

St. Cloud State University

The Repository at St. Cloud State

Culminating Projects in Information Media

Department of Information Media

6-2021

Mobile Technology Integration for Teaching EFL/ESL: What Teachers Need to Know

Seohyun Yoon

Follow this and additional works at: https://repository.stcloudstate.edu/im_etds

Recommended Citation

Yoon, Seohyun, "Mobile Technology Integration for Teaching EFL/ESL: What Teachers Need to Know" (2021). *Culminating Projects in Information Media*. 37.
https://repository.stcloudstate.edu/im_etds/37

This Starred Paper is brought to you for free and open access by the Department of Information Media at The Repository at St. Cloud State. It has been accepted for inclusion in Culminating Projects in Information Media by an authorized administrator of The Repository at St. Cloud State. For more information, please contact tdsteman@stcloudstate.edu.

Mobile Technology Integration for Teaching EFL/ESL: What Teachers Need to Know

by

Seohyun Yoon

A Starred Paper

Submitted to the Graduate Faculty of

St. Cloud State University

in Partial Fulfillment of the Requirements

for the Degree of

Master of Science

in Information Media: Instructional Technology

June, 2021

Starred Paper Committee:
Yun Claire Park, Chairperson
Plamen Miltenoff
Marc Markell

Table of Contents

	Page
List of Tables.....	4
Chapter	
1. Introduction.....	5
Background.....	5
Research Problem.....	6
Significance of the Study.....	7
Limitations.....	8
Delimitations.....	8
Definition of Terms.....	8
Summary.....	9
2. Literature Review.....	11
Introduction.....	11
Methodology.....	11
Variables and Themes.....	12
Mobile Learning and Mobile Assisted Language Learning.....	13
Constructivism.....	14
Challenges of MALL.....	15
Suggestions for Mobile Devices Integration in Language Classrooms.....	16
Gaps in the Research.....	17
Summary.....	18

Chapter	Page
3. Methodology.....	19
Introduction.....	19
Institutional Review Board Exemption and Justifications.....	19
Methodology.....	19
Timeline.....	20
Summary.....	21
4. Findings.....	22
Introduction.....	22
Analysis of Findings.....	22
Challenges of Mobile Technology Integration in K-12 ESL/EFL Classrooms....	26
Instructional Strategies for Mobile Device Usage in ESL/EFL Class.....	28
Summary.....	33
5. Conclusion.....	34
Implications.....	37
Recommendations for Further Research.....	37
Summary.....	38
References.....	40

List of Tables

Table	Page
1 Summary of the Selected Research.....	12
2 The Analysis of the Related Research Studies.....	23
3 Instructional Strategies Suggested.....	35

Chapter 1: Introduction

Background

As a myriad of researchers have proved the positive effects on using mobile devices for language teaching and learning, mobile devices have been actively adopted in many English as a Second Language (ESL)/ English as a Foreign Language (EFL) classrooms (Ali et al., 2020; Bernacki et al., 2020; Sarrab et al., 2013; Shahrol et al., 2020). For language teaching and learning, the use of mobile devices can support differentiation of each student's learning needs (Ali et al., 2020), facilitate interaction with their peers and teachers (Shahrol et al., 2020), and reduce cultural gap among students and teachers (Sarrab et al., 2013). Various applications and websites accessible through mobile devices also allow learning to be more dynamic (MacCallum et al., 2014). These possibilities for mobile technology integration in education empower students to take an active role in the language acquisition process (Bernacki et al., 2020). However, at the same time, the use of mobile devices is often found to be a distraction for students. Network failure from weak Internet connection, limited display panel, short battery life of devices (Chartrand, 2016; Dashtestani, 2016; Ghallab, 2020; Suparjan, 2020), unnecessary use for surfing the Web and chatting or texting with peers (Atwell, 2012; Ghallab, 2020; Metruk, 2020) are only some of the factors distracting students' learning in class. These factors listed above cannot be easily solved only by a teacher's control in class.

This secondary research will look at existing drawbacks of using mobile technology in EFL/ESL class settings and provide research-based, practical teaching strategies for educators to take advantage of mobile technology. The ability of teachers to approach the mobile technology

integration through feasible strategies to control on their own in class will bring benefits for both teachers and students as minimizing the barriers and maximizing the benefits of it.

This chapter will include the background of the mobile device integration into classes and then will discuss the research questions, importance of this research study, limitations, and definitions of terms used in this paper.

Research Problem

The purpose of this secondary research study is to explore existing challenges of mobile device usage in K-12 EFL/ESL classes and to suggest effective teaching strategies that teachers can implement to make up for those limitations.

Even though many researchers have already examined several advantages and disadvantages of using mobile technology in language classroom in their study (Atwell, 2012; Chartrand, 2016; Dashtestani, 2016; Ghallab, 2020; Metruck, 2020; Suparjan, 2020), few discuss detailed solutions and practical suggestions. Because of the possibility of distraction from mobile devices, still there are significant number of teachers who are reluctant to bring the useful gadgets into their classroom (Alshammari, 2020). Moreover, most research articles about this topic- the integration of mobile technology in ESL/ EFL settings and suggestions for better use- are focused more on technical, environmental issues that teachers usually have difficulties figuring out their own, rather than pedagogical issues that teachers can resolve in class on their own.

Therefore, the research questions include the following:

- What is mobile learning?

- What are the existing/possible challenges of mobile technology integration for teaching and learning EFL/ESL in K-12 settings?
- How can ESL/EFL teachers incorporate mobile devices effectively into their teaching for K-12 students?

Significance of the Study

Despite numerous research studies focused on the impact of mobile device usage for teaching and learning languages in schools (Chiu & Churchill, 2016; Elaish et al., 2017; Pegrum et al., 2013), few studies offer effective instructional strategies for mobile devices integration into EFL/ESL setting in an organized way. Most of them are focused on identifying disadvantages of mobile technology use for language teaching and learning and several non-instructional suggestions to make up for the challenges. The focus of this study will be placed on the examination of the existing empirical research studies across grade levels to identify pedagogical strategies for the use of mobile devices adopted to EFL/ESL teaching and learning.

The importance of instructional strategy for effective use of mobile devices in class has been emphasized by several researchers (Cochrane, 2014; Rosell-Aguilar, 2017). According to Christensen and Knezek (2017), when educators acquaint themselves with possible challenges and practical methods to effectively incorporate mobile technology into teaching language, more learner-centered environment will be created. It also can lead students to meaningful academic achievement. As gathering various pedagogical strategies together in a well-organized format in this research paper, many ESL/EFL teachers may find it helpful for their effective adoption of mobile technology into their class.

Limitations

The access to several research studies were completely limited. Most articles could be available through Google Scholar, EBSCOhost, and Interlibrary Loan, but some resources were not possible to obtain through mentioned database. Some of them have not been published in digital formats and some others are published in foreign languages. The number of research studies focused on instructional strategies for mobile technology integration in K-12 settings was also limited due to the novelty of the didactical application of this technology.

