology in terms of learning English is increasing.
6	To improve communication between teachers and students, introduce online lessons on some topics.	This one is a practical idea from the student's perspective on how to increase efficiency of the classroom activities motivating students thereby.

5. Analysis of practical application

After conducting a survey on the students' perceptions of English as a foreign language learner on using mobile technology in the process of learning and teaching English we then made a link between the declared view of the students and the practical use of the mobile apps. In order to reach this goal a subset of students of law were encouraged to apply their mobile devices and the educational apps in the course of their language classes at the university.

The subset of the students was a random choice; it included 8 people who provided their responses to the follow-up interview questions. 8 subset students out of 102 respondents make 8% of the entire population of participants. The students were enrolled into KROK University of Economics and Law, Ukraine, and were contacted by the authors in the course of the tutorials scheduled in the spring semester 2018. They were the first-year students who study law as their specialty. A subject of Legal English for law students is included into the curriculum designed to give necessary English skills to work in a legal environment.

The participants of this research procedure received particular practical tasks including using professional vocabulary and preparing PowerPoint Presentations on a given list of

topics related to their specialty, reading texts containing professional lexis, translating separate sentences from Ukrainian into English and vice versa. Afterwards follow-up interviews checking actual use of mobile devices in the course of the language learning were conducted.

The aggregated results of the analyses are presented in Appendix 4. According to them all participants agreed that the use of educational technology and mobile apps in the language classroom increased their motivation and that they can understand language better when the teacher uses digital technology in the classroom. However, at the same time 3 disagreed that different technological devices and/or mobile apps should be used in the class to increase their motivation for learning English with the vast majority expressing their willingness to the opposite. Also, a vast majority believe that computer- and mobile-based teaching activities made the lessons more enjoyable (3 marked this as “strongly agree” and 4 – as “agree”).

We introduced a statement “Technology can be boring and unnecessary” and received answers that fall under all available categories with equal percentage of those who agree (1 “strongly agree”, 3 “agree”) and disagree with it (2 “disagree” and same number of those who “strongly disagree”). This may bring us to a conclusion that using technology in the classroom should be in a reasonable amount to keep the students’ interest and enthusiasm while learning. This conclusion is supported with another statement received from the follow-up interview as all in all 6 out of 8 of the law students agreed that using technology every time makes the lesson long and boring.

Results for the statement that using mobile apps and educational technology tools distract them split into mainly categories of those who support it and disagrees with it. Saying this it is important to point out that totally 6 out of 8 of the respondents express their disagreement with it to a different extent.

Half of the participants agreed that computer- and mobile-based lessons are more enjoyable and effective than traditional lessons with additional 2 participants who strongly agreed with this statement and equally 2 who did not support it. The majority of the students (3 who “strongly agree” and 4 who “agree”) confirmed that the web-surfing they do when preparing for the English classes makes them more active in the learning process. Everybody who had undergone the follow-up interview agreed that using educational technology and mobile apps improves their English skills.

The overall data suggest a need to recognize a large necessity to introduce mobile-based lessons of learning English to support the motivation and interest of students in the subject. At the same time using technology in the classroom should be in a reasonable amount

in order not to make lessons too long and boring. However, an extremely small scale of the follow-up survey (only 8 participants) makes its results more of diagnostic than confirmatory value.

6. Conclusions and further research

In sum, the study demonstrates that over the years the perception of foreign language acquisition has evolved and undergone a remarkable shift from the traditional way of classroom teaching to a wide using of ICTs for the language learning purposes.

The current research aimed at finding out whether the university students will be interested in partial incorporation of their mobile phones into the process of learning English. The study revealed that they use their mobile devices for the learning purposes, and more specifically, for language learning. Also, the students showed their willingness to implement the initiative into the practical English lessons at university.

The survey covered a pool of 102 university students from various countries, yet, as the study suggests, there is a high potential of using mobile devices and apps for the classroom activities of preschool-age students.

We found it useful for the purposes of our research to crosscheck responses given by individual respondents to different questions. As a result, we found out that female respondents use a greater variety of mobile apps and practice more language skills as compared to male students. Also, the students with the advanced level of English focus on several language skills through mobile apps like communication, reading and listening while beginners and elementary students train mainly their grammar skills. We assume that academic teachers may use these conclusions in the classroom in order to improve effectiveness and efficiency of the English learning process.

The data received in the course of the survey gave answers to the initial research questions. The students use mobile apps and educational technology tools in- and outside of the classroom as a large percentage declared that they use their mobile devices at home, university and public transport. This fact gives some room for improvement and flexibility of the classroom lessons and may indicate the necessity for further research in the field.

We also asked what mobile devices the students prefer. We separately checked preferences of the male and female students in this regard. The survey showed that all respondents use *Duolingo* more than any other mobile apps for learning English.

In the course of the study suggestions from the students were received including introduction of online lessons on some topics for the purposes of improving communication

between teachers and students, using phones for translation, learning words, reading articles and listening to news.

We also designed and conducted the follow-up interviews for the subset of students participated in the survey in order to link the reported mobile device use (obtained from the questionnaire) and its actual use for language learning. The received data also showed that technology should be applied in a reasonable amount in order not to make lessons long and boring.

In light of these finding it may be stated that there is a great potential for introduction mobile devices into the process of university studies as an additional educational tool for motivating and encouraging students to learn English.

At the same time certain questions related to the subject of the study remain unanswered or even become more prominent. Since the research was conducted on a relatively small segment of the entire population of students (8% out of the student population volunteered to participate in the survey) more empirical studies should be conducted concerning the effect of mobile learning, the connection between the students' perceptions and the relationship between such perceptions and the actual achievement of specific skills. Such studies may contribute to a future knowledge base that will shape and improve curriculum and instruction mediated by technology.

Also, most of the students who answered the survey questions (75.5%) were from Ukraine. This fact decreases the overall objectivity of the data and as a result, of the conclusions drawn based on the above. Due to this more diverse composition of respondents is recommended in further research.

This study has several limitations as its participants were the students who came from different cultural and educational backgrounds and degrees. The information is self-reported, and factors that may influence student perceptions such as the student ability, prior experience with technology, prior language background and personality type were not considered. Therefore, the research findings may be used as reference data and cannot be universally extrapolated.

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Appendix 1. Instructions to participate in the survey

Dear all,

You are kindly asked to participate in a survey which is organized for the research purposes. The research is aimed at finding out whether using mobile apps for learning purposes, in particular, for learning English is of interest for students and look at potential ways of learning the language. It is proposed on a volunteer basis and is not personalized. The survey consists of questions; it is presumed it will take about 8-10 minutes of your time to answer them. The findings are supposed to be reflected in a publication submitted to a recognized scientific journal.

To participate in the survey please press the button below [the link to the online Google Form is given].

Thank you so much in advance to those who agree to participate in the survey for your time and for your input into the research.

