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The Role of Mobile Devices on Online EFL Skill Courses During Covid-19 Emergency Remote Education

Emrah Dolgunsöz,[1]
Bayburt University, Dept. of ELT, Bayburt, TURKEY
edolgunsoz@gmail.com
http://orcid.org/0000-0002-1277-2177

Gürkan Yıldırım[2]
Bayburt University, Dept. of Computer Education and Instructional Technology, Bayburt, TURKEY
gyildirim@bayburt.edu.tr
http://orcid.org/0000-0003-1314-0275

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Abstract

The recent Covid-19 based emergency remote education caught educational practitioners unprepared and caused learners to rely on any technology which offered them the best pedagogical solution. Since mobile devices such as smartphones, tablets, and notebooks are widely used in daily life, EFL learners also preferred to utilize them for online courses due to their undisputable mobility. However, using mobile devices in long online EFL courses is not without its limitations. This study aimed to examine the mobile experience during EFL skill courses in emergency remote education. 47 EFL preparatory class students who were attending online courses for 4 months with their mobile devices were asked to write a reflection for each skill course based on three main categories: Limitations of mobile devices, effects of mobile devices on in-classroom interaction, and device satisfaction rates. The initial findings addressed that EFL learners commonly used smartphones or notebooks for online courses rather than desktop PCs and tablets. Secondly, our results revealed various limitations for each EFL course such as limited screen size, overheating, microphone problems, and internet connection efficiency. On the other hand, although mobile devices were reported to have worked fine for in-class communication, device satisfaction rates regarding online courses were low, especially for smartphones.

Keywords: *emergency remote education, EFL, mobile devices, online course*

INTRODUCTION

Today, it can easily be observed that mobile technologies have diversified. In this context, small computers containing extraordinary computing power such as notebooks, personal digital assistants (PDAs), smartphones, and e-book readers are among the mobile technologies (Sung et al., 2016). Recent rapid and stunning developments in mobile technologies have made mobile devices an indispensable part of our lives. They have also been

Corresponding Author: Emrah Dolgunsöz, Bayburt University, Faculty of Education, room 304, Bayburt/TURKEY, Dept. of ELT, Bayburt, TURKEY, 69000. email: edolgunsoz@gmail.com

attached to education systems for more than a decade and became a crucial component of the online education experience. Mobile devices even became prominent mediums of online education during the Covid-19 pandemic. Due to the pandemic, educational institutions had to go for a global cancellation of face-to-face practice for public health and adopted a new form of distance education system called "emergency remote education" (Hodges et al., 2020). Now that education in all fields and degrees was carried out online without compromising weekly class hours and curricula. Emergency remote education (ERE) is fairly new and emergent with viable optimization caveats (Russell, 2020). It was adopted urgently due to the Covid-19 pandemic and caught most institutions and instructors unprepared. One of the most affected fields and the focus of the current study was learning English as a foreign language (EFL) which is a communicative practice by its nature. EFL practice emphasizes a social classroom environment that exists in face-to-face classrooms but not in ERE. EFL courses have a multi-faceted structure; learners need to listen, analyze, produce and practice when required which means that learners need to fulfill multiple tasks to have skill development Now learners of EFL are joining online classrooms with their mobile devices and spending at least an hour for each course and completing language tasks online. In this process, the devices they use to join EFL courses and fulfill tasks became more and more important since students rely on them for their EFL progress. Hence, the current study aimed to examine the effect of using mobile devices on EFL skill development and in-class communication along with learner satisfaction rates.