Delimitations

The delimitation in this study includes the period of time selected and covered the related research articles. This research study covers a topic of mobile technology, and the ever-changing technological advance produces up-to-date information annually, even daily. Technology devices evolve rapidly. For example, the abilities of cellphones produced in 2000 and the smart phones in 2020 differ significantly. In this respect, the chosen timeframe of research articles was set from 2010 to 2020. The articles published during this period also include mobile technology integration in ESL/EFL settings using more recent mobile devices, so those can reflect current flow of the technology use in language classes.

Definition of Terms

Mobile Assisted Language Learning (MALL)

MALL refers to a subarea of mobile learning which includes the features such as “permanency, accessibility, immediacy, interactivity, situating of instructional activities” (Viberg & Gronlund, 2012, p.1). In this paper, MALL is defined as synchronous teaching and learning language in class, using mobile devices as a supplementary tool.

Mobile Technology/ Mobile Devices

Any handheld computer including smartphones, laptops, tablet PCs, E-readers with an access to the Internet.

Constructivism

The theory that knowledge is constructed by learners themselves through active interaction with their surroundings (Henderson & Yeow, 2012). Utilizing mobile technology is grounded on constructivism “since it motivates learners to be active constructors of knowledge, embeds the technologies in a realistic context, and at the same time offers them access to supporting tools” (Tran, 2020, p.38)

Challenge/ Drawback/ Disadvantage

The difficulties aroused or stimulated while teachers and students using mobile devices for teaching and learning language.

Pedagogical Method/ Teaching Strategy

Often described as the act of teaching or the way of teaching to foster learning and experiences of learners.

Summary

This secondary research study will provide a research-based, practical teaching strategies for effective use of mobile devices in EFL/ESL circumstance of K-12 schools. Researchers have reported several drawbacks of using mobile technology in class. Because of the disadvantages some educators do not even consider using it in their class in spite of its definite benefits. This research study will analyze the disadvantages currently identified and will suggest effective makeup solutions for educators. The findings of this study will also offer appropriate ways of

teaching for incorporating new teaching tools, rather than traditional existent method. In the next chapter, a review of the selected research studies on the topic will be presented.

Chapter 2: Literature Review

Introduction

The aim of this study is to provide English Language (EL) teachers with a practical avenue for effective use of mobile devices in EFL classrooms. In this chapter, the research about utilizing mobile devices in language classes, which defines as mobile assisted language learning (MALL), will be detailed. The methodology for relevant literature will be presented, and research gaps will be identified while discussing how Constructivism melted into mobile assisted language learning (MALL), what the challenges of utilizing mobile devices in language classrooms are, how educators can incorporate mobile devices into their teaching language as minimizing the limitations and drawbacks of it. The approaches to help bridge the research gaps identified in this chapter will be discussed in depth in Chapter 4.

Methodology

The related research articles were searched using Google Scholar, EBSCO Databases, and Interlibrary Loan. Keywords included “mobile devices”, “language learning”, “challenges/drawbacks” and “teaching strategies”. Research articles written within ten years (2010-2020) dealing with the topic of utilizing any mobile devices for language teaching and learning were identified first, and then those recently published were mainly chosen as considering the rapid change of the technology field. All selected articles were from peer reviewed journals and primary research, and those research studies were organized as a following matrix.

Table 1*Summary of the Selected Research*

Author	Year	Variables Considered in the Study					
		Use mobile devices	For teaching ESL/EFL	Grade levels		Challenges/ Drawbacks	Solutions
				K-12	Higher ed		
Chou, Block & Jesness	2012	x	x	x		x	x
Henderson & Yeow	2012	x		x		x	x
Bartholomew & Reeve	2016	x		x		x	
Dashtenstani	2016	x	x		x	x	x
Heflin, Shewmaker & Nguyen	2017	x			x	x	x
Ghallab	2020	x	x		x	x	x
Metruk	2020	x	x	x	x	x	x
Sad, Ozer, Yakar & Ozturk	2020	x	x		x	x	x
Suparjan	2020	x	x		x	x	
Suryasa, Mendoza, Mera, Martinez & Gamez	2020	x	x	x		x	

Note. This matrix was formulated during the initial phase of the secondary research study for gathering information.

Variables and Themes

From the above research studies, several variables and themes were identified as following: the use of mobile devices, its use for ESL/EFL teaching, grade levels of participants,

challenges of using mobile devices, and solutions or suggestions. The findings from the articles are discussed below based on the identified theme and topic. The first of these themes is Mobile assisted language learning (MALL) and Constructivism.

Mobile Learning and Mobile Assisted Language Learning (MALL)

Mobile learning can be defined in numerous ways, but mostly it includes the use of mobile devices and the occurrence of learning. According to Grant (2019), mobile learning has shared its features with distance learning in some ways. It makes sense in that students can do their assignment away from school at any time with their mobile devices. However, this secondary research study will mainly be focused on using mobile devices as a medium to support teaching and learning English during class.

Mobile assisted language learning (MALL) has been discussed as a sub-area of mobile learning and it refers to language teaching and learning using any type of portable mobile devices such as smartphones, iPods, laptops or tablet PCs (Arvanitis et al., 2016; Kukulska-Hulme & Shield, 2008; Yukselir, 2017). Grant (2019) defines this mobile learning as a mediator or facilitator for teaching and learning.

Most research studies chosen for this literature review discuss the advantage of using mobile devices to help language learning for students. Ghallab (2020) conducted surveys with 30 EFL students in Yemeni University, and the result showed that participants in the study agreed on the significant benefits of utilizing mobile devices for improving English speaking skills. Students responded that utilizing mobile devices was beneficial because it provided them with chances to practice English speaking and to listen to native speakers, it made learning more fun as well as helped them improve their intonation, pronunciation, accent and fluency.

Chou et al.(2012) implemented an iPad pilot project with 120 9th graders to examine the impact of iPads in class. They collected data from the focus groups and classroom observations. The project reported that using iPads during class led students' active engagement. According to teachers' comments after class, the students were on-task during the whole time by using various apps for their activities, and they engaged in active discussion as well. It also improved students' information literacy and digital citizenship. Using iPads in class enabled student-centered activities through various apps and gave teachers up-to-date resources as well to teach.

Constructivism

Constructivism is based on the notion that learners can learn better by doing and they construct their own meaning through active engagement in learning (Henderson & Yeow, 2012). It advocates student-centered learning and considers teachers as facilitators in the learning process. Since the use of mobile devices allows students' active involvement in the whole learning process (Dunn et al., 2013; Heflin et al., 2017), mobile assisted language learning is very much in line with constructivist learning. While students are immersed in the learning process, they can build on their own meaning with new information from websites or apps on mobile devices with a given support from teachers. Students have the opportunities not only for sharing their opinions with peers at any time but also being provided a teacher's feedback synchronously, so it enables them to make the knowledge on their own through active interaction (Hamdani, 2014). This learning environment makes learners active knowledge constructors and makes a teacher a facilitator to help students' construction of knowledge.