Appendix 2. Questionnaire

1. What specialty are you currently studying?
2. What is your age?
3. What is your gender?
4. What is your country of birth?
5. Do you have access to a tablet or a smart phone in your daily life?
6. Do you use your device to access various apps and contents?
7. How much time on average do you use your mobile devices a day?
8. What are the time spots when you use your mobile devices (apart from calling)?
 - in the morning
 - in the afternoon
 - in the evening
 - at night
9. What are the places where you mostly use your mobile devices?
 - at home
 - in the public transport
 - at the university
 - at cafes and coffee shops
 - other places
10. Do you use any mobile apps downloaded to your mobile devices for the learning purposes?
11. What areas of expertise are you mostly interested in that you are learning through your mobile apps?

12. Are the English language skills among those you are practicing?
13. What mobile apps do you use for learning English? Please give the names.
14. What language skills do you mostly practise through your mobile apps?
 - communication
 - grammar
 - reading
 - writing
 - listening
15. How much time do you devote to learning English through your mobile apps?
 - 10-15 minutes a day
 - 30 minutes a day
 - 1 hour a day
 - 1 hour a week
 - other (please specify)
16. Do you believe that using mobile apps for learning English on a regular basis will contribute to improving your language skills?
17. Would you like to use educational mobile apps as part of your practical English classes at the university on a periodic basis?
18. Do you have any suggestions regarding using your mobile devices for the purposes of learning English?
If yes, please specify below.
19. How would you evaluate your level of English?
 - Beginner
 - Elementary
 - Pre-intermediate
 - Intermediate
 - Upper-intermediate
 - Advanced
 - Native

Appendix 3. Follow up interview

Interest in Using Information Technology and Mobile Apps for the Language Learning

(4 point scale: 4=Strongly agree; 3=Agree; 2=Disagree; 1=Strongly disagree)

1	Use of educational technology and mobile apps in our language classrooms increases my motivation.	
2	Computer-based teaching activities make the lesson more enjoyable.	
3	Technology can be boring and unnecessary.	
4	I can understand language better when my teacher uses technology in the class.	
5	Using mobile apps and educational technology tools distract me.	
6	Different technological devices and/or mobile apps should be used in class to increase my motivation for learning English.	
7	When we use technology all the time, it makes the lesson long and boring.	
8	Computer- and mobile-based lessons are more enjoyable and effective than traditional lessons.	
9	Web-surfing I do when preparing for my English classes makes me more active in the learning process.	
10	Using educational technology and mobile apps improves my English skills.	

Appendix 4. Aggregated results of the follow up interview responses

#	Statement	Strongly agree 4	Agree 3	Disagree 2	Strongly disagree 1
1	Use of educational technology and mobile apps in our language classrooms increases my motivation.	1	3		
2	Computer-based teaching activities make the lesson more enjoyable.	3	4	1	
3	Technology can be boring and unnecessary.	1	3	2	2
4	I can understand language better when my teacher uses technology in the class.	1	7		
5	Using mobile apps and educational technology tools distract me.	1	1	2	4
6	Different technological devices and/or mobile apps should be used in class to increase my motivation for learning English.	3	1	3	
7	When we use technology all the time, it makes the lesson long and boring.	1	5	1	1
8	Computer- and mobile-based lessons are more enjoyable and effective than traditional lessons.	2	4	1	1
9	Web-surfing I do when preparing for my English classes makes me more active in the learning process.	3	4	1	
10	Using educational technology and mobile apps improves my English skills.	4	4		

INVESTIGATING EFL LEARNERS' PERSPECTIVES ON VOCABULARY LEARNING EXPERIENCES THROUGH SMARTPHONE APPLICATIONS

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Abstract

This study investigated EFL learners' perspectives about their vocabulary learning experiences via a smartphone application. An online demographic questionnaire was used for recruiting 50 EFL learners from a language teaching channel in Telegram messenger required to use a smartphone application called Vocabulary Flashcards 2016 for a month. After finishing the sampling procedure, the participants were asked to take part in Dialang online diagnostic test to specify their vocabulary level proficiency based on CEFR (Common European Framework of Reference). The quantitative and qualitative data were collected utilizing evaluation questionnaires and semi-structured interviews respectively. The evaluation questionnaire adapted from Chapelle's (2001) evaluation criterion was used to evaluate the application from the users' perspectives. This study investigated the effects of learners' proficiency level and gender differences on using the application, and their perspectives on the negative and positive aspects of the application were also uncovered. The findings showed that the users held positive attitudes towards the application because it influenced their learning positively and provided them with both form and meaning-focused instruction, but they were dissatisfied with the app's levels and authenticity. Results of independent t-test and ANOVA respectively showed that gender and vocabulary proficiency level did not make significant difference on participants' app usage patterns. The findings of this study highlighted the users' localized needs which could be used as guidelines for customized vocabulary apps' development purposes. The study's implications for learners, teachers, and app developers are discussed in detail.

Keywords: MALL; smartphones apps; vocabulary learning; evaluation criteria

1. Introduction

Using technology has become one of inseparable aspects of life in the 21st century. Almost everybody can feel and appreciate its penetration into all aspects of life. Information and Communication Technology (ICT) by introducing smart devices enabled people to have access to knowledge and information with no spatial and temporal constraints (Sampson, Isaias, Ifenthaler & Spector, 2013). Probably the most important impetus for utilizing

technology in the process of language learning is its ability to emancipate all stakeholders from time and space limitations (Burston, 2011) and solve the time boundary problems between instructors and their students (Salleh & Binti, 2010).

Roughly speaking, this learning which is aided by technology and especially by computers is called Computer Assisted Language Learning (CALL). As Savchenkova (2003) states, “Starting in the early 60s... CALL has become a common practice of language teaching and learning” (p.1). Two positive aspects of CALL are providing learners with authentic learning materials (Martiz, 2015) and widening the potential of language learning by increasing its effectiveness and decreasing its tedium (Savchenkova, 2003). Being considered as an almost new branch of CALL, Mobile Assisted Language Learning (MALL) came into vogue with the advent of “Portable Digital Assistant (PDA) and i-Pod” (Burston, 2011.p. 57). MALL is the process of learning a language by the aid of a mobile learning device which is defined as “a handheld, portable computing instrument with Internet or some other network access, which allows for mediated activity for information access and learning in multiple contexts” (Walters, 2012, p.16).

Enhancing language learning opportunities needs special attention to the aspects which form the basis of language. One of these aspects is vocabulary acquisition. Vocabulary, as a key component of any language, has been paid considerable attention with the aim of finding techniques that foster its acquisition (Vahedi, Ghonsooly & Pishghadam, 2016). It should be noted that the role of this component has undergone changes in L2 instruction through time, which has resulted in different approaches towards its role in L2 learning (Celce-Murcia, Brinton & Snow, 2014). According to Leal Alves and de Oliveira (2014), the difficulties faced by EFL learners in vocabulary acquisition are caused by several variables. Furthermore, they believe that these variables “are somehow dependent on factors such as socioeconomic, ideological and cultural conditions beyond their own teaching/learning and the intellectual characteristics of learners” (p.51). Sanchez and Manchon (2007) asserted that there has always been concentration on the best pedagogical way in developing learners’ vocabulary or lexicon.