Mobile devices and Online EFL Experience

Recently, mobile devices are getting more and more popular when compared to desktop computers. For instance, more than 90% of people in developed countries now use a mobile device, while desktop PC usage is about 40% (Pew Research Center, 2017). Mobile technologies are an indispensable part of our lives and they have recently attracted the majority of the world population with their increasing capacity, processing speed, and allowing more sophisticated practice while providing great mobility. The use of mobile technologies in learning and teaching practice progressed accumulatively and improved with new technological updates. Mobility of learning also created new modes of learning experience which were more personalized, learner-centered, and lifelong (Sharples et al., 2005). The new mobile learners can have a unique learning experience without any time, place, or age limitation. In the foreign/second language learning context, the term mobile-assisted language learning (MALL) was first coined by Chinnery (2006) and differed from computer-assisted language learning (CALL) with its purely mobile dimension which enabled learners to personalize their learning experience along with spontaneous access and interaction. (Kukulska-Hulme and Shield, 2008). Mobile application services for MALL can be summarized as Mobile Social Software (MoSoSo) such as Facebook, Twitter, YouTube, or Flicker; Mobile Podcasting, Course Management Service (CMS), and Automatic Speech Recognition (ASR) such as Bing, Google Voice, Vlingo, or Siri Assistant (Kim and Kwon, 2012). In the context of MALL, mobile devices and PDAs attracted many researchers in the field as they provided easy access to information, immediate feedback, and easy interactivity (Ogata and Yano, 2005). Several studies yielded positive results on the efficacy of mobile

learning on developing EFL skills (Balula et al., 2015; Luo et al., 2015; Teodorescu, 2015; and Wu, 2015). These studies confirmed that mobile devices worked well in learning new EFL vocabulary, developing writing skills, and decreasing anxiety. With different media modes provided by mobile apps and devices, learners were found to have remembered 10% of what they have read, 20% of what they have heard, 30% of what they have seen, 50% of what they have heard and seen, 70% of what they have said, and 90% of what they have done (Klimova, 2018).

However, mobile devices and the like were not without limits. Especially for mobile devices and tablets, small screen size, limited graphic quality (Klimova, 2018), and mobile network dependence may be some drawbacks. Regarding usability, MALL practices can be negatively affected by battery life, low storage capacity, and slow downloading speed in mobile devices. (Franklin et al., 2007). Some studies found out that learners were challenged by small keyboards (Wentzel et al., 2005). Limited screen size can hinder proper viewing or cause eyestrain. Furthermore, web pages are not always designed for small screens (Bachfischer et al., 2008). Mobile devices also have limited storage and memory capacities along with limited document editing capabilities which may easily affect language learning tasks requiring typing (Shudong & Higgins, 2005). Also, the limited availability of broadband wireless access Bachfischer, Dyson and Litchfield, 2008) may hinder the MALL implementation. Most mobile devices have limited multitasking capabilities in which learners cannot fulfill multiple tasks at the same time. It may disorient learners which would surely adversely affect the learning process (Dolittle et al., 2009). Moreover, mobile phones and mobile internet services are not free. Some studies showed that both the cost imposed by telecommunications and the mobile device itself may emerge as a barrier for many learners (DuVall et al., 2007).

Because mobile device usage is common among EFL learners during the ERE period, the current study aimed to seek answers to the following questions.

1. Which type of devices was commonly used by EFL learners in ERE online courses?
2. What do EFL learners think about the limitations of mobile devices during ERE courses?
3. What were the opinions of EFL learners on the effect of mobile devices on in-class communication?
4. Were EFL learners contended with their current mobile devices regarding ERE courses?
5. Would they have changed them for better language learning gains if they had an opportunity?

METHODS

Research Design

Our study had a phenomenological qualitative design as we did not have any well-formed hypothesis on the effects of mobile devices on ERE language courses. With this design, we aimed to investigate the common experiences of EFL learners with their mobile devices. Phenomenological design fitted well to our research aims hence this design works well to arrive at a description of the nature of the particular phenomenon with no well-grounded hypothesis (Creswell, 2013).

Participants

47 learners of EFL (28 women and 19 men) age range of 18 to 21 in the preparatory class at the same state university voluntarily participated in the study. All of the learners have been attending online courses with their mobile devices 22 hours a week for 4 months. Their curriculum consisted of intensive skill-based courses; writing, reading, speaking/listening, and grammar.