Challenges of MALL

Through reviewing the research studies, identified challenges could be classified into three categories- technical, social, and educational. Technical challenges include issues from mobile devices and technology facility such as network failure from weak Internet connection, limited display panel resulting in restricted graphical display, short battery life of devices, small amount of memory (Chartrand, 2016; Dashtestani, 2016; Ghallab, 2020; Suparjan, 2020). Social challenges include high cost to access needed software tools for online learning activities (Dashtestani, 2016; Suparjan, 2020). Educational challenges include issues about learner's attention and teacher's lack of skill for the technology use. Most researchers pointed out the high possibility of learner distraction (Atwell, 2012; Ghallab, 2020; Metruk, 2020). They found that students could send text messages, surf the web, chat online with peers, and even use those devices unnecessarily as well during class. These issues seemed to be resulted from students' lack of digital literacy to use mobile devices for academic, educational purposes. Moreover, they reported that cheating and dishonesty during tests could be another difficulty to be dealt with. Using mobile devices during tests, some students constantly communicated with peers out of the classroom by email or text message services. Students could snapshot test questions and share those with other peers through email. The possible disconnection with real-world situation of their classroom while students' paying attention to using technology was also filed (Ghallab, 2020). As for the teacher-related issues, teacher readiness was pointed out as the biggest challenge (Ghallab, 2020; Ismail et al, 2013; Metruk, 2020). Sometimes teachers might experience lack of skills or knowledge for mobile devices usage; this could be another trigger for

students' distraction. Teachers' absence of strategies for technology use could also make students feel bored during in-class activities.

Suggestions for Mobile Devices Integration in Language Classrooms

As mobile technology advances at high speed, some technical limitations have been smoothly resolved. The size of the screen is becoming larger to easily see and read the materials on devices, and the high speed of internet has been introduced almost nationwide (Education Super Highway, 2019, p.7). However, there are still other issues remaining to be made up for education such as the cost of software and training for better use of mobile devices in class.

Suparjan (2020) advised that educational institutions should provide free access to quality internet use to support students' better learning outcome. For the concern about high cost of software/applications for learning activities and internet plan, he emphasized the school districts' proactive approach for enough financial support.

Dashtestani (2016) suggested teachers to be supportive for students' using mobile devices during class by modeling. He insisted that students' awareness and knowledge of using technologies in language learning would be increasing as teachers provide training for the educational use of mobile devices for students. For better and effective support from teachers, the need for teacher training on how to utilize mobile devices was suggested as well (Delacruz, 2014).

There were a few research studies mentioned teaching strategies or pedagogical methods that individual teachers can do in class. Heflin (2017) recommended small group activities when using mobile devices, to easily communicate and encourage student engagement. However, most researchers just emphasized the importance of developing well-planned instructional design for

teachers at the end of their research papers although they didn't ascertain or examine how teachers should plan a good instruction. These gaps will be detailed below.

Gaps in the Research

Researchers have been investigating the utilization of mobile technology for teaching and learning across the various age groups. As a result, not only were many drawbacks and benefits from the technology usage in the educational field revealed, many solutions for remedying the identified shortcomings were also suggested throughout the research articles. However, there were few articles that summarized useful and practical instructional strategies in a clear way for teachers to directly implement for their actual use. The valuable information that can be beneficial for educators' use was dotted all over the articles. In this research study, those will be presented in well-organized manner as a reference for educators.

The first research question in this research study is to define mobile learning. The definition of mobile learning and mobile assisted language learning is provided in this chapter through literature review. The second research question in this research study is to describe the currently identified challenges of utilizing mobile devices for teaching and learning EFL/ESL in K-12 schools. It will be described by reorganizing information I found through literature review as well as new information from other meta-analysis studies. The third research question in this research study is to examine pedagogical strategies that teachers can apply to their class for more effective integration of mobile devices in EFL/ESL setting, by evaluating other published research articles. There are several research studies that provide practical suggestions that teachers can directly apply to their classroom. This will be investigated through analyzing information from most related research studies.

Summary

In this chapter, more than 10 peer-reviewed empirical research articles were reviewed as a background study on effective use of mobile devices in EFL/ESL settings. It was clear that using mobile devices for language teaching and learning for students had much benefits and positive potential. The challenges of utilizing mobile technology for learning EFL/ESL in K-12 schools were also identified to some extent as well. However, there were few studies that mainly discuss the topic of the practical and useful suggestions for EFL/ESL teachers that can be directly applicable to their classroom. The topic was only mentioned shortly across the various articles, so it needs to be put together to make it easy to find and easy to refer to for educators. The following chapter will detail the methodology for searching and selecting research studies to find answers for the research questions.

Chapter 3: Methodology

Introduction

The purpose of this research study is to provide a useful reference for teachers to maximize the positive aspects of mobile technology integration for teaching and learning EFL/ESL in K-12 school settings. Any teacher of any subject who use mobile devices in their classes can refer to the findings to see the big picture of the scene. The primary research questions in this study focus on how EL teachers can incorporate mobile devices into their teaching as minimizing its limitations at the same time.

The purpose of this chapter is to present the methodology for the study. In this chapter, what keywords were used to search appropriate research articles, how the articles were selected, how data was organized, and how conclusions were drawn will be discussed.

Institutional Review Board Exemption and Justifications

Institutional Review Board (IRB) serves an important role in the protection of the rights and welfare of human research subjects. Basically, for research studies involving data from human subjects, a researcher must get an IRB approval in advance. However, this secondary research study does not include any human subject participation. All the information and data sources used in this paper were taken from already existing primary research studies. This study did not collect data directly from any human participants. Therefore, the IRB review and approval are not required.

Methodology

The related research articles were identified using the keywords “mobile devices”, “language teaching and learning”, “MALL”, “elementary students”, “secondary students”,

“challenges/limitations”, “teaching strategies”, and “pedagogical strategies”. The studies were searched using Google Scholar, EBSCOhost, and Interlibrary Loan. Once related-like titles were appeared on the list, abstracts and conclusions of the articles were scanned. References of each article also were reviewed to choose more meaningful research study. A range of published year was set within ten years, 2010-2020, to search articles, and the most relevant and the latest published ten articles of them were chosen.

The age range of kindergarten through 12th grade was selected to obtain enough resources for reliable results of this secondary research study since most participants of current research articles were higher education students. However, some studies dealing with higher grade level students were also used to evaluate if they include discussions on usable teaching strategies.

The factor whether the article includes pedagogical strategies that teachers can apply to classes for better use of mobile technology were most important to select research studies. Because the literature review in the previous chapter only focused on other technical suggestions rather than providing pedagogical strategies that English teachers can directly bring it to their class, more information and data for feasible solutions were needed to be analyzed thoroughly.

To find more valuable solutions eventually, whether the research studies discuss challenges/drawbacks of using mobile devices for language teaching and learning was considered as well. It's because the articles dealing with challenges or limitations of using mobile technology were more likely to discuss solutions for that in the study.

Timeline

The planned date for completion of this research study is May 2021. By August 2020, Chapter One, Two, and Three were drafted. During 2020 fall semester, the proposal chapters

were revised after receiving feedback from Dr. Yun Claire Park. The first committee meeting will be completed during February. The committee is made up of three faculty members, including Dr. Yun Claire Park, Dr. Plamen Miltenoff, and Dr. Marc Markell. The analysis of the secondary data for Chapter Four will be continued throughout the spring semester. The final committee meeting will be scheduled to meet the graduation deadline for 2021 Spring. After the committee approval for the final version of the starred paper, the paper will be sent to Graduate Studies for another approval for graduation.

