

ROLE OF MOBILE TECHNOLOGY
IN ENABLING LEARNING AND
EFL LEARNING: AN
ECOLOGICAL ACCOUNT OF THE
PEDAGOGICAL DECISIONS OF
PAKISTANI LECTURERS

Uzma Rana Shamsi

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Abstract

The highly fast-paced advancement of mobile technology has been considered potentially revolutionary for teaching and learning, including L2 (second language) teaching and learning. Over the last two decades, a growing number of empirical studies have demonstrated that mobile technology can facilitate situated, personalised, formal, informal, and collaborative language learning across multiple contexts. While previous studies have established various benefits of Mobile-Assisted Language Learning (MALL), there is little evidence concerning the potential benefits of incorporating mobile technology in language pedagogy.

Notably, in a resource-constrained context like Pakistan, where students' ownership of mobile devices surpasses their ownership of desktop or laptop computers, empirical evidence of the role of mobile technology for EFL (English as a Foreign Language) teaching and learning is required. This study investigated a comparatively less explored niche about the incorporation of mobile technology in pedagogy to enable EFL learning in Pakistani universities. The current study also elicited EFL learners' perspectives and practices about the use of mobile technology for L2 learning.

An ecological paradigm was adopted as the theoretical framework to conduct a thorough and rigorous investigation of the interdependent relationships of mobile-integrated EFL teaching and learning in Pakistani universities. A mixed methods research approach has been used as it aligns with the ecological paradigm underpinning this study. Using qualitative instruments, data were collected from six EFL lecturers through initial semi-structured interviews, lesson observations, and post-observation interviews to investigate the complexities of Pakistan's learning eco-system. Data were triangulated using a quantitative survey and three focus groups to document students' perceptions and practices about using mobile technology for EFL learning.

Data analysis identified various affordances and constraints of mobile technology; there was evidence of mobile technology playing a significant role in enabling or inhibiting EFL learning in Pakistani universities. It appeared that the ubiquitous availability of mobile technology, with its inherent flexibility, was the primary reason for its incorporation into the lecturers' pedagogical decisions and practices. The findings indicate that mobile technology integration in the lecturers' pedagogical decisions and practices was driven, also, by context (e.g., lack of technological and educational resources) and determined by the students' learning practices. Overall, the participants utilised mobile technology mainly as a dissemination/communication tool, a storage device, and an access point.

Evidence was also found that the affordances of mobile technology played a crucial role in helping lecturers situate EFL activities in authentic/informal contexts providing students with opportunities for interacting with multiple contexts and people. Analysis of the questionnaire and focus groups data revealed the students' learning contexts ranged from the traditional classroom to mobile-mediated learning at virtual platforms in which they interacted with their peers and other online interlocutors across times and spaces. The study also revealed tensions that stemmed from the students' unpredictable mobile-mediated learning practices that were inconsistent with the lecturers' pedagogical decisions and practices.

This study complements and contributes to the existing body of knowledge in the field of m-learning and MALL. Theoretically, this study suggests the use of an ecological paradigm to interrogate the complexities of mobile-mediated teaching and learning. It extends our understanding of the interconnectedness of teaching and learning in mobile-integrated learning ecosystems with practical implications for resource-constrained contexts. This study identifies how teachers can leverage mobile technology to provide learners with extended exposure to L2 learning, particularly in foreign language contexts. It emphasises the need for lecturers' continuous and informed guidance to help learners benefit from mobile technology for EFL learning. This study also offers policy implications by highlighting the need for teachers' professional development programmes to harness mobile technology affordances in better, creative, innovative and informed ways.

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Chapter 1. Introduction

In the 21st century, the proliferation of mobile technology has impacted us in many ways, from our personal to professional lives. The mobility element of mobile technology has influenced our everyday activities to such an extent that imagining lives without mobile technology seem to be a tale of the distant past. The unprecedented advancement in mobile digital technology has radically changed how we live, work, and communicate. Mainly, in the last two decades, many traditional and digital technologies (e.g., book, paper, camera, radio, video recorder, computer, and telephone) have merged into a single mobile device (Laurillard, 2009). This unique integration of multiple functionalities in a single portable device has contributed to its rapid adoption in comparison with desktop/laptop computers. Thus, portable technology that possesses many of the characteristics of computers gave rise to mobile-learning (m-learning), entailing the use of mobile devices for teaching and learning (Golonka, Bowles, Frank, Richardson, & Freynik, 2014; Lomicka & Lord, 2019; Viberg & Grönlund, 2012).

Given the scenario mentioned above, it is not surprising that this technology has been adopted in language teaching and learning, commonly referred to as Mobile Assisted Language Learning (MALL). Although learners' adoption of "ultra-portable language learning" (Burston, 2011, p. 56) technology is well documented in MALL literature, there is comparatively little empirical evidence about the nuances and complexities of teachers' pedagogical decisions and practices regarding the use of mobile technology for second/foreign language (L2) development.

This study is situated in the field of MALL, a comparatively under-researched sub-field of Computer Assisted Language Learning (CALL) and m-learning. While it contributes generally to the established yet growing body of research about mobile technology in L2 learning and teaching, it extends, in particular, the understanding of MALL literature on the pedagogical harnessing of mobile technology affordances for L2 teaching. In this thesis, affordances refer to mobile technology's characteristics or functionalities useful for teaching and learning (see Chapter Two for the discussion and definition of affordances).

1.1 Chapter overview

This chapter provides a general introduction to this thesis by providing information pertinent to the current study. It starts by giving background information (Section 1.2), followed by a

description of the context in Section 1.3. While Section 1.4 reviews literature about CALL and MALL in the Pakistani higher education sector, the purpose of the study is stated in Section 1.5. Section 1.6 introduces the specific research questions leading this inquiry, the study's significance is established in Section 1.7, and an outline of the entire thesis structure presented in Section 1.8.

1.2 Background

In m-learning literature, it is established that mobile technology ownership has exceeded that of desktop and laptop computers because it is “more affordable and more easily self-procured and managed than tethered computers” (UNESCO, 2013, p. 2). Due to the flexibility, portability, connectivity, and affordability of mobile technology, m-learning is considered to have the potential to transform teaching and learning in unprecedented ways in both developing and developed countries. It enables the teaching and learning landscape to be radically reshaped as to how, where and when we access information for teaching and learning (Burston, 2015; Duman, Orhon, & Gedik, 2015; Kukulska-Hulme, 2010).

The transformative potential of mobile technology for teaching and learning has been regarded as highly beneficial for L2 teaching and learning. MALL is primarily dependent on the use of hand-held mobile devices, “especially in situations where portability and situated learning offer specific advantages” (Kukulska-Hulme, 2018, p. 1). With regard to language learning and teaching, the key affordances of mobile technology include flexible learning at multiple times and locations; personalised and autonomous learning; continuity of learning at multiple devices (e.g., mobile phones, tablets, laptop/desktop computers); and easy access to EFL resources (Hoven & Palalas, 2011; Kukulska-Hulme, 2010; Reinders & Pegrum, 2015). Thus, computer-based hand-held mobile devices have been heralded as the way of seamless teaching and learning languages transcending times and locations (Kukulska-Hulme, Lee, & Norris, 2017; Reinders & Benson, 2017).

While the numerous affordances of mobile technology for enabling novel teaching and learning methods have been documented, constraints, which may pose challenges for mobile-incorporated teaching and learning, have also been identified. The constraints of m-learning include technical (e.g., small screen size, insufficient storage space); financial (e.g., cost of mobile devices and mobile internet); and institutional (e.g., lack of appropriate IT (Information Technology)

infrastructure and support for technology/mobile technology use). These barriers impede the full and formal adoption of mobile technologies for m-learning and MALL.

Besides the technical, financial, and institutional constraints, other challenges also hamper mobile-integrated teaching and learning. For example, users may be distracted by text messages and social media, teachers and their students may have low digital literacy, and lack interest in, and motivation for, the educational use of their mobile devices. It has also been reported that teachers' negative perceptions related to mobile technology, their habitual pedagogical practices and time required to design lessons may also be potential constraints for the pedagogical use of mobile technology (Beetham & Sharpe, 2013; Burden & Kearney, 2017; Burston, 2014a; Kearney, Burden, & Schuck, 2019; Kukulska-Hulme, Gaved, Jones, Norris, & Peasgood, 2017).

1.3 Context

This study was conducted in Pakistan, a multilingual and multicultural country located in South Asia, home to more than 200 million people. In Pakistan, Urdu is a national language, but English is the dominant language for official communication.

In the Pakistani educational context, English is the medium of instruction at the secondary and tertiary levels. Two English as a Foreign Language (EFL) courses are mandatory for all the students enrolled in undergraduate degrees regardless of the disciplines (e.g., engineering, computer sciences, social sciences, and business management). EFL courses, which are mandatory for all undergraduate students, aim to foster the core EFL skills (i.e., listening, speaking, reading, and writing), communicative competence in the English language to help students' employability in an increasingly digital global job market with English as the dominant language of communication.

It has also been noted that undergraduate degrees offered by English departments in Pakistani universities have traditionally focused on teaching English literature instead of linguistics (Coleman & Capstick, 2012; Malik, 2014). Therefore, EFL lecturers were unable to focus specifically on students' individual needs regarding their proficiency levels in English. Since the last two decades, the focus of EFL teaching at the tertiary level has increasingly shifted towards enhancing students' communicative competence to enable them to compete in the global job market.

Despite the increased focus on communicative EFL teaching in the Pakistani tertiary sector, there are several issues associated mainly with education in schools, which impact EFL teaching at the tertiary level, such as overcrowded classes, lack of resources, outdated teaching methods and the lack of trained teachers. The situation is exacerbated for EFL teaching in schools because of the resource-constrained tertiary sector in Pakistan trying to cope with an increasing number of students. Teaching students with various English proficiency levels has emerged as a formidable challenge for EFL lecturers in Pakistan. The differences in students' proficiency levels in English is due to one-third of students, educated in private schools, usually being more proficient in the English language as private schools have better human and material resources than public schools (Ahmad & Rao, 2012; Haidar & Fang, 2019; Manan, Dumanig, & David, 2017; Nawab, 2012).

Teaching students with different English proficiency levels has been highlighted as a considerable challenge at the tertiary level in Pakistan, as trained teachers/lecturers are required to meet the individual needs of students with various English proficiency levels. To address the shortage of trained English language lecturers in Pakistan, the Higher Education Commission of Pakistan (HEC, 2016) launched an English Language Teaching Reforms (ELTR) project. ELTR provided professional development courses for the faculty members of the Pakistani tertiary sector. An area targeted for these courses has been integrating technology in language teaching to upskill in-service lecturers with the current technology integration trends for EFL teaching. Although the HEC has helped universities to establish IT infrastructures, the issues related to Wi-Fi connectivity and an insufficient number of computer labs continue to exist.

1.4 M-learning and MALL Research in Pakistan

This section presents an overview of CALL and MALL research in Pakistan to identify gaps relevant to this research. First, international organisations' MALL projects are described, followed by a review of MALL research conducted by researchers associated with universities. Research gaps are also identified in Chapter 3, which reviews CALL/MALL literature by encompassing research publications worldwide.

1.4.1 M-learning and MALL projects by international organisations

In Pakistan, one of the countries with the highest internet penetration rates, smartphones are “the primary or sole means of internet access for large sections of the population” (Churchill, Pegrum,

& Churchill, 2018, p. 26). Ownership of mobile technology is increasing with 169 million cellular subscribers, which is markedly more than owners of desktop/laptop computers (Pakistan Telecommunication Authority, 2020). It would appear to be highly valuable technology that could be incorporated in L2 education in the Pakistani universities which have few well-equipped computer labs and well-resourced libraries.

Because of extensive ownership of mobile technology in Pakistan, numerous programmes integrating mobile technology were started for EFL teaching and learning by international organisations such as UNESCO, British Council, and USAID. For instance, UNESCO (2015) initiated a project named Mobile-Based Literacy Programme in Pakistan to enhance the literacy and numeracy skills of 2750 rural Pakistani women. More than 800 text messages were developed on topics related to women's daily lives, such as health, nutrition, law, economics, environment, livestock, skills, jokes, and cooking recipes. The participants were trained in mobile technology use for six months. The project reported increased proficiency levels in reading, writing, and numeracy. The project also increased excitement and motivation for learning, decreased social isolation, and improved overall communication.

Another mobile-based interactive EFL learning project, U-English, was launched by the British Council (2016) in collaboration with a local cellular company. Through quizzes delivered by text messages, the service helps subscribers improve their English grammar. The users receive an SMS on-demand with multiple-choice questions on the usage of nouns, pronouns, prepositions, and articles. They respond to these messages by making the appropriate selection and receive automated feedback on the appropriateness of their answers. Although no formal data is available about this ongoing project's results or impact, my informal interactions with users of various age groups found it reported as an exciting and accessible platform for learning English.

Mobile technology has also been used for teacher-training programmes in Pakistan. For instance, UNESCO (2017) collaborated with a local cellular company to launch a teacher-training programme. The project aimed to train 150 teachers from 75 schools working in the pre-primary sector. The participants were provided with free mobile handsets and internet access. At the beginning of the project, the participants were provided with a three-day training workshop to familiarise them with mobile phones to access videos and other resources specifically designed for the training programme. A Facebook page was also set up to create a collaborative

environment and share pedagogical tips with the participants. The project reported to have enhanced skills related to the use of mobile technology, increased collaboration generating enthusiasm for the use of technology and mobile technology.

1.4.2 M-learning and MALL research in the tertiary sector

As well as the projects run by international organisations, there is a limited though growing, number of studies conducted on m-learning, including MALL in the tertiary sector. The studies reviewed in this section capture the participants' voices belonging to the Pakistani tertiary sector because the current study was conducted in three Pakistani universities.

A qualitative study (Imtinan, 2013) in the Pakistani university sector investigated the university students' practices and perceptions about the use of mobile technology for learning. The study reported various issues, including usability, slow internet speed, interrupted connectivity by electricity disruption, students' reluctance to be self-directed learners. After a period of three years, however, the findings of a case study (Perveen, 2016) and a quantitative survey (Khan, 2016) reported university students' positive attitude towards mobile technology signalling a significant change due, probably, to the greater pervasiveness of mobile technology in Pakistan. In another study in a Pakistani university, Rashid, Cunningham, Watson, and Howard (2018) identified students' preferred digital devices through a survey of 316 undergraduates.

The results indicated that although the students' most preferred tools were smartphones, their frequency of use for educational purposes was low compared to non-educational and personal uses. A few other studies have investigated the impact of using mobile technology on tertiary students' EFL learning. For example, a study conducted in the Pakistani university context by Rashid, Howard, Cunningham, and Watson (2020), trained 23 undergraduate students in writing blogs using their smartphones. Students' increased interest was reported regarding the use of mobile phones for practising EFL writing skills. Likewise, another study (Nair, Siddique, & Wider, 2020) investigated mobile technology's role in developing tertiary students' writing skills. Data were collected from 90 undergraduate students through a survey and from two EFL lecturers with semi-structured interviews. The findings suggest that mobile technology motivated students to learn EFL and enhanced their essay writing skills.

Although there are some studies about the use of mobile technology for learning, and specifically language learning, research about the pedagogical integration of mobile technology in the

Pakistan context is still scarce. Only one study which has focused explicitly on investigating lecturers' perceptions about the use of mobile technology for EFL teaching was identified. Ali, Gulzar, and Yasmeen (2018) administered a survey to 100 lecturers in the Pakistani tertiary sector and reported that although participants considered mobile technology a new phenomenon, the lecturers were willing to incorporate it. As noted above, similar enthusiasm and positive perceptions were also reported by two lecturers who participated in the study by Nair et al. (2020).

Despite the proliferation of mobile technology in Pakistan, few studies have been published in the known MALL journals though several self-published studies are available online. In the Pakistani context, none of the published MALL studies fulfils the authors' inclusion criteria for seminal literature reviews (e.g., Burston, 2015; Kukulska-Hulme & Shield, 2008). Similarly, in the most recent reviews, in which Burston & Athanasiou (2020) analyse 25 years of MALL and Gillespie (2020) includes studies published during 2006-2016, none of the studies was conducted in Pakistan. It would appear that the current study is the first to elicit lecturers and students' perceptions of and practices in using mobile technology for EFL teaching and learning in three universities in responding to the dearth of MALL research in Pakistan.

1.4.3 Research gaps

In the light of empirical evidence in the context of Pakistan as presented in this chapter and around the world (see Chapter Three for literature review), this study aims to provide evidence of how the incorporation of mobile technology enhances the teaching and learning of core EFL skills (i.e., listening, reading, speaking and writing). The existing empirical evidence, as presented above, is primarily related to teachers and students' general perceptions of the role of mobile technology for teaching and learning. This study responds to a sustained call in MALL literature, which emphasises the need for an ongoing investigation of students' changing learning practices in the rapidly changing nature of mobile technology.

In addition, this research contributes to MALL literature in Pakistan, a resource-constrained context (see Section 1.4.1 and 1.4.2 for literature review), where mobile technology is the primary and, in most cases, the only way of connecting to the internet. The current study examines how mobile technology is integrated by teachers and how it is utilised by students in contexts where students' access to other devices is limited.

Notably, in MALL literature, examining the role of mobile technology in the process of language teaching and learning has garnered considerable interest. A growing body of MALL research recognises the importance of technological and environmental affordances in facilitating language teaching and learning. In line with the current trends in MALL literature, the present research explores, for the first time in the Pakistani context, how the mobility of devices and mobility of learners can play a deciding role in teachers' pedagogical decision making. The current study narrows a gap in Pakistani and international MALL literature regarding how teachers leverage the ubiquitous availability of mobile technology for teaching EFL skills and providing assistance to students. Hence, this study offers some critical insights into the role of multiple factors and actors in enabling language learning from an ecological perspective.

1.5 Purpose

In the context of MALL, the teachers' role is deemed fundamental in enabling language learning through maximising mobile technology's intrinsic affordances (Traxler, Read, Barcena, & Kukulska-Hulme, 2018). Teachers can enrich language learning experiences for learners by blending formal language learning in the classrooms and informal language learning in authentic contexts (Dettori & Torsani, 2013; Kukulska-Hulme, 2015; Pooley, Midgley, & Farley, 2019; Reinders & Cho, 2011). By exploiting mobile technology affordances, teachers can help learners navigate, *notice*, and negotiate linguistics affordances in multi-directional ways (Godwin-Jones, 2018). Moreover, to tailor lessons contingent on learners' needs, teachers can include their students as co-designers of their lessons.

Due to the technical, financial, institutional, and attitudinal barriers described earlier in this chapter (Section 1.2), mobile technology's transformative potential, however, has not been fully explored by L2 teachers. Many researchers have noticed that the potential of MALL has been constrained due to the teachers' tendency to use traditional practices in teaching cohorts of learners whose everyday lives are defined and mediated through mobile technologies (Burston, 2014a; Cochrane, 2013; Kukulska-Hulme et al., 2017). Teachers' use of traditional pedagogies might be attributed to the lack of professional development about mobile technology's pedagogical use for L2 teaching.

A dichotomy among teachers' pedagogical and students' learning practices has been noticed. On the one hand, students' learning practices are determined by mobile devices as they live in an increasingly mobile world without boundaries. Students follow non-linear learning trajectories¹ as they are not tethered to specific places or times; and can connect to various people and learning spaces at convenient times and spaces. They may not have to wait for specific spaces or times and can learn, literally, on the move with their mobile devices. Another aspect of their non-linear learning trajectories is that they may sit in a traditional classroom but connect to various learning spaces through their connected mobile devices. On the other hand, the tendency to apply traditional linear pedagogies², in which teachers are in-charge of the learning process transmitting pre-planned content/information to students in enclosed classrooms with predetermined schedules, still dominates.

It has been also noted that teachers' designed EFL lessons are largely for definite and defined contexts inside the classrooms, in sharp contrast to students' everyday learning practices who may come across linguistic affordances across various contexts (Hubbard, 2020; Sharples, 2016). Hence, the adoption of "flexible and adaptive pedagogies" (Tolosa, 2017, p. 51) is required to respond to mobile learners' needs and help them navigate through their non-linear trajectories of learning.

The theoretical framework of this study was an ecological paradigm, or perspective, which implies studying a phenomenon in its entirety as well as focusing on the role of interactions among various components and participants of a learning environment/ecosystem. An ecological paradigm not only considers the relationships of various components within the ecosystem, but also considers external influences. While investigating a learning ecosystem with an ecological paradigm, it is essential to examine thoroughly how teaching and learning are influenced by the relationships among all the stakeholders and with other contextual factors.

The purpose of the current inquiry is to study the role of mobile technology in the pedagogical decisions and practices of Pakistani EFL lecturers in three universities. More specifically, the

¹ Non-linear learning trajectories refer to students' mobile-mediated learning practices across times and spaces without following any pre-determined schedules.

² Linear pedagogies refer to teachers' traditional pedagogical approaches, which follow pre-determined lesson plans and have a little room for learner agency.

current study investigates how lecturers in the Pakistani university sector employ mobile technology to enable MALL. This study also investigates students' perceptions about, and practices in, the use of mobile technology for EFL learning.

As this study focused on investigating mobile-incorporated pedagogical practices from an ecological paradigm, it examined students' perceptions and practices regarding EFL learning using mobile devices. Overall, this study provides insights into EFL lecturers' mobile-mediated pedagogical decisions and practices to enable students' mobile-integrated L2 learning.

1.6 Research questions and study design

The overarching research question (RQ) asked in this research is: What is the role of mobile technology in the pedagogical decisions and practices of Pakistani EFL lecturers to enable MALL?

This research question was answered through two sub-questions:

RQ.1. How do the lecturers in Pakistan harness the affordances of mobile technology in their pedagogical practices for EFL teaching?

RQ.2. What are the learners' perceptions and practices regarding the use of mobile technology for EFL learning?

As mentioned earlier, this research is informed by an ecological paradigm that entails an interplay of various actors, tools, contexts, and resources within a learning ecosystem (see Chapter 2 for details). Informed by the ecological paradigm, this study adopted a mixed-methods design to examine mobile technology's role in Pakistani lecturers' pedagogical decisions and practices to enable MALL. This research considers the perceptions and practices of six lecturers, 229 students in their classes, technological devices, contextual affordances, and barriers. Equal importance is given to examining the participants' interactions with one another, as well as their contexts and EFL resources.

The purpose of this research and the ecological perspectives informing this study determined the methodological approach taken in this study. As mentioned earlier in this chapter, this study's purpose was to thoroughly investigate the role of mobile technology in Pakistani lecturers'

pedagogical decisions and practices to enable MALL with all its intricacies involving two key stakeholders (e.g., teachers and students).

An ecological paradigm, as an epistemological stance, acknowledges the significance of reciprocal relationships among people and their environment for teaching and learning. Hence, a mixed methods research design with multiple data collection methods was deemed pertinent to capture the reciprocity of relationships among two key stakeholders and their environments in a holistic way. Therefore, despite being predominantly a qualitative study, a quantitative survey was used to include the voices of a larger cohort of students to examine how the lecturer-participants' mobile-mediated pedagogical decisions influenced their students' learning practices.