The Online Reflection Questions

The instrument for this study consisted of 3 reflection questions prepared by the researchers in line with the research aims. The questions aimed to examine the efficiency and drawbacks of mobile devices used in online courses. The first question aimed to reveal limitations (if any) of mobile devices in ERE EFL courses. The second question required participants to reflect their experience on mobile devices and in-class communication during online courses. The last question was about learner satisfaction with their mobile devices. All participants were instructed to write a short reflection depending on three questions for each course (writing I, Grammar I, Speaking/Listening I, and Reading I). Hence, each learner was expected to write 12 reflections in total. All reflections were asked to be written in L1 to make the process easier for the participants. The instrument was administered online due to Covid-19 restrictions.

Procedure

The demographics and reflection-questions were prepared by the researcher(s) and validated by two other experts. We also piloted the questions with 10 senior students to ensure validity before the application. The instrument was prepared with google forms and links were send to volunteers' mail addresses. The participants were given 2 days to send their written reflections to us.

Data Analysis

Descriptive statistical analysis and content analysis were adopted in the analysis of the data within the scope of the present study. The online semi-structured interviews were analyzed by the researcher(s) and coded, categories and themes were created. At this stage, each researcher made his analysis, then these analyses were compared and a common result was produced. Due to the need to examine learners' views on mobile devices in-depth, the opinions were analyzed in detail with content analysis.

RESULTS

Finding 1: Device Preferences in ERE Online EFL Courses

We initially asked learners about their device preferences to attend and carry out ERE courses. The results were illustrated in Figure 1 below.

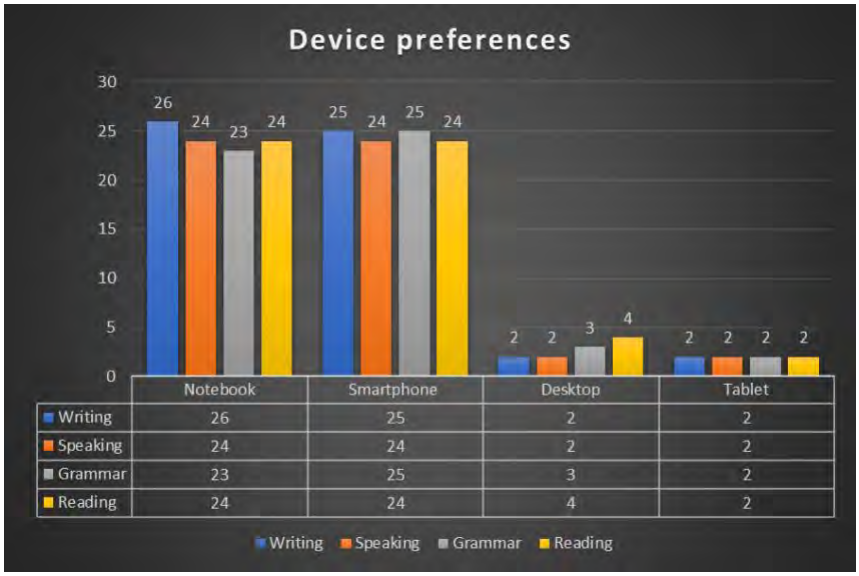

Figure 1. Device Preferences of EFL learner for ERE

When the device preferences were examined, it was observed that learners did not use a specific device for each course. They commonly used a single device for every course. The participants frequently preferred mobile devices (notebooks and smartphones) in all courses rather than desktop PCs. Tablet usage was also found to be minimal.

Finding 2: Mobile Device Limitations During ERE Online EFL Courses

Secondly, learners were asked whether the mobile device they used in online courses caused any debilitating effects or not throughout the online courses. The results were presented in Table 1.