Summary

In this chapter, the methodology for the study has been discussed. The related research articles were found using databases such as Google Scholar, EBSCOhost, and Interlibrary Loan. Some was selected from references of each research articles. Key terms used to search articles included “mobile devices”, “EFL/ESL teaching and learning in schools”, “challenges”, and “teaching strategies”. Related research studies were selected based on its published year, grade level, and whether it includes solutions or not. The next chapter will present the findings of this research study.

Chapter 4: Findings

Introduction

Although mobile technology integration in teaching and learning is still a controversial topic in the education field, its positive effects on teaching and learning have also been identified by a number of researchers (Elfeky & Masadeh, 2016; Miller & Cuevas, 2017; Cho et al., 2018; Demir & Akpınar, 2018; Kuimova et al, 2018). Accordingly, to take advantage of its merits and make up its drawbacks for mobile device usage in ESL/EFL classrooms, this secondary research study attempted to identify effective pedagogical strategies that teachers can implement in their classes.

This chapter focuses on the findings of this secondary study. The discussion of the findings is organized by (1) the current challenges for mobile technology integration in K-12 ESL/EFL settings and (2) the effective practical instructional strategies for using mobile devices in ESL/EFL classrooms.

Analysis of Findings

The findings from the analysis of the related literature are summarized in Table 4 below in terms of author/s, year of publication, title, target grade level, a summary of each article, suggested teaching strategies, and the country where the study took place.

Table 2*The Analysis of the Related Research Studies*

Author/s	Year	Title	Grade level	Summary of research	Suggestions for instruction	Country
Henderson, S. & Yeow, J.	2012	iPad in education: A case study of iPad adoption and use in a primary school	K-6	The iPad provides quick and easy access to information for students as well as support for collaboration in class.	<ul style="list-style-type: none"> - Design a learning environment around the iPad considering various factors - Set guidelines around the use of the iPad 	New Zealand
Falloon, G.	2013	Young students using iPads: App design and content influences on their learning pathways	K-6	The careful selection of well-designed apps enables students' thoughtful engagement and productive learning.	<ul style="list-style-type: none"> - Pay careful attention to selecting apps to boost students' engagement and their meaningful learning. 	New Zealand
Cho, B. & Woodward, L.	2014	New demands of reading in the mobile internet age	9	Educators should design their instruction considering mobile pedagogy to foster students' higher-order reading strategies in the mobile world.	<ul style="list-style-type: none"> - Teach specific strategy within authentic tasks - Support students' meaning construction and collaboration using performance assessments - Provide careful modeling and guided practice 	United States
Kukulka-Hulme, A., Norris, L. & Donohue, J.	2015	Mobile pedagogy for English language teaching: A guide for teachers	Higher Ed.	Language teaching can be enhanced by the careful use of mobile devices.	<ul style="list-style-type: none"> - Create tasks for students' communicative needs within the classroom - Provide prompt feedback and scaffolding - Create opportunities to interact with peers and English learners outside the classroom - Allow students to choose what and how to learn 	England

Table 2 (cont.)

Summers, J.B.	2015	Apples on! Exploring mobile device learning in schools	K-12	Teachers who implement mobile teaching design lessons aligned with a constructivist and learner-centered pedagogy tend to involve communication by providing feedback often as well as research projects that foster Internet and Web to enhance learning.	<ul style="list-style-type: none"> - Try to improve professional development through monthly tech meetings, ongoing assistance by the school IT staff, and observations as needed - Provide more scaffolding and small group collaboration for students - Need a thoughtful selection of applications 	United States
Gloria, A. & Oluwadara, A.	2016	Design and development of mobile learning lesson plan (MLLP) template: A design relevant to the African context	K-12	The MLLP template should be shared with pre-service teachers as an outline for teachers to develop a mobile learning plan.	<ul style="list-style-type: none"> - Must plan adequately before delivering instruction - Break content into smaller parts - Identify appropriate media to explain the content - Provide scaffolding and ongoing support for students - Select appropriate features on the mobile device 	Africa
Pepe, T. M.	2016	Teacher perceptions and attitudes of classroom technology integration related to iPad training	K-8	Teacher training for using iPads in class contributes to teachers' professional development despite their concerns towards technology integration in teaching.	<ul style="list-style-type: none"> - Share ideas and practices with other teachers regularly - Participate actively in training sessions for professional development. 	United States

Table 2 (cont.)

Han, I., Han, S. & Shin, W.	2019	Teachers' and students' perspectives on good teaching using technology in elementary classrooms	1-6	“Good teaching with technology” includes deliberate instructional design, enhanced engagement, adaptive instruction, and a respectful learning environment.	<ul style="list-style-type: none"> - Set clear goals for what to teach and create a deliberate lesson plan. - Elicit deep engagement from students by providing interesting, diverse activities, scaffolding, and feedback - Provide adaptive instruction - Create a respectful learning environment 	Korea
Inggita, N. D., Ivone, F. M. & Saukah, A.	2019	How is mobile-assisted language learning implemented by senior high school English teachers?	7-12	Teachers should enrich their teaching practice through professional supports such as a workshop or training sessions to overcome their limited use of technology.	<ul style="list-style-type: none"> - Prepare well before employing the technology in class - Explore the applications thoroughly - Provide enough practice about the application for students - Attend workshops and discuss with teachers - Discuss the expected potentials and benefits of mobile devices with students 	Indonesia
Karimah, A. & Muslim, A. B.	2019	Redefining EFL teachers' roles in technology-integrated instruction	7-12	In technology-integrated instruction, teachers are considered as managers and technology promoters.	<ul style="list-style-type: none"> - Give a reward to students based on their learning process as well as optimal use of technology - Share feedback and reflections on students' use of technology with them - Work and share ideas with other teachers - Manage students' unnecessary access to the Internet using the monitor controller - Attend relevant seminars and conferences regularly 	Indonesia

Challenges of Mobile Technology Integration in K-12 ESL/EFL Classrooms

As detailed in Ch. 2, three themes about challenges were identified for mobile technology integration in ESL/EFL classrooms: technical, social, and educational. Technical challenges are related to the devices itself such as screen size, short battery life, and memory limitations as well as network failure due to unstable Internet connections (Chartrand, 2016; Dashtestani, 2016; Ghallab, 2020; Suparjan, 2020). Currently, most of them have been resolved as mobile technology has evolved rapidly. Not only is the screen size now big enough to easily see and read the resources on devices but the speed of internet is much improved (Education Super Highway, 2019). Social challenges include high expenditure for hardware and software (Dashtestani, 2016; Suparjan, 2020). Zhang (2020) reported that those issues also have been relieved gradually by state funding or other sources. On the other hand, educational challenges address issues about teachers and learners in the classroom, including inadequate teacher and learner training (Yang & Walker, 2015), increasing learners' cognitive load (Chu, 2013), and learners' inappropriate use of mobile devices as a distraction (Atwell, 2012; Ghallab, 2020; Metruk, 2020). Those issues are discussed in detail below.