The vast body of literature in the area of technology-aided vocabulary learning and teaching shows some important trends that need to be summarized here. Montero Perez, Peters, Clarebout and Desmet (2015) investigated the impact of video captioning on both incidental vocabulary acquisition and video comprehension. Wang, Teng and Chen (2015) showed the effectiveness of using iPad App in English vocabulary acquisition compared to traditional methods, while more recently Vahedi et al. (2016) investigated the effect of

different gloss types on L2 vocabulary learning. The unconvincing issue about studies of this kind is that they only seek for technology's influence on participants' performance.

The advent of iPad in 2010 resulted in developing freely available computer programs specialized for mobile devices use which are called applications (apps) (Deng & Trainin, 2015). To the best of the authors' knowledge, a significant point of concern about vocabulary apps studies so far is that their main focus has been almost exclusively on evaluating the apps and tapping into participants' attitudes. It is hoped that this study's findings will pave the way for designing new apps which are tailored and customized to specific audiences' needs within countries, within races, or even within genders. However, it should also be noted that localization and customization of instructional tools, especially digital ones, does not seem an easy practice and needs time, fund, and patience investment.

2. Literature review

In this section studies in the areas of vocabulary learning, Computer Assisted Vocabulary Learning (CAVL), Mobile Assisted Vocabulary Learning, and vocabulary apps will be presented. Gui (2015) tried to find a positive correlation between EFL learners' vocabulary size and their proficiency level in a non-English context. This correlation was explored using such tests as College English Test Band-4 (CET4), College English Test Band-6 (CET6) and Vocabulary Size Test (VST). 96 male and female Chinese English learners were selected as participants. Results of the study showed that vocabulary size was highly influential in predicting learners' listening, reading, and overall proficiency. However, the researcher contented that in cases of rote vocabulary learning and lack of in-depth knowledge, participants' improvement in vocabulary size did not necessarily result in their overall EFL proficiency.

In CAVL area Stockwell (2011) compared two types of online vocabulary learning in one of which vocabulary items were provided in form of online materials selected by teachers (teacher-centered) and in the other learners themselves were responsible for compiling and entering lexis into a designed online system. Data for this purpose were collected through administering vocabulary pre- and post-tests along with an attitudinal questionnaire to elicit learners' perceptions of both systems. 55 first-year law students studying an obligatory English course were divided into "teacher-centered" (28), and "learner-centered" (27) classes. The pre-test results showed that LC and TC class members were not so different in their achievement (TC: 61.3% and LC: 61.4%). However, this difference was very sharp in post-test results as in this stage TC class members achieved 93.2% while their counterparts

achieved 85.9%. Totally speaking both tests results proved that TC class compared to LC class made greater improvement, which was because LC class spent more time on the activities. Both groups evaluated the activities as useful but LC class members held more positive attitudes towards their activities. They expressed the view that vocabulary data input was very interesting and useful.

In classroom settings smartphones and tablets started to attract attention since the beginning of the 21st century which was a consequence of introducing iPod touch and iPhone, and finally iPad (Leis, Tohei & Cooke, 2015). An investigation in mobile assisted vocabulary learning exercise was pursued by Suwantarathip and Orawiwataakul (2015). 80 EFL university learners were put into two sections of 40 students each. One section was provided with paper based vocabulary exercises and the other one was sent SMS-based exercises for 7 weeks. Before starting the study the students were examined with a pre-test to realize their proficiency level which was then covered to be at the same level. In the parallel pretest the score mean of experimental group (33.25) was higher than that of the control group (29.70). This data revealed SMS-based exercises advantage over paper-based activities in developing vocabulary knowledge. To gain evidence of participants' attitudes after the experiment section, they were given an attitudinal questionnaire to express their opinions about SMS-based vocabulary improvement. The responses revealed their overall satisfaction with the activity, their acceptance of mobile phones as learning aids, and mobile phones potential to remove spatial limitations.

Effectiveness of *WhatsApp* educational mobile application was studied in a 4-week long project by Basal et al. (2016). A pre-test and post-tests were employed to compare 50 first year English students in two equal groups. The app provided a corpus of 40 figurative idioms. Data was collected through a 40-item achievement test. Before starting the experimental phase of the study, the 40 idioms were presented to both groups' members in a pre-test to check groups' differences. Pre-test results indicated no significant differences in their knowledge. After that the control group was given learning material and activities in printed form (paper-based) including idioms' meaning, their usage example, and fill in blanks. The experimental group was provided with MMS via *WhatsApp* on their smartphones which included the idioms, their meanings, their pictorial representation, and three sample sentences followed by a test to be answered and sent back after two hours. Although both groups' immediate post-tests means improved significantly compared to their pre-test, the experimental group's improvement in the targeted skill was much greater. This implies that both traditional and technology-based instructional tools indeed resulted in better post-test

performance when compared within each group, but between groups comparison showed the app's advantage over the traditional method.

3. Methodology

3.1. Research questions

The following questions guided this study:

- 1) What is EFL learners' perspective on vocabulary learning experiences through using the vocabulary application called *Vocabulary Flashcards 2016* at different levels of vocabulary proficiency according to CEFR?
- 2) Do gender and proficiency differences influence learners' app usage patterns during vocabulary learning experiences using the app?
- 3) What are learners' perspectives on the advantages and disadvantages of their learning experience with the app? What are their suggestions for making the app more efficient?

3.2. Research methodology and data collection instruments

Following a mixed-methods approach to research, this study combines qualitative and quantitative methods. Based on Dörnyei (2007) the mixed-method type used in this study was "questionnaire survey with follow-up interview or retrospection" (p.170). For the quantitative part the data was collected through questionnaires while semi-structured interviews were utilized to collect qualitative data.

The first instrument used in this study was the demographic questionnaire. This online English questionnaire retrieved from <https://www.surveymonkey.com/r/SCDCJMH> (Appendix A) was distributed prior to starting the project. It was designed in *Google Docs* service and shared to the channels' members by providing them with the link and a brief introduction to the study's design and purpose.

The other instrument was an online diagnostic test called *Dialang* available at <https://dialangweb.lancaster.ac.uk/> sent to the participants via a *Gmail* group called 'vocabulary team'. This team included those who completed the demographic test and provided the researchers with their emails for further contact. Designed to determine language learners' proficiency level in 14 European languages, *Dialang* use for purposes other than diagnosing like granting certificates or employment purposes is rejected by its developers. The test in each language section is divided into three parts after which the examinees are assigned into different proficiency levels. Learners' proficiency in different language

components (grammar, vocabulary) and skills (listening, reading, writing, and speaking) is diagnosed through scores related to the *Common European Framework of Reference for Languages* (CEFR). Based on these scores the examinee is assigned into one of CEFR level from A1 (the least proficient) to C2 (the most proficient). Participants were requested to complete the vocabulary test and then inform the researcher of their levels via email. After that they were divided into three groups based on the test results. Group A included A1 and A2 levels (elementary), group B included B1 and B2 levels (intermediate), and group C included C1 and C2 levels (advanced).