Table 1. Limitations of Mobile Devices during ERE Online EFL Courses

	Writing		Speaking/Listening		Grammar		Reading	
	f	%	*f*	%	*f*	%	*f*	%
My mobile device has no limitation	23	46,94	21	42	31	60,80	28	54,90
My mobile device has following limitations	24	46,93	29	58	20	39,20	23	45,90
• Hardware Problems								
o Technical Problems (speed, overheating, freeze, crash)	5	10,20	5	10	3	5,88	3	5,88
o Limited Screen Size	3	6,12			6	11,76	8	15,69
o Battery Problems	3	6,12	2	4	1	1,96	3	5,88
o Multitasking	1	2,04			1	1,96		
o Speaker-Microphone Problems	1	2,04	2	4				

o	Keyboard Issues	1	2,04						
o	Sound problems (echo, sound latency, low-quality sound)			11	22	2	3,92	2	3,92
•	Internet Connection Problems	7	14,29	6	12	4	7,84	3	5,88
•	Eye Pain	1	2,04			1	1,96	2	3,92
•	Incoming Call Problems	2	4,08	3	6	2	3,92	2	3,92

Table 2 above illustrated that around half of the participants mentioned that the mobile device they used during the courses affected them negatively in all courses. Firstly, learners mentioned some technical problems, sound issues and internet connection problems in speaking/listening courses. Participants also complained about screen size problems in reading and grammar courses. Besides, freeze, system crash, overheating and internet connection problems were mentioned for writing courses. Some learners also mentioned incoming calls were problematic during all of the courses. The participants commented:

Writing

> *…since the course is more dependent on listening and taking notes, I can comfortably see the screen and take notes from each device (S39, translated by the author(s).*
> *The only annoyance is that the eyes are sore due to the small screen. Other than that, I do not see any disadvantage.*
> *Yes, there are some drawbacks. For example, when we write something in any writing software, my smartphone does not provide the flexibility offered by a desktop PC for a writing lesson. And it also causes problems due to the features of the phone…it brings me a lot of trouble. (S8, translated by the author(s).*
> *It can cause disadvantages because we are accustomed to using pen and paper in writing courses. We still need pencil and paper to collect things in our minds during the lesson. It takes some time to organize and sort things out on the screen. (S14, translated by the author(s).*
> *With a small screen and limited multitasking, the disadvantages of my phone outweigh its advantages. Although I want to get more efficient, it cannot be said that I have succeeded. (S41, translated by the author(s).*

Speaking/Listening

> *When I join online courses with my phone, it is a disadvantage in terms of my participation in cases such as receiving calls, receiving messages, notifications, running out of battery, etc. For example, someone may call while I was speaking… (S17, translated by the author(s).*
> *My phone is small and limited to multitasking. Since these are not needed only in the speaking course, I can easily participate in the course. Its microphone works fine (S134, translated by the author(s).*

Grammar

> *Since my phone screen cannot do multiple things at the same time, I have to investigate points that I cannot understand later on (S9, translated by the author(s).*
> *Yes, there are some disadvantages. I cannot make use of the slides that the teacher shared on the screen during the lesson and this has a negative effect on my lesson experience and his exam (S9, translated by the author(s).*
> *Because the screen is small and we are constantly taking notes, it is a little overwhelming. Other than that, there is no problem (S28, translated by the author(s).*

Reading

> *Yes, the device I use creates some disadvantages during the reading lesson. As I said, I cannot benefit from reading texts much because of their small screen size. The screen makes the reading parts too small to read. (S34, translated by the author(s).*
> *It causes some disadvantages. My eyes are on the screen for hours, and after a while, my eyes start to be affected negatively. (S14, translated by the author(s).*
> *No, but it drains my battery quickly because of the long lesson hours (S39, translated by the author(s).*

In sum, participants mentioned several drawbacks regarding smartphones rather than notebooks. These limitations can be summarized as small screen size, typing issues, overheating, battery life, and internet connection problems.

Finding 3: In-classroom Communication and Mobile Devices during ERE Online EFL Courses

In this research question, learners were asked about the limitations and advantages that mobile devices provided regarding in-class communication. The results were presented in Table 2 below:

Table 2. Mobile Devices and in-class Communication

	Writing		Speaking		Grammar		Reading	
	f	%	*f*	%	*f*	%	*F*	%
I have no problems in classroom communication	36	77,55	40	80	38	82,61	38	86,36
I have classroom communication problems due to…	11	22,45	10	20	8	17,38	6	13,64
• Speaker-Microphone problems	7	14,29						
• Internet Connection Problems	4	8,16	5	10	3	6,52	2	4,55
• Sound problems (echo, sound latency, low-quality sound)			5	10	1	2,17		
• Screen size limitations					1	2,17	1	2,27
• Hardware issues					3	6,52	3	6,82