1.7 Significance

The current research is significant as it responds to a sustained call for more empirical research regarding the use of mobile technology for language teaching (Bozdoğan, 2015; Burston, 2014a; Burston, 2014b; Kukulska-Hulme et al., 2017). It is anticipated that this study will generate valuable insights by identifying how the lecturers harness mobile technology affordances to enable MALL in Pakistani universities.

Moreover, in the field of m-learning and MALL, many researchers (e.g., Bernacki, Crompton, & Greene, 2020; Pachler, Bachmair, & Cook, 2010; Sharples, Taylor, & Vavoula, 2010; Sharples et al., 2016) have indicated a need for a theory to interpret the unique phenomenon of teaching and learning defined by increasingly blurred boundaries between formal and informal environments. As the ecological paradigm has not often been used in MALL literature, this study is expected to make a meaningful contribution at the theoretical level.

Although the notion of ecology in L2 literature is not new (Steffensen & Kramsch, 2017), this study reveals how it can be used to investigate a phenomenon in its entirety. It makes a significant theoretical contribution by providing empirical evidence to establish how ecological perspectives can help investigate the relationships among teachers, students and their ecosystems/environments in the context of ever-changing teaching and learning practices due to the rapid advancements of mobile technology.

Moreover, growing ownership of mobile devices in Pakistan, as described earlier in this chapter (Section 1.4.2), justifies an inquiry into incorporation of mobile technology into pedagogical approaches. As far as the researcher knows, this is the first study in Pakistan to examine the role of mobile technology in EFL teaching and learning by interrogating the perceptions and practices of key actors (e.g., teachers, students) and elements (e.g., mobile devices, authentic contexts) in the Pakistani learning ecosystem. Although the integration of mobile-assisted teaching and learning might have been investigated in other contexts, because of the importance of local contexts for language teaching and learning, this in-depth inquiry may provide new insights into the interdependence of teaching and learning within the Pakistani ecosystem related to L2 development. By focusing on the opportunities and challenges related to MALL faced by teachers and their students, the current study contributes to empirical research in the field of MALL in Pakistan.

Moreover, this research is timely as mobile technology's affordability has made it preferable in Pakistan for study and all other interactions related to trade (e.g., online shopping, banking, and corporate communication). As the English language is used for official communication in the government and corporate sectors, this research will also have ramifications for MALL pedagogy and the wider m-learning community. Findings are expected to highlight mobile technology's benefits through enhancing students' communicative competence required to survive in an increasingly digitalised job market.

Additionally, this study may also lead to further investigation of mobile-assisted teaching and learning in schools, which is scarce in the Pakistani context; it is expected to inform future EFL policies in the tertiary and school sectors of Pakistan. Policies regarding initial teacher education programmes and professional development programmes in Pakistan may also benefit from this empirical investigation. Importantly, although this research investigates mobile-assisted teaching and learning in Pakistan, it may contribute to a growing interest in MALL in similar contexts which have insufficient resources and compromised IT infrastructure.

1.8 Thesis outline

This thesis is organised into nine chapters. Chapter One has introduced the study's topic, background, research purpose, context, and significance. Chapter Two is comprised of the literature review of the ecological paradigm, the theoretical framework for this research. Chapter

Three presents a review of the relevant empirical research that has been undertaken across the world. Chapter Four describes the study's research design by explaining how a mixed-methods research design aligns with the study's overall purpose and theoretical framework. In the fourth chapter, details are provided about the research context, participants, data collection instruments, methods, and data analysis highlighting the steps taken to ensure the validity and trustworthiness of data collection and analysis procedures.

The next three chapters (Five, Six, and Seven) present the findings related to mobile technology's role in EFL teaching and learning in Pakistan. The findings' chapters include data gathered through six lecturers' initial interviews, lesson observations, post-observation interviews, and the results from students' survey along with three focus group interviews. Given the interconnectedness inherent to ecological perspectives, data collected from the lecturers and their students is presented in an integrated way. Chapter Five presents an overview of the pedagogical dimension (see Chapter 2 for the description of the dimensions used in this study). Chapter Six builds on the data presented in Chapter Five and unpacks the details of the technological dimension. Thus, Chapter Five and Six partially address the overarching research question. Chapter Seven contributes to answering the overarching research question by reporting the findings related to the transactional, physical, and temporal dimensions. Chapter Eight interprets, explains, and discusses the findings in the light of prior research in the field of MALL and the theoretical framework to answer the research questions. Finally, Chapter Nine summarises the study, proposes recommendations for improvement in EFL teaching, signals the contributions of this inquiry to existing MALL research, and suggests some areas for further research.

Chapter 2. Theoretical Framework

2.1 Chapter overview

An ecological perspective provides a theoretical framework to understand and explore the complex phenomenon of language learning and teaching with mobile devices in this study. This chapter explains and justifies the ecological paradigm and the constructs of ecosystems and affordances, the central tenets of this study.

The chapter begins with an overview of the ecological perspective in L2 literature (2.2), followed by an explanation of two constructs related to the notion of ecology. The next section (2.3) provides a rationale for framing this study from an ecological perspective. The fourth section (2.4) presents empirical research informed by ecological perspectives, the constructs of ecosystems and affordances in CALL/ MALL literature. An ecological model, which informed data collection, analysis, presentation, and discussion, is presented in the fifth section (2.5). The sixth section (2.6) concludes the chapter and connects it with the next.

2.2 Ecological perspectives in CALL/MALL research

Traditionally rooted in biology, the term ecology refers to studying relationships and interactions among living organisms and their environments. In educational literature, the term ecology is used to describe the reciprocity of relationships among people and their environments. The central tenet of an ecological approach is its emphasis on learning processes, both teaching and learning, which goes beyond the concept of student-centeredness or teacher-dominance.

Describing ecological approaches in education and e-learning, Frielick (2004, p. 1) contends that “teaching/ learning is an ecosystemic process of transforming information into knowledge”; it involves complex interactions among teachers, students, learning content and contexts.

In L2 literature, the term ecology has been increasingly used to understand and describe the complex process of language teaching and learning. Several researchers (e.g., Lemke, 2002; Steffensen & Kramsch, 2017; Uryu, Steffensen, & Kramsch, 2013; Van Lier, 2011) have advocated for the notion of ecology to understand how dynamic social relationships and contextual elements in learners’ environments facilitate L2 acquisition. Van Lier (1997; 2004), a pioneer in the use of ecological perspectives for language learning and teaching, goes beyond the traditional approach of language learning as *input* and *output*. Instead, he considers L2 learning

occurring as the result of individuals' purposeful engagement and interactions with humans and environments. He highlights the role of social relationships and activities, as well as mental processes, for L2 teaching and learning. According to Van Lier (2010, p. 3):

An ecological approach aims to look at the learning process, the actions and activities of teachers and learners, the multilayered nature of interaction and language use, in all their complexity and as a network of interdependencies among all the elements in the setting, not only at the social level but also at the physical and symbolic level.

While the notion of ecology is not new in L2 literature, it was popularised in the first decade of the 21st century and gained momentum with the use of technology for language teaching and learning (Steffensen & Kramch, 2017). In the context of CALL/MALL, the use of an ecological perspective is increasingly embraced to navigate through the “criss-crossing complexities” (Van Lier, 2011, p. 384) of L2 teaching and learning in “diverse spaces, contexts, situations, technologies, and systems” (Hoven & Palalas, 2016, p. 114).

In the last decade, Hoven and Palalas (2011; 2016) combined various constructs of *constructivism* and *ecology*, proposing a learning theory, Ecological Constructivism. An ecological model proposed by Palalas (2013), described later in the current chapter (see Section 2.5), has been used in the present study. Drawing on the model, the researcher investigated the relationships among multiple components and actors that shape and influence teaching and learning in an ecosystem.

Moreover, it is important to acknowledge that the term ecology evokes various connotations in the world of L2 teaching and learning. For instance, Steffensen and Kramsch (2017, p. 2) regard it challenging to define ecology for L2 teaching and learning. They argue, “While one can easily identify the ecology of an animal..., it is far from clear exactly what the ecology of (a) language is”. van Lier (2004) also discusses how the term ecology has evolved over the years. He notes, “Originally, ecology was the study and management of the environment... or specific ecosystems. However, it is nowadays also used to denote a world view” (p. 3) which “touches all aspects of how, why and what we educate” (p. 20).

Recently, in m-learning and CALL/MALL literature, the term ecology has been used as an alternative to an ecosystem or a context. For instance, Hammond (2020, p. 855) notes, “many

contemporary researchers use the term as not more than a stand-in for local context”. In L2 research, Steffensen and Kramersch (2017, p. 3) use the term “sociocultural ecology” in order to describe “language in relation to the social and cultural forces that shape the conditions of speakers and speech communities”. Pegrum (2019) also uses it as an alternative to a context or an ecosystem. While referring to the success of a BBC project in Bangladesh, he notes that this project “demonstrates how different technologies can work together in a learning ecology” (p. 214). Likewise, Hoven and Palalas (2016) use the term ecology as an alternative to a system. Discussing language learning with mobile devices, they contend, “The learners (and teachers) are seen as mutually inter-dependent mobile agents immersed within a system (or ecology).”³ (p.129).

Underpinned by an ecological approach, the current study examines their interrelatedness within learning ecosystems in the context of L2 teaching and learning with mobile technology. The convergence of all media platforms and resources into one single mobile device with internet connectivity makes MALL an emergent and ever-evolving, rather than absolute and predetermined, process. That is, the current study has focused on the constructs of ecosystems and affordances because they are central to L2 teaching and learning from ecological perspectives. An overview of these two constructs is presented in the following sub-sections.

2.2.1 Ecosystems

The term ecosystem, typically associated with biology, corresponds to a community of living organisms and non-living elements in the environment. All elements of an ecosystem/environment work as a system influenced by internal and external factors. Hence, an ecosystem can be defined as a network of interactions among organisms themselves and their environments (Bronfenbrenner, 1979).

Drawing on the dynamic properties of networking of a biological ecosystem, Bronfenbrenner (1993) presented the social ecosystems of human development. Bronfenbrenner (1979) alludes to different ecosystems, which contribute to human development: the microsystem corresponds to close personal relationships; the mesosystem refers to interactions among an individual and

³ In the present study, the terms ecology and ecosystem have been used alternatively to describe an interplay among various actors and factors in an environment/context/system.

people known to the individual; the exosystem describes relationships within local communities; and the macrosystem encompasses cultural and national influences.

Various fields have recently adopted the term ecosystem, for example, a digital ecosystem, a business ecosystem, and a learning ecosystem. The term ecosystem has also been embraced in CALL/MALL literature because the flexibility of mobile devices makes L2 teaching and learning a holistic, emergent and fluid process of *meaning-making*, rather than a “pre-established matrix” which determines the process of teaching and learning (Tudor, 2003, p. 3).

An L2 language learner's ecosystem is a web of interactions among various external and internal elements and actors. Blin (2016b, p. 42) provides an all-inclusive description of CALL/MALL ecosystems:

CALL [/ MALL] ecosystems consist of interacting components including language learners, teachers and other users of the target language, technological devices, applications and platforms, multimodal materials/semiotic artefacts and resources, ... as well as the social processes and semiotic practices that characterise the way the human actors interact with one another and with other components of the system.

In sum, it can be argued that a language learner is a part of many ecosystems including, classroom, institute, playground, recreational and socialising spaces in physical and virtual worlds (e.g., cafeteria, online platforms). A classroom is just one of the ecosystems, which is not alienated from other ecosystems (Van Lier, 2011). When the mobility of mobile technology is part of all the ecosystems of L2 learners, they become more dynamic and complex, necessitating an ecological approach to teaching.

2.2.2 Affordances

The concept of affordances is a central construct of an ecological perspective and is an overarching term for the current study. Therefore, it is deemed appropriate to present a brief overview of the term affordances and position it in m-learning and MALL literature before presenting its operational definition for this study.

The term, affordances, has been used inconsistently, and at times ambiguously, in various fields such as ecological psychology, human-computer interaction, m-learning, and CALL/MALL (Blin, 2016a; Oliver, 2005). The concept was initially introduced by Gibson (1979), who defined

affordances as the characteristics of an environment, that is, “what it offers the animal, what it provides or furnishes, either for good or ill” (p.127). Gibson views affordances as objectively measurable properties that exist naturally and are independent of an actor’s ability to perceive them. In contrast, other researchers (e.g., Norman, 1988; Van Lier, 2004; Zheng & Yu, 2016) contend that affordances are not static or permanent; instead, they are relational and situated, emerging according to individuals’ needs as a result of their interactions with the environment.

Despite the ambiguity associated with the term affordances, it is widely used in educational technology literature, including CALL/MALL with varying connotations (Bower & Sturman, 2015; Darhower, 2008; Hoven & Palalas, 2016; Levy & Steel, 2015; MacCallum, Day, Skelton, & Verhaart, 2017; Newgarden, Zheng, & Liu, 2015; Van Lier, 2000). The term affordances has been used as an alternative to technical features of mobile devices such as “mobile-specific affordances, such as GPS tagging, and built-in cameras” (Cochrane & Bateman, 2010, p. 4) and as specific characteristics associated with mobile devices, including but not limited to portability, ubiquity, and multimodality (Orr, 2010; Schrock, 2015).

In L2 literature, the term affordances has also been used as a relationship between learners and their environment “that signals an opportunity for or inhibition of an action” (Van Lier, 2004, p. 4). Affordances have also been described as the “potentials for learning and experience which are present and available in the environment for perceptions by learners, leading to action and learning, and which are relative to individual learners and their intentions, to the context and the context-embedded technology” (Hoven & Palalas, 2016, p. 124).

2.2.2.1 *Operational definition of the term affordances*

In this study, the term affordances is defined as the potential for learning perceived by teachers and learners that exists within mobile devices. This could be in the form of technical features or one that emerges in a learning ecosystem due to mobile-mediated contextual interactions leading to or inhibiting an action. It also includes other contextual enablers that facilitate the ubiquitous availability of mobile technology.

The operational definition of affordances for this study is informed by Hoven and Palalas’ s (2016) definition of affordances and the notion of affordances posited by Van Lier (2004) as elaborated earlier in this chapter. The primary constructs of an ecological paradigm are embedded in this operational definition. It considers the learning opportunities provided by built-

in features of mobile technology as well as ones perceived by learners and teachers within a learning ecosystem. The operational definition for this study also encompasses mobile-mediated contextual interactions that may refer to social, temporal and physical interactions in authentic and virtual contexts (Hoven & Palalas, 2016). Most importantly, it gives equal importance to learners and teachers as learning potential may be associated with both teachers and learners who use opportunities while planning lessons to enable learning and to complete the planned activity.

2.3 Connecting the ecological paradigm with the current study

The current study investigates the role of mobile technology in the Pakistani lecturers' pedagogical decisions and practices to enable MALL in Pakistani universities. Therefore, ecological perspectives are appropriate in the current inquiry to understand the multifaceted role of mobile technology in the lecturers' pedagogical decisions and practices as well as their students' learning practices.

The current study acknowledges that the role of interactions and situations or contexts is significant in language learning and teaching. The ecological perspective was useful in examining the interactions among the lecturers, their students, EFL resources, and other interlocutors in the mobile contexts. An ecological perspective was equally useful in examining the lecturers' pedagogical practices, which enable language learners to notice linguistics affordances in dynamic real-life contexts by harnessing the technological affordances of mobile devices.

2.4 Empirical evidence on ecological perspectives in L2 literature

Even though ecological perspectives are not new in L2 literature, there is a paucity of research in this area in CALL/MALL literature. This section reviews empirical studies which use ecological perspectives related to L2 teaching and learning in tertiary settings.

Liu and Chao (2018), using an ecological perspective with 37 students and their lecturer in a Taiwanese university, investigated how a lecturer's perception of affordances in the ecosystem of a classroom could facilitate L2 teaching. Data were collected in thirty hours of classroom observation and ten post-observation interviews with the lecturer. The authors note that a lecturer's role is central in making students aware of the affordances of a technological tool and that the lecturer's perception of the affordances might be beneficial for language learners.

Consistent with an ecological paradigm, Liu and Chao' (2018) study found that a teacher's understanding of the context, the students and their expectations played a crucial role in her pedagogical decisions regarding technology-enhanced L2 teaching. The authors also noted that despite students' expertise in using technological tools, the teacher's contribution was fundamental in making students perceive the affordances of technological tools for language learning. The authors concluded that while technology provided more pedagogical choices for L2 teaching, "pedagogical adjustments are needed to make affordances easier to perceive and take advantage of" (p. 81) according to learners' needs.

In another study, taking an ecological perspective and its related construct of affordances, Thoms and Poole (2017) investigated 15 undergraduate learners' interactions during collaborative reading in digital environments through their comments. Students read 18 poems written in Spanish for four weeks. Data were collected through students' online discussion threads, a survey and four individual interviews. The authors identified linguistic, social and literary affordances that emerged during students' collaborative reading. The findings indicated that students' comments focused more on social, collaborative and literary affordances (e.g., interpreting the poems, elaborating one another's comments).

Thoms and Poole (2017) pointed out that the affordances of collaborative digital reading allowed learners to engage with reading for a more extended period through their interactions with their peers and their instructor. The authors also argued that collaborative/social affordances transformed reading, typically a solitary activity in L2 learning, into a dynamic experience. While collaborative reading affordances could enrich pedagogical practices by allowing student-teacher interactions outside the class, they reported that some students tended to be influenced negatively by their peers' comments and may need support.

Ecological perspectives also informed Thoms (2014), who collected data from 18 L2 tertiary students to investigate the pedagogical affordances of their lecturer's oral interactions with them during the whole-class discussion. The author found robust evidence of how the lecturer's reformulations (i.e., explanations, corrections, clarifications, and feedback) of one student's oral comments during the discussion was an affordance for that student and the whole class. The teacher's pedagogical decision to provide an explanation or clarification of one student's comments by posing questions to probe comprehension of the text were affordances for other

students to comprehend the text and increase their participation in linguistically correct academic speaking. The author suggests that an ecological perspective of L2 teaching, recognising and exploiting various pedagogical affordances in upper-level classes, created potential learning opportunities.

Ecological perspectives and the construct of affordances also informed Ducate and Lomicka's (2013) empirical study with 39 students in two intermediate-level foreign language classes. The authors investigated "the affordances of mobile devices that encourage interactions with the target language" (p. 445). They examined a range of activities both inside and outside the classroom made possible due to the interactional, physical and temporal affordances of mobile technology. The authors also trained students to perceive the affordances of mobile technology for educational use in formal and informal settings within their learning ecosystem. They claimed that mobile technology afforded increased access to L2 authentic materials at convenient times and places for students. The students also reported that the mobility and connectivity of mobile technology provided them with more choices regarding their access to authentic material resulting in their more interactions with L2.

Darhower (2008) similarly analysed the role of affordances for L2 learning. He investigated bilingual telecollaborative text chats between two groups involving Spanish-speaking learners of English and English-speaking learners of Spanish. His study analysed the participants' nine chat logs. Various linguistic affordances were identified while the participants reformulated one another's chat for further explanation, provided meanings of some words, and sought help for comprehension. The author concluded that various linguistic and collaborative affordances could emerge in the environments involving text-based chat, which results in enriched L2 learning experiences.

In another study, Hoven (2007) investigated the affordances of technology for pre-service teachers to help shape their teacher education experience of L2 teaching and learning. The study was conducted to redesign a post-graduate course, Technology, and Language Learning, to enable students to perceive technology affordances and incorporate them into the curriculum to enhance their L2 teaching. The study documented and analysed pre-service teachers' responses to technology-enabled changes in the course, from face-to-face to a blended collaborative approach.

In Hoven's (2007) study, focused on making students perceive various affordances related to technology, the author considered the students' academic and personal lives, thus encompassing learners' entire lives. The course redesign considered various factors within their ecosystem, potentially impacting their relationships with their lecturer, peers and learning resources. For example, temporal affordances and constraints were considered a determining factor in L2 teaching and learning because many of them were studying, working, and managing family commitments. Physical affordances and constraints were also regarded as crucial because computer laboratories (labs) were not generally available at the scheduled class time. The teacher's pedagogical decisions regarding the course redesign also considered the content to be taught given the technological developments, as well as the pedagogical approach to developing pre-service teachers' skills to incorporate technology for L2 learning and teaching

Taking the significant elements (e.g., temporal and physical affordances/constraints) and agents (e.g., students, lecturer/course designer) of teaching and learning in pre-service teachers' ecosystem, to enable students' interactions, Hoven (2007) incorporated multiple technological resources/platforms including email, discussion forums, SMS, blogs, wikis and other online resources. By employing these technological resources, the author emphasised that "using language for communication and negotiation of meaning rather than merely teaching about language" through collaborative learning practices "to provide learners with the means of tracking their emerging understandings and competencies" (p.138).

The findings suggested that while the learners engaged in online collaborative interactions and found it empowering, many indicated the need for more scaffolding for autonomous learning activities. The study also highlighted teachers' role in making students notice various affordances. With the lecturer's assistance, the students could perceive the potential of blogs for collaborative L2 learning by seeking and providing assistance to their peers. The author concluded that the learners' needs and their learning practices should be taken into account while integrating technological resources. Hoven (2007, p.152) also recommended developing "a flexible and adaptive pedagogy" that suits the students' environments and ecosystems.

In the context of CALL, Van Lier's (1997; 2008) work provides significant implications for MALL. For example, he examined the role of affordances for L2 teaching and learning (Van Lier, 2002) by analysing teacher-student interactions in two classrooms in which computers were

used. In one of the classrooms, he described how a lecturer used computers to generate affordances for L2 students for making websites and presentations. The study found that computers were used to enhance students' engagement with L2 learning and foster autonomy and collaboration. Van Lier concluded that "in order to be pedagogically effective, technology has to be integrated into creative, open-ended classroom work that goes beyond the transmission of knowledge and skills" (p. 62). Thus, he emphasised the significance of pedagogical decisions and their alignment with other elements and factors (e.g., availability of technological tools, classroom settings, and learners' expectations) in a classroom's ecosystem.

Overall, based on the theoretical and empirical evidence, it can be argued that ecological perspectives view all elements and agents of an ecosystem as interacting with one another, their internal, socio-cultural, and physical environments. Using ecological perspectives in the current study provided the researcher with a deeper understanding of the diversity and complexity inherent in MALL in the Pakistani university context.

The following section (2.5) describes how ecological perspectives inform the entire process of data collection, analysis and reporting.

2.5 The Mobile Learning Eco-System: An ecological model underpinning the study

Digital learning, including mobile learning, can be examined from different theoretical models. While selecting a framework to understand, investigate and analyse mobile-enabled L2 teaching and learning, a framework was needed to help analyse the complex processes in MALL. In CALL/MALL literature, the commonly used framework is the four-tiered approach Substitution, Augmentation, Modification, and Redefinition (SAMR) model proposed by Puentedura (2006), which teachers can use to select, use and evaluate their technology use. The first two stages of this model help teachers evaluate if the technology is used as a substitute for or an augmentation of the resources or tools traditionally used for similar educational activities. The next two levels seek to evaluate if technology can help redesign tasks to modify and transform traditional educational activities.