Vocabulary Flashcards 2016 as the targeted vocabulary learning application was another instrument to be installed on participants' smartphones and used for a month. In this app high-frequency English words (in total 1,200 words) are divided into three groups based on their difficulty level (easy, medium, and hard). Each entry includes pronunciation, meaning, contextualization in a sentence, semantic relation (synonym, antonym), and a memory trick for better memorization. For each level quizzes are designed and after their completion the user is informed of her/his right and wrong responses. While taking the exams immediate feedback is provided after each question. The final feedback specifies all answers as right or wrong, and in the latter case the correct option is provided again. The users' control over the app includes selecting the words to be ordered alphabetically or randomly, and opting to be shown either all words from the selected level or alternatives such as seen words, new words, and learnt words. Words can be bookmarked for easy access by tapping on a like symbol. By tapping each level the studied words can be recognized from new ones. To be sure that the participants studied the words of their level, the researcher requested them to send screenshots on app's pages in which the words that were not studied were marked as new (Appendix B).

The main instruments for collecting data were a questionnaire and an interview, the purpose of which was evaluating the application and tapping into its users' attitudes and perceptions towards it after one month of usage. This questionnaire was designed in a 3-point Likert-scale format in Persian (Appendix C). The first section included instructions, the second part included providing personal information and some questions about manner and amount of using the app. In the last part the items were in the form of statements followed by three options ('yes', 'somewhat', 'not at all') to be selected by respondents. The total number of items other than those which were about personal information and proficiency level were 17. These statements were designed based on evaluation criteria proposed by Chappelle (2001) and adapted from Jamieson, Chappelle and Priess (2005), including language learning

potential, meaning focus, learner fit, authenticity, positive impact, and practicality. The justification for using a three-point Likert scale was the relative similarity of these two studies in nature. The mentioned criteria were used intact but the items were changed to be suitable for current study purposes.

To assure content validity of the questionnaire the researcher compared it to the similar questionnaire used by Jamieson et al. (2005), which resulted in ensuring the content validity on part of the researcher by realizing that the responses to the items were not affected by any other factors. A common way of measuring questionnaires' reliability is using Cronbach Alpha coefficient. To measure reliability, each response was assigned a scale and then put into the Cronbach's Alpha formula in *SPSS* software version 21. The reported coefficient index was .81 which is considered reliable for this questionnaire.

Questionnaire piloting was conducted to get rid of any ambiguities and pitfalls and evaluating its appearance, clarity, and answering time (Dörnyei, 2003). It was administered to a sample of 5 persons not included in the study and based on their verbal opinions and their answering time modifications were applied. These modifications included changing some ambiguous and loaded words. The final versions of the questionnaires were administered in two ways. The researcher prepared some hardcopies to administer them to those participants who were known and nearby. For those participants who were not available, a file containing the questionnaire was sent via their *Telegram* accounts.

Interview questions (8 items) were extracted from the questionnaire items indirectly but they were not identical. Although the questionnaires were distributed to all the participants, only 2 representatives (one male and one female) from each group (A, B, C) were interviewed voluntary (in total 6 persons). Questionnaire piloting was done by asking the items from three nearby participants who did not volunteer to take part in the main interview. Accordingly ambiguities were removed or modified. The interviews were conducted in Persian to hinder any misapprehension between the interviewer and the interviewees. *Skype* call service was the channel for conducting interviews with two participants, while others were available for personal performing. Each interview was audio recorded for further analysis. Finally, each interview was transcribed, translated into English, and then analyzed using thematic analysis.

3.3. Participants

English teaching public *Telegram* messenger channel called @drebadietofl was targeted as a recruitment source for participants' selection. The justification for this selection was that the

participants had joined the channel in order to improve their English proficiency and this channel provided them with rich material including useful vocabulary so they seemed eager to improve their vocabulary learning. The members were required via an online demographic questionnaire yielding data about their age, gender, education, field of study and email. Out of the 55 submitted questionnaires, all the respondents were selected as the final participants in the study. These participants were both male and female, their age ranged from 20 to 45 years, and all of them had university degrees in different fields of education. From among them, 5 did not answer the emails and were excluded from the study. Filling in the demographic questionnaire did not cause any obligations to continue participating in the study. After one month of using the app, the researcher sent them the online evaluation questionnaire.

The following table represents the demographic information of the questionnaire participants.

Table 1. Demographic information of the questionnaire participants

Gender	N	Age Range		Vocabulary Proficiency Level	N	First Language	N	Academic degree	N
Male	19	Max	44	A	10	Persian	50	BA	24
Female	31	Min	20	B	22			MA	25
		Mean	28	C	18			Ph.D.	1

The interview participants were not different from the questionnaire participants, that is; two participants were selected to be interviewed from among each proficiency level.

3.4. Data analyses

The first two research questions were answered using data obtained from the evaluation questionnaire. *Statistical Package for the Social Science* (SPSS) version 21 (descriptive and inferential statistics) was used to process the quantitative data. The questionnaire items were analyzed in this way to see how many of the participants had selected each option for each question and then the percentage was calculated. T-test and ANOVA were inferential statistical tools used for making inferences from the selected options to questionnaire's items. For answering the last question the interviews were transcribed in Persian and then translated into English. After that they were analyzed using open-thematic coding method. Through this

method, common patterns are looked for in the transcribed data to render what is called theme (Seidman, 2006), so commonalities in thematic terms are put into a single category.

4. Results and findings

4.1. Quantitative results

As regards the first research question, only those questions which were developed based on the evaluation criteria were taken into consideration to tap into participants' perception of vocabulary learning using the app. These widely-known criteria proposed by Chapelle (2001) were used as evaluation criteria in studies like Jamieson et al. (2005) for evaluating a CALL product called *Longman English Online* (LEO). Following this approach and by references to Chapelle (2001), Jamieson et al. (2005), Hubbard (2006), and Leakey (2011) each criterion will be elaborated on and participants' attitudes in this regard will be explained.

4.1.1. Evaluation criteria

1. language learning potential

This criterion was described as the degree of opportunity the product presents for users to focus on form in a useful manner (Leakey, 2011). As Figure 1 shows, participants' attitude towards this criterion in reference to the used app is rather favorable as more than two thirds of them selected either the first or the second option. In line with this finding, Bensalem (2018) found that EFL learners who used WhatsApp enjoyed more vocabulary learning compared to those who did not use it.