Inadequate Teacher Training and Learner Training. Yang and Walker (2015) insisted that insufficient knowledge and skills of both teachers and learners disturb ESL/EFL teachers' technology use to the full potential. As such, teacher readiness for technology use is important as their lack of skills can be a trigger for students' distraction in class (Ghallab, 2020; Ismail et al., 2013; Metruk, 2020). At the same time, learner training for their technology use is also essential since students' lack of knowledge can impede their learning. For example, when a teacher wants students to practice English speaking through a learning application on the iPad, if the student doesn't know how to use the iPad, how to download the app, or how to use the app,

then the teacher needs to spend some time to train the student within the class duration. This will cut off the flow of the lesson as well as interfere with students' learning. Thus, teachers should actively participate in training sessions to improve their knowledge and competencies and provide enough opportunities to practice technologies for students to be intuitive.

Heavy Cognitive Load Caused by Easy Access to Resources. Although the use of mobile devices provides easy access to enormous English learning resources for supporting students' language acquisition, it can also cause students' feeling overwhelmed by large amounts of information (Schmid, 2008). According to Paas and Sweller (2014), information overload prevents students' effective learning since working memory has a limited capacity. Chu (2013) found that heavy cognitive load can be defined as the main factor leading to the negative effect on students' academic achievement. In her study, two groups of students were given the same instruction from a teacher about their local cultures in the social studies course. Then one group explored online via PDA to search for more resources about the local cultures while another group was given a traditional instruction, the teacher's guidance, to learn the local cultures. She insisted that the first group of students in a combined learning situation of a real world and a digital world needed new learning strategies or approaches, so it caused them to receive lower scores on a post-test as imposing them higher level of cognitive load than the other group. Therefore, to reduce students' cognitive load when mobile technology is used in class, effective instructional methods should be incorporated into a lesson plan, such as strategies including chunking and breaking down a complex task into parts.

Inappropriate Use of Mobile Devices. The use of mobile devices during class might be considered as a distraction factor even though many research articles have proven that mobile technology usage in class facilitates students' learning (Saidouni & Bahloul, 2016; Tingir et al.,

2017; Darsih & Asikin, 2020; Dagdeler et al., 2020). As students have the chance to access mobile devices in class, they can easily get distracted by using their devices to chat with peers, surf the web, or send text messages (Atwell, 2012; Ghallab, 2020; Metruk, 2020). Furthermore, while performing class activities online, embedded external web links and pop-up advertisements often take students off-task (Falloon, 2013). Nairn & Dew (2007) pointed out students' possible exposure to inappropriate material through external links or banners. According to Beland and Murphy (2015), these features of mobile phones work as distractions and lower students' academic performance.

Instructional Strategies for Mobile Device Usage in ESL/EFL Class

Educational challenges described above can be overcome if teachers incorporate mobile devices in their classes using scientific and research-based instructional strategies. The strategies identified from the analysis of the related literature are presented in accordance with the instructional design components, which includes planning, implementation, and reflection.

Planning Phase

Plan adequately before delivering instruction. Planning is a basic integral part of the instructional design process (Gloria & Oluwadara, 2016). Since what to teach and how to teach are determined at this planning phase, adequate planning is important as an outline of well-organized instructions. Han and Shin (2019) emphasized “deliberate instructional design (p. 108)” starting with teachers' having clear goals for what to teach. Along with the goal setting, the learning environment also should be considered such as the class setting, the curriculum and content, and the student-teacher relationship (Quresh, 2017). As ESL/EFL teachers need to widely understand both the content area and language goals, careful, proactive planning for instruction is important and necessary (Baecher et al., 2014). Considering that changes to the

content require changes of the online resources such as apps and web sites, teachers must have clear content and language objectives for planning (Vrasidas & McIsaac, 2000).

Break the content into smaller pieces. Once the outline of the lesson is drawn, break the content into smaller pieces to prevent students' overload. As many researchers have pointed out that easy access to learning resources online can make students overwhelmed by too much information at one time (Debie & Leemput, 2014; Paas & Sweller, 2014; Schmid, 2008), breaking down the points to explain in smaller parts will decrease students' cognitive load (Chu, 2013). Consequently, students can learn better when the information is presented in segments as each small piece of content reduces students' extraneous cognitive processing (Mayer, 2014). In a similar vein, Eubanks (2002) examined that simplifying contents into small steps allowed teachers to provide more guided practice and frequent checks for students' understanding; this maximized student motivation.

Identify proper devices and applications for use. Renard (2020) suggested five considerations for choosing the right educational technology: relevance, navigation, customization, interaction, and accessibility. Relevance ensures that the tool/application meets the learning goals. It is important to determine if the tool/application is appropriate for students, whether it is reliable, and ensure that it aligns with the learning goals. Navigation refers to how easy the tool/material is to use. Further, customization covers the flexibility for personalized learning based on student needs. Personalization or adaptation of the tool/application features should be examined. In addition, interaction implies that the tool/application offers interactive features. They should be considered because communication with each other during class engages and motivates students (Nugent, 2009). Accessibility includes accessibility features to help students in need access the resources.

Explore the tools/applications thoroughly. Several research articles indicate that teachers' lack of skills or knowledge of technology usage can be a trigger for students' distraction allowing them to feel bored (Ismail et al., 2013; Ghallab, 2020; Metruk, 2020). Therefore, teachers should spend enough time to practice the tools and applications, trying them out to figure out strengths and weaknesses for better use before employing the technologies in class. It will also help to protect students from embedded external web links or detrimental pop-up advertisements.

Create modified tasks relating to students' needs. Since each student has a different learning style and level of ability and performance, teachers need to modify the tasks or activities according to students' needs. Han et al. (2019) state that "Technology played an essential role in the classroom when it came to individual learners' differences in learning" (p.111). Teachers can utilize those devices and various applications to provide individualized support, but they are still responsible for appropriate modification of in-class activities. Considering students' achievement levels, teachers should enrich activities for advanced students as well.

Participate actively in training sessions for professional development. With the rapid advancement of technology, adequate teacher training is required for the effective adoption of instructional technology into the classroom (Pepe, 2016). Numerous research studies have examined teacher training regarding the use of mobile devices being crucial for successful technology integration (Raymond, 2012; Liu et al., 2014; Delacruz, 2014). Other findings show that a lack of knowledge and skills for technology use contributes to the underuse of technologies in ESL/EFL classes (Yang & Walker, 2015). Through monthly technology meetings, workshops, relevant seminars and conferences for professional development, teachers can grasp technological skills to familiarize themselves with operating mobile devices.

Implementation Phase

Set clear guidelines around the use of the selected technology. Henderson and Yeow (2012) suggested that teachers set clear guidelines in terms of behavior around the use of the selected technology at the beginning of each class. The guidelines are needed to prevent students from using mobile technology for other purposes rather than educational (Inggita et al., 2019). Teachers can discuss the expected benefits of mobile devices with students. They may adopt a rewarding system that gives a reward to students based on their participation as well as appropriate use of technology, thereby helping students avoid going off-task when using mobile devices (Karimah & Muslin, 2019).