The SAMR model has been extensively used in m-learning. In CALL/MALL literature, Hockly (2013) has encouraged evaluating the design of instructional resources using the SAMR model.

However, after careful consideration, the SAMR model did not seem appropriate for investigating and analysing MALL in the current research for two reasons. Firstly, despite being extremely popular for the design of educational activities, it lacked theoretical foundations. An interpretation of the model given by Puentedura is in the form of presentation slides with few connections to published research and theory has led to contradictory explanations and interpretations of the model (Hamilton, Rosenberg, & Akcaoglu, 2016). Secondly, the SAMR model focuses on how teachers design and analyse learning activities using technology; it does not capture the complexity of MALL as students and learning contexts are not taken into account. Since the taxonomy represented by the SAMR model is not ecological as it does not connect all elements and agents within a learning ecosystem, the SAMR model was not deemed suitable for the current study.

Another popular model among the m-learning and CALL/MALL research community is the Technological, Pedagogical, Content Knowledge (TPACK) (Mishra & Koehler, 2006). This model proposes an intersection of three types of knowledge in order to teach effectively with technology. This model has been extensively utilised in technology-integrated teaching and learning in the last decade as it prompts teachers to examine and evolve their knowledge related to the three nodes, as mentioned in TPACK. Although the interconnectedness of these three types of knowledge could support, to some extent, the ecological perspective, the focus of the current study is not to examine teachers' knowledge about content, technology and pedagogy. TPACK does not explicitly include learning contexts in pedagogical decisions and practices. Therefore, this model did not seem to represent the entire range of interactions among various agents and contexts, which is the distinguishing characteristic of an ecological approach for teaching and learning.

In sum, interactions across contexts using various mobile-enabled platforms should be fundamental parameters for language teachers to conceptualise, design and assess their technology-enhanced pedagogical practices (Kukulka-Hulme, Lee, & Norris, 2017). Neither the SAMR nor TPACK models focus on the role of mobile-mediated multimodal communication and interactions in various authentic and virtual contexts. Since both these models did not encompass various layers and connections within an ecosystem, these models were not deemed appropriate for a study underpinned by the ecology paradigm.

For the current study, I drew on an ecological model The Mobile Learning Eco-System (Figure 2.1), proposed by Palalas (2013) to gather evidence about both lecturers' pedagogical decisions and practices, as well as students' learning perceptions and practices. Palalas's (2013) framework has also been used to analyse and present the data to examine and document how the technological and environmental affordances used in pedagogy enable language learners in Pakistani universities to perceive affordances within their ecosystems and use them for linguistic actions.

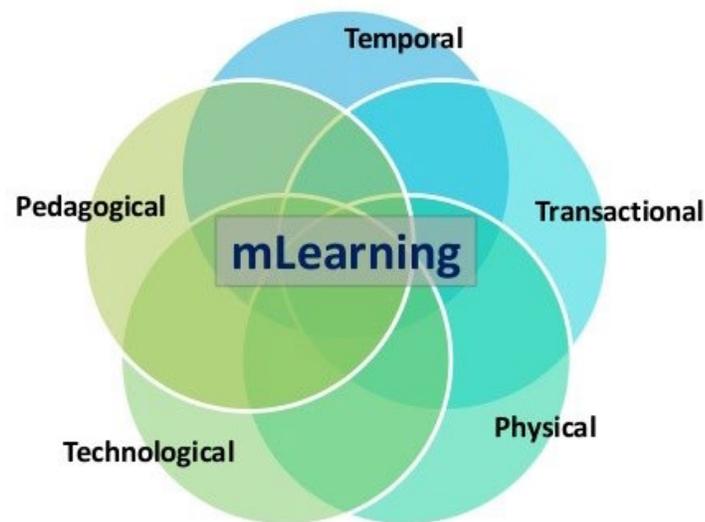


Figure 2.1. The Mobile Learning Eco-System (Palalas, 2013). Reprinted with permission.

The Mobile Learning Eco-System model (Figure 2.1) was presented in an article and a video presentation (Palalas, 2013a; Palalas, 2013b). According to Palalas (personal communication, February 17, 2021), this model evolved during a longitudinal study conducted in a Canadian community college that investigated the effectiveness of a mobile-enabled solution to address the problem of adult L2 students' listening skills (Palalas, 2012). In the study, Palalas (2012) focused on designing a mobile-based solution, which could help learners extend their learning beyond the classroom.

The author documented how the use of mobile technology's technological affordances enabled mobile-mediated pedagogical interactions/transactions⁴ to enhance L2 learning. The students

⁴ In this thesis, the words transactional and transactions are interchangeably used for interactional and interactions.

were enabled to make personal transactions with L2 resources and contexts and interpersonal transactions with other people using their mobile devices for L2 learning. During the iterative process of data collection over 18 months, the author designed a mobile-accessible website named Mobile-Enabled Language Learning Ecosystem (MELLES). The website encompassed “a whole network of actors, learning tasks and resources integrating the environmental supports with the help of mobile technologies” (p.1).

MELLES was designed to demonstrate an interplay of pedagogical, technological, physical, temporal and transactional dimensions because it functioned “like an eco-system connecting the actors, resources, and the context of learning anytime, anyplace” (p.5). Findings demonstrated a significant improvement in learners’ L2 listening skills through carrying out individual and collaborative listening activities, creating multimedia artefacts, engaging in peer feedback, and seeking teacher’s assistance in and beyond the classroom. Findings also indicated that the coexistence and interdependence of various elements and actors, for pedagogical use, within MELLES was critical in enabling learning.

Palalas (2012) posited that the role of mobile technology was crucial as it worked as a “glue and enabler of all the pedagogical features” to facilitate L2 learning and enable “communicative exchanges, storage and access to ...content, learning support and scaffolding” (p. 7). Hence, a blend of pedagogical, technological, temporal, physical and transactional dimensions in MELLES enabled L2 teaching and learning through interdependent interactions among learners, teachers, environments, and mobile devices.

The Mobile Learning Eco-System model (Figure 2.2) contains five components, elaborated in the following sub-sections. Although Palalas’s (Palalas, 2013b) description of these dimensions is crucial to understand them, the researcher has associated these dimensions with the corresponding affordances for the current study because the term affordances aligns with the ecological paradigm underpinning this research.

2.5.1 The technological dimension

In the current study, the technological dimension refers to mobile technology's affordances related to various features such as availability, flexibility, built-in features, connectivity, soft wares/apps (applications), and students’ expertise in operating mobile devices. The technological affordances include the technological spaces where information is stored (e.g., cloud or mobile

storage), which enable mobile-mediated interactions among content and users. The technological dimension also refers to the constraints which become barriers to L2 teaching and learning.

In this study, the primary role of technological affordances is to enhance flexibility through portable devices for L2 teachers and learners and to connect them with various contexts in an ecosystem. Although every study in the MALL literature includes technological affordances, a few will be used as examples to demonstrate how technological affordances can enable L2 teaching and learning. An empirical study, West and Ei (2014), reported the use of mobile devices as an affordable way of providing easy access to content and promoting the habit of reading in developing countries. Other researchers (e.g., Gromik, 2012; Toland, Mills, & Kohyama, 2016) have reported that built-in video recorders technological affordances provided opportunities for practising L2 speaking skills leading to improved speaking proficiency and presentation skills. Further empirical evidence is presented in the following sections on how technological affordances generate the temporal, physical and transactional affordances in a learning ecosystem.

The next two sub-sections describe the temporal and physical dimensions, which have been described as corresponding affordances. Although the affordances of the physical and temporal dimensions are intermingled, they are described separately for clarity.

2.5.2 The temporal and physical dimensions

The temporal and physical dimensions are highly interconnected, but they have been discussed separately for clarity.

2.5.2.1 *The temporal dimension*

The temporal dimension covers a wide range of learnable times that become available at various formal and informal places. Palalas (2013, p. 91) posits that mobile learning can be structured “as a component of in-class instruction or designed as a time-flexible or time-bound learning task”. She further elaborates that learners may start a mobile-mediated learning activity at one specific moment that can then be paused if required and restarted when they find a time that could be “more conducive to knowledge building” (Palalas, 2013, p. 91). Hence, mobile technology provides individuals with a host of choices regarding learning at such times that may provide additional support for “rehearsal and reflection” (Palalas, 2013, p. 91).

The temporal dimension not only refers to the times of learning but also refers to the length of learning. Palalas (2013) contends that due to the ubiquitous availability of mobile technology, times of learning may emerge during unplanned, short periods such as travelling, sitting in the café, the time between meetings or classes that can be used to listen “to a podcast, watch a video, answer an email or complete an assessment task” (Palalas, 2013, p. 92). She further elaborates that although learning occurs in small chunks of time, episodic learning may not necessarily be translated into a meaningful and useful learning experience. Therefore, planned, extended periods (e.g., planned lessons at home, in the library/classroom) are needed for meaningful learning to happen. Mobile devices have the potential to turn both short and extended periods into learning experiences and to bridge the gap between formal and informal learning.

In conclusion, the temporal dimension is “a multifaceted territory populated by interstitial learnable moments, time-bound events, as well as extended periods of learning” (Palalas, 2013, p. 92). Since no definite lines can be drawn among various dimensions of a MALL ecosystem, teaching and learning occur at various times when they intersect with other dimensions.

2.5.2.2 *The physical dimensions*

The physical dimension refers to the affordances related to places or locations of learning, including particular circumstances at the time of learning, such as authentic and virtual contexts. As mobile devices have been turned into mini-computers, various formal and informal spaces can be utilised for learning: for example, inside the classroom, mobile devices can facilitate individuals to take notes and access information. Owing to the flexibility and ubiquitous availability of mobile technology, learners can navigate through contextual affordances facilitating their meaning-making in a range of contexts (Palalas, 2012).

Similar to the temporal dimension of learning, the places of learning “may be traversed with the help of mobile technologies, thereby offering a range of settings that may prove appropriate for mobile learning” (Palalas, 2013, p. 92). Palalas further notices that mobile technology allows learners to choose spaces according to their learning objective. For instance, learners may prefer to learn in some specific context if that context could enhance their learning experiences, or they may choose to leverage “ad-hoc interstitial situations” (Palalas, 2013, p. 92) to engage in learning.

Although learning with mobile devices may facilitate context-specific and context-independent learning, they are interconnected. For instance, context-specific learning can prepare for learning that may happen beyond the formal spaces. Outside the classroom, learners can access the documents prepared in the class stored within mobile devices or on virtual platforms and draw on them to expand and enrich their learning; thus, bridging the gap between formal and informal learning spaces. Palalas (2013) contends that the provision of learning at a range of contexts through mobile technology has the potential to “transform the classroom into a blended learning student-centered experience” (p. 92).

Taken together, the temporal and physical affordances of mobile technology enable teachers to situate learning activities in authentic contexts providing opportunities for learners to continue learning across time and space. The use of mobile technology's temporal and physical affordances for pedagogy has the potential to facilitate learners' creation of artefacts (e.g., recording videos, taking pictures) by using the technological affordances to enrich their learning experiences. Learners can also be encouraged to utilise flexible spaces (e.g., social media platforms, class-specific LMS) to share such artefacts. Teachers can also incorporate learner-generated artefacts to acknowledge learner agency and promote autonomous and collaborative learning through follow-up activities (e.g., giving feedback and initiating discussions at shared platforms).

Many empirical studies in the MALL literature have documented how technological affordances of mobile technology generate the temporal and physical affordances for MALL. There is evidence that merely the availability of mobile technology has enabled L2 teaching and learning at various times and spaces (e.g., Gaved, Jones, Kukulska-Hulme, & Scanlon, 2012; Jones et al., 2018; Li, 2009). Evidence is accumulating on how the temporal and physical affordances of mobile-enabled virtual spaces have been incorporated in L2 teaching. For example, Benson's (2015) study in Hong Kong found that L2 learners' interactions through YouTube, in the form of written comments, were an opportunity for the negotiation of meaning and enhancement of intercultural competence. Another study by Wang and Chen (2019) in a Taiwanese university reported the potential of more flexible, interactive and exciting EFL learning through YouTube videos as the participants tended to search, utilize and share more language learning resources across times and spaces.

2.5.3 The transactional dimension

The transactional dimension encompasses three kinds of interactions (Palalas, 2013): intrapersonal, personal, and interpersonal interactions. According to Palalas (2013, p. 88), intrapersonal interactions are “internal learning processes occurring within the individual mind” related to individual thoughts, ideas, and reflections. Examining individuals’ inner thoughts and internal learning processes was beyond the scope of the current study; therefore, intrapersonal interactions have not been explored. The current study has examined personal and interpersonal interactions with content, contexts, and people.

Personal interactions are interactions with content within individuals’ private spaces (Palalas, 2013). Palalas (2013) mentions a range of mobile-mediated interactions with content and context in the category of personal interactions (e.g., accessing and watching/listening to audio-visual resources, reading, taking pictures and playing mobile games). She further notes that mobile-mediated personal interactions allow students to personalise their learning experiences as they “interact with content, create, revise and recreate their own knowledge artifacts” (p. 98).

Other transactions examined by the current study are interpersonal transactions which may also be termed as transactions with people and contexts. Interpersonal transactions allude to social interactions in formal spaces (e.g., classroom) and informal spaces (e.g., café, market, and social media) within which learning occurs. Emphasising the significance of mobile technology for the range of transactions, Palalas (2013) notes that individuals use mobile technology for their personal interactions with content and context; it also “provides a channel to connect their private spaces with shared knowledge spaces” in which learning takes place through “joint activities engaging multiple users and multiple modes of interactions” (p. 98).

Palalas’s (2012) study, summarised earlier in the chapter (see Section 2.5), is an example of how mobile technology mediates transactions among various actors and elements within an ecosystem. The study also demonstrates how the transactional affordances of mobile technology can help teachers personalise learning experiences. Personalised learning activities can be designed to optimise mobile technology's ubiquitous availability and to enable learners to make transactions and/or interactions with learning resources. Teachers can also customise learning experiences by making *just-in-time* interactions to support learners. Mobile technology can enable teachers to support L2 learners’ use of new contexts and modes of making interactions

ranging from face-to-face to online and text-based to multimodal. Incorporating mobile technology's transactional affordances to customise learning experiences can promote learner-centred learning as learners are empowered to engage actively in their learning.

Other researchers have also reported how the technological, temporal, physical affordances of mobile technology can enable interactions for L2 teaching and learning. For example, in the case study of a German EFL lecturer, Gilbert (2013) documented how using a Learning Management System (LMS) through mobile devices promoted students' interactions with EFL content at flexible times and spaces, which resulted in improving their vocabulary. Likewise, other studies (e.g., Blattner & Lomicka, 2012; Kabilan, Ahmad, & Abidin, 2010) have reported how the temporal and physical affordances of Facebook facilitated L2 language learning in informal spaces across times and locations through interactions not only with peers but also with native speakers.

2.5.4 The pedagogical dimension

The core focus of this study is the pedagogical dimension that refers to approaches, strategies, and procedures to enable learning. The study also examines whether or not the lecturers' pedagogical approaches align with their students' learning practices. Whereas some empirical studies have reported that various affordances of mobile technology have been pedagogically harnessed for L2 teaching, as cited in the preceding sections, others (e.g., Burden & Kearney, 2017; Kearney, Burden, & Rai, 2015; Lindsay, 2016) have documented superficial use of mobile technology. Limited utilisation of collaborative, situated and flexible affordances for L2 teaching suggests that traditional teacher-led pedagogical approaches still dominate (see Chapter Three for further empirical evidence).

Having outlined five interwoven dimensions of the model by Palalas (2013), the next section connects this model with ecological perspectives.

2.5.5 Connecting ecological perspectives with the Mobile Learning Eco-System Model (Palalas, 2013)

The present study draws on The Mobile Learning Eco-System Model (Palalas, 2013) to understand and examine EFL teaching and learning in the Pakistani university sector. This model matches the ecological perspective that underscores the interconnectedness of teachers, learners and other contextual factors in the entire phenomena of teaching and learning.

Although this model explores various ecosystems (Bronfenbrenner, 1993) related to an individual's learning as described earlier in the present chapter (see Section 2.2.1), it embraces a unique approach, which aligns with the amorphous nature of mobile language learning. Palalas (2013) appears to unpack Bronfenbrenner's ecosystems using labels of dimensions/spaces, which are inextricably connected to one another, highlighting the entirety of an ecosystem.

Bronfenbrenner's (1993) ecosystems (i.e., micro-macro) intermingle in five dimensions of Palalas's (2013) model. She maps how each dimension (ecosystem) interacts with others, reflecting the mobility and complexity of mobile language learning.

The intermingling of five dimensions reflects the element of mobility, which plays the central role in blurring boundaries among Bronfenbrenner's (1993) various ecosystems. For instance, when learners learn using mobile technology within their microsystems (e.g., classroom), they are directly impacted by the decisions made by their lecturers and departments about the use of mobile technology, thus connecting micro to meso system.

Similarly, learners' micro and meso systems are strongly linked to exo and macro systems represented by institutional enablers and barriers associated with IT infrastructure. For instance, learners might access language learning in the classrooms through various resources such as websites, YouTube videos, and blogs that link their microsystems to macrosystems. Learners may seek learning support from their peers through social media platforms; they may also interact with other interlocutors residing across the globe; they may decide to learn while travelling; they may also be prompted to learn sitting at an untraditional place (e.g., park, restaurant). Additionally, they may also post a video or a picture of their recreational activities on their social media, creating an opportunity for interaction among language users separated by locations belonging to various ecosystems. Hence, it can be argued that the mobility element inherent in mobile devices enables teachers and learners to traverse across various dimensions in a learning ecosystem.

Overall, Palalas' model reiterates the core concepts associated with the interconnectedness of Bronfenbrenner's ecosystems and their role in teaching and learning. It, however, looks beyond these divisions as van Lier (2004, p. 383) contends that "the micro-macro dichotomy is rather a crude delineation and might suggest that one can only focus either on the micro, or on the macro." He further argues that "all ecological approaches aim to transcend any one particular

spatio-temporal scale and this break down the micro-macro split”. van Lier’s explanation of ecosystems lends support to the overlapping and intermingling of various dimensions in Palalas’s model.

To conclude, the model (Figure 2.1) illustrating the ecological perspective enables an examination of the relationship between various dimensions, including the lecturers’ pedagogies for language teaching, the affordances as perceived and interpreted by learners, as well as their social interactions with their lecturers and peers in a range of mobile contexts. Constraints, which hamper mobile-mediated L2 teaching and learning, are also identified.

2.6 Concluding remarks

This chapter has provided an overview of the theoretical framework for the current study: the ecological perspectives in CALL/MALL research. It also presented an overview of MALL and empirical evidence for the two constructs of an ecological approach in MALL literature.

This chapter has provided insights into how an ecological perspective views teaching and learning processes in their entirety, acknowledging the contributions of teachers, learners, other interlocutors, mobile devices, and mobile contexts. The Mobile Learning Eco-System (Figure 2.1), an ecological model for data collection, analysis and presentation, which comprises of five over-lapping dimensions described as affordances in this study, was introduced.

In summary, it can be argued that an ecological perspective takes into account the complexity inherent in CALL/MALL ecosystems that are constantly evolving and emerging, so that language learning and teaching is viewed more broadly (Van Lier, 2011). It is argued that an ecological framework is useful in examining the interconnected scenarios of teaching and learning. The current study contributes to the existing body of MALL literature regarding research underpinned by ecological perspectives. The next chapter reviews the literature related to the various affordances of mobile technology identifying gaps in the literature and providing a rationale for the current research.

Chapter 3. Literature review

3.1 Chapter overview

As this study investigates how mobile technology influences L2 lecturers' pedagogical decisions, practices, and learners' learning practices in the Pakistani university context, this chapter presents a review of research related to L2 teaching and learning with mobile technology.

Although three disciplines of m-learning, L2 and MALL, inform this literature review, the review does not present an exhaustive account of contemporary literature. Instead, the key concepts in the three disciplines have been woven together to explicate the current study's focus.

The chapter is organised into seven main sections. After giving an overview of the chapter in the first section (3.1), the second section (3.2) defines mobile technology and m-learning. The relationships between mobile technology and m-learning are established in the third section (3.3), which also describes relationships between CALL and MALL by examining similarities and differences between the two fields. Then literature is reviewed on the learners' ever-evolving learning practices in the fourth section (3.4).

Literature relevant to pedagogical possibilities related to mobile technology for L2 teaching and learning is presented in the next section (3.5). Section 3.5 presents a scholarly debate on the multiple affordances of MALL integrated into four sub-sections related to flexible/ubiquitous, collaborative, personalised, and situated/informal L2 teaching and learning. The sixth section (3.6) highlights some barriers to mobile language learning and teaching. The final section (3.7) summarises and concludes the discussion presented in the chapter.

3.2 Mobile technology in relation to m-learning

Despite the widespread use of mobile technology and an increasing focus on m-learning, there are no agreed definitions for either of these terms in contemporary literature. The following subsections (3.2.1 and 3.2.2) examine some of the concepts associated with mobile technology and m-learning and describe mobile technology's current status and its role in the present and future of mobile learning.

3.2.1 Defining mobile technology

What exactly is meant by mobile technology is debatable because it is continually evolving (UNESCO, 2013). Unlike other technologies, mobile technology has advanced markedly in the

last decade as the number of mobile devices has exceeded desktop and laptop computers (Pegrum, 2014; Pimmer, Mateescu, & Gröhbiel, 2016). Mobile phones have progressed from being basic phones to smart and wearable devices with a variety of built-in functionalities and specifications connected by high-speed internet. Modern smart mobile devices have built-in multimedia tools such as camera, audio, and video recorders as well as apps such as text chat, social media, note-taking, dictionaries, audiobooks, and vocabulary games, other context-awareness functions such as Augmented Reality and QR codes (Palalas & Hoven, 2016). Furthermore, wearable mobile technology (e.g., Google Glasses, smartwatches, fitness trackers) introduces new dimensions in our lives as we do not have to take out our mobile devices from our purse or pocket (Pegrum, 2019).

In the m-learning literature, mobile technology has been defined in a variety of ways. For example, Hockly (2013) claims that the devices termed as mobile technological devices include: mobile phones, tablet computers, e-readers, MP3, MP4 players, digital cameras, gaming consoles. Some researchers (e.g., Kearney, Burke, & Schuck, 2019; Stockwell, 2007) also refer to laptop computers as mobile technology due to their portability. Other researchers (e.g., Crompton, Burke, Gregory, & Gräbe, 2016; Pachler, Bachmair, & Cook, 2010; Pegrum, 2019), however, argue that laptop computers do not qualify as mobile devices because they are not as seamlessly integrated into users' lives as other portable mobile devices and lack the required ubiquity and portability.