As indicated in Table 2, it was observed that a majority of learners did not have any classroom communication problems. The mobile devices they used worked fine to ensure communication with the instructor and their peers. However, a small number of learners emphasized internet connection problems interrupting in-class communication. Besides, some of them mentioned that they sometimes had microphone problems. They also added that they had some minor sound problems during speaking courses. The participants commented:

Writing

> *Yes, it is enough, thanks to the microphone of my phone, which I use to participate in the writing course, I can express my opinion in the lessons and answer the questions given and at the same time, I can communicate with my friends in the class when necessary. (S40, translated by the author(s).*
> *My device is sufficient for this, but we turn on the microphone and read the homework we have done in the writing class, and then our teacher evaluates it briefly, passes it to the other friend and I think this is not enough for us. Sometimes when other friends read their homework, their voices do not reach clearly and it is difficult to understand what they are reading, and this turns into a useless waste of time for us. (S32, translated by the author(s).*

Speaking/Listening

> *My mobile device may cause a disadvantage at times. Sometimes my voice is interrupted and what I am saying is not understood. That's why the person in front of me can't understand what I'm talking about (S27, translated by the author(s).*
> *Unless the phone is frozen, it does not cause a communicative disadvantage (S2, translated by the author(s).*

Grammar

> *Yes, it is enough, but when more than one student tries to ask a question, communication becomes difficult. (S11, translated by the author(s).*
> *As in every lesson, whenever I want, I can turn on the microphone and headphone feature of my phone, express my questions and opinions, answer questions, and hear my teacher and friends (S42, translated by the author(s).*

Reading

> *Since we are constantly doing reading activities, it is hard to maintain communication for an hour on the phone. (S30, translated by the author(s).*
> *Yes, my device is sufficient. I can talk to my instructor whenever I want. I am just having trouble with the Internet connection sometimes. (26, translated by the author(s).*

Our findings in the second research question revealed nearly no limitation of mobile devices for in-class communication. Mobile devices worked well to maintain learner interaction during ERE online courses.

Finding 4. Mobile Device Satisfaction Rates

Learners were asked about their general satisfaction level with their mobile devices regarding online course experience and their ideas on replacing them for better online learning aims.

Table 3. Device Satisfaction Details

	Writing		Speaking		Grammar		Reading	
	f	%	*f*	%	*f*	%	*F*	%
Satisfied	14	30,43	20	42,55	21	46,67	18	40,91
Not satisfied, I would like to have…	32	69,55	27	57,45	24	53,33	26	59,09
• Better hardware	16	34,78	14	29,79	6	13,33	7	15,91
• A notebook	11	23,91	11	23,40	16	35,56	14	31,82
• A wider screen	4	8,69	1	2,13	1	2,22	4	9,09
• A tablet	1	2,17	1	2,13	1	2,22	1	2,27

Table 3 illustrated that more than half of the participants would change their devices if they had an opportunity. Participants were found to be least satisfied with their devices in writing courses (69.55%) which was followed by reading courses (59.09%). Participants who used smartphones commonly desired a notebook with good hardware especially for reading and grammar courses and we inferred that their smartphones could not provide enough satisfaction for these courses. Several participants mentioned that they would like to have a smartphone or a notebook with better hardware, especially for writing and speaking courses. They also would not like to change their mobile device with a tablet. The participants commented:

Writing

> *I am not very knowledgeable about this subject, but I would like a much better-quality device that works faster and has a higher storage capacity. We use our devices for a long-time during courses. Encountering problems such as the slow operation of the device both takes more time and makes us more tired. (S14, translated by the author(s).*
>
> *I am generally satisfied with my mobile device I used in writing lessons, but I would like to have a notebook since I could not provide the writing layout due to the small screen of my phone while doing my writing tasks. Although I generally do not have any difficulties while attending courses and exams with my phone, I believe that a notebook is a better choice to participate in classes and exams and to do writing assignments. (S24, translated by the author(s).*