2. meaning focus

While the previous criterion emphasized focusing on form, this one is more in favor of focus on meaning. This means that both form and meaning should be taken into consideration in instruction. This criterion states that when the learner is learning a language via CALL or MALL products, his/her attention should be directed toward the meaning of that language (Leakey, 2011). This criterion is assumed to be considered in the app used in this study as the majority of participants agreed on it. This might be due to the fact that every word was contextualized in sample sentences and its antonyms and synonyms were also provided, which led learners to pay attention to semantic relations.

3. learner fit

Learner fit criterion, as its name suggests, proposes materials to be fine-tuned to learners' characteristics. Leakey (2011) contends that an equal amount of opportunity for engagement with language should be provided for learners based on their characteristics. Chapelle (2001) argues that "learner fit refers not only to appropriate difficulty but also to appropriate instructional strategy relative to individual differences" (p.158). A quick look at Figure 1 reveals that the app was not successful in fulfilling this criterion. More than two thirds of the participants selected the third option, which was the least positive one.

4. authenticity

According to Hubbard (2006), when in instructional CALL/MALL material the learning activity corresponds to real activities out of classroom and CALL practice, that piece of material is assumed to enjoy a high degree of authenticity. Like the previous criteria this one was also negatively evaluated by the participants (72% disagreed). This implies that activities did not resemble real life activities.

5. positive impact

The impact of the CALL activity on app's users is evaluated through this criterion. In this study the participants were asked whether this product had any influence on their desire to improve their vocabulary ability and also whether it led to their search for similar apps. This criterion was the most positively evaluated with regard to the app, as 87% of learners authenticated this by selecting the first option.

6. practicality

Practicality concerns the sufficiency of resources that support using the CALL/MALL product. Furthermore, this criterion refers to the degree of learner control over the time and place of use. Based on the responses presented in Figure 1 (73% selected 'yes, very much'), it is inferred that practicality of the app was considerably high because using the app needed no specialized skill on the part of users, and did not need network for operation.

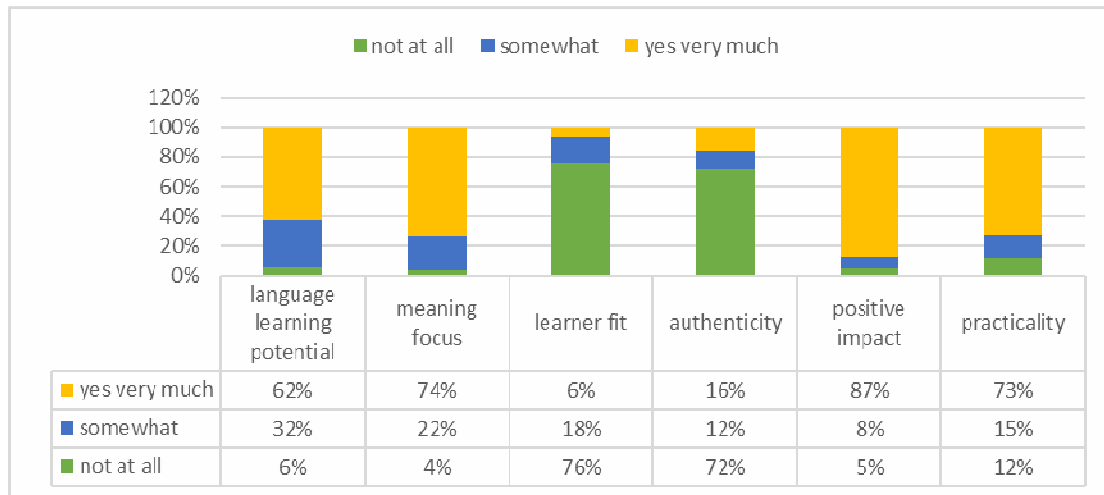


Figure 1. Learners’ attitudes based on the evaluation criteria

4.1.2. Gender and proficiency influences

The second research question was aimed to determine the influence of gender and proficiency level on app usage patterns during vocabulary learning experiences using the app. The results of t-test and ANOVA are represented in Tables 2 and 3 respectively.

Table 2. Group statistics

gender	N	Mean	Std. Deviation	Std. Error Mean
New male	19	1.3308	.29375	.06739
female	31	1.3548	.24431	.04388

Table 3. T-test statistics

	Levene’s test for Equality of Variances	t-test for Equality of Means							
	F	Sig.	t	df	Sig.(2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	1.542	.220	-.312	48	.756	-.02401	.07690	-.17863	.13061
			-.299	32.945	.767	-.02401	.08042	-.18763	.13961
Equal Variances not assumed									

The independent samples t-test comparing the two genders in their app usage patterns shows that there is no significance difference between the genders as the $p > .05$ (.22). This finding is

in contrast to a study about gender differences in accepting CALL programs for EFL learning by Lai and Kuo (2007), who used a different program and found that male learners preferred to spend more time on this kinds of programs. As regards the use of CALL in a classroom setting Awad and Alkaraki (2013) found that gender and proficiency level were not a determining factor in shaping participants' attitudes, which is in line with the results of the current study. However, they conducted their research in self-directed vocabulary learning, rather than teacher-guided.

As for the result of the t-test the p value for ANOVA was also more than .05 ($p > .05$) so the proficiency level did not result in significant difference between groups.

Table 4. Descriptive statistics

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
A	10	1.3857	.33705	.10659	1.1446	1.6268	1.00	2.00
B	22	1.3182	.22013	.04693	1.2206	1.4158	1.00	1.71
C	18	1.3571	.27392	.06456	1.2209	1.4934	1.00	1.86
Total	50	1.3457	.26150	.03698	1.2714	1.4200	1.00	2.00

Table 5. ANOVA statistics

	Sum of Scores	df	Mean Score	F	Sig.
Between Groups	0.35	2	.018	.248	.781
Within Groups	3.316	47	.71		
Total	3.351	49			

This is in line with Kawauchi (2008), who targeted proficiency differences in CALL-based vocabulary learning experiences. The two proficiency levels in his study perceived the program called *PowerWords* as favorable. In another study by Amer (2014) those who reported the highest TOEFL score exhibited the greatest usage of a MALL product called *Idiomobile* which is somehow in contrast to this study finding. Soleimani and Morshedian (2013) concluded that more proficient participants showed more tendencies to take benefit from technology-supported instruction. In line with Maleki et al. (2015), most learners did not have technical problems with implementing technology-based vocabulary instruction as previously addressed by the practicality criterion. This was also declared as a positive aspect in the interviews.

4.2. Qualitative results

Semi-structured interviews with 6 participants were conducted in Persian in order to answer the final question. The interviewees volunteered to participate in this phase of study. Two of the interviews were conducted via *Skype* and the others were performed in interviewees' presence one by one. On average each interview lasted about 15 minutes. All interviews were audiotaped, transcribed for further analysis and coded with open-thematic coding. During the process follow-up questions were asked in order to gain more insight into participants' responses (Lai et al., 2016). Interview participants' background information and their pseudonyms are displayed in Table 6. Based on the research question the transcribed data was assigned into themes for further organization. Accordingly three themes emerged from the data:

- 1) participants' reasons for using the app which somehow implied its positive aspects,
- 2) any shortcomings in the app perceived by participants that revealed app's negatives aspects,
- 3) participants' suggestions for modifying the app.