Drawing on Crompton et al.'s (2016) criterion for a device to be included in the range of mobile devices, this study considers any handheld/ wearable device to be a mobile device that can be turned off and on just by one click and can remain on standby mode to be used *anytime, anywhere*. This study does not include laptop computers in the range of mobile devices because they lack such readiness, ubiquity, and flexibility.

3.2.2 Defining m-learning

Like mobile technology, the concept of m-learning is also contentious (Hockly, 2013; Kukulska-Hulme, 2009; Lomicka & Lord, 2019; Traxler, 2009). Whether mobile learning refers to learning that can occur anytime, anywhere, or to learning with sophisticated mobile devices has been discussed. Contemporary literature has also reported a gradual shift regarding definitions of m-learning. For example, in the first decade of the twenty-first century, Sharples, Taylor, and

Vavoula (2007, p. 225) defined mobile learning as “the processes of coming to know through conversations across multiple contexts amongst people and personal interactive technologies”. While it is argued that m-learning is primarily dependent on mobile digital devices (Pegrum, 2016b), many researchers (e.g., Hockly, 2013; Kukulska-Hulme, Sharples, Milrad, Arnedillo-Sanchez, & Vavoula, 2009) regard mobile devices just as one part of the picture.

In the last decade, due to the rapid advancement in mobile technology and its pervasiveness in people’s everyday lives, m-learning definitions have become more comprehensive and inclusive (Greengard, 2015; Pegrum, 2016b; Walker, 2013). For example, internet connectivity is considered crucial for m-learning, which implies the need for environments that facilitate learners’ interactions with various people and contexts (Ng & Cumming, 2015; Palalas & Hoven, 2016).

Moreover, the typology of m-learning propounded by Pegrum (2014), which refers to three degrees of mobility, explains various layers of m-learning. The first level of mobility is restricted to the mobility of mobile devices, where mobile devices generally are a substitute for fixed computers making m-learning “a kind of portable e-learning” (p.17). This level of mobility is mainly exploited when computers are not affordable for everyone. In the second level of mobility, both mobile devices and learners are mobile. Learners may move around mobile devices inside and outside their classrooms to work individually or collaboratively by forming groups or utilising some of the “regular patches of downtime in everyday settings” (p.18); their learning, however, remains primarily distanced from their surrounding contexts. Although these two mobility levels may not transform learning experiences, learning with these two levels of mobility may be “radically empowering” (p.18), particularly in resource-constrained contexts. The third mobility level is associated with the mobility of learning experiences, as well as the mobility of devices and learners.

Like the interconnected components in an ecosystem, Pegrum’s three mobility levels work together to turn authentic contexts into learning experiences as the learners interact with their peers, teachers, and their contexts. They can also create and share multimedia artefacts, which make learning experiences mobile for themselves, irrespective of the locations and times of learning.

In this study, “The term mobile learning is defined as learning mediated by mobile devices which happens across multiple contexts, through social and content interactions” (Crompton, Burke, & Lin, 2019, p. 685), as it focuses on L2 teaching, which includes mobile-mediated interactions with contexts, people, and content. The rationale for drawing on Crompton et al.’s (2019) definition is that it encompasses the entire range of elements and agents that potentially can contribute to learning and enable learning.

In summary, in the twenty-first century, when mobile technology has reached the areas where access to schools, books, and computers is difficult, it can address several educational challenges in new and unique ways (UNESCO, 2013). Looking at the widespread use of mobile devices in educational settings, many researchers agree that mobile technology has started breaking traditional boundaries and established traditions, thus, paving the way for m-learning (Cochrane, 2014; Traxler, 2013; Traxler, 2016). As our society is mobilised and connected in an unprecedented way, any attempt to create a learning environment without embedding mobile technology will create an unnatural environment not conducive to learning and teaching (Chun, Kern, & Smith, 2016; Traxler, 2015).

This chapter, so far, has elaborated on several concepts associated with mobile technology and m-learning. The next section (2.3) discusses how m-learning relates to L2 teaching and learning.

3.3 Language learning with m-learning

This section (2.3) presents an overview of various concepts related to language learning with mobile devices. It also highlights connections between CALL and MALL.

3.3.1 Defining MALL

Despite researchers’ claim that mobile technology is the present and future of language teaching and learning, there is no single accepted term to describe language learning with mobile learning (Burston, 2011; Kukulska-Hulme, 2013). Numerous terms, for example, MALL (Mobile Assisted Language Learning), MALU (Mobile Assisted Language Learning Use), and MLL (Mobile Language Learning), have been used in contemporary literature. The term MALL has been used extensively, but Jarvis and Achilleos (2013, p. 3) point out that the concept of “assisted language learning” in this acronym restricts its scope by implying that a particular device or software assists language learning. They present the concept of MALU (Mobile

Assisted Language Use) as an alternative to the MALL. Recent literature has also referred to MLL (Mobile Language Learning) with some researchers (e.g., Kukulska-Hulme, 2016; McCarty, Sato, & Obari, 2017a; Palalas, 2016) suggesting that MLL encompasses the mobility of devices, learners and learning contexts transcending the constraints of time and space. The current study uses the term MALL as it is an “anachronistic-sounding but still commonly used term” (Pegrum, 2019, p. 1).

3.3.1.1 *MALL in relation to CALL*

The term MALL, however, is not new, as its origin can be traced to CALL. Although there is no authentic documentation regarding the history of CALL (Bax, 2003; Torsani, 2016), it dates back to the 1960s when the term Computer Assisted Language Learning (CALL) was coined. The term CALL has been interpreted in different ways in contemporary literature. For example, Levy (1997, p. 1) defined CALL as “the search for and study of applications of the computer in language teaching and learning”. Egbert (2005, p. 4) offered a more inclusive approach by defining CALL as a process of “learners learning a language in any context with, through and around computer technologies”. However, Garret (2009, p. 720) warned against the superficial and techno-centric perspective of CALL by arguing that “CALL is not shorthand for the use of technology but designates a dynamic complex in which technology, theory, and pedagogy are inseparably interwoven”. Similarly, Levy and Stockwell’s (2013, p. 3) definition of CALL includes “tasks, software, courseware, web sites, online courses, programs, packages, and learning environments”. Lomicka and Lord (2019) sum up that an initial, superficial role of computers shifted to a more integrated and participatory role including learners' linguistic activities, applications for creating content, and, most importantly, access to resources.

Many other acronyms have emerged as substitute terms for CALL: for example, TELL (Technology Enhanced Language Learning), WELL (Web Enhanced Language Learning), CAI (Computer Aided Instruction). Although desktop or laptop computers were implied in all these acronyms, none challenged the term CALL because it was established in the global research community as a branch of study (Egbert, 2005; Jarvis & Achilleos, 2013; Levy & Hubbard, 2005; Lomicka & Lord, 2019).

3.3.1.2 *The differences and similarities between CALL and MALL*

MALL is different from CALL, but at the same time, it is informed by CALL. Early in the 21st century, as noted by Goodwin-Jones (2008), CALL literature began to address the potential of MALL. CALL arose from the language lab breaking traditional language learning boundaries. Stockwell (2012) claims that CALL's horizons have expanded by including mobile tools by allowing for interactive language learning in a new phase of CALL. Pegrum (2014) also refers to the inclusion of MALL into CALL literature and conferences. Chun (2016) endorses this by, naming this new phase as Ecological CALL, which includes various characteristics of MALL, including mobile and wearable devices. Although MALL is regarded as the next phase of CALL, it has been named as a “post-CALL era” by Jarvis and Achilleos (2013, p. 10).

Furthermore, many researchers have pointed out a difference between CALL and MALL. For instance, Kukulska-Hulme and Shield (2008, p. 273) state that MALL differs from CALL “in its use of personal, portable devices that enable new ways of learning, emphasising continuity or spontaneity of access across different contexts of use”. Jarvis and Krashen (2014) also claim that the term CALL is obsolete because of its emphasis on conscious learning and formal instruction. The same difference is observed by Pegrum (2014, p. 5) when he points out that the term MALL conveys a sense of mobility and continuity better than the term CALL.

To conclude the discussion above, it is apparent that either CALL has gained an added potential of mobility or MALL has retained an inherent potential of CALL. The blurred boundaries between these two fields makes it difficult to draw definite lines. Whereas CALL provides “a valuable vantage point” with which explore more established practices of language learning (Thomas, Reinders, & Warschauer, 2013, p. 4), the mobility factor of MALL transcends the traditional constraints of CALL. Thus, the mobility element of MALL opens unlimited opportunities that are unexplored in the CALL literature. The following excerpt by Palalas and Hoven (2016, p. 50) concludes the discussion above:

MALL should be viewed not as a subset but rather an extension of CALL that comes with its own characteristics, affordances, opportunities, and limitations, just like an offspring that inherits many yet not all features of the parents and evolves into a distinctive organism.

In conclusion, these two terms are increasingly being used interchangeably as mobile devices have turned into mini-computers.

After presenting an overview of the definitions of m-learning, CALL and MALL, the following two sections (3.4 and 3.5) review MALL literature on L2 learning and teaching. First, literature on learners' ever-evolving learning practices is reviewed (Section 3.4). Then, MALL literature is reviewed about the pedagogical possibilities emerging from learners' use of mobile technology for learning. The rationale for foregrounding literature about learners' learning practices is that it is crucial to understand learners' ever-evolving learning practices in the context of rapidly changing mobile technology. Also, learners' mobile-enabled learning practices are the key factor that calls for pedagogical adaptations.

3.4 Learners' ever-evolving learning practices

Understanding learners' attitudes towards MALL is crucial for effective pedagogical practices (Lai & Zheng, 2018). As learners from different cultures may approach language learning through mobile devices differently, teachers should consider their educational and cultural preferences when designing language learning activities incorporating mobile technology (Hsu, 2013b).

Contradictory findings regarding learners' changing practices have been reported in contemporary research on MALL. Although it has been reported that students enthusiastically embrace mobile technology for educational purposes and language learning in terms of collaboration, communication, and personalisation (Dashtestani, 2016; Demouy, Valérie, Jones, Kan, Kukulska-Hulme, & Eardley, 2016; Ma, 2017), students' reluctance to use mobile technology for learning and language learning has also been reported. For example, many researchers (e.g., Cochrane & Antonczak, 2015; Hubbard, 2019; Stockwell & Reinders, 2019; Wang & Smith, 2013) have argued that students' use of mobile devices for personal communication does not necessarily mean that they will opt to use mobile devices for educational purposes. They have argued against the hypothesis that students' increased exposure to technological tools will result in learners' more significant engagement with language learning tasks, increased autonomy, and language learning motivation.

Because of learners' reluctance to use mobile technology for educational purposes and language learning, m-learning research has focused on learners' training in using essential functions of mobile devices such as audio and video players/recorders. Hoi (2020) argues that without authentic knowledge and in-depth understanding of mobile technology for language learning, MALL may be perceived negatively by learners who "may be reluctant and ultimately resistant" (p.146) to using mobile technology for language learning. It has been claimed that learners will be motivated to use mobile technology for learning if they are technologically trained on a cyclic programme as one training session or course will not meet the learners' ever-changing needs (Hubbard, 2019; Romeo & Hubbard, 2010; Stockwell & Reinders, 2019).

MALL empirical research has reported contradictory findings on learners' differential learning practices. For instance, Hsu's (2013a) study in Taiwan reported that university learners from seven countries perceived MALL differently. Another study (Stockwell & Liu, 2015), conducted with two cohorts of students in Taiwan and Japan, corroborated Hsu's (2013) findings reporting different learning practices of learners in each of the countries for learning vocabulary with mobile devices.

Two other studies, Imtinan (2013) and Viberg & Grönlund (2013), confirm differences in learners' learning perceptions and practices of mobile technology use for learning and, specifically, language learning. Imtinan (2013), in a Pakistani university investigating students' perceptions of their teachers' role in a qualitative study, reported that students expected support from their lecturers while learning with mobile devices, with many not wanting to be autonomous learners. In contrast, Viberg and Gronlund (2013)'s study, with 345 students from Chinese and Swedish universities, using a questionnaire, reported that learners had positive attitudes towards using mobile technology for L2 learning. These learners indicated that they drew on mobile technology for L2 learning because it offered personalised and flexible access to L2 resources. The learners identified the provision of personalised content, time, and space, which provided them with more control over their learning as their most valued affordance. They conclude that pedagogical decisions regarding mobile learning environments for L2 learning need to be informed by learners' attitudes towards using mobile technology for learning.

Learners' tendency to use mobile devices in informal environments because of the affordances of flexible access to L2 resources and personalisation of times and spaces is also reflected in many

empirical studies. For example, in a mixed-method study, Demouy et al. (2016) studied 243 adult language learners who were learning different languages, including Italian, Spanish, English and French, through distance learning courses in the Open University in the United Kingdom. The results showed that the participants utilised their mobile devices in informal environments and adopted various personal strategies to extend their learning time by accessing L2 resources anytime, anywhere. They claim that mobile devices enabled the learners “to feel more in control of their learning, understand the necessity for exposure and frequent contact with the language” (p. 20). The authors concluded that mobile-facilitated repeated exposure to the same content in multiple contexts helped learners manage their personalised times and spaces for L2 learning.

Similarly, Qian and Tang (2018) in China, using the questionnaire developed by Demouy et al. (2016), used by the current study too, investigated how mobile technology impacted adult distant learners' learning perceptions and practices. Based on 148 learners' responses to the questionnaire and follow-up email interviews with six learners, the study demonstrated that the learners used mobile devices for L2 learning in small chunks of time during the day as well as accessing content during planned learning sessions. The students reported their lecturer's role was very limited in their out-of-class learning and that they needed more support from their lecturers for their out-of-class MALL activities.

Likewise, in another mixed-methods study conducted in Hong Kong, Ma (2017) investigated 30 EFL students' mobile-mediated language learning experiences by analysing data collected through a survey and semi-structured interviews. The findings indicated a multidisciplinary approach to L2 learning as the students combined L2 learning, not only with their learning of other subjects but also their interests such as reading news, watching entertaining videos, listening to music and commentaries on football matches. The participants utilised mobile phones for EFL learning more frequently in quiet locations such as home and library compared to informal environments.

In contrast, having conducted a longitudinal study in Taiwan, Japan and Australia for eight years, Stockwell (2019) warns that the higher ownership of mobile devices may not increase learners' engagement for L2 learning. The study reported that the learners did not prefer mobile devices for learning when other devices were available. Stockwell further points out that a “teacher's role is likely the most important factor contributing to how learners view and engage in mobile

learning” (p. 50). The author emphasises the need for more empirical research to learn about learners’ practices of using mobile technology for L2 learning in other contexts.

In summary, it can be concluded that the pedagogical integration of mobile technology for L2 teaching will not be useful without understanding learners’ changing learning practices. Given the rapid advancement in mobile technology, which has become an integral part of learners’ lives, learning practices are also constantly evolving. Therefore, empirical evidence regarding the learners’ perceptions and practices about using mobile technology for L2 learning is essential for informing mobile-mediated pedagogical practices.

The following section (3.5) reviews the literature on mobile technology's pedagogical possibilities for enabling language learning.

3.5 Pedagogical possibilities for enabling MALL

As established in the preceding sections, MALL includes mobile devices, learning resources, teachers, students, physical and virtual learning environments. Teachers’ awareness of learners’ mobile-enabled learning practices plays a vital role in the pedagogical integration of mobile technology for enabling language learning. Since mobile technology can empower learners to learn autonomously at their preferred times and spaces, teacher-centred pedagogies are irrelevant in this era (Borawska-Kalbarczyk, Tołwińska & Korzeniecka-Bondar, 2019; Pegrum, 2019). In this regard, Kukulska-Hulme, Norris and Donohue (2015) contend that teachers can leverage mobile technology for connecting “classroom learning with work, home, play and other spaces embracing varied cultural contexts, communication goals and people” (p.5). Burston (2014) also argues that “MALL is equally capable of supporting more innovative, constructivist, collaborative and learner-centred instruction” (p. 344).

There is a consensus among MALL researchers (e.g., Burston, 2014; Kukulska-Hulme & Traxler, 2019; Stockwell, 2013; Pegrum, 2019) that teachers can leverage the ubiquitous availability of mobile technology to reconceptualise their pedagogical approaches to align them with learners’ mobile-enabled learning practices. Reconceptualisation in MALL entails going beyond the traditional teacher-centred pedagogical model and exploring learner-centred practices that were unthinkable before mobile technology's proliferation. The transformative pedagogies also acknowledge and incorporate learners’ interactions across the physical and virtual worlds.

Contemporary literature has documented numerous pedagogical possibilities for L2 teaching associated with mobile technology. For example, language teachers can leverage the ubiquitous availability of mobile technology and provide learners with opportunities to immerse themselves in L2 and make learners notice linguistic affordances (Hoven & Palalas, 2016; Reinders & Cho, 2011). Teachers can draw on mobile technology for enabling collaborative language learning for students (Kukulska-Hulme & Viberg, 2018). Mobile technology provides teachers with an opportunity to bring language teaching from the artificiality of the classroom and situate learning activities in authentic environments (Godwin-Jones, 2019). Robust learning opportunities can be created in the classrooms by incorporating artefacts created by learners in informal spaces (Palalas & Wark, 2020; Zourou, 2020). Additionally, teachers can utilise mobile technology to personalise students' learning experiences (Kukulska-Hulme, 2016; Xu & Peng, 2017). Notably, these transformative pedagogical approaches include the possibility of empowering learners by promoting mobile-enabled interactions (Pegrum, 2014) and connecting episodic learning to extended and structured learning across multiple times and spaces (Palalas, 2013); hence connecting microlearning ecosystems to macro learning ecosystem.

The following sub-sections (3.5.1- 3.5.5) review MALL literature about four key pedagogical possibilities of mobile technology: flexible/ubiquitous, collaborative, situated/informal and personalised L2 teaching and learning. The affordance of flexible/ubiquitous L2 teaching and learning is examined in subsection (3.5.1), followed by a review of related empirical studies. An overview of the other three affordances is presented in the following three subsections (3.5.1- 3.5.4), followed by a review of related empirical studies in the fifth subsection (3.5.5). Since the affordances of collaborative, situated/informal and personalised L2 teaching and learning overlap in empirical research; therefore, it was deemed appropriate to present empirical evidence of them altogether.

Given the global proliferation of mobile technology worldwide, studies related to MALL conducted in various parts of the world are included. Furthermore, as the current research has been conducted in tertiary settings, the studies reviewed are from tertiary settings and adult learners who use mobile technology for L2 learning. It is reiterated that this review of literature relevant to mobile technology affordances applies the operational definition of affordances

adopted for this study, which encompasses the technological and perceived affordances that instigate or inhibit actions (see Section 2.2.2).

3.5.1 Flexible or ubiquitous L2 teaching and learning

The most significant affordances of mobile technology are inherent in its flexibility and ubiquity, which enable access to learning resources anytime, anywhere, thus, expanding learning horizons beyond traditional classrooms and material resources. The fundamental technological features of mobile technology (e.g., audio-video recorder, storage capacity) coupled with connectivity, which entails access to the internet, are fundamental enablers of teaching and learning. Although every study in MALL literature focuses on the affordances of flexibility and ubiquity, the few seminal studies reviewed here highlight the pivotal role played by the very concept of mobility, flexibility and ubiquitous availability.

Evidence has been accumulating globally that flexibility and ubiquity can significantly increase learners' engagement with L2 resources; thus, enabling their exposure to linguistic affordances. For example, in the Korean university context, Reinders and Cho (2011) conducted a study with 68 students to examine the affordance of mobile technology for L2 listening. The authors reported that accessing EFL content on mobile devices increased students' engagement with EFL content in their convenient times and spaces, which contributed to their communicative competence. The ability "to control when and for how long to listen to the materials" (p. 5) was also deemed an exciting experience by the students.

Another empirical study (McCarty, Sato, & Obari, 2017b) conducted in Japan has also reported that mobile technology's mere flexibility and ubiquitous availability was beneficial for L2 learners. The authors used mobile phones to teach an English course due to inadequate space in the computer lab for a language class at the university. All 70 students used the smartphone app Line for interaction. Each student was asked to post textual or audio-visual information about the topic of common interest. The students' interaction in the form of comments and discussions increased their interest and extended their practice time beyond the classroom, enhancing their core EFL skills. The positive impact of mobile-enabled flexible access to resources on L2 teaching and learning has also been documented by studies in other parts of the world: Canada (Hoven & Palalas, 2011); South Africa (Rambe & Bere, 2013b) ; Pakistan (Imtinan, Chang, &

Issa, 2013a); USA (Ducate & Lomicka, 2013); Iran (Dashtestani, 2016); and Saudi Arabia (Jamal, Mohammed, Wagdi, & Ali, 2019).

The affordances of other built-in features for L2 teaching and learning have also been documented in MALL literature. For example, Gormik (2012) reported the positive results from mobile phones' video recording feature for EFL learners in a Japanese university on students' L2 fluency and vocabulary. Nine participants were asked to record short videos while speaking in L2 every week. This study implies that the video recording feature of mobile phones is a pedagogical affordance that can enhance the speaking skills of L2 learners. Similar results have been reported in another empirical study in Germany (Lys, 2013). Lys (2013) reported an increase in quality and amount of EFL speaking and listening due to authentic conversations through video chatting, recording, and listening to learners' own recorded oral interactions.

Likewise, Demouy and Kukulska-Hulme (2010) reported encouraging results related to the ubiquity of mobile technology and its audio-recording function facilitating students' frequent exposure to L2 resources. The authors concluded, "the basic functionality of mobile phones seems to have the potential to offer a surprisingly valuable way to practise listening and speaking skills" (p. 229). Demouy and Kukulska-Hulme's (2010) claims are valid even after a decade, with more and more studies resonating. Empirical studies reviewed in the rest of the chapter provide further empirical evidence.

The following three subsections provide an overview of the three affordances of mobile technology for L2 teaching and learning (i.e., collaborative, situated and personalised) and are followed by a review of empirical studies. As these three affordances overlap, empirical evidence is provided for them together (see Section 3.5.5).

3.5.2 Collaborative L2 teaching and learning

In this study, collaborative affordances of mobile technology are those which facilitate L2 teaching and learning through mobile-mediated interactions involving two or more people in or beyond the classroom, both in the physical and virtual worlds. These interactions may be among learners, peers, and teachers (Kukulska-Hulme & Viberg, 2018). The affordances of mobile technology for collaborative language learning also include collaboration happening around and through mobile devices (Pegrum, 2014). Collaboration around mobile devices refers to mobile devices being used by a group of learners to access and discuss content, resulting in enhancing

their speaking skills. In contrast, collaboration through mobile devices refers to virtual language learning interactions through built-in features or installed apps, resulting in L2 learning across contexts and times.

MALL literature reports on various affordances, which can enhance collaborative language learning: content sharing using mobile devices as tools (Pegrum, 2019); content-creation through collaborative activities in multiple authentic situations resulting in the frequent use of the target language (Hwang, Shih, Ma, Shadiev, & Chen, 2016; Viberg & Grönlund, 2013); and interactions through various mobile-enabled apps and features among learners, teachers, and peers (Wong & Hsu, 2016).