Speaking/Listening

> *Macbook…(S37, translated by the author(s).*
>
> *I am satisfied with my devices. They are fine for me. If I had the opportunity to change it, I would prefer devices with better hardware, functionality, or storage. I would buy devices that have a wider screen because it has more positive effects in terms of following the course and functionality. (S37, translated by the author(s).*
>
> *In fact, as I said, my phone can cause problems such as message alerts or calls at the time of conversation, but I have been in that situation just once until now.*

I would replace it with a laptop if I had a chance, it would be more convenient for me (S42, translated by the author(s).

Grammar

The phone I use to join the Grammar course is sufficient for the course and it has sufficient features. However, when I need to write for the grammar assignments, I cannot adjust the writing layout. The same problem also emerges in writing courses. My problem is with the screen, it is too small. So, I would love to have a notebook. (S12, translated by the author(s).

The phone I use to enter the Grammar (Grammar 1) course is sufficient for the course, as it has sufficient features. However, when I need to write for the homework of the Grammar course, I cannot adjust the writing layout, due to the small size of the screen. So I would love to have a notebook (S23, translated by the author(s).

Reading

...I have difficulty in reading because the paragraph size exceeds the screen size, and in this case, I think it will be more beneficial for me to replace my phone with a notebook or a PC because they have a wider screen than the phone. So, I would like to replace it with a computer, preferably a notebook (S30, translated by the author(s).

I would have preferred a PC. I think it will be convenient for me because of its screen size, keyboard, and better hardware (S16, translated by the author(s).

DISCUSSION

The primary aim of the current study was to examine the ERE experience with mobile devices in the EFL context. We initially found out that EFL learners commonly preferred notebooks and smartphones over desktop PCs and tablets. Furthermore, the findings showed that these mobile devices offered some advantages along with several limitations. These limitations revolved around smartphones in general rather than notebooks. Although all mobile devices offered acceptable in-class communication, the majority of the participants would like to have better hardware or change their smartphones with a notebook or a desktop PC due to some limitations such as small screen size, hardware problems, and typing.

It has been considered that the worldwide tendency towards mobile devices has been growing, and Rambitan (2015) stated that mobile devices today acted like mini computers with their features and the functions they provide. From this point of view, we assumed that mobile devices were preferable for EFL learners since learners could perform multiple functions with a single mobile device in their online learning environment. Besides, today mobile devices are budget-friendly and have higher processing capabilities compared to their earlier versions and these advantages might have made mobile devices good instruments for online learning (Ergüney, 2017 and Singh & Samah, 2018). Albeit, our findings showed that mobile devices, especially smartphones were not without their limitations in ERE courses. We found out that limited screen sizes for reading and grammar courses were reported as problematic. Ortiz and Green (2019) stated that in addition to providing a flexible learning environment, mobile devices could adversely affect the learning experience due to limited screen size. Similarly, Yu et al., (2015) emphasized that screen size is important in performing learning activities. It can be assumed that screen size was an important factor in grammar, writing, and especially reading courses. For speaking courses, low-quality microphones were mentioned as drawbacks while typing, layout designing, overheating, crash, and freezing were reported as problems in writing