The interview questions, the coding system and illustrative segments from interviews are presented in Table 7. The 8 guiding questions were extracted from questionnaire's items indirectly. The aim was to gain further insight into app users' recommendations for alleviating its shortcomings.

- 1) *What was something specific that you enjoyed about this vocabulary learning application?*
- 2) *What were some specific concerns or difficulties that you had during using this application?*
- 3) *What were your typical approaches to studying and the average effort you put into each lesson?*
- 4) *Were different parts designed in accordance with your expectations?*
- 5) *Were the words in different sections taught in a good way?*
- 6) *What is your overall evaluation of this app?*
- 7) *Is there any way to redevelop the app into a more efficient version?*
- 8) *How different learners' needs can be satisfied by this app?*

Table 6. Interview participants' background information

Background	Gender	Proficiency level	Major	Amount of app use per week
Pseudonyms				
Sara	Female	A	Philosophy	1 hour
Farhad	Male	A	Arabic Literature	1.5 hour
Simin	Female	B	Statistics	2 hours
Dana	Male	B	IT	4 hours
Hoda	Female	C	TEFL	4 hours
Reza	Male	C	English literature	7 hours

Table 7. Themes, codes, and segments extracted from interviews

Themes	Codes	Segments
Positive aspects	a) systematic	<ul style="list-style-type: none"> • Being in flashcard form (3) • Leveling the words (2) • Recognizing seen words, new words, and learnt words (2) • Showing words in sentences (3)
	b) up to date	<ul style="list-style-type: none"> • Developed in 2015 and updated in 2016 (6)
	c) easy to use anytime anywhere	<ul style="list-style-type: none"> • Smartphones are portable (5) • Does not need network for operating (2)
	d) included exams	<ul style="list-style-type: none"> • Exams were followed by feedback (3)
	e) vivid explanations	<ul style="list-style-type: none"> • Explaining words in fluent English (2) • Providing synonyms/antonyms (3) • Providing memory trick (1)
Negative aspects	a) levels	<ul style="list-style-type: none"> • Fuzzy boundaries between levels (4) • Easy level was not suitable for basic learners (3)
	b) tests	<ul style="list-style-type: none"> • Were only of one kind (4) • Did not provide comprehensive feedback that would lead to improvement (3)
Recommendations for making the app more efficient	a) changing way of presenting material b) including some other elements	<ul style="list-style-type: none"> • Putting words in form of paragraphs (3) • Putting words in form of dialogues (3) • Putting related words in a lesson format and giving instructions for study (2) • Adding photos (6) • Adding phonetic symbols (6)
	c) implementing variety in test	<ul style="list-style-type: none"> • Including fill in blank tests (2) • Including open-ended questions (2) • Including bilingual translation (1) • Providing feedback in form of hints and tips (4) • Adding game quizzes (1)

4.2.1. Positive points

Almost all interviewed participants held positive views about their vocabulary learning experiences using the app. These points included the following aspects which will be followed by related interview segments.

1. Systematic presentation of material, providing different information for each entry, leveling words, and allowing for organization of studied and new words

Simin was a student bored with keeping up with paper-based vocabulary learning:

It was very interesting for me to find a vocabulary app which is designed in form of flashcards. I used to write down new words on one side of white papers and on the other side I wrote its equivalent in Persian. Because it was hard to keep big papers this small flashcards did not allow me to write monolingual explanation and this bilingual method of vocabulary learning caused little, if any, improvement. (Simin)

The traditional method of writing a long list of vocabulary along with students' first language equivalents was regarded as an inefficient way which did not lead to deep knowledge of words. This participant had somehow negative attitudes towards vocabulary learning, which changed after using this app. This attitude shift from negative to positive after using a certain product was also found by Tabatabaei (2012). Similarly, in another study by Shafeii Ebrahimi (2016) the participants of interviews declared that they preferred using those kinds of language learning materials which are integrated with technology instead of old-fashioned printed ones. This can be due to learners' unsuccessful experiences in target skills development while using traditional methods:

In traditional paper-based vocabulary learning when I was preparing myself for Konkor exam, I had no idea of how to use words in sentences because I was taught and practiced with a long list of words along with their Persian equivalence either on blackboard or in book to be memorized. This app by contextualizing the words in sentences allows us a deep practice. (Dana)

2. Being systematic in word categorization

In past when I resumed my vocabulary practices, I had to search all papers to find those words that I had not learnt or studied and this took me a lot of time. I faced this problem no more as they were recognized by different labels as seen, new, learnt. (Hoda)

Other positive points declared by these participants were app's being up to date, its easy way of using, including quiz section, and vivid explanations provided for each entry. The title of app was a determining factor in attracting EFL learners who responded the researcher's mail to take part in the study as represented in the following extract:

When I received an email containing the link of a vocabulary app titled *Vocabulary Flashcards 2016*, I really got excited to download and use it as soon as possible. Its name implied its being updated in current year. I found it in Google Play store with some difficulties. When I saw the reviews of other users I got more interested in it....I think one of my main reasons for using this app was its operation on my smartphone which could be used anytime anywhere. (Hoda)

Another reason expressed by participants was their dissatisfaction with previously used apps which could not be used as easily as this one:

I had downloaded a lot of apps before this one but most of them were not possible to be used at all times and in all places. This shortcoming was alleviated here as no network was needed for working with app's different parts except for pronunciation. Besides these some of previously download apps in my mobile phone either did not contain any examination or did not divide words into levels. (Farhad)

Feedback provision after taking the quizzes was of interest for a level A participant:

The quizzes were very interesting for me because at the end I was informed of my wrong and right answers. Even the meanings that I selected wrongly were assigned to related word. I think providing feedback just after a test is very effective in memorizing the material. (Sara)

The app was useful for the study's teacher participant in order to respond to his learners' needs:

I am studying and teaching TEFL and so I should constantly be in contact with this language otherwise I will face many problems in my career. As my students are in advanced level and ask for new words' English translation or equivalence, this app was a good help for me. I introduced them this app as the explanations were really vivid and contained synonyms and antonyms for each word. It would definitely be said that it can function as a 2 in 1 dictionary. (Reza)

4.2.2. Negative points

Besides mentioning a fair number of positive aspects about the app, negative aspects had also been discovered by them. These negative points were targeted to the quiz part and problems with levels.