Collaborative language learning does not necessarily mean learning in groups in the physical world (Comas-Quinn & Mardomingo, 2012; Kukulska-Hulme & Viberg, 2018; Walker & White, 2013). Using mobile devices, learners can collaborate with their peers, instructors, and with other people in the virtual world round the clock and on the move according to their needs and preferences.

Furthermore, the affordances of mobile social media/apps (e.g., Facebook, WhatsApp⁵) have been regarded “a catalyst for collaborative curriculum redesign” (Cochrane, Guinibert, Simeti, Brannigan, & Kala, 2015, p. 1) as teachers can incorporate learners’ extensive interactions on social media platforms to foster collaborative language learning. Mobile technologies also offer increased opportunities for collaborative language learning in formal and informal contexts (Kukulska-Hulme & Lee, 2020). The following section elaborates on the affordances of mobile technology in formal and informal environments.

3.5.3 Situated or informal L2 teaching and learning

In MALL literature, situated L2 learning is a complex construct encompassing learner-driven learning activities to pedagogically planned learning activities that occur in authentic or informal contexts (Dressman, 2020; Godwin-Jones, 2018; Sockett & Toffoli, 2020). This study explores the complexity inherent in this construct and examines it from two dimensions. First, this study examines learning activities planned by teachers and situated in informal contexts. Second, it

⁵ WhatsApp, an app which can be downloaded on smartphones for free, is used for simple and secure communication through text messages, voice calls as well as share photos and audio/video files. It can also be used for communication among multiple people in a group.

examines informal EFL learning, which teachers do not plan; instead, it is independently carried out by students and occurs outside the classroom (Pegrum, 2019). The current study examines how learners enhance their learning through mobile-mediated interactions with their surroundings and how teachers draw on informal/authentic contexts for EFL teaching. Overall, this study examines how mobile technology use has blurred the boundaries of formal and informal contexts and facilitated EFL teaching and learning in multiple contexts instead of teaching and learning in isolated formal contexts (i.e., classrooms) (Godwin-Jones, 2019; Kukulska-Hulme, 2018).

Although the significance of the construct of ubiquity cannot be overemphasised as it underpins the entire body of research in MALL, there is no agreed term to describe the phenomenon of L2 learning outside the classrooms. For example, in a recently published book (Dressman & Sadler, 2020), out-of-class language learning has been given various names such as: situated, informal, contextualised, location-dependent, and extramural language learning. However, the term informal has been regarded as a holistic term that encompasses “not a single new phenomenon..., but rather a set of new phenomena...that includes all the ways people are informally learning a new language in the 21st century” (Dressman, 2020, p. 4). The terms situated and informal language learning have been used interchangeably in the current study.

MALL literature identifies two informal language learning streams that occur outside formal classroom settings. Firstly, informal language learning is learner-driven and learner-led with little or no intervention by teachers; it is not structured in terms of times, places, and tasks. Secondly, informal language learning may be formally planned by a teacher but placed in informal settings. This learning stream is structured and well-planned with clear objectives (Kukulska-Hulme, 2019; Kan & Tang, 2018). Learning through mobile technologies in informal contexts can also be incidental and unintentional

Mobile technology offers numerous opportunities for situating learning activities across an array of contexts to enable informal L2 learning. As mobile devices can merge learners’ personal, real and virtual worlds in diverse contexts (Palalas & Wark, 2020), they are well suited for situated learning (Huang, Yang, Chiang & Su, 2016; Shadiev, Liu, & Hwang, 2019). The flexibility of mobile technology can also extend classroom activities into informal environments that continue language learning along the continuum of formal to informal environments (Kukulska-Hulme &

Lee, 2020; Reinders & Cho, 2011; Zourou, 2020). Unlike other technology-assisted language learning that happens in a high-tech environment and specific locations, mobile language learning takes place in the real-world, which makes it location-independent. It facilitates learners in discovering and exploring language learning opportunities through the connectivity and flexibility offered by the portability of mobile devices (Hubbard, 2020; Kukulska-Hulme, 2010; Traxler, 2005; Wong & Looi, 2011).

It has been argued that mobile technology can also support sustainable language learning practices through learners' increased engagement enabled by easy access to content and authentic contexts across times and spaces (Beatty, 2013). Elaborating on the notion of sustainable language learning, Palalas and Hoven (2016) contend that, instead of waiting for some specific location or device, learners can leverage information and language learning by communicating with people or accessing information related to a particular situation and place. Other researchers (e.g., Huang, Shadiev, Sun, Hwang & Liu, 2017; Kukulska-Hulme, 2018) also argue that learners can accomplish their tasks while doing other activities in informal contexts such as walking, travelling, and shopping, and waiting in line. Learning at informal times and places "representing a range of time, energy, and attention commitments" (Godwin-Jones, 2019, p. 16) can help sustain language learning.

Moreover, researchers (e.g., Kukulska-Hulme, 2013; Wong & Looi, 2011) have argued that learners who are already connected and mobilised can learn formal content in informal settings and vice versa. It can be argued that the mobility element of MALL transcends time and location constraints; it enables learning between formally scheduled classes and other informal "little snippets of time" that arise during the day (Ballance, 2013, p. 43). Mobile technology is vital in giving increased, continuous, and informal exposure to language learners at multiple times and places; particularly, in foreign language learning situations where learners get little or practically no exposure to the target language (Hwang & Chen, 2013; Reinders & Cho, 2011).

The teachers' role, however, is crucial in making learners notice and appropriate linguistic affordances they may encounter through repeated exposures with authentic contexts (Godwin-Jones, 2018; Scholz, 2017). Teachers can also motivate learners to draw on the availability of multiple resources and contexts for autonomous learning (Lee, 2019). Therefore, teachers need to think beyond the traditional rule-based language teaching approach to enable informal

language learning and plan a wide range of activities that can be carried out with a range of resources. For example, researchers (e.g., Bradley, 2015; Godwin-Jones, 2018) have reported that teachers can utilise mobile devices to facilitate language learning through reading, writing text messages, listening and watching audio/video films, capturing routine activities and communicating with other online communities.

In summary, as discussed above, “potential flexibility can result in optimised scaffolding and access to language resources, practice and support” (Hoven & Palalas, 2016, p. 52): that is, incorporating the process of language learning into dynamic real-life environments unlike older practices of role-plays, computer-based practices and simulations (Wong & Looi, 2011). It can be argued that the contextual affordances of mobile technology can expand the existing boundaries of language learning by supporting learners to explore new avenues of learning by accessing, creating, sharing, and discussing content (Shadiev, Hwang, & Liu, 2018).

Given the rapidly evolving nature of mobile-mediated interactions, further empirical evidence is needed to build on the affordances of mobile technology for L2 teaching and learning in informal environments.

3.5.4 Personalised L2 teaching and learning

Personalised learning counters a *one-size-fits-all* approach that encourages uniform content and learning styles for all individuals with diverse interests, skills, and needs. Instead, it emphasises acknowledging differences in each individual's learning styles and providing a learning environment customised to individual preferences. Other key characteristics of personalised learning include increased interactions among students, teachers and student-driven learning processes (Kerr, 2016; UNESCO, 2012). Kukulska-Hulme (2016, p. 2) broadens the boundaries of personalised learning by arguing that “personalisation can be oriented towards individuals or groups of learners,” which takes into account learners’ “interests, presences, prior knowledge, competencies, movements and behaviours” (p. 2). With regards to the personalisation of learning in this study, teachers’ pedagogical decisions have been examined, which cater to students’ individual learning needs taking into account their interests, learning patterns using mobile technology and their prior EFL learning experiences as outlined by Kukulska-Hulme (2016).

Mobile technology is considered suitable for the personalisation of teaching and learning because mobile devices are considered personal to each individual (Palalas & Hoven, 2016). Learners' personal preferences are reflected through choices regarding specific mobile devices, font, colour, and other apps (Romrell, Kidder, & Wood, 2014). Sung, Chang and Liu (2016) argue that mobile technology affordances can be leveraged to customise learning content and environments to cater to the needs of different language learners.

Other researchers have also claimed that language learning can become a unique and personalised experience for every learner through mobile-enabled social encounters with multiple contexts in the physical and virtual worlds (Godwin-Jones, 2018). While Kukulska-Hulme (2016) argue that learners can enhance their listening or/and reading skills by making their personal media choices, Pegrum (2016a) notes that auto-translation soft wares are opening new horizons for personalised language learning. It has been predicted that mobile technologies (e.g., wearable devices, smartphones, and tablet computers) will play a significant role in the personalisation of learning with advancements in artificial intelligence, virtual reality, and cloud computing (Xie, Chu, Hwang, & Wang, 2019).

Another dimension of personalised language learning is on-demand and instant feedback afforded by mobile technology. The provision of interaction among students, teachers, and peers can be instrumental in providing personalised support to learners. Kukulska-Hulme (2016) posits that the notion of assistance, significant for learners struggling with some specific communication issue, becomes more effective with mobile technology, enabling teachers, peers, online mentors, and parents to provide customised assistance. Mobile technology can potentially enable instant feedback by allowing for interactions anytime, anywhere. Mobile-mediated feedback can be particularly beneficial for the contexts in which time constraints and large-sized classes make it almost impossible to provide immediate and detailed feedback inside the classrooms (Xu & Peng, 2017).

In addition, the advantages of multimodal feedback offered by mobile devices facilitates personalising learning (Elola & Oskoz, 2016). The provision of an audio-visual focus, enhanced by video-recorded comments, makes learning dialogic and personalised (Mann, 2015). Palalas and Hoven (2016) also assert that the location flexibility, coupled with the mobility of

technology, can personalise and enhance authentic language practice by providing “just-in-time expert intervention and feedback” (p. 52).

Evidence is accruing of the pedagogical potential of virtual assistants for L2 teaching and learning, although it has had little attention in MALL literature. Researchers (e.g., Fryer, Luke, Coniam, Carpenter, & Lăpuşneanu, 2020; Kukulska-Hulme et al., 2021) have referred to the novel and revolutionary prospect of virtual assistants supporting L2 learning and providing personalised assistance anytime, anywhere. It is argued that chatbots or virtual assistants can provide personalised assistance whenever required regardless of learners' time and place. It has also been noted that virtual assistants can be communication partners to help learners overcome hesitation they may feel in the presence of human communication partners.

However, despite the affordances of mobile technology for personalised language learning, there is a dearth of relevant literature in the MALL field. Having reviewed studies published over a decade from 2007-2017 about technology enhanced personalised L2 learning, Xie et al. (2019) reported that only a few studies have explored mobile technology affordances for personalised language learning.

The following section reviews MALL empirical studies conducted in various parts of the world in the first and second decades of the 21st century, highlighting similarities and differences in research trends.

3.5.5 Empirical evidence related to flexible/ubiquitous, collaborative, situated/informal and personalised L2 teaching and learning

Mobile technology affordances for flexible, collaborative, informal and personalised teaching and learning have been reported in MALL literature since the beginning of the 21st century. For example, Cue and Bull (2005) investigated mobile technology's potential for personalised and informal L2 learning in an empirical study at the University of Birmingham. The authors designed a mobile-accessible language learning environment to teach the use of tenses in English to postgraduate Chinese students. This system could adapt to individual learners' learning styles, to their ability to concentrate, and to the time available. For example, the system could provide a short module or lesson when the students were waiting for the bus while providing more extended modules when in the library. Mobile technology was found to develop learners' explicit grammar knowledge through extended exposure to grammar lessons. The authors concluded that

teachers could support learners in learning tenses, grammar, and other language skills by customising lessons according to students' needs at various times and places with mobile technology.

In a Japanese university context, Uosaki, Ogata, Sugimoto, Li, & Hou (2012) investigated the potential of mobile technology for collaborative L2 teaching in informal or authentic environments. Uosaki et al.'s (2012) empirical study also demonstrated that lecturers could integrate formal and informal teaching with a system called Seamless Mobile-Assisted Language Learning (SMALL). The students were given the opportunity to upload words encountered in informal contexts in written, audio or video form. The system linked the vocabulary items to the similar words uploaded by other students, by the teacher, or from the textbook which enabled students to read their peers' logs and build their own logs. The authors reported statistically significant vocabulary learning effects as a result of integrating in-class and out-of-class vocabulary learning through personalised artefacts and collaboration with peers.

Likewise, the potential of mobile technology for collaborative and personalised L2 teaching at learners' preferred times and places has been reported by Read and Hulme (2015). The authors developed an app named The Audio News Trainer for English (ANT) to enhance learners' listening skills and sustain their interest through pedagogically appropriate use of English audio news podcasts. The students could choose podcasts available within the app to improve their listening and writing skills independently, according to their interest and difficulty level of the item. In one version of the app, a link to Facebook was also provided so that the learners could post the summaries of their listening tasks and comment on, or like, others' posts. The authors concluded that the opportunity to select from the news domain, or any podcast, based on their interests and available times, prolonged listening comprehension activities. The authors also noted that Facebook/social media interactions could be used to foster collaborative L2 learning.

Similarly, a mixed-methods study (Liu, Chen, & Hwang, 2018) conducted with 36 university students in Taiwan reported that the use of informal scenarios helped students notice the affordances of collaborative and personalised L2 learning through mobile-enabled transactions. They designed a mobile-enabled learning environment called Ubiquitous Fitness English Listening Comprehension System to examine how learners' EFL listening skills could be enhanced through collaborative learning in authentic environments. The participants

collaboratively watched videos related to fitness before entering the fitness centre. Inside the fitness centre, the students scanned QR codes attached to the machines to access a quiz and obtain information about their personalised tasks in the fitness centre. The study reported improved listening comprehension, related to students' exercise machines and their personalised tasks, by noticing the affordances of listening with the lecturer's assistance. The authors also reported significant improvement in students' listening comprehension and positive attitudes regarding innovative ways of learning English collaboratively. The researchers concluded that "situating students in real-world contexts with ubiquitous support via mobile and wireless communication technologies" (p. 311) could provide a personalised language learning experience in authentic contexts.

Moreover, empirical evidence has been increasing in MALL literature about the pedagogical use of mobile-enabled social media apps/platforms (e.g., WhatsApp, YouTube, Facebook) and other digital environments for collaborative, personalised and situated L2 teaching and learning. For example, it has been reported that with learners' increased access to web-based resources, teachers can adapt their pedagogy to teach L2 reading skills in digital environments. For example, Blyth (2014) reported that a Digital Annotation Tool called eComma promoted collaboration in a digital social environment through social reading, which developed an appreciation of L2 texts among the study's participants. It was also noted that digital social reading could occur in synchronous or asynchronous mode.

The affordances of other digital/social media environments have also been extensively reported in MALL literature. For example, Andujar (2016) conducted a mixed-methods study with 80 EFL university students in Spain to analyse the benefits of mobile interactions in the form of text messages at WhatsApp for teaching L2 writing skills. Adopting a quasi-experimental research design, the author analysed WhatsApp text messages exchanged among students over six months. The author reported a significant decrease in grammatical and lexical errors as a result of peer collaboration, suggesting that the affordances of learners' interactions at WhatsApp led to the development of accuracy in L2 writing. Andujar concluded that "typed messages have evolved to become a new hybrid of spoken, written and electronic chat discourse" (Andujar, p.64).

Similar findings were also reported by Rambe and Bere (2013). They conducted a study with 165 university students and their lecturer in South Africa to investigate WhatsApp's potential to foster collaboration among students and their lecturer in formal and informal spaces for L2 teaching and learning. Data were collected using a questionnaire, the observation of interactions in WhatsApp and the lecturers' with 15 students' semi-structured in-depth interviews. Data analysis revealed that the affordances of synchronous and asynchronous interactions through WhatsApp increased students' engagement with learning across times and places and led to "extended learning times and augmented traditional consultation spaces" (p. 552).

Rambe and Bere (2013) further pointed out that the lecturer's "academic appropriation of WhatsApp afforded the convergence of individual student traits..., situated contexts and the conversational technology, which triggered their meaningful involvement in learning" (p.560). They concluded that the lecturer' adoption of WhatsApp "helped transform pedagogical delivery from an authoritative, instructivist mode to a collaborative, connectivist approach" (p.558).

It has also been reported in the MALL literature that incorporating videos could also sustain learners' interest and expand their pedagogy by enabling collaborative language teaching and learning across contexts. For instance, in a qualitative study, Wang and Chen (2019) examined university students' perceptions and practices regarding learning English from YouTube English teaching videos. The study found that students' engagement with YouTube videos encouraged collaborative learning through sharing videos with their peers. The authors also noted that the students chose YouTube as there were videos available on diverse topics, making EFL learning more interactive, exciting, and flexible than learning in the classroom. They also suggested that students' interest in YouTube videos could be used for teaching in the formal lessons to promote autonomous learning.

Other studies have similarly reported the benefits of YouTube videos for EFL teaching and learning. For example, in an empirical study, Arndt and Woore (2018) reported that students were more likely to recall grammatical structures and meanings of words learnt through YouTube videos than through blog entries. Benson (2015) also documented that learners' written comments at YouTube videos helped them negotiate meaning-making and enhance their intercultural competence.

Furthermore, empirical studies have started documenting the use of mobile technology for giving feedback although MALL literature still lacks a body of empirical evidence regarding drawing on the affordances of mobile-enabled flexible interactions for providing feedback. For example, Hsu, Wang and Comac's (2008) study demonstrated the efficacy of asynchronous feedback. The participating students recorded audio blogs on their mobile phones, which were submitted as assignments. The instructor interacted with students through individual audio blogs and provided feedback to enhance their pronunciation and spoken English fluency. The results indicated that mobile devices facilitated students recording their assignments and teachers in providing quick and individualised feedback.

The affordances of mobile technology for giving feedback have also been documented in other contexts. For example, a study by Li (2009) in New Zealand also reported the use of SMS for providing feedback to students who were learning English vocabulary. Twenty-five international students from different countries were provided with SMS feedback to help them learn vocabulary. The results suggested that mobile-enabled SMS feedback increased students' engagement with vocabulary learning and their better performance. Likewise, Xu and Peng's (2017) study highlighted mobile devices' affordances for instant feedback to EFL students in a Chinese university. The students sent their recordings throughout the semester through an app called WeChat, and they were provided with feedback. The students demonstrated improved grammatical structures in their oral communication and a positive attitude towards using social communication app because they got immediate feedback.

Recently, in a mixed-methods study conducted in a Hong Kong university, Ma (2020) investigated the provision of peer feedback in an online platform. The analysis of learners' 1000 entries and teachers' 400 comments showed that peer feedback in an online platform contributed to the development of students' EFL writing skills. Mobile-mediated peer interactions were also found to be conducive to creating a supportive and collaborative learning environment. The author also noted that critical peer feedback could predict the final score given by the teacher. The author suggests that teachers should design and scaffold learning by providing feedback to prompt learners to take part in L2 writing activities using mobile-mediated platforms, Likewise, Ko (2019) in a South Korean university, examined 208 undergraduate students' reactions to using smartphones to seek feedback for L2 vocabulary learning. The results

indicated that the affordances of mobile-enabled platforms could be harnessed for providing immediate feedback to facilitate EFL vocabulary learning. The authors also reported an increased interest, improved vocabulary, and enhanced cooperation by undergraduate students. Bakla (2020) likewise highlighted the effectiveness of audio recorded and screencast feedback for improving EFL students' writing skills. However, Bakla's study indicated that most students did not express a preference for mobile technology when they responded to feedback, although they accessed feedback using their mobile devices.

Although there is a dearth of research about the use of virtual assistants in MALL, few studies have reported virtual assistants' potential for L2 teaching and learning, as indicated earlier in this chapter (see Section 3.4.4). For example, Alem and Nkomo's (2020) analysis of online data to examine learners' experience of using chatbots for informal L2 learning suggested they were seen as useful tools to practise language learning informally. They indicated learners' curiosity in using chatbots and readiness to engage in more sustained L2 practice. The authors conclude that if used appropriately, chatbots can “foster a non-threatening learning environment”, which could help overcome the shyness some learners experienced in traditional in-class environments or with human partners.

Fryer et al. (2019) also investigated Japanese university students' attitude towards using chatbots for L2 learning. The findings suggest that students' interest in chatbots was strongly linked to their interest in conversation with human partners, and that students' conversation with chatbots helped them overcome their communication issues. The authors note that chatbots have great potential and can be promoted for sustained L2 practice if teachers' pedagogical decisions are informed by their students' learning practices with human partners. The authors conclude that teachers can incorporate chatbots as an opportunity for students that is not available in traditional learning environments claiming that, “This could mean the scaffolded introduction of new vocabulary, grammar, and expressions, which a human partner is unlikely to present” (p. 287).

Likewise, Ahn and Lee (2016) in Korea reported that automatic speech recognition software expanded opportunities of speaking English in authentic contexts in interactive, enjoyable and engaging ways. Jones et al. (2018) also reported an app that helped migrants learn English in an authentic context in the United Kingdom. In another study in Vietnam (Pham, Pham, Nguyen,

Nguyen, & Cao, 2018), the researchers designed an intelligent personal assistant and reported its potential for MALL.

The current section of this chapter has reviewed literature related to mobile technology affordances for L2 teaching and learning. The following section outlines the constraints of mobile technology for language teaching and learning in MALL literature.

3.6 Barriers to pedagogical integration of mobile technology in enabling L2 learning

Incorporating mobile devices as handy tools for L2 learning and teaching cannot be overemphasised; however, this is only one aspect. This section describes barriers to integrating mobile devices for L2 teaching and learning.

3.6.1 Technological barriers

Despite claims made in contemporary literature regarding mobile devices' efficacy for language learning and teaching, numerous constraints have been noted. For example, since the beginning of MALL research, many researchers (e.g., Chinnery, 2006; Kukulska-Hulme & Shield, 2008; Reinders & Hubbard, 2013) have alluded to the barriers such as small screen size, slow processing speed, limited storage capacity, and audio-visual capacity. Internet connectivity issues have also been extensively reported by many empirical studies (Imtinan, Chang, & Issa, 2013b; Ma, 2017; Rambe & Bere, 2013a).

In addition, the availability of mobile devices was a significant issue in the last decade when learners relied on devices provided by teachers or schools so that learning was restricted to specific devices (Burston, 2014). This technological challenge still exists in a slightly different form causing temporal, physical and transactional barriers. For instance, MALL depends on the Bring Your Own Device model (BYOD), which presents a host of problems, including inconsistency and incompatibility of operating systems of various devices, making it difficult for teachers to disseminate course content, gather students' responses, and provide feedback in a standardised pattern (Kessler & Hubbard, 2017).

Nonetheless, the MALL literature has reported various temporal, physical and transactional constraints. For example, although the affordances of flexibility and availability make mobile technology a promising and fascinating choice for L2 learners across the formal and informal

spaces, undergraduate students in Demouy and Kukulska-Hulme's (2010) study reported that noisy public places created barriers to mobile-mediated listening and speaking practices. These findings were corroborated by an empirical study in Hong Kong (Ma, 2017), which found that the participants engaged in mobile-assisted L2 learning either at home or in the library because of unstable internet connectivity and environmental distractions in noisy environments.