Provide enough practice for the use of technology. Before using technology, students are also provided with enough practice with teachers' careful modeling and guided practice for better learning outcomes (Cho & Woodward, 2014; Inggita et al., 2019). For example, a teacher presents either to the whole class or each group about how to log in to a certain application and how they can use the app for speaking practice as well as what to expect from the learning activity. Then students have time to explore the application on their own to help themselves familiarize its use. The student training will avoid not only the disconnection of the flow of instruction but also the waste of time on extra training in the middle of the class (Yang & Walker, 2015).

Use the monitor control software for students' unnecessary use of technology. Many teachers are concerned about students' getting distracted through the misuse of mobile devices when they adopt the technology in class (Atwell, 2012; Ghallab, 2020; Metruk, 2020). However, teachers can assuage the concern as they have an available option, i.e., a monitor control software. If they are iPad users in their school district, a school administrator can sign up for an

Apple School Manager first. Then each classroom teacher can download and install the Apple Classroom app on teachers' and students' iPads. Using this app, teachers can monitor students' work as well as lock a specific student's screen so they stay focused on a learning page.

Give students opportunities to interact with peers using technology. To add authenticity to students' English learning, Kukulska-Hulme et al. (2015) recommended that teachers provide an outside-class learning opportunity for students. For example, students can be tasked to conduct a short interview online with a peer from an English speaking country. Providing opportunities for authentic communication in a language classroom using technology has a positive impact on students' language learning (Ozverir & Herrington, 2011).

Provide prompt feedback and scaffolding. Many researchers suggested project-based and student-centered small group work for active communication among teachers and students (Kukulska-Hulme et al., 2015; Summers, 2015; Han et al., 2019). Small group work generates students' active engagement along with collaboration and opportunities to synthesize their learning (Summers, 2015). Teachers can walk around the classroom providing students with prompt feedback and adequate scaffolding as a motivator or conductor of learning.

Share reflections on their use of technology. Teachers can give feedback towards students' learning including their attitude, learned knowledge and targeted skills at the end of the class. Verbal praise for good points along with a reward may be a part of the feedback. As students also share their thoughts on their use of technology for learning, every class member can reflect on the learning of the day for a better outcome next time.

Reflection Phase

Share ideas and practices with other teachers regularly. Karimah and Muslim (2019) defined EFL teachers' roles as collaborators and knowledge sources in technology-integrated

instruction. In terms of technological competence, teachers can be a knowledge source or collaborators with other teachers. Through regular meetings with other teachers, they can share individual practical experiences and ideas. Moreover, they can get ideas from workshops, conferences, and training sessions as well, but the insights from sharing their direct field experiences would work more meaningfully in their classrooms.

Summary

This chapter discussed the findings of this secondary research study to answer the research questions. Various educational disadvantages of mobile technology integration in ESL/EFL settings were identified. To support teachers' smooth adoption of mobile technology, practical instructional strategies were listed by analyzing related empirical research articles. The next chapter will offer implications as well as recommendations for further research.

Chapter 5: Conclusion

Throughout the course of this secondary research study, the current challenges of incorporating mobile technology in K-12 ESL/EFL classrooms and suggestions for teachers' effective mobile technology integration have been discussed. The three questions of the study include what the definition of mobile learning is, what the identified side effects of mobile technology use in class are, and how teachers can use mobile devices effectively.

The table below includes the summary of instructional strategies discussed in Ch. 4. The strategies are enumerated in compliance with the teaching process: planning phase, implementation phase, and reflection phase. Author/s and the year of publication are involved for readers' reference for their use.

Table 3*Instructional Strategies Suggested*

Teaching Process	Instructional Strategies	Author/s
Planning	Plan adequately before delivering instruction.	Gloria & Oluwadara, 2016; Han et al., 2019
	Break the content into smaller pieces.	Gloria & Oluwadara, 2016; Henderson & Yeow, 2012
	Identify proper devices and applications for use.	Falloon, 2013; Summers, 2015
	Explore the tools/applications thoroughly.	Inggita et al., 2019
	Create modified tasks relating to students' needs.	Han, 2019; Kukulska-Hulme et al., 2015
	Participate actively in training sessions for professional development.	Inggita et al., 2019; Karimah et al., 2019; Pepe, 2016; Summers, 2015
Implementation	Set clear guidelines around the use of the selected technology.	Henderson & Yeow, 2012; Han et al., 2019; Inggita et al., 2019; Karimah & Muslim, 2019
	Provide enough practice about the use of technology.	Cho & Woodward, 2014; Inggita et al., 2019
	Use the monitor control software for students' unnecessary use of technology.	Karimah & Muslim, 2019

Table 3 (cont.)

	Give students opportunities to interact with peers using technology.	Cho & Woodward, 2014; Kukulska-Hulme et al., 2015
	Provide prompt feedback and scaffolding.	Cho & Woodward, 2014; Han et al., 2019; Kukulska-Hulme et al., 2015; Summers, 2015
	Share reflections on their use of technology.	Karimah & Muslim, 2019
Reflection	Share ideas and practices with other teachers regularly.	Karimah & Muslim, 2019; Pepe, 2016

Implications

As mobile devices have become essential items for most people, the efforts to incorporate mobile technology in the field of education have expanded. Recent technology integration for teaching and learning has been actively implemented as distance learning increased due to the COVID-19 pandemic. Various drawbacks of mobile technology use for teaching were defined, and those have been continuously monitored and attempted to be resolved. Some were solved by technology advancement while others were not. However, there also are opportunities for teachers to learn how to produce better outcomes, which involve improving their teaching strategies.

The instructional strategies provided in Ch. 4 will help teachers to find better ideas for technology integration in their classrooms. Particularly, it will be a useful reference for the novice teachers who want to bring the new technology into their classes. Since teachers have undergone trial and error of technology integration in distance learning during the COVID-19 pandemic, they now might have become used to mobile technology usage in the classroom due to the experience. As most schools return to in-person learning again, this would be the ideal time to implement the valuable findings for teachers' effective teaching as well as students' meaningful learning.

Recommendations for Further Research

This study has examined not only the existing challenges for mobile technology integration for ESL/EFL teaching and learning, but also useable instructional strategies that teachers can implement in class to overcome identified barriers. Now that we have the list of strategies in hand, evaluation of what goes well and areas of revision while implementing the

methods in the real context can further the research. Those strategies can be further refined through trial and error to improve their practicality and utility.

As teachers from diverse subject areas such as math and science can also use mobile technology in their classrooms, it would be helpful for them to implement the strategies and revise them in accordance with a particular subject.

Summary

In this secondary research paper, the current challenges of mobile technology integration in ESL/EFL settings were identified with a focus on the educational challenges that can be resolved by teachers' efforts in class. Those challenges include inadequate teacher and learner training, heavy cognitive load caused by easy access to online resources, and learners' inappropriate use of mobile devices. The practical instructional strategies for the use of mobile devices were also examined to overcome the challenges. Thoughtfully selected research studies were reviewed and analyzed, and the findings of the studies provide a list of practical strategies for technology integration by means of the instructional design components involving planning, implementation, and reflection phases.