1. Unsuitable division of words in each specified level

In answering first research question, it was realized that learner fit criterion was the most negatively evaluated one which was mostly unfavorable for least proficient participants:

I know a limited range of vocabulary, when I was introduced this app it seemed to be a good opportunity for improving my proficiency. Before that I had not struggled in this regard because I believed I do not need it. When I clicked the option learn words and I was given options about the levels labeled as easy, medium, and hard my motivation was doubled. I was expecting basic and more frequent words for easy level but to my surprise they were not so

easy and I really lost my motivation to use it very much. Even if I wanted to spend more time on it I could not, because sometimes practicing a single word took me so much time that I got bored to continue. (Sara)

Even intermediate participants did not assume the words to be at appropriate defined levels:

At early days of downloading this app I set a plan to start from the easy level until I progress to the hard one. But when I took a quick look at words I came to realize that there could not be put a boundary between the three defined levels. In my opinion all of them should be divided into two levels and be labeled as intermediate and advanced. (Dana)

The participant teacher, though satisfied with words' explanations, did not like the exams:

“An app through which one can both learn words and test himself is a strong point for attracting users. One of my reasons for using the app was this capability. But the tests were very monotonous. I mean the learner was only given a decontextualized word followed by 4 options one of which had to be selected. In this way a mere memorization could result in correct answers for all questions and could give learner the impression that she/her had made a great improvement.” (Reza)

This was also expressed by Hoda as she thought just knowing meaning cannot result in vocabulary improvement:

I liked the way of teaching words in this app but the way of testing was not desirable. I think just knowing the meaning of a word cannot lead to its mastering and sticking in one's memory. (Hoda)

Although the provided feedback at the end of each test was interesting for participants like Sara, for others this feedback was not considered as so helpful.

Always after taking part in a test I look forward to receiving my score and my teachers' feedback in form of her comments especially in writing tasks. It was a strong point that this app contained such a system to inform me of my wrong and right answers. But in my opinions the provided feedback was not so helpful to lead to a significant improvement. (Dana)

4.2.3. Suggestions for improving the app

Finally, the participants' suggestions for improving the efficiency of app were elicited. As learners are thought to benefit the most from app development projects (Lindaman & Nolan, 2015), their suggestions can be useful in this way.

1. Adding more elements in words' presentation and more test types

2. Increasing the amount of contextualization of words

As I mentioned previously the explanations provided for each entry were very helpful but many other ways can be implemented in order to further this efficiency. In my opinion if words are first put in a sentence and then in a paragraph it would be very helpful. In this way more focus on meaning is achieved. (Simin)

Reza, the teacher participant, was more in favor of an authentic way of contextualizing words:

I often ask my students to form a group of three persons and use new words in form of a dialogue then perform it for others. I think using this method, I mean putting words in dialogues, can be a good idea. (Reza)

A level B participant suggested a more organized manner of word instruction in the app:

I studied most of this app's words and I came across words which were related to each other in semantic terms or appearance. I think it is a good idea to put these words in weekly or daily lessons. For those words that are similar in appearance instructions and hints can be provided in order not to mix them or their meanings. (Dana)

Alghamdi (2016) stated that many learners are multimodal in their learning style which means that diverse modalities in combination are conducive to their learning. In the following extract Sara indirectly pointed to different learning styles:

Some learners have a good visual memory and including visual material to instruction can be very helpful for them. (Sara)

Sara's point was also expressed by the teacher participant:

In learning eyes can function as very helpful tools. For example some of my students are very good at dictation and when I ask them the reason they say they memorize the form of words while writing them. Because English orthography system contains some exceptions and in all cases sound-symbol correspondence cannot be found I think adding pictures is a very helpful idea. (Reza)

3. Adding words' pronunciation

Although the app was useable anytime anywhere, pronunciation was not paid much attention in it. Below Farhad's suggestion can be seen in this regard.

As I mentioned in response to previous questions, this app was very easy to use regardless of time and place. As some of the words were totally new for me and I had never seen before, I had no idea about their pronunciation and I even could not guess about it. The problem in this regard was that only if my phone had any network connection the pronunciation was able to be reached. One way to solve this problem is adding phonetic symbols. (Farhad)

4. Adding challenging quizzes (suggested by more proficient learners)

I really like quizzes on the conditions that my abilities are challenged. I think this was not taken into consideration in this app. All the quizzes were in one form. I think filling in blank questions followed by four or more words can be another form to be added here. (Hoda)

Inclusion of learners' mother tongue was favored by level A participant Sara:

For EFL learners like me who have a very basic knowledge of vocabulary knowing the Persian meaning of words is of prime importance. If in learning words and exam sections Persian meaning can be included I will continue using it with more interest. (Sara)

The teacher participant suggested a new method of quiz in mobile apps which needs an advanced operating system:

I think if the app can be designed very smart it can also include open-ended exams in which the user is required to provide more than two one word or even a sentence as the response. (Reza)

Maybe this last suggestion can be considered as a dynamic assessment approach to be implemented in the app's quiz section. This consideration can be justified because the proposer is a graduate of TEFL:

Providing feedback in form of some mediation while taking the quiz is a helpful idea to improve the exam section. For example if the learner chooses the wrong answer, the right answer will not be revealed on the spot. I mean that some guidance be provided to the learner to make more guesses. This can also be done by adding games which are more exciting. (Hoda)

As these extracts from interview data showed, almost all the participants held some positive views about this app's different parts. Besides possessing remarkable advantages, also some limitations inherent in the app were mentioned by interviewees. Dissatisfaction with the levels difficulty range was said to increase learners' fear of language and also decrease their efficient functioning in language teaching (Lai et al., 2016). According to Javdani et al. (2011), facing difficulty in this situation results in perceiving the tool to be unhelpful for independent and autonomous learning.

Different expectations were reported by participants at different proficiency levels. While intermediate-level students were in favor of mixing Persian and English for instruction and assessment, other interviewees preferred more challenging strategies to enhance their vocabulary proficiency via apps. It has been revealed by language teachers that diverse media provision by CALL and MALL aids learners' to acquire more language (Lindaman & Nolan, 2015), which was suggested by the study's participants in the form of adding pictures. Another widely suggested idea in this regard was showing pronunciation by using phonetic symbols. This is in line with Maleki et al.'s (2015) study, in which more than two thirds of participants agreed (52.5%) or strongly agreed (17.5%) that technology-supported vocabulary learning can be of more interest and usefulness if pronunciation of words is provided. The preference of users for adding pictures, changing way of presenting the material, and inclusion of more exam types were new suggestions not encountered in the literature.

5. Final conclusions and implications for the future

This study was an attempt to address EFL learners' needs to improve vocabulary learning with the aid of technology. To address the issue three research questions were developed to be answered in a mixed-methods approach design. The first two questions were answered using

data collected via questionnaires and analyzed in quantitative terms, while the last research question was answered via semi-structured interviews conducted with two volunteers (one male and one female) from three different proficiency levels.