Other empirical studies have also documented similar temporal, physical and transactional constraints related to interactions made through mobile-mediated apps. For example, Hamad (2017) examined the use of WhatsApp in enhancing 36 university students' core EFL skills in Saudi Arabia. While the study reported that using WhatsApp enhanced students' core EFL skills and enhanced their collaboration, the lecturer indicated that the app increased her workload as students wanted to engage in discussions anytime without drawing any lines between work and life. The lecturer also noted that all students did not participate with the same enthusiasm in WhatsApp discussions. Likewise, another study in a Turkish university (Saritepeci, Duran, & Ermiş, 2019) has also pointed out issues, such as a lack of concentration and students' disinterest in participating in academic interactions in the absence of pedagogical support.

Notwithstanding the technological constraints mentioned in the preceding paragraphs, some researchers (e.g., Burston, 2014b; Traxler, 2013) agree that market forces are overcoming the technological issues, making mobile technology robust and dynamic enough to support MALL. In the context of MALL, a UNESCO study conducted by West and Ei (2014) in six developing countries, including Pakistan, demonstrates that mobile technologies are becoming increasingly normal for reading despite their small screens. West and Ei's (2014) study found that small screens were not considered a hindrance; instead, people still engaged in reading longer texts due to the ubiquitous mobile technology availability.

3.6.2 Pedagogical barriers to MALL

Despite evidence in contemporary literature regarding teachers' integration of mobile devices into their pedagogies (see Section 3.5), many MALL researchers (e.g., Burston, 2014; Goodwin-Jones, 2011; Kukulska-Hulme & Shield, 2008; Kukulska-Hulme, Norris & Donohue, 2015; Traxler, 2013) have alluded to the lack of appropriate pedagogy with regard to incorporating mobile technology into e-learning. For example, while pointing out a lack of appropriate pedagogical utilisation of mobile technology, Kukulska-Hulme and Shield (2008) argued that

even mobile technology's basic communicative features (e.g., voice calls and recorders) were not pedagogically utilised. Burston (2014) also notes that although contemporary literature has increasingly reported successful projects related to the use of mobile technology for L2 teaching and learning, "MALL remains on the fringes of foreign language pedagogy." (p. 103). Having reviewed 345 MALL implementation studies, he noted that several of the reviewed studies were restricted to class trials, pilot testing, vocabulary reviews and limited experiments without indicating how mobile technology was integrated into the curriculum. Burston (2014, p. 344) noted the prevalence of "a behaviorist, teacher-centred, transmission model of instruction". Similarly, Kukulska-Hulme et al. (2015) highlighted a disconnect between teachers' language pedagogies and learners' multimodal mobile-enabled interactions.

Furthermore, many researchers (e.g., Burden & Kearney, 2019; Daniela, 2019; Kukulska-Hulme et al., 2015; Kukulska-Hulme, Norris & Lee, 2017; Pegrum, 2019) have reported that traditional pedagogical approaches do not align with the present era due to their linearity and focus on teachers. For example, Dainella (2019) contends that teachers used to be the central authority transmitting information and resources for students in the traditional pedagogical approaches. Borawska-Kalbarczyk et al. (2019) also note that in traditional pedagogical approaches teachers would set learning goals for students, and students were expected to achieve those learning goals through the process, which was solely planned and guided by teachers. Concerning the primary feature of traditional pedagogies, Kukulska-Hulme, Norris and Lee (2017) note that traditional teacher-led pedagogies focused on the planned, predictable teaching and learning process at a specific time and place (i.e., class time and classroom); therefore, these pedagogies are irrelevant in today's rapidly changing world underpinned by the mobility of devices and mobility of learners (Pegrum, 2019).

Although these traditional, linear pedagogies that endorsed content transmission do not suit learning in unpredictable temporal and spatial environments, several studies have reported a surface-level pedagogical use of mobile technology. For instance, in a qualitative study, Raghunath, Anker and Nortcliffe (2016) reported that mobile devices were used as a substitute for other technologies. The authors explored 12 academics' readiness for innovative teaching at a university in the UK. The findings showed that smart devices were used for communication and

coordination with students and colleagues, but their use in pedagogical practices was not prevalent.

In another study, Van Praag and Sanchez (2015) discussed the limited pedagogical use of mobile technology to enhance students' language learning experiences. Three instructors participated in this multiple-case and a multiple-method qualitative study conducted in a private language school in the United Kingdom. The authors reported tensions in a language classroom where the teachers discouraged students' use of mobile devices because they believed mobile phones provided students with a shortcut. The teachers also viewed mobile phones as a distraction because students were unable to focus on the lesson. However, one of the participants encouraged mobile phones for students to take photos of the board, so they did not have to wait for the slow note-takers. The authors note that while teachers allowed mobile phones to access information, take photos, and translate words, they did not use the affordances of mobile technology to inform and enrich their pedagogical practices.

Furthermore, empirical evidence also exists in MALL literature about the teachers' negative perceptions of mobile technology for language teaching. For example, Song and Kong (2017) studied seventeen teachers in a university in Hong Kong for two years and reported that most teachers encouraged students to bring their own devices to the classrooms. Some teachers, however, thought BYOD (Bring Your Own Device) was time-consuming and distracting. Therefore, the authors argued that despite teachers' enthusiasm for integrating mobile technology, they needed technological and pedagogical assistance to design activities to cater to students' needs. Similarly, teachers' reluctance to incorporate mobile technology affordances to teach L2 writing skills has been documented in an empirical study in the Malaysian context by Zaki and Yunus (2018). Despite acknowledging the benefits of mobile technology for L2 teaching and learning, mobile technology was not deemed suitable for developing writing skills by the study participants, pre-service EFL teachers.

In the context of teachers' limited use of mobile technology affordances, as discussed in the preceding paragraphs, MALL literature emphasises the need for teachers' professional development to effectively incorporate mobile technology in language pedagogy. Several areas have been identified on which teachers' professional development programmes should focus. Most importantly, teachers' technological competence is essential as it is a prerequisite for

appropriately utilising mobile technology affordances for teaching, including language teaching. For example, Cochrane (2012, p. 125) argues that teachers' "modelling of the pedagogical tools" requires a mastery of the tools being used, which may require learning a new skill-set (Pegrum, 2016a). Additionally, since teachers have to work within institutional systems, they need to be trained in integrating mobile technologies with available technological institutional systems (Traxler, 2013).

The need for teachers' professional development related to m-learning and MALL has been reported in empirical studies. There are empirical studies about language teaching that demonstrate similar reluctant attitudes to integrating technology, including mobile technology, in pedagogy. For instance, in Taiwan, Hsu (2017) studied 158 in-service teachers' technological content knowledge relevant to pedagogy for MALL adoption. The results indicated that although teachers were proficient users of smartphones, they needed assistance and training to exploit the affordances of mobile devices for teaching English as a foreign language.

In summary, contradictory findings reported in empirical research, as reviewed in this chapter, call for further research regarding the role of affordances and constraints within a learning ecosystem. It is important that teachers should be provided training to adopt effective and innovative pedagogies so that they do not revert to traditional teacher-led pedagogies (Kearney, Burden, & Rai, 2015; Royle, Stager, & Traxler, 2014). Teachers also need to understand how mobile technology fits into their students' individual learning practices because there is an increasing demand for teachers to design lessons contingent on learners' needs (Godwin-Jones, 2018).

3.7 Concluding remarks

The literature review presented in this chapter indicates that MALL technology affords numerous affordances for language teaching and learning. The MALL community, however, is confronted with a host of constraints that need to be managed so that the full potential of MALL can be realised. The studies reviewed in this, and the previous two chapters, have established a significant need for further research on the integration of mobile devices in the rapidly evolving and expanding field of MALL pedagogy.

This chapter also highlights various research gaps in MALL literature in the global context, which indicate that, despite a growing number of studies, empirical evidence on the pedagogical integration of mobile technology for L2 teaching is scarce. A review of the literature also indicates gaps on a range of issues about the use of mobile technology for EFL teaching, including how mobile technology is used for formal, informal, situated, collaborative and personalised EFL teaching. This chapter has also highlighted a gap in MALL literature on the use of mobile technology for providing personalised assistance and feedback.

Given the extensive ownership of mobile technology among university students in Pakistan and around the world, this study also endeavours to narrow a gap in the MALL literature about students' perceptions and practices. Responding to the calls in contemporary literature about more empirical evidence about students' voices about MALL, this research has examined the students' perceptions and practices regarding the use of mobile technology or L2 learning.

Additionally, due to mobile technology's mobility element, unprecedented and uncharted learning trajectories have evolved, necessitating the need to view L2 teaching and learning from an ecological perspective. The current research has adopted the ecological paradigm for investigating the complex issues of incorporating mobile technology for L2 teaching and learning. This research is expected to contribute to the ongoing discussions about the theoretical frameworks in the field of MALL.

In the Pakistani context, the current research contributes to understanding the general use of mobile technology for EFL teaching and learning. In investigating how and why Pakistani EFL lecturers use mobile technology for EFL teaching, this study also focuses on the contextual constraints that pose challenges for the integration of mobile technology for EFL pedagogy. It also provides evidence about students' perceptions and practices about MALL. The next chapter describes and justifies the research methodology adopted to investigate the pedagogical integration of mobile technology to enable MALL in this study.

Chapter 4. Research design

4.1 Chapter overview

After establishing the need to conduct in-depth studies in the field of MALL with an ecological paradigm in the previous two chapters, this chapter describes how this investigation was conducted. The chapter begins with a reminder of the research questions posed for the current inquiry in Section 4.2. Section 4.3 provides details about the mixed-method approach; it introduces the research sites in Section 4.4 and research participants in 4.5. Data collection methods, procedures and instruments are described in Section 4.6, with the data analysis procedures discussed in Section 4.7. Section 4.8 deals with the ethical considerations associated with the research process. The final section concludes the chapter.

4.2 Research questions

The following RQs were posed to investigate the role of mobile technology in EFL teaching and learning.

Overarching RQ: What is the role of mobile technology in the pedagogical decisions and practices of Pakistani EFL lecturers to enable MALL?

This overarching research question was answered through two sub-questions:

RQ.1 How do the lecturers in Pakistan harness the affordances of mobile technology in their pedagogical practices for EFL teaching?

RQ.2 What are the learners' perceptions and practices regarding the use of mobile technology for EFL learning?

4.3 Mixed methods research approach

A mixed methods research design was adopted to address the research questions of the current research and investigate the complexity of the EFL ecosystem of teaching and learning in Pakistani universities. A mixed-methods design incorporates both qualitative and quantitative data “in an interactive way at all stages of the investigation” (Onwuegbuzie & Johnson, 2006, p. 53). Mixing both the qualitative and quantitative research approaches has gained popularity in education research and applied linguistics due to their potential to complement and supplement each other (Brown, 2014; Creswell, 2014; Punch & Oancea, 2014). As both quantitative and

qualitative data have strengths and limitations, in a mixed-methods approach, one method's disadvantages can be compensated by the other's strengths. Mixed methods research draws on the generalisability of quantitative research and the contextual nature of qualitative research (Creswell, 2014).

While the research methodology used for this study situates itself within a mixed methods research approach, it is predominantly a qualitative study. This study employed six data collection methods: semi-structured interviews, lesson observations, post-observation interviews, students' survey, focus groups and observation of online platforms. Five of six instruments were qualitative. Because of complexity inherent in L2 teaching and learning with mobile technology and to give an added breadth to this study and complement qualitative data collection methods, a quantitative survey was included. Quantitative data from 229 EFL diverse learners in Pakistan provided further insights into EFL learners' perspectives.

There is a rationale for relying primarily on qualitative data collection instruments and complementing them with a quantitative survey. The complexity of teaching and learning in a world populated with mobile devices called for a holistic research design that could reveal the complex layers of EFL teaching and learning with mobile technology. Therefore, a mixed-methods research design informed by ecological perspectives was adopted for a thorough investigation of the EFL ecosystem in Pakistani universities in the “multimodal, multi-sensory and multi-cultural” world (Van Lier, 2008, p. 63).

In the comparatively new field of CALL/MALL, qualitative research can provide deeper insights into an evolving phenomenon. For example, Levy and Moore, (2018, p. 1) regard the qualitative orientation as “useful and even necessary... to help clarify and detail the contextual factors-from macro to micro”. They further contend that the qualitative approach has a capacity “to generate highly detailed data on moment-by-moment processes of CALL [/ MALL]” and “provide an emic perspective on such data”. Stickler and Hampel (2019, p. 14) also suggest that qualitative research approaches are “necessary to adequately understand the experiences of learners and teachers in novel digital environments”. With the rapid pace of developments in mobile technology, it becomes even more important to examine users' perceptions and practices and investigate them from various perspectives.

Technology-enhanced language learning is regarded as a phenomenon too complex to be “captured in a single frame” (Leather & Van Dam, 2003, p. 13). Whereas the qualitative approach has been recommended to generate highly robust data for an adequate understanding of teachers’ and learners’ practices in digital environments populated by mobile devices (Levy & Moore, 2018; Stickler & Hampel, 2019), the use of mixed methods research design has been advocated to “capture, analyse and understand the subtle and sophisticated patterns of interaction” (Levy, 2015, p. 566). Levy, Hubbard, Stockwell, & Colpaert (2015) have argued that using a single research approach to investigate relatively new fields of CALL/MALL may not adequately yield multi-layered findings.

More precisely, a mixed-method design underpinned by an ecological approach was instrumental for a thorough investigation of the complex phenomenon of EFL learning and teaching with mobile technology. Also, an ecological view of L2 teaching and learning necessitates recording and examining all actors' perceptions in an ecosystem (Thoms, 2014). Therefore, the researcher collected data from teachers and students, which helped explore how the lecturers’ pedagogical decisions were impacted by a unique interplay of various factors such as learners’ mobile technology ownership, their mobile-mediated learning practices, their social interactions with others in different mobile contexts and learning resources accessible through mobile devices.

The researcher adopted five qualitative and one quantitative data collection methods to capture “the full complexity of the entire process” of language learning and teaching in an ecological way (van Lier, 2010, p. 5). Given the ecological perspective underpinning the present study, using qualitative and quantitative methods helped engage students and teachers, capture teaching and learning occurring at various times and places, gain an in-depth understanding of their perceptions. A mixed-methods design was instrumental in understanding how various layers in the ecology of the EFL ecosystem of Pakistani universities unfolded and how teaching and learning opportunities emerged.

The process of combining and comparing diverse sources of data allowed the researcher to examine relationships among mobile technology, lecturers, learners and multiple learning contexts from micro to macro levels. For instance, lecturers’ individual interviews, lesson observations, students’ survey and focus group discussions were instrumental in providing

insights into various layers of the EFL ecosystem of Pakistani universities at micro and meso levels. These data collection methods helped examine not only the participants' perceptions and practices (micro level) but also provided a deeper understanding of the impact of various institutional and social factors (e.g., technological and financial constraints) on the lecturers' pedagogical decisions (meso level).

Since no definite lines can be drawn among micro, meso and macro levels in a learning ecosystem underpinned by the mobility of devices and learners, data were also collected by observing students' interactions at online platforms. The observation of students' online transactions captured a unique array of interactions that seemed to bridge boundaries among micro, meso and macro levels. At online platforms, students made interactions with their peers and *knowledgeable others* residing in the *digital wilds* across times and spaces. Thus, the chosen research design with one quantitative and five qualitative data collection methods informed by an ecological perspective has helped examine "the full complexity of the entire process, over time and space in order to capture the dynamic forces that are at work" (van Lier, 2010, p. 5) in the Pakistani university sector.

In summary, a mixed methods research design helped explore various layers of the EFL ecosystem of Pakistani universities and highlight the role of contextual factors on the lecturers' pedagogical decisions and learners' learning practices.

4.4 Introduction to the research sites

The research was conducted in three universities. In order to select universities, the method of stratified random sampling was used. The researcher stratified the universities in Lahore into two groups based on the information available on the universities' websites. The universities in the first group did not have explicit information available on their websites about the use of technology and mobile technology. In contrast, the websites of universities in the second group mentioned the use of technology and mobile technology for EFL teaching. Then, three universities from the second group were randomly selected.

Only three universities were selected for the following reasons: 1) the time and resources available for a doctoral research project did not allow for collecting data from more than three universities; 2) as the research was framed by ecological perspectives, data from teachers and

students within the ecosystems of the universities on how students perceived their lecturers' pedagogical decisions and practices in regards of mobile technology had to be examined; 3) the universities were situated in Lahore, the second-largest city of Pakistan, which attracts students from all parts of the country for tertiary studies. The three selected universities enabled the researcher to observe the relationship between local, social, cultural, financial, and technological factors that impact the use of mobile technology for EFL teaching and learning.

The following section presents information about the research sites.

4.4.1 University One

University One (U1) is a public university in Pakistan that has multiple campuses in various cities. The English language is the medium of instruction in U1. Data were collected from the English Language Teaching and Linguistics department from the main campus situated in Lahore, in which the twelve faculty members were teaching EFL courses at the time of data collection. The department offers MA ELTL (Master of Arts in English Language Teaching and Linguistics), a two-year pre-service training for prospective EFL teachers. The entry requirement for MA ELTL is a bachelor's degree in Arts.

As stated in course outlines, departmental policies encouraged communicative language teaching, whereas EFL was traditionally taught by the Grammar-Translation Method (GTM) in Pakistan. U1 was undergoing a phase of transition from fully face-to-face teaching to a technology-integrated or blended mode of teaching. For this reason, a course related to educational technology, CALL-Instructional Technology, was offered in MA ELTL. Data were collected from the lecturer who taught this course and the enrolled students by the researcher. As the course was related to educational technology, the lecturers were encouraged to use audio-visual resources by the department, but no guidelines were provided as to integrating any specific technology.

4.4.2 University Two

University Two (U2) is relatively new but the largest private sector university in Pakistan, with more than 35,000 students and seven campuses across Pakistan. The English language is the medium of instruction in U2. Data were collected from the Department of English Language and Literature in the main campus of U2 situated in Lahore. At the time of data collection, 29 faculty

members were teaching courses in the department. The department offered a four-year undergraduate degree in English language and literature and two postgraduate degrees in English literature and English language teaching.

The features of the four-year undergraduate degree, as stated on the university website, described this as an interdisciplinary degree programme designed to cover the core areas of English language and literature. The programmes offered by the Department of English Language and Literature aim to foster the skills of reading and critically analysing a range of texts. The programme emphasises oral and written English language skills to ensure graduates' employability in various fields. The departmental policy encourages lecturers to align their teaching with the current trends of technology-enhanced EFL teaching to foster the skills of independent learning and critical thinking among students.

4.4.3 University Three

University Three (U3), established in 1998, is ranked among the top ten universities in Pakistan, with 37000 enrolled students in seven campuses. English is the medium of instruction for all courses. Data were collected from the Department of Management Sciences, which offers undergraduate and postgraduate degrees in business administration in Lahore's main campus. The two lecturers, who volunteered to participate in the study, were teaching EFL courses in the department at the time of data collection. In Pakistan, two EFL courses are mandatory for each undergraduate degree, irrespective of the discipline they are studying, to enhance students' communication skills in the English language.

According to the course outlines and departmental website, EFL courses are tailored to achieve two purposes. First, the courses aim to give students a solid foundation to comprehend and produce texts in English so that they can satisfactorily complete the academic requirements of their degrees. Second, the courses will enable students to communicate effectively and confidently in English in their professional lives.

4.5 Introduction to the research participants

The participants for this study were six EFL lecturers from three universities and their 229 students who were enrolled for EFL courses at data collection time.

4.5.1 Participants' recruitment

From the selected universities, the researcher identified EFL lecturers who used mobile technology for teaching. From those, six lecturers were selected using the stratified random sampling method. The selection process is described in the following paragraph.

To recruit the lecturers as participants, the researcher sought consent from the Heads of the Departments (HoDs). Consent was sought to engage two EFL lecturers from each university. In order to provide detailed information about the study, each HoD was provided with a Participant's Information Sheet (PIS) (Appendix A) and a Consent Form (CF) (Appendix B). In each university, the secretary of the HoD was asked to send an initial email to all EFL lecturers who could volunteer for the study. Two lecturers from each university were randomly selected as more than two lecturers were willing to participate.

The selected lecturers were sent PISs (Appendix D) and a CF (Appendix E) to provide details about the study and seek their formal consent. The secretaries of the HoDs also sent official emails to invite the students enrolled in EFL courses taught by the participating lecturers to fill in a survey and to participate in a focus group. They were sent PISs (Appendix G) as well as a Survey Monkey link to an anonymous questionnaire. Many students indicated their willingness to participate in the focus groups. In each university, six randomly selected students were invited to participate in focus groups and provided with CFs (Appendix H).

4.5.2 Participants in U1

In U1, two EFL lecturers and their 79 students participated in the study. Amir and Huria are the pseudonyms used for the lecturers.

Table 4.1

Demographic Information of the Two Lecturers in U1

	Amir	Huria
1. Gender	Male	Female
2. Qualification	MA ELTL	MA ELTL
3. Years of EFL teaching	Five	Eight
4. EFL Courses	Instructional Technology (CALL)	English Language Skills

The student-participants enrolled for an MA ELTL are identified with letters and numbers such as S1-U1 (Student 1-University 1). The student-participants were studying to become EFL teachers in schools and colleges.

4.5.3 Participants in U2

In U2, two EFL lecturers and their 77 students enrolled in EFL courses participated in the study. Aly and Bina are the pseudonyms used for the lecturers.

Table 4.2

Demographic Information of the Two Lecturers in U2

	Aly	Bina
1. Gender	Male	Female
2. Qualification	Master of English Language and Literature and a Diploma in ELT	Master of Applied Linguistics
3. Years of EFL teaching experience	Ten	Six
4. EFL Courses	Intercultural Communication	Communication and Presentation Skills

The student-participants enrolled for a Bachelor of English Language and Literature have been identified with letters and numbers such as S1-U2 (Student 1-University 2).

4.5.4 Participants in U3

Two EFL lecturers and their 73 students participated in the study in U3. Adam and Sara are the pseudonyms used for the lecturers.

Table 4.3

Demographic Information of the Two Lecturers in U3

	Adam	Sara
1. Gender	Male	Female
2. Qualification	Master in English Language and Literature	Master in English Language and Literature
3. Years of EFL teaching experience	Eight	13

The student-participants enrolled in the Bachelor of Business Administration degree are identified with letters and numbers such as S1-U3 (Student 1-University 3).

4.6 Data collection methods, instruments and procedures

This section describes and justifies the data collection methods, instruments and procedures. The decisions about the methodology were informed by the ecological paradigm and the focus of the research. The chosen methods complement one another because while interviews can elicit teachers' pedagogical beliefs, lesson observation can capture teachers' pedagogical practices. Similarly, post-observation interviews can also help obtain further information about the rationale of the observed pedagogical practices. Therefore, a combination of interviews and lesson observations was deemed appropriate to connect various components of the learning ecosystems within Pakistani universities.