courses. Especially in writing courses, learners were required to fulfill multiple tasks (i.e., reading, analyzing, and writing) which requires a flexible device supporting multi-tasking. In related literature, it was emphasized that especially hardware competence and system use skills are important factors in the success of distance education activities (Balıkçıoğlu et al., 2019; Bonk, 2001; Eygü & Karaman, 2013; and Falowo, 2007). In this context, the lack of multi-screen use and keyboards, especially in devices such as mobile devices and tablets, did not make it possible to do more than one job at the same time or makes the process very difficult.
Also, it was observed that the participants experienced some internet connection issues which adversely affected their course performance. When the distance education process was examined, it is often stated that frequent network connection problems can interrupt learning progress (Clough et al., 2008; İşman, 2011; and Özgöl et al., 2017). It was considered that the synchronous continuation of the courses was an important factor in the formation of this problem and caused learning losses for the learners in any connection problem. It was obvious that a problem with an internet connection, which was one of the most basic components of distance education today, would deeply affect online learning activities. Hence, we assumed a direct relationship between the demands of the course, the needs of the learners, and mobile devices. A larger screen size, a high-quality microphone, a robust ethernet card, and a proper keyboard made notebooks preferable regarding online course performance.
Our results related to in-class communication with mobile devices yielded positive results. The majority of our participants reported that they didn't have any serious issues in communicating with their instructors and peers during online courses. Considering today's learner characteristics, the devices used in online learning environments were efficient mediums for learners to communicate effectively. When the literature is examined, it is emphasized that especially Generation-Z individuals preferred to carry out their communication processes online and were constantly active in these environments (Ardıç & Altun, 2017 and Chawinga & Zozie, 2016). In this respect, their familiarity with mobile devices supported a strong communicative behavior. Our results confirmed Clough et al., Scanlon (2008) emphasized that modern mobile devices, especially mobile devices, were important for learners to communicate effectively in synchronous and asynchronous learning environments. However, it should be noted that in-class communication was dependent on two basic factors: robust internet connection and a proper microphone. Some of our participants mentioned minor problems related to these issues. In case of such technical issues, learners and instructors might design their specific communicative environment which would yield some positive effects on the in-class environment.

And finally, our findings showed that EFL learners would have changed their mobile devices with a better hardware device or a notebook. Although Clough et al., (2008) stated that smartphones have computer skills as small and powerful tools, it was observed that most participants would have preferred notebooks in the ERE online courses. Indeed, learners have been going through an extraordinary and intensive online learning experience due to the Covid-19 pandemic. The courses were long and they actively use their smartphones for longer periods which naturally lead to some hardware issues such as overheating or crashing. Direct power supplied devices such as notebook or desktop PCs surely have stronger electronic parts along with better cooling systems. Smartphones are not designed for such long active use; they have smaller electronic parts with a less efficient internal cooling system. Hence, confirming our expectations, the participants mentioned opinions that favored notebook or desktop PCs in ERE online courses.

CONCLUSIONS AND PEDAGOGICAL IMPLICATIONS

Although our results indicated that the mobile devices helped to carry out the online courses and in-class communication to a certain extent, especially smartphones had some limitations such as limited screen size, typing problems and hardware issues along with internet issues. In long ERE courses, such limitations threaten online course efficiency and inhibit enough pedagogical assistance for language skills which require multi-tasking and deeper analysis of linguistic input. Hence, our final inference They do not fully meet the needs of learners, especially in synchronous online learning environments.

Within the scope of the current research, it has been observed that learners in the distance education process generally prefer high-end mobile devices with large screens and hardware. Tablets which are recently favored by the governments are not popular. In this context, it seems more effective for learners to utilize notebooks in learning activities rather than smartphones since they allow multitasking. In general, it can be proposed that internet technologies, as well as mobile technologies, affect this process significantly. Especially high-speed and uninterrupted internet service will play a key role in promoting EFL skills in the ERE period. For instructors, the following teaching implications can be proposed for a more efficient online teaching experience:

Instructors should design materials that are optimized for smartphones. Although MALL practice showed several benefits of smartphones in communication applications, an online classroom is a different experience. For reading and grammar, visuals and texts should be in short forms divided into paragraphs that fit the smartphone screens. Texts can also be divided into lines with numbers which may help learners to follow easily. Grammar exercises can be more multiple-choice forms as learners with smartphones may have some writing and screen issues especially in cloze tests. Considering internet and lagging problems, instructors should be patient in speaking and listening exercises as not all learners have a high-speed internet connection. For these courses, chat boxes may be used as support when needed. Instructors may also prefer to avoid prolonged course hours as many mobile devices have battery and overheating problems when used for long course hours. Instead, instructors may divide course hours into smaller periods and design courses regarding shorter course duration. In each of these periods, brief warm-ups may also be needed.

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