Quantitative results of the study showed that all participants, regardless of their age, gender, and proficiency level, held positive perspectives about *Vocabulary Flashcards 2016*. The most positively viewed criterion regarding the app was its positive impact (87%) while the most negatively viewed one was learner fit (6%). Results of t-test and ANOVA showed no significant difference as regards gender and proficiency level in terms of participants' preferences and app usage patterns. Most interviewees shared similar positive and negative viewpoints and also suggested similar ideas except for adding game quizzes, which was only proposed by a level C female.

The findings can be useful for EFL learners in all proficiency levels, instructors, and also app developers not only in vocabulary instruction but also when teaching all other language skills and components. Instructors learn how to change the class atmosphere to be learner-centered by asking learners' opinions about materials and material development while app developers should operationalize all these considerations. The evaluation conducted in this study intended to highlight the users' needs which could serve as guidelines for customized vocabulary apps development purpose.

Major limitations of this study were a short span of time devoted to using the app and a limited number of participants. Developing new apps or modifying existing ones is not possible unless longitudinal and more comprehensive research is conducted. The limited number of participants' evaluation of an app cannot be considered as the final judgment to its rejection or acceptance, therefore, more ideas from a diverse number of learners and teachers with different experiences need to be taken into consideration in a longer-term project.

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Appendices

Appendix A: demographic questionnaire

Dear members

I am Saba Bashiri one of TEFL MA students of Dr. Ebadi at Razi University. I humbly request you to fill the online demographic questionnaire the link of which is provided below.

The information provided by you will be used as a part of sampling procedure for my MA thesis entitled "investigating EFL learners' vocabulary learning experiences through social networks and smartphone applications" which is going to be supervised by Dr. Ebadi. Selected participants will enjoy the benefits of being provided a vocabulary learning application with 3 different levels and tests which will be helpful to improve your English vocabulary. Please note that by participating in the present study you will be informed of your CEFR level at vocabulary and also all other skills through Dialang- a free online diagnostic language testing system- . All personal information will remain confidential in this study.

To fill the DEMOGRAPHIC QUESTIONNAIRE out which takes only two minutes, please click on the following link:
https://docs.google.com/forms/d/1ZQ0CW3d_4mpSsLqEXXBm9c4uZXy3jR1eQlrPMFhKE1k/viewform?c=0&w=1&usp=mail_form_link

Gender *

female

male

Age *

20-30

30-40

40 and over

Degree

bachelors

masters

PhD

Field of Study *

Email *

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Appendix B: Words studied by participants (2 pictures per level)

Learn - Easy words

absurd Illogical or untrue, laughably foolish or false.	accomplice A person who helps another commit a crime.
accessible Able to be reached or entered.	acknowledge To show or express appreciation, one's truth etc.
acute Shrewd.	acquit
adamant Stubbornly unyielding.	addiction Condition of being addicted to a particular substance.
adapt	adhere Stick fast to (a surface or substance).
	adjacent

adulterate Not pure or genuine.	ageless Continuing forever.
advert An advertisement.	agitate Stir up; disturb.
afterlife	appreciation
awesome Inspiring an overwhelming feeling of admiration.	behaviour Manner of acting/the action or reaction of something.
bank Heap; piled-up mass; embankment; bank	beneficial Helpful; useful.
barter	

Learn - Medium wor...

pass-off Present falsely, represent falsely to be.	patriarch Father and ruler of a family or tribe.
passive Not active.	patrician Noble.
plight A condition, state or situation.	patrimony
prevail Be widespread, triumph over, gain victory	propensity A natural inclination or tendency.
procurement	propriety Rightness/justness; appropriate; proper
	prosperous

pushy Disagreeably aggressive	taint Trace of something bad, offensive or harmful
requisite Necessary quality for a particular purpose.	tantalize Excite or tease by presenting or offering something desirable.
stipulate	telltale
trivial Small and of little importance.	viable Capable of living; able to live and grow; vivid
underwrite Guarantee financial support of or provide insurance for something	vigil Wakefulness maintained for any reason during normal hours of sleeping.
unkempt	vindicate

Learn - Hard words

sullen Gloomy or dismal; showing irritation or ill humor.	tenable Based on sound reasoning.
superfluous Unnecessary; being more than is sufficient or required; excessive.	termagant A violent, turbulent woman
unsavory Tasteless; socially or morally objectionable or offensive.	unmitigated
unsavoury Not pleasing in taste/objectable.	vertigo The sensation of dizziness.
venerable	vestige A mark, trace, or visible evidence of something that is no longer present or in existence.

accretion A thing formed or added by gradual growth.	acclivity An upward slope or grade
acerbity A sharp bitterness.	accost Approach someone boldly or aggressively.
acetic	accoutre
abstinence Practice of re'aining from something.	abscission The act of cutting off something.
abstruse Difficult to understand.	absolve To pardon or remit.
accede	abstemious

Appendix C: Evaluation questionnaire

Dear Participant

This questionnaire is designed for evaluating vocabulary flashcards 2016 application. Please read the questions carefully and then select the option which is closer to your opinion. The results of filling out this questionnaire will be utilized for conducting MA thesis in TEFL. It is worth mentioning that all personal information will remain confidential. Your precise answers will be a great help in furthering study purposes and improving vocabulary instruction methods.

Thank you very much

Age: gender: educational degree:

Vocabulary proficiency level based on CEFR:

A1 A2 B1 B2 C1 C2

1) I devoted most of my free time during this month on using the app.

1) Yes 2) somewhat 3) not at all

2) Using the app was one the favorite things I could do with my phone.

1) Yes 2) somewhat 3) not at all

3) In case of developing new version of the app I will use it desirably.

1) Yes 2) somewhat 3) not at all

4) I started using the app based on a pre-planned schedule.

1) Yes 2) somewhat 3) not at all

5) I had separate schedules for using each part of the app.

1) Yes 2) somewhat 3) not at all

6) While using the app my main focus was on the form of words.

1) Yes 2) somewhat 3) not at all

7) Using the app challenged my vocabulary ability.

1) Yes 2) somewhat 3) not at all

8) While using the app my main focus was on words meaning and their contextualization.

1) Yes 2) somewhat 3) not at all

9) Words in each level were selected aptly and conveniently.

1) Yes 2) somewhat 3) not at all

10) The quizzes were designed authentically and resembled real life situations.

1) Yes 2) somewhat 3) not at all

11) The app increased my motivation to improve my vocabulary proficiency.

1) Yes 2) somewhat 3) not at all

12) The app made me optimistic about my vocabulary abilities.

1) Yes 2) somewhat 3) not at all

13) I was able to use the app anytime anywhere without any limitations.

1) Yes 2) somewhat 3) not at all

14) I was able to use the app without any specialized skill.

1) Yes 2) somewhat 3) not at all

15) I had enough control over using different parts of the app.

1) Yes 2) somewhat 3) not at all

16) Using the app made me curious to look for similar vocabulary apps.

1) Yes 2) somewhat 3) not at all

17) Provided feedback after quizzes was helpful in reminding me my weak and strong points.

1) Yes 2) somewhat 3) not at all

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