4.6.1 Data collection to answer the first sub-question

The data to answer the first research sub-question were collected from six lecturers at the three Pakistani universities through the lecturers' semi-structured interviews, class observations, and post-observation interviews.

The following three sub-sections describe and justify the data collection methods adopted to answer the first sub-question.

4.6.1.1 *The lecturers' initial semi-structured individual interviews*

In this empirical research, the primary purpose of collecting data through semi-structured interviews was to explore the multiple layers of the ecology of EFL pedagogy in a conversational manner by drawing on the flexibility inherent in semi-structured interviews (Yin, 2014). The following paragraphs describe the key advantages and disadvantages of semi-structured interviews as well as the key issues explored in the lecturers' interviews in the present research.

Interviews are considered one of the widely used qualitative data collection tools and one of the most powerful ways of understanding participants' perceptions, seeking explanations, and defining situations (Punch & Oancea, 2014). Interviews provide focused answers to researchers'

intended line of inquiry and provide them with an opportunity to seek further clarification from the interviewees (Miles & Huberman, 1994). Forsey (2012) contends that the predominant characteristic of an interview is a conversation between the interviewer and the interviewee to come to an understanding together. Rubin and Rubin (2011) also assert that, in qualitative interviews, interviewees and interviewer are engaged in a relaxed conversation for meaning-making instead of being threatened or overwhelmed by a feeling of being examined.

Interviews fall under three categories: structured, unstructured and semi-structured (Cohen, Manion, & Morrison, 2013). A pre-determined agenda in the form of questions guides structured interviews, while the respondents' responses guide unstructured interviews. Semi-structured interviews fall between these two extremes. Semi-structured interviews are used in this study to focus on critical issues in the Pakistani context while allowing the respondents to articulate their teaching beliefs and provide details about their pedagogical practices (Bryman, 2012; Warren & Karner, 2014).

Initial semi-structured interviews also assist in getting an in-depth understanding of the lecturer participants' beliefs by using probes. Using probes can be significant when a researcher senses that the interviewee states something significant and asks follow-up questions, which can give more useful information (Merriam, 2009). For example, in this research, although the interview guide did not include a direct question to EFL core skills, through follow-up questions, information about skills were elicited as the lecturer participants repeatedly mentioned the use of mobile technology to enhance students' EFL skills.

There are some disadvantages associated with interviews as a data collection method and the advantages identified in the preceding paragraph. For example, interviews are criticised because the researcher's dominant position can influence participants. Miles and Huberman (1994) posit that a researcher's bias can lead to an interviewee's incorrect response. For example, an interviewee's response can be affected or biased due to the researcher's age, gender, and cultural background. Interviews are also regarded as an expensive and time-consuming method because of travelling and post-interview transcription costs (Doody & Noonan, 2013; Kvale, 2006).

Efforts to minimise the effect of these limitations were made in this study. Interviews were conducted at a time and place convenient for the participants. The fact that I, the researcher, had been an EFL lecturer in a Pakistani university, but with no connection with the participants'

employers, made the participants comfortable as they regarded me as an *insider* with whom they could communicate freely. Probes were used cautiously to overcome the researcher bias so that questions did not influence the original ideas of the interviewees. The lecturers were also free to speak in any language (Urdu/English) to express their opinions comfortably.

The interview questions focused on various aspects, such as the type of mobile devices, built-in features, apps or resources used by the participants, the objectives of using mobile devices for EFL teaching, and the lecturers' strategies for using mobile technology in or beyond the classrooms. Interviews also focussed on obtaining information about the barriers to incorporating mobile technology for EFL teaching within the ecosystems of Pakistani universities (see Appendix I for details).

The interview questions (Appendix I) were prepared, drawing on the identified research gaps, the themes gleaned from the current literature, and the specific issues in Pakistani universities' EFL ecosystem to capture the complex phenomena of EFL teaching and learning. For instance, there is no consensus in contemporary literature about the definition of mobile technology. Some researchers consider hand-held devices as mobile devices, while others include laptops in the category of mobile technology (see Section 3.2.1 for details). Therefore, it was deemed appropriate to ask which devices were considered mobile devices in the Pakistani context.

Similarly, contemporary literature reports diverse uses of mobile technology by teachers. Some teachers use it to enable learning for their students in and beyond the classroom, while others use it to organise their teaching and communicate with their students (see Section 3.4 for details). In order to capture the participants' pedagogical use of mobile technology, a question was asked in the interview whether they used mobile technology inside the classroom, outside the classroom, for prescribed syllabus, communication and organisation of their teaching.

Additionally, the researcher' contextual knowledge also informed the preparation of interview questions. For instance, being an insider to the learning ecosystem of Pakistan, the researcher was aware of the fact that teaching is primarily teacher-centred in the Pakistani context. Given extensive ownership of mobile technology among learners, exploring the changes in teachers' roles was significant. Therefore, a question was asked if the lecturers experienced any changes in their traditional authoritative roles and if they have made adaptations in their pedagogical practices due to the ubiquitous availability of mobile technology. Overall, semi-structured

interviews helped the researcher maintain her focus on critical issues in a particular context while allowing the respondents to provide more details about the emergent themes.

The lecturer participants were invited for semi-structured individual interviews. The interview session took place at times and venues convenient to the participants for approximately one hour. The interviews were audio-recorded with the participants' consent. The interviews were transcribed, and the transcriptions were sent to the participants for review. Two of the six lecturers added more details to the transcribed scripts to further explain their opinions.

4.6.1.2 *Non-participatory class observation*

Non-participatory observation helps researchers to observe behaviours, events and interactions in the context of a study environment (Bryman, 2012; Creswell, 2012). Emphasising the need to observe language classrooms, Allwright (2006) argues that, among other things, researchers need to observe, understand and describe the complexity of classroom teaching. Observation is also a powerful data collection tool as it provides clear and detailed evidence compared with other data collections methods.

As well as advantages, numerous challenges are raised. For example, a researcher's bias can stand in the way of impartial observation. Preconceived ideas about a teacher or an institute may colour his /her observation so that they unintentionally note evidence based on a biased preconception. Allwright (1991, p. 70) describes "the observer's paradox", which refers to the fact that the presence of tapes, audios and observers might change the observed behaviour leading to the contamination of data. Another issue is that gaining access to the research sites, and conducting observation, can cost a considerable amount of time, resources, and energy (Warren & Karner, 2014).

In the current study, the researcher adopted various strategies to minimise researcher bias. Firstly, researcher bias was minimised by following an observation guide (Appendix J). Secondly, the lecturers were not requested to incorporate mobile technology for EFL teaching in the observed lessons so that their existing practices could be captured. Thirdly, the lecturers were requested to inform the students about class observation so that they would not feel uncomfortable. Fourthly, the researcher also tried to minimise disturbance for the lecturers' routine pedagogical practices by not participating in any classroom activities. Lastly, no

recorders were used in the classroom, but the observations followed an observation guide, and field notes were taken.

The observation guide was prepared to focus on a range of elements related to the lecturers' pedagogical practices that incorporated mobile technology in the EFL classrooms' ecosystem. Observations included classroom settings, the technological affordances (features/apps) of mobile technology used by the lecturers, and the purpose of incorporating the affordances, which included lecturers' using mobile technology for in-class activities and out-of-class activities. Observations also included whether students accessed mobile technology for individual tasks or group work. Lesson observation also focused on the challenges encountered by the lecturers and their students while using mobile technology in the class and the lecturers' strategies of resolving the issues (see Appendix J).

The purpose of using lesson observation to collect data was to observe the specific pedagogical practices of the EFL lecturers in the Pakistani university sector. For the current study, Pakistani EFL lecturers' "idiosyncrasies" (Allwright, 2006, p. 13) were more critical than characteristics common to EFL lecturers in other contexts. Non-participatory observation provided opportunities to gather data in real-life contexts and observe situations inside the classroom, which the participants might not have expressed verbally. Lesson observations were also useful in gaining insights into the relationships among various actors and factors in the ecosystem of Pakistani universities.

4.6.1.3 *Post-observation interviews with the lecturers*

Post observation interviews of the lecturer-participants provide an opportunity for teachers to think reflectively and help researchers evaluate classroom learning. For this study, the purpose of the post-observation interviews was to triangulate data from the interview and focus groups and gain a deeper understanding of the reasons for the lecturers' observed pedagogical decisions and practices.

Long delays between lesson observations and post-observation interviews are a significant drawback of post-observation interviews. The participants were interviewed as early as possible after the lesson observations to ensure lecturers could "verbally exteriorise the actions" (Edwards-Leis, 2007, p. 12) and that a deeper understanding of the rationale for their pedagogical practices could be gained.

In the present study, a contextual barrier affected the process of post-observation interviews. Five of the six lecturers did not agree to face-to-face interviews due to political unrest at the time of data collection that made travelling difficult, so questions were emailed on the same day as the second observation. Four lecturers sent their answers to post-observation questions in emails, and one lecturer replied in the form of recorded WhatsApp messages. One of the six lecturers managed time for a face-to-face interview within 24 hours after observing the second lesson. The lecturer-participants' permission to seek further explanation via emails provided opportunities to understand the rationale behind their observed pedagogical practices, which enriched data.

The lecturers' answers to post-observation questions provided further insights into the rationale of their pedagogical decisions of using mobile technology in the observed lessons. For instance, Amir got two apps installed in the observed lesson. In order to find a rationale for his practice, one of the post-observation questions was: "What is the use of spending time in getting the apps installed when students can do this outside the class time?" His answer explained that he was teaching potential EFL teachers; therefore, he focused on teaching students about technology and giving them a hands-on experience. In this way, his students could not only use mobile technology for EFL learning, but they would also be able to teach the use of various mobile-enabled technological features to their students.

Post-observation interviews from other lecturers also provided clarity regarding the use of mobile technology for EFL teaching. For example, in one of Huria's lessons, her students used mobile technology to read an article. Then the lecturer shared a link to a quiz based on the reading. Using their mobile devices, the students solved the quiz, which was designed to provide instant scores. In order to understand her approach to the use of mobile technology for assessment, a question was asked: "Do you design assessment activities that could be accessed through mobile technology?" In her post-observation interview, Huria explained that she did not design assessment activities herself. Instead, she usually drew on a website agendaweb.org because it provided "*mobile-friendly automated assessment resources*".

In conclusion, in the current study, post-observation interviews provided insights into the lecturers' pedagogical decisions, which enriched data collected through the lecturers' initial semi-structured interviews and lesson observations.

4.6.2 Data collection to answer the second sub-question

Data to answer the second sub-question, which examined EFL learners' learning perceptions and MALL practices in the Pakistani university sector, were collected through a survey. Data from three focus groups, and observation of students' online interactions, complemented and triangulated data elicited through the questionnaire. These collection methods in the research design enabled triangulation of the data to record students' perceptions of and practices with mobile technology for EFL learning in their learning ecosystems.

4.6.2.1 *The questionnaire*

Questionnaires are an effective and efficient way of collecting data, both qualitative and quantitative, from a large number of participants within a short period at a low cost, and the data yielded can be readily processed (Dörnyei, Zoltán & Taguchi, 2009; Richardson, 2005). According to Brown (2014), questionnaires are written instruments that allow the respondents to answer various questions by writing answers in their own words or selecting one from the given answers. Despite the efficacy of questionnaires for data collection, several issues have been raised. For instance, issues to be considered include questionnaire design, including language and order of questions; management and distribution; issues of validity and reliability; strategies to maximise response rate and manage vague answers to open-ended questions (Cohen et al., 2013).

Several strategies can be employed to overcome the issues mentioned above. For example, to design an effective questionnaire, a researcher should ensure that the language used for asking questions is neither ambiguous nor biased by personal assumptions to ensure the intended purpose can be met. A researcher should also consider the options for answering a particular question in the best possible way.

Another problem associated with a questionnaire is its distribution and management. A researcher should ensure that questionnaires are distributed in a way that is easily accessible to the respondents. Before distribution, it should be considered whether the respondents would be able to respond to an online or printed form questionnaire. However, to maximise the response rate, a researcher should be mindful of the respondents' context when applying these strategies (Cohen et al., 2013).

The questionnaire for students in this study was anonymous and focused on several aspects related to MALL including: preferred mobile devices; motivation to use mobile technology for language learning; preferred times, places, apps; and language learning resources with mobile technology. The questionnaire also investigated the language skills, which are enhanced through mobile technology as well as the students' preferred people, and platforms for assistance while language learning outside the classroom, and their preferred connectivity options (see Appendix K).

This study used an adapted version of a questionnaire developed by Demouy, Jones, Kan, Kukulska-Hulme and Eardley (2016). According to Demouy (personal communication, July 4, 2017), the original questionnaire was refined through several iterations of feedback from the experts in m-learning working in the Open University, United Kingdom. Drawing on the issues and the challenges reported in contemporary literature, the researchers who designed the questionnaire ensured that the questionnaire's items captured all the related content addressing a wide range of issues about students' perceptions and practices related to m-learning. These researchers also piloted the questionnaire to ensure that it could accurately measure and predict students' learning practices related to the use of mobile technology for learning a second or foreign language. Piloting, along with feedback from the experts in m-learning, ensured the reliability and validity of the questionnaire so that Demouy et al. (2016) could be confident it measured the content which they intended to measure.

The original questionnaire was designed to be administered to students belonging to many nationalities enrolled in EFL/ESL courses at The Open University, UK. It focused, therefore, on the items that measured the learning practices common to the mobile learners irrespective of their location. However, the specific focus on EFL learners in the Pakistani university sector, and the theoretical framework, called for some adaptations to the original questionnaire so that the learning perceptions and practices of the Pakistani students could be assessed.

The adapted version of the questionnaire responded to specific contextual factors to identify all the pros and cons of the use of mobile devices for EFL learning and teaching. Two questions that required students' short descriptions of their favourite websites and typical language learning activity were eliminated because these aspects were covered in focus groups and online data observations in the present study.

Another question about students' preferred times and places for L2 learning was adapted by adding specific options. For example, in the question related to students' favourite times and places for accessing learning resources, the original questionnaire gave two options (i.e., planned learning sessions and short bursts of time). As an *insider*, the researcher had an understanding of relationship of various elements in the learning ecosystems of Pakistani university students and so specific options informed by Palalas's (2012) study were added. The options added were travelling, in the café, in the library, watching TV and waiting for the next class, as well, using the time slots during electricity breakdown, a common issue in Pakistan.

4.6.2.2 *Focus groups*

Focus groups are group interviews, which deliberately use interaction in order to encourage participants to clarify or justify one another's statements and facilitate a researcher to get insights into the participants' perceptions (Rubin & Rubin, 2011). Krueger and Casey (2000, p. 5) describe a focus group as a "carefully planned discussion designed to obtain perceptions on a defined area of interest in a permissive, non-threatening environment". Group dialogues foster agreements and disagreements, paving the way to robust discussions among the participants who share a similar background. According to Dörnyei (2009), a focus group format allows for group brainstorming, through which the participants can inspire and challenge one another about emerging issues and ideas. Additionally, focus groups yield naturalistic data by engaging all participants in the discussions and by facilitating the moderator to observe group dynamics, including similarities, differences, silences and other gestures.

Despite the flexible and dynamic nature of focus groups, there are some inherent limitations. The challenges related to focus groups include time, budget, participants' recruitment and venue suitable for all participants (Morgan, 2008). Furthermore, some group members may influence others' opinions, which may affect the data and, because of the open nature of discussions, some participants may be afraid of expressing their opinions publicly (Krueger & Casey, 2000). However, to minimise these issues, the focus groups were held inside the university campus and during students' free time slots; they were moderated to ensure all the participants had an equal opportunity to express their viewpoints.

The purpose of the focus group discussions in this study was to get deeper insights into the learners' perceptions and practices regarding the affordances and constraints of mobile devices

for EFL learning. Three focus groups allowed the researcher to triangulate data collected through the questionnaire. The focus groups aimed at obtaining the students' data about how and why the students used mobile devices for language learning; their use of mobile technology for self-directed learning related to EFL courses; and the students' use of mobile technology for collaboration with their lecturers and peers. The focus groups also investigated barriers to MALL related to formal and informal language learning, internet connectivity and its cost (see Appendix L).

For selecting the participants, in each university, eight participants who indicated their willingness to participate in the questionnaire were randomly selected from the respondents to the questionnaire. Six participants in the first, six participants in the second and five in the third focus group participated in the focus groups. All the participants preferred the focus groups to be conducted on the campuses of their universities, the time and place of which were negotiated with the participants through WhatsApp. These focus group sessions were audio-recorded for data analysis with the participants' consent. The sessions were conducted in Urdu so that the participants could express their ideas without being hindered by language constraints (Gass & Mackey, 2007), although the participants used both English and Urdu.

4.6.2.3 *Online platforms*

Alternative data collection methods can play a vital role in collecting data from mobile learners about mobile learning. Contemporary research has highlighted the value of researching mobile learning in real-life settings for obtaining real insights into the participants' views (Laurillard, 2009). With advancements in technology, researchers are experimenting with innovative data collection methods: which include but are not limited to, the use of social media and other online platforms to capture technology-enhanced L2 teaching and learning with its full complexity (Smith, 2017). However, Helm and Dooly (2017) point out that analysis of multimodal data collected through innovative methods can pose many challenges, such as transcription and representation of visual, textual and oral data. In this study, online data collection was restricted to observing communication, interaction, and transaction patterns among multiple agents such as lecturers, students, peers and online contacts.

Access to data generated by interactions among the students and their lecturers at online platforms such as Facebook, WhatsApp and Google Classroom was obtained on request. All the

participant-lecturers had set up class-specific groups or pages on Facebook and WhatsApp for course-related communication and dissemination of EFL content. One of six lecturers preferred to communicate via Google Classroom as he used it as an LMS for the course. Google Classroom is a web-based platform managed by Google that teachers and students can use free of cost; it can also be accessed via an app on mobile devices. The lecturer was using it for communicating and disseminating EFL-related content, moderating virtual discussions, and giving feedback on students' assignments submitted through Google Classroom.

Access to these class-specific platforms provided insights into the nature and purpose of interactions being made at these platforms. The researcher made observation notes based on the discussion threads related to the course content, questions and issues raised by the students, and the lecturers' answers or feedback. Observing interactions at online platforms provided a deeper understanding of the EFL ecology of Pakistani universities.

4.6.3 Piloting of research instruments

Interview questions were piloted with two lecturers (non-participants) to refine the instruments and ensure the data's trustworthiness. As the lecturers did not fully understand some terms (e.g., ubiquity and contextual/situated learning), these terms were explained to the participants during the semi-structure interviews and alternative words were used wherever required. Likewise, the focus group protocol was piloted with four students (non-participants), but no problems were found as the students were able to understand and answer the questions quickly.

The adapted version of the questionnaire was piloted with 15 students (non-participants) who had already studied EFL courses from the participating universities. Subsequently, clear instructions were added in the online questionnaire and explanatory words were inserted in brackets to make it as straightforward as possible for the readers. I also deleted one question that asked students whether or not they used mobile technology for language learning because the piloting results indicated that if the students answered negatively to this question, all the subsequent questions would be rendered meaningless for them.

4.7 Data analysis

Researchers (e.g., Gibbs, 2018; Punch & Oancea, 2014; Warren & Karner, 2014) have argued that data analysis implies transforming data into a meaningful and sensible story. Qualitative data

analysis is a complex and iterative process, which entails “moving back and forth between concrete bits of data and abstract concepts, between inductive and deductive reasoning, between description and interpretation” (Merriam & Tisdell, 2015, p. 202). Repetitive checks have been recommended to identify recurring patterns and alternative interpretations (Stake, 1995). Richards (2014, p. 101) argues that “establishing a data processing style that you like is essential” because the qualitative approach is “intensely personal”, which makes “agency and ownership of the data” as critical factors in the data analysis process.

Both inductive and deductive approaches were used in the current study for thematic analysis. An inductive approach is a data-driven, bottom-up way of building patterns, categories and themes, while a deductive approach is a researcher-driven, top-down way of reflecting on the data for identifying themes going beyond initial or apparent codes (Braun & Clarke, 2019; Creswell, 2014). The terms codes, categories, and themes for initial or data-driven coding were utilised for both these approaches for the data analysis; categories informed by literature and the theoretical ecological framework were also used. The following section describes the methods and procedures of data analysis.

4.7.1 Methods and procedures of data analysis

This section describes the analytical approach of this study. The present study adopted a combination of content analysis and thematic analysis to analyse data gathered from six methods. Both approaches allow for a qualitative analysis of data. Content analysis is a term used to analyse a large amount of text to identify trends, patterns, and frequency. A descriptive approach is used in the content analysis in data coding and interpreting quantitative data. Although thematic analysis is a rich, detailed, yet complex method of data analysis that is used to search for recurring patterns, content analysis arguably is an integral part of thematic analysis.

Even though the micro-level discourse analysis is acknowledged and given significance in thematic analysis, it focuses more on the underlying meaning. In thematic analysis, what is said is regarded more important than how it is said; hence, emphasising the analysis of meaning than on grammar and syntax. Given the purpose of the study about the role of mobile technology in the pedagogical decisions of the lecturers in enabling EFL learning, content analysis was used to identify recurring patterns rather than content analysis at the micro-level (e.g., grammar and syntax).

The analysis of qualitative data-sets started from the initial conceptualisation of the study, literature review and the researcher's theoretical orientation and continued during data collection and transcription as Richards (2003, p. 268) notes that in qualitative data, "analysis is neither a distinct stage nor a discrete process; it is something that is happening, in one form or another, throughout the whole research process". The process of data analysis involved analysing content and identification of patterns and themes.

As the transcription process is regarded as a crucial phase of data analysis in qualitative interpretative methodology, my decision, as a researcher, to transcribe the data myself proved a distinct advantage. Initial analysis commenced during the transcription process, with the identification and labelling of "semantic codes... [which are] identified within the explicit and surface meaning of the data" (Braun & Clarke, 2006, p. 13). Keywords, phrases (e.g., mobile phones, connectivity, out-of-class assignments, recording, feedback, WhatsApp) and sentences were highlighted, and notes were made in the margins. The codes were identified in the data, and a description for each code was written to develop a coding framework. Following the initial content analysis, codes were grouped into categories. Then, categories were grouped under theory-informed themes based on similarities found among categories.

In the present study, the researcher adopted both inductive and deductive approaches to analyse multiple data sets. In terms of deductive analysis, the entire data analysis process was informed by the researcher's theoretical orientation (i.e., ecological paradigm) and guided by her background knowledge of MALL literature. The data analysis process was guided by pre-determined codes gleaned from the literature. These codes were used in preparing lecturers' interview questions, lesson observation guide, and focus group protocols.

Data gathered through the survey were also analysed in a deductive way. Quantitative data were analysed using descriptive statistics to aggregate the information about the students' preferences regarding their use of mobile technology and their views about their preferred times and spaces for EFL learning. Then, the content of survey questions was coded informed by literature informed codes. The first layer of analysis was enriched by thematic analysis as the data were coded under theory-driven themes.