In the planning phase, the parameters of what and how to teach are determined; so teachers should think of what tools and methods they would use for a lesson. Some of these include chunking or breaking down the content into manageable parts to decrease learners' cognitive load. Once the tools and methods are chosen, teachers should practice thoroughly using those tools to avoid learner distraction. For effective use of technology, teachers' active participation in professional development is also recommended in advance.

In the implementation phase, setting clear guidelines around the use of the selected technology is important since it will prevent students from off-task activity when using mobile

devices. Teachers can utilize monitor control software for students' unnecessary use of technology. During class activities, the teacher's prompt feedback and frequent communication can be emphasized as they generate students' active engagement.

In the reflection phase, it would be helpful for teachers to share ideas and practices with each other to improve their technological competence. Sharing each other's insights from direct field experience would work more meaningfully to develop teacher professionalism and coordination.

Further research into the implementation of the instructional strategies in various real contexts is recommended. Instructional strategies may perform differently in other subject areas and their application may need to be revised based on different contexts.

References

- Ali, M., Moghal, S., Nader, M. & Usman, Z. (2020). The application of mobile assisted language learning in Pakistani ESL classrooms: An analysis of teachers' voices. *International Journal of Innovation, Creativity and Change*, 14(10), p.170-197.
- Alshammari, R. (2020). The Current use of mobile devices among students and faculty in EFL teaching in a Saudi Arabian context. *The Turkish Online Journal of Educational Technology*, 19(2), p. 34-51.
- Arvanitis, P., Krystalli, P. & Panagiotidis, P. (2016). Applications for mobile assisted language learning: A current field study. *Proceedings of INTED2016 Conference*, p.7645-7651.
- Atwell, G. (2012). 25 Practical ideas for using mobile phones in the classroom. Retrieved from <https://www.pontydysgu.org/2009/11/25-practical-ideas-for-using-mobile-phones-in-the-classroom>
- Baecher, L., Farnsworth, T. & Ediger, A. (2014). The challenges of planning language objectives in content-based ESL instruction. *Language Teaching Research*, 18(1), p.118-136.
- Bernacki, M., Greene, J. & Crompton, H. (2020). Mobile technology, learning, and achievement: Advances in understanding and measuring the role of mobile technology in education. *Contemporary Educational Psychology*, 60.
- Chartrand, R. (2016). Advantages and disadvantages of using mobile devices in a university language classroom. *Bulletin of the Institute of Foreign Language Education*, Retrieved from https://swsu.ru/sbornik-statey/pdf/gaiken23_1-13.pdf
- Chiu, T. & Churchill, D. (2016). Adoption of mobile devices in teaching: Changes in teacher beliefs, attitudes and anxiety. *Interactive Learning Environments*, 24(20), p.317-327.
- Cho, B. & Woodward, L. (2014). New demands of reading in the mobile internet age. In A. Gard

- & K. Wolfe (Eds.), *Mobile Pedagogy and Perspectives on Teaching and Learning* (p. 187-204). Information Science Reference.
- Cho, K., Lee, S. Joo, M. & Becker, B. J. (2018). The effects of using mobile devices on student achievement in language learning: A meta-Analysis. *Education Science*, 8(105), p.1-16.
- Chou, C., Block, L. & Jesness, R. (2012). A case study of mobile learning pilot project in K-12 schools. *Journal of Educational Technology Development and Exchange*, 5(2), p.11-26.
- Christensen, R. & Knezek, G. (2017). Readiness for integrating mobile learning in the classroom: Challenges, preferences, and possibilities. *Computer in Human Behavior*, 76, p.112-121.
- Chu, H. (2013). Potential negative effects of mobile learning on students' learning achievement and cognitive load: A format assessment perspective. *Educational Technology & Society*, 17(1), p.332-344.
- Cochrane, T. (2014). Mobile social media as a catalyst for pedagogical change. *Proceeding of EdMedia: World Conference on Educational Media and Technology 2014*, p.2187-2200.
- Dagdeler, K. O., Konca, M. Y. & Demiroz, H. (2020). The effect of mobile-assisted language learning (MALL) on EFL learners' collocation learning. *Journal of Language and Linguistic Studies*, 16(1), p.489-509.
- Darsih, E. & Asikin, N. A. (2020). Mobile assisted language learning: EFL learners' perceptions toward the use of mobile applications in learning English. *English Review: Journal of English Education*, 8(2), p.183-194.
- Dashtestani, R. (2016). Moving bravely towards mobile learning: Iranian students' use of mobile devices for learning English as a foreign language. *Computer Assisted Language Learning*, 29(4), p.815-832.

- Debue, N. & Leemput, C. (2014). What does germane load mean? An empirical contribution to the cognitive load theory. *Frontiers in Psychology*, 2014 (5), p.1-12.
- Delacruz, S. (2014). Using Nearpod in elementary guided reading groups. *TechTrends*, 58(5), p.63-70.
- Demir, K. & Akpınar, E. (2018). The effect of mobile learning applications on students' academic achievement and attitudes toward mobile learning. *Malaysian Online Journal of Educational technology*, 6(2), p.48-59.
- Dunn, P., Richardson, A., Oprescu, F. & McDonald, C. (2013). Mobile phone-based classroom response systems: Students' perceptions of engagement and learning in a large undergraduate course. *International Journal of Mathematical Education in Science and Technology*, 44(8), p.1160-1174.
- Education Super Highway. (2019). *2019 State of States*. <https://s3-us-west-1.amazonaws.com/esh-sots-pdfs/2019%20State%20of%20the%20States.pdf>
- Elaish, M., Shuib, L., Ghani, N., Yadegaridehkordi, E. & Alaa, M. (2017). Mobile learning for English language acquisition: Taxonomy, challenges, and recommendations. *IEEE Access*, 5, p.19033-19047.
- Elfeky, A. I. & Masadeh, T. S. (2016). The effect of mobile learning on students' achievement and conversational skills. *International Journal of Higher Education*, 5(3), p.20-31.
- Eubanks, P. (2002). Students who don't speak English: How art specialists adapt curriculum for ESOL students. *Art Education*, 55(2), p.40-45.
- Falloon, G. (2013). Young students using iPads: App design and content influences on their learning pathways. *Computers & Education*, 68, p.505-521.
- Ghallab, S. (2020). Using mobile technology in the classroom for teaching speaking skills in

- Yemeni Universities. *Language in India*, 20(4), p.104-124.
- Gloria, A. & Oluwadara, A. (2016). Design and development of mobile learning lesson plan (MLLP) template: A design relevant to African context. *American Journal of Educational Research*, 4(9), p. 658-662.
- Grant, M. (2019). Difficulties in defining mobile learning: Analysis, design characteristics, and implications. *Education Tech Research Dev*, 67, p.361-388.
- Hamdani, D. (2014). A constructivist approach to a Mobile learning environment. *International Journal of Computer Applications*, 93(4), p.41-46.
- Han, I., Han, S. & Shin, W. (2019). Teachers' and students' perspectives on good teaching using technology in elementary classrooms. *International Journal of Information and Communication Technology Education*, 15(3), p. 103-116.
- Heflin, H., Shewmaker, J. & Nguyen, J. (2017). Impact of mobile technology on student attitudes, engagement, and learning. *Computers & Education*, 107, p.91-99
- Henderson, S. & Yeow, J. (2012). iPad in education: A case study of iPad adoption and use in a primary school. *IEEE Computer Society*, p.78-87.
- Inggita, N. D., Ivone, F. M. & Saukah, A. (2019). How is mobile-assisted language learning implemented by senior high school English teachers?. *Jurnal Pendidikan Humaniora*, 7(3), p. 85-94.
- Ismail, I., Bokhare, S., Azizan, S. & Azman, N. (2013). Teaching via mobile phone: A case study on Malaysian teachers' technology acceptance and readiness. *The Journal of Educator Online*, 10(1), p.1-38.
- Karimah, A. & Muslim, A. B. (2019). Redefining EFL teachers' roles in technology-integrated instruction. *2019 5th International Conference on Educational and Training Technologies*

- (*ICETT*), p. 8-12.
- Kuimova, M., Burleigh, D., Uzunboylu, H. & Bazhenov, R. (2018). Positive effect of mobile learning on foreign language learning. *TEM Journal*, 7(4), p.837-841.
- Kukulska-Hulme, A. & Shield, L. (2008). An overview of mobile assisted language learning: From content delivery to supported collaboration and interaction. *ReCALL*, 20(3), p.271-289
- Kukulska-Hulme, A., Norris, L. & Donohue, J. (2015). Mobile pedagogy for English language teaching: A guide for teachers. *British Council 2015*, London.
- Liu, M., Navarrete, C. C. & Wivagg, J. (2014). Potentials of mobile technology for K-12 education: An investigation of iPod touch use for English language learners in the United States. *Educational Technology & Society*, 17(2), p.115-126.
- MacCallum, K., Jeffrey, L. & Kinshuk. (2014). Factors impacting teachers' adoption of mobile learning. *Journal of Information Technology Education*, 13, p.141-162.
- Mayer, R. E. (2014). *The Cambridge handbook of multimedia learning*. Cambridge University Press.
- Metruk, R. (2020). Confronting the challenges of MALL: Distraction, cheating, and teacher readiness. *iJET*, 15(2), p.4-13.
- Miller, H. B. & Cuevas, J. A. (2017). Mobile learning and its effects on academic achievement and student motivation in middle grades students. *International Journal for the Scholarship of Technology Enhanced Learning*, 1(2), p.91-110.
- Nairn, A. & Dew, A. (2007). Pop-ups, pop-unders, banners and buttons: The ethics of online advertising to primary school children. *J Direct Data Digit Mark Pract*, 9, p.30-46.
- Nugent, T. (2009). *The impact of teacher-student interaction on student motivation and*

- achievement* (Publication No.3860) [Doctoral dissertation, University of Central Florida].
- Ozverir, I. & Herrington, J. (2011). Authentic activities in language learning: Bringing real world relevance to classroom activities. *EdMedia Innovate Learning*, p.1423-1428.
- Paas, F. & Sweller, J. (2014). Implications of cognitive load theory for multimedia learning. In Mayer, R. Editor, *The Cambridge Handbook of Multimedia Learning* (p. 43-54). Cambridge University Press.
- Pegrum, M., Oakley, G. & Faulkner, R. (2013). Schools going mobile: A study of the adoption of mobile handheld technologies in Western Australian independent schools. *Australasian Journal of Educational Technology*, 29(1), p.66-81.
- Pepe, T. M. (2016). *Teacher perceptions and attitudes of classroom technology integration related to iPad training* [Doctoral dissertation, Walden University].
- Quresh, F. Y. (2017). Opening the doors for mobile assisted language learning mobile apps for ESL: Value and methods. *Journals of Al-Quds Open University for Research and Studies*, 42(1), p.22-34.
- Raymond, R. G. (2012). *The impact of e-readers on adolescent students' reading motivation: A case study* [Doctoral dissertation, Sam Houston State University].
- Renard, L. (2020, Feb 06). *Choosing the best classroom technology- 5 things teachers should think about*. Bookwidgets Interactive Learning.
<https://www.bookwidgets.com/blog/2020/02/choosing-the-best-classroom-technology-5-things-teachers-should-think-about>
- Rosell-Aguilar, F. (2017). State of the app: A taxonomy and framework for evaluating language learning mobile applications, *CALICO Journal*, 34(2), p.243-258.
- Saidouni, K. & Bahloul, A. (2016). Teachers and students' attitudes towards using mobile-

- assisted language learning in higher education. *Arab World English Journal (AWEJ)*, 3, p.123-140.
- Sarrab, M., Al-Shihi, H. & Rehman, O. (2013). Exploring major challenges and benefits of m-learning adoption. *British Journal of Applied Science & Technology*, 3(4), p.826-839.
- Schmid, E. C. (2008). Potential pedagogical benefits and drawbacks of multimedia use in the English language classroom equipped with interactive whiteboard technology. *Computers & Education*, 51(4), p.1553-1568.
- Shahrol, S., Sulaiman, S., Samingan, M. & Mohamed, H. (2020). A systematic literature review on teaching and learning English using mobile technology. *International Journal of Information and Education Technology*, 10(9), p.709-714.
- Summers, J.B. (2015). Apples on! Exploring mobile device learning in schools. *Journal of Teaching and Teacher Education*, 3(2), p.111-121.
- Suparjan. (2020). Mobile communication device in English language learning: Motives and constraints. *Journal of EST Research*, 5(1), p.53-67.
- Tingir, S., Cavlazoglu, B., Caliskan, O., Koklu, O. & Intepe-Tingir, S. (2017). Effects of mobile devices on K-12 students' achievement: A meta-analysis. *Journal of Computer Assisted Learning*, 33, p. 355-369.
- Tran, T. (2020). *Mobile learning for professional development: Significant factors, attitudes, behaviours and engagement patterns* [Doctoral dissertation, The University of Queensland]. <https://doi.org/10.14264/uql.2020.658>
- Viberg, O. & Gronlund, A. (2012). Mobile assisted language learning: A literature review. Retrieved from <https://www.diva-portal.org/smash/get/diva2:549644/REFERENCES01>
- Vrasidas, C & McIsaac, M. (2000). Principles of pedagogy and evaluation for Web-based

- learning. *Educational Media International*, 37(2), p.105-111.
- Yang, S. & Walker, V. (2015). A pedagogical framework for technology integration in ESL classrooms: The promises and challenges of integration. *Journal of Educational Multimedia and Hypermedia*, 24(2), p.179-203.
- Yukselir, C. (2017). A meta synthesis of qualitative research about mobile assisted language learning (MALL) in foreign language teaching. *Arab World English Journal*, 8(3), p.302-318.
- Zhang, G. (2020). *The relationship between school technology expenditures and high school graduation rates: An assessment of North Carolina public schools* [Master's thesis, Georgetown University].