Regarding inductive analysis, given the natural flow of conversation in semi-structured interviews, focus group discussions, spontaneity inherent to classroom teaching, which also informed post-observation interviews, and unpredictability of students' online interactions necessitated an inductive approach. Several patterns were identified as the content was analysed for ideas that flowed naturally during the interviews and those that could not be pre-conceived, as found in observational data. For example, the content of observational data were analysed inductively. Observation notes were read several times to analyse online data, and recurring underlying patterns were identified. Likewise, the online data analysis was also inductive as there were no pre-established schedules for online observation. The online data analysis highlighted students' interests and engagement in online communication platforms such as WhatsApp, Google Classroom and Facebook.

The data analysis process was not linear as the researcher moved back and forth to analyse content and identify patterns, which could be grouped under various categories related to MALL. In this stage, data were collated under the themes informed by MALL literature, such as situated learning, affordances of mobile technology, constraints of mobile technology, and interactions at virtual spaces.

Furthermore, given that data triangulation plays a crucial role in the data analysis process, the lecturers' and students' data were compared and contrasted. First, the three sets of data collected from the lecturers were compared. While the lecturers' initial and post-observation interview data were being transcribed, read, and coded, the two sets of data were compared with data from the lesson observations to examine whether or not the pedagogical practices reflected the reported data. During this process, the reasons for any convergence or divergence of their stated beliefs, perceptions, and pedagogical practices were identified.

As part of data triangulation, the students' data were also compared and contrasted with the lecturers' data. Triangulating various data sets collected from the lecturers and their students provided insights into mobile-mediated teaching and learning intricacies. This triangulation process also helped identify the gaps in the lecturers' pedagogical and students' learning practices. For example, comparing the observational data collected from the students' online interactions with the lecturers' data, several missed opportunities were identified that were not

taken advantage of by the lecturers for EFL teaching, suggesting the untapped potential of MALL.

4.7.2 Theory-informed themes

Significantly, since the paradigm of ecology underpinned the entire data analysis process, after analysing various data sets separately, commonalities in each data set were identified and grouped under theory-informed themes. The collation of various codes under theory-informed themes was significant as it helped the researcher visualise how the entire system worked and how the dynamics at micro and meso and macro levels helped shape the pedagogical decisions of the lecturers. The process of bringing together various data sets and comparing and contrasting data from lecturers and learners also highlighted how students' macro level transactions at online platforms influenced the lecturers' pedagogical decision-making at the micro-level in Pakistan universities' EFL ecosystem. The themes informed by the theoretical model underscored the interconnectedness of various components and contexts that contributed to the whole procedure of teaching and learning.

In the final iteration, data were deductively analysed as they were coded under five dimensions related to the ecological model by Palalas (2013), as described in the second chapter of the thesis. The following section describes how theory-driven themes were applied to all data sets.

4.7.2.1 *The pedagogical dimension*

The pedagogical dimension of MALL is the central focus of this study. Data collected from EFL lecturers helped examine how the lecturers optimised mobile technology affordances for teaching EFL. The researcher analysed the lecturers' reported beliefs and perceptions (as expressed in the initial semi-structured interviews), their practices (as observed during lesson observations), and their views (as expressed in the post-observation interviews). Institutional enablers and inhibitors, which influenced EFL lecturers' pedagogical decisions and practices concerning the integration of mobile technology in their teaching, were also identified by examining the availability of technological devices and connectivity.

4.7.2.2 *The technological dimension*

As MALL is enabled by the availability of mobile digital devices and internet connectivity, the focus was on mobile devices used by and connectivity options available to the participants. Any possible compatibility issues facing the lecturers while using mobile devices for EFL teaching

were also identified. The qualitative data in the questionnaire, from the first question about the type of mobile devices and the fifth question about the apps and resources, were also coded in the technological dimension.

Moreover, a sound technology infrastructure in universities is a prerequisite for enabling m-learning. Data collected through class observation, as well as visits to the research sites to interview the lecturers and conduct the focus group discussions, provided opportunities to assess on-campus connectivity provided by the universities; the quality and cost of internet connectivity were also noted. Internet connectivity provided by cellular companies in Pakistan was also given equal consideration. The data were examined considering the concept of affordances and affordability advocated by Pegrum (2014). In sum, data were analysed to ascertain how the available technological infrastructure shaped the lecturers' pedagogical practices in the Pakistani context.

4.7.2.3 *The temporal and the physical dimension*

Mobile technology gives learners a unique opportunity to start, pause, and resume their learning whenever and wherever they like (Palalas, 2013). The data were coded initially to indicate times and places of learning in two separate categories. Subsequently, it became apparent that the temporal dimension was interwoven with the physical dimension. For example, students' use of mobile technology beyond the classrooms was coded under the physical dimension because it indicated language learning in informal places. The same data was also categorised under the temporal dimension, as it also indicated language learning at students' convenient times. In the questionnaire, the sixth question eliciting students' preferred times for using mobile technology for L2 learning was also coded under two categories as the given choices included travelling, watching TV, in the café and during planned lessons. Consequently, the two dimensions in the data analysis process were collapsed.

Data collected from the EFL lecturers and their students were analysed to examine the temporal and the physical dimensions of the EFL ecosystem of Pakistani universities. A significant characteristic of mobile technology is that it enables students to study at times slots and places, which would not usually be suitable for studying. Data yielded through the questionnaire and focus groups helped the researcher explore Pakistani EFL learners' preferred times and places. The data also revealed how the students accessed learning resources at various times and places

such as waiting for the next class, travelling to and from the university, watching TV, and during the tedious power shutdown times typical of the Pakistani context. Data were also analysed to identify the lecturers' preferred places and times for situating EFL activities to take advantage of the ubiquity and flexibility of mobile technology.

4.7.2.4 *The transactional dimension*

The transactional dimension refers to a web of interactions among teachers, students, EFL content, and authentic contexts within Pakistani universities' ecosystem. Multi-dimensional interactions through mobile-enabled flexible platforms have the potential to enable and enrich EFL teaching and learning (see Section 2.5.3).

Data were analysed to examine how mobile technology facilitated communication and collaboration among EFL lecturers and their students within the Pakistani universities' MALL ecosystem: that is, the transactional or interactional dimension of EFL teaching and learning in three Pakistani universities. Data were examined to ascertain the lecturers' perceptions of the potential benefits of transactions with students outside and inside the classroom. Themes related to the transactional dimension were identified by examining the interactions among multiple agents in the EFL ecosystem that included interactions among the students and their lecturers, the students and their peers, and participants and online contacts.

Data were also examined to ascertain which pedagogical decisions facilitated students' interactions with EFL content and how students interacted with EFL content beyond the classrooms. Interactions with EFL contexts were also identified as it was found that the lecturers situated EFL activities in authentic contexts (e.g., markets, campus grounds). Students' interactions with other interlocutors at virtual spaces (e.g., Quora.com and Engvid.com) which were made to seek assistance for EFL learning (see also the seventh question in the questionnaire), were also identified.

The data were analysed to examine why and how the students and the lecturers entered into transactions related to EFL, taking into account the time, place, and specific purpose of these transactions: for example, how EFL learners seek assistance from their lecturers and peers. The data were also analysed to establish lecturers' responses regarding mobile technology feedback when their students sought assistance; the platforms for making transactions in both qualitative data and the questionnaire (see the ninth question in the questionnaire); and strategies employed

by the lecturers in resolving the transactional issues. Equal importance was given to the issues, which constrained the lecturers in making interactions with their students. Most importantly, the focus was on the participants' preferred apps and resources to make transactions for EFL teaching and learning.

4.7.2.5 *The blending of five dimensions*

As mentioned in the second chapter of this thesis, the ecological model (see Section 2.5) informed the data analysis process with the five dimensions, illustrated in Figure 2.1, pivotal for the final data analysis process. During the theory-driven coding, it was found that many themes arising from various data sets were highly interconnected. Data were labelled within each dimension with any overlapping noted. For example, several excerpts were coded many times as they fell under more than one category (see Appendices M-P). Data analysis initially revealed an overlapping of the technological, transactional, temporal and physical dimensions.

The data analysis process reiterated that the pedagogical dimension is relevant to all the datasets categorised under other dimensions (i.e., technological, temporal, physical and transactional). It was apparent that the pedagogical decisions of the lecturers were the most crucial elements or factors connecting all components in the learning ecosystem of the participating universities. Consequently, the lecturers' beliefs about language teaching with technology were coded under the pedagogical dimension, which connected them to the themes related to other dimensions. Identifying the themes related to five dimensions was significant for illustrating the complexity of the MALL ecosystem in Pakistani universities.

4.8 Reliability, trustworthiness and ethical considerations

Several procedures were followed to ensure the reliability and trustworthiness of the study. Some have been mentioned earlier in the chapter, while describing the data collection procedures. For example, the procedures employed to ensure the validity of the questionnaire by Demouy et al. (2016) were detailed earlier in this chapter (see Section 4.6.2.1). The procedures already described and other steps to ensure the study's reliability and trustworthiness follow.

Firstly, this research employed methodological triangulation, which entails studying the same phenomena using various methods. The methodological triangulation as a strategy to raise the analysis beyond the researcher's personal biases has been described by many researchers (e.g.,

Cohen et al., 2013; Creswell, 2014; Merriam, 2009; Punch & Oancea, 2014). The current research employed various data collection methods to enable data triangulation: for example, the participants' reported data were triangulated by the observation of lessons and online interactions on various mobile-enabled platforms.

Secondly, while conducting the lecturers' interviews and students' focus groups, the participants were given a choice to speak their preferred language (English or Urdu), as most participants spoke a mixture of two languages. Although the lecturers chose to speak English while giving interviews, some words and sentences to explain their views were in Urdu, which ensured that they could express their opinions more explicitly and unambiguously.

Similarly, most student participants spoke a mixture of both languages during the focus groups, with most students tending to speak in Urdu. Being able to speak in Urdu seemed to give them the confidence to express their views in a detailed and explicit manner. The language in the questionnaire was reviewed to ensure there were no ambiguous words or expressions.

Thirdly, as indicated earlier, another strategy employed to ensure the study's trustworthiness was member checks, which entailed checking the plausibility of data interpretations by sending the transcribed data to the lecturers for review (Merriam, 2009). The lecturers checked and returned the transcribed data, with two lecturers adding explanations to clarify their viewpoints. Similarly, interpretation of the observed pedagogical practices was triangulated in the post-observation interviews by the lecturers having the opportunity to endorse, refute, or alter the observer's interpretations.

Finally, a second person was involved in the data analysis process to ensure inter-coder reliability. The second coder was a PhD student at the University of Auckland in the area of m-learning, who had also worked as an EFL teacher overseas. She was briefed about the research, its context and theoretical framework and provided with six samples of various data sets, four of which were already coded. The coder coded two samples according to the coding framework provided to her. After the coder finished the analysis and coding process, a meeting was held to determine the inter-coder reliability. While no discrepancies were found in the data-driven and literature-informed codes, there were disagreements in the theory-informed themes. These differences were due, predominantly, to the overlapping nature of the five dimensions (Figure 2.1) influencing the data analysis procedure.

Following the coder's analysis and suggestions, we discussed the differences to resolve the discrepancies. As a result of discussions between the coder and the researcher, a few codes were merged and collapsed to reflect the relationships among the temporal, physical and transactional dimensions. The second coder's analysis, coding and subsequent discussions ensured that the subtle intricacies of the interconnectedness of various themes could be established. Insights from the second coder were helpful because of the significance of the five dimensions (Figure 2.1), which influenced the data analysis, presentation, interpretation, and discussion of the findings.

The following section describes ethical considerations followed by the current research to meet the regulations set out by the University of Auckland Human Participants Ethics Committee (UAHPEC). UAHPEC approved an application, lodged by the researcher, containing information about the study (e.g., research design, methods, instruments and potential participants).

The most significant ethical issues considered throughout this research were access to the universities and participants, informed consent, confidentiality, and anonymity. As indicated earlier in the current chapter, the participants were provided with PISs so that they could familiarise themselves with the research and make informed decisions about their participation. The participants signed CFs, indicating their understanding of the research process, their willingness to participate and their entitlement to withdraw within a specific timeframe.

Additionally, anonymity, privacy and confidentiality were guaranteed by using pseudonyms for the participants and the universities in this thesis and any subsequent publications or presentations based on the study. The participants were also assured that only the researcher and her supervisors could access the data and related documents. To respect the participants' privacy, the data were transcribed by the researcher and audio recordings, instead of video recordings, were used for the lecturers' interviews and students' focus groups to avoid capturing the participants' faces.

4.9 Concluding remarks

This chapter provided an account of the research methodology used to examine the role of mobile technology in the lecturers' pedagogical decisions and practices for MALL. A mixed-methods research design was adopted for the current inquiry as it could establish the relationship

of various components of the MALL ecosystem in Pakistan. This chapter also provided details about various data collection methods used to conduct the current research, and it justified the research design and data collection methods. It also presented information about the research sites, research participants, the steps taken to ensure reliability and trustworthiness of the data and to ensure anonymity and confidentiality of the participants. The next three chapters present the research findings.

Chapter 5. Findings

The Pedagogical Dimension

5.1 Introduction

This chapter and the following two present the findings of the current study to answer the overarching RQ about the role of mobile technology in the pedagogical decisions and practices of lecturers in three Pakistani universities. Two sub-questions, related to the participants' perceptions and practices for EFL teaching and learning by bringing together data from six lecturers and their 229 students enrolled in EFL courses, contribute to the main RQ. As this study's focus is on the pedagogical dimension, the data have been examined to establish how the affordances related to the technological, temporal, physical, and transactional dimensions are used pedagogically to enable MALL in three Pakistani universities.

The findings presented in these chapters draw on the lecturers' semi-structured initial interviews, lesson observations, post-observation interviews, the students' survey, three focus groups, and online platforms' observation. The multiple data sets have been integrated to reflect the complex but interconnected nature of the five dimensions and navigate their relationships through the pedagogical dimension because of the complexity of language teaching and learning with mobile devices. The findings, drawing on Figure 2.1, help to a discrete analysis of these dimensions and examine the inter-relationships of these dimensions in Pakistani universities' learning ecosystem.

The paradigm of ecology underpins this study, and an ecological model by Palalas (2013) guided the researcher's decisions about designing this study as well as collecting and analysing data. The Mobile Learning Eco-system model (Palalas, 2013), illustrated and explained in the second chapter of this thesis (see Figure 2.1), also guides the data presentation in three chapters. The data have been presented in an integrated way to answer the overarching research question.

The rationale for the researcher's decision of data presentation in an integrated way rather than separately is that a researcher who views reality from an ecological lens needs to take a different approach to analyse data because various data sets cannot be seen in isolation. Elaborating the process of handling and analysing data in a study informed by the ecological perspective, Hammond (2020, p. 858) contends that after collecting data of various layers of an ecosystem, a researcher needs to bring all layers together in the process of data analysis "in order to show how

the system as a whole works....[and] to identify conduits between one layer and another”. Data analysis in the current study followed similar procedures in which all data sets were put together and compared as well as contrasted to examine how various factors and actors contributed to the process of EFL teaching and learning.

Since data analysis in a study underpinned by an ecological perspective is “a process of integration rather than conventional triangulation” (Hammond, 2020, p. 858), the findings have also been presented in an integrated way. The decision to present findings in an integrated way aligns with the ecological paradigm because presenting data collected from teachers and students separately would not have allowed a holistic examination of the entire system.

Although the ecological model informs the presentation of the findings, the findings have been organised into three chapters for clarity and coherence. The current chapter presents the analysis of the pedagogical dimension, which will be unpacked in the following two chapters. Findings relevant to the technological dimension are presented in Chapter 6, giving an overview of mobile technology's affordances and constraints for EFL teaching and learning. Chapter 7 then connects the pedagogical and technological dimensions with the transactional, temporal, and physical dimensions by describing how mobile technology affordances are optimised to teach core EFL skills and provide personalised assistance. Chapter 8 further discusses the role of these five interconnected dimensions to enhance MALL in Pakistan universities' learning ecosystem.

This chapter is divided into three sections. After a general introduction to three findings chapters in the introductory section (5.1), the second section (5.2) introduces the pedagogical dimension. The second section (5.2), which is further divided into six sub-sections, portrays the pedagogical dimension by giving an overview of the lecturers' perceptions and practices regarding EFL teaching with the integration of mobile technology. An in-depth analysis of the data presented in the second section of this chapter is presented in the following two chapters. The final section (5.3) summarises the findings presented in this chapter and connects them to the next chapter.

5.2 The pedagogical dimension

In this thesis, the pedagogical dimension refers to the pedagogical approaches and practices of six EFL lecturers to enable MALL in Pakistani universities' learning ecosystem (see Section 2.5.4 in Chapter 2). The pedagogical dimension is introduced before other dimensions because it

is the central construct of this study. In this section (5.2), the lecturers' distinctive perceptions and practices related to incorporating mobile technology for EFL teaching are presented. In each lecturer's profile, that is, his/her beliefs about language teaching with the integration of mobile technology are described, with a brief synopsis of each lecturer's two observed lessons provided in tabular form. Detailed lesson descriptions are provided as appendices (see Appendices M-R). Each sub-section ends with an illustration of the observed pedagogical practices presented in a vignette. It is important to reiterate that the vignettes do not provide complete illustrations of the lecturers' pedagogical practices. Instead, they provide insights into the lecturers' signature pedagogical practices. As the pedagogical dimension is the main focus of this study, it provides the basis for the findings presented in the following two chapters.

The following six sub-sections introduce the lecturer-participants and provide an overview of their observed pedagogical practices.

5.2.1 Amir

At the time of data collection, Amir had been teaching EFL for five years in a public sector university in Pakistan. He joined the university after completing his master's degree in English Language Teaching and Linguistics. He claimed that his master's degree played a critical role in shaping his language teaching beliefs and practices.

Amir expressed his beliefs about language teaching with the integration of technology in his initial and post-observation interviews. In his initial interview, he indicated his multidisciplinary approach to EFL teaching by saying that he believed in teaching "*English as a language, not as a subject*". This suggests he did not restrict language teaching to a specific subject or topic; instead, he seemed to believe in harnessing various topics and resources for EFL teaching. He further explained that he was using no more the "*cliché approach of teaching English through the Grammar-Translation Method*" (GTM henceforth), which was the prevalent method of L2 teaching in Pakistan.

He attributed his shift from the GTM to a more communicative approach to contextual factors in his post-observation interview. He explained that a good command of the English language could be a "*passport for success*" in Pakistan. Through EFL teaching, he also sought "*to enhance linguistic and communicative competence*" of his students. He aimed, therefore, to teach EFL "*in*

such a way as can prove a tool to access information for education and employment in this digital world” for his students.

Amir regarded his interest in the topic as the primary motivation for incorporating technology, including mobile technology, into EFL teaching. He explained that he opted to teach Instructional Technology (CALL) to student-teachers due to his interest in learning using technology and referred to his habit of web-browsing to obtain information about various topics of his interest. As the university did not lay any explicit policy about using specific technologies for teaching, he decided to integrate mobile technology due to its extensive ownership among his students. He decided to integrate it into his teaching to create a *“know-how of using different resources for their EFL learning... [and] later in their teaching too”*.

Because the lecturers could incorporate any technological resources contingent on their students’ needs, his tech-savvy nature motivated him to search for new resources for his teaching accessed through mobile technology. For example, in the absence of a university-managed LMS, Amir adopted Google Classroom⁶. He said he believed that the technological affordances of Google Classroom (GC, henceforth) facilitated him, and his students, with EFL teaching and learning management. In his initial interview, he said that he could *“get notifications”* at the GC app whenever the students would submit *“their assignment, ask questions, initiate discussions, and comment on others’ posts”*. He further added, *“I can manage to check assignments and give feedback anytime. I mean whenever I am free.”* Amir’s primary purpose of using GC seemed to be the management of EFL teaching because it could be accessed through an app.

5.2.1.1 *An outline of Amir’s observed lessons*

Amir was teaching Instructional Technology (CALL) to 40 students in the second semester at the time of lesson observations. The observed lessons of 60 minutes each were the second and third

⁶ Google Classroom is a free web-based virtual classroom managed by Google, which helps organise teaching and learning by enhancing collaboration among teachers and students through communication in an organised way.

lessons of the semester. The first observed lesson was about GC, while the second observed lesson focused on EFL learning through Microsoft OneNote⁷ and Immersive Reader⁸.

Amir gave a rationale for teaching about GC, OneNote and Immersive Reader, explaining that these apps and resources were included in the course for the students' and future teachers' professional lives. He further explained in his post-observation interview, *“After completing their degrees, they [students] usually start EFL teaching at various institutes that might not have well-developed IT infrastructure.”* The course was designed to include technological resources, which would be *“beneficial for students for their learning in the university and later in their professional careers”*.

An outline of the observed lessons is presented in tables 5.1 and 5.2 (see Appendix M for details), followed by a description of the key activities.

Table 5.1

Amir's First Observed Lesson

No	Type and time of activities	Language focus	Technology use
1	Introduction (5 minutes)	Speaking skills	Lecturer's laptop use (17 minutes) Students' use of mobile phones (18 minutes) Disrupted Wi-Fi and lecturer's sharing of his mobile internet
2	Lecture about GC (17 minutes)		
3	GC app installation (7 minutes)	Technology focus	
4	Group discussion and mobile-facilitated browsing (10 minutes)	Reading and speaking skills	
5	Oral presentations based on group discussion (17 minutes)	Speaking skills	
6	Setting homework (3 minutes)		

In the first observed lesson (Table 5.1), Amir's pedagogical decisions and practices about language teaching with technology were reflected in three activities (Activity 2-4).

⁷ Microsoft OneNote is a digital notebook, which can organise users' notes, drawings, and record audio notes, insert online videos and add files. A sharable content library can also be created to collaborate with others. Microsoft OneNote can be accessed through multiple devices.

⁸ Immersive Reader, specifically designed for language learning, is a built-in feature of Microsoft Learning Tools. It can be installed at OneNote as an Add-in.

In Activity 2, Amir introduced GC and asked questions to establish his students' knowledge about GC. The students' responses indicated that most of them had heard about GC, but none had detailed information about its features. When Amir announced that GC would be used as an official LMS for the course, the students seemed interested in knowing more about it. As the students did not know much about GC, Amir provided detailed information about it in a lecture.

For the lecture, Amir used his laptop attached to an overhead projector to display PowerPoint slides, providing information about its features by demonstrating their use. For example, he explained how he would use GC for course-related managerial communication. He wrote a short message announcing an upcoming event in the city and demonstrated how students could access, reply, ask further questions about the announcement or start a discussion on another topic. He also displayed a section where he had uploaded course-related documents and videos on GC.

In Activity 3, he made students install the GC app on their mobile devices and invited them to join GC through a class code. The lecturer shared a password to provide access to his mobile internet to resolve the students' connectivity issues. The lecturer also resolved issues related to app installation and using the code to join the class.

In Activity 4, Amir decided to incorporate mobile technology for a group discussion. He advised his students to access a document uploaded at GC and browse the web to get more information about GC's use for learning. The students utilised their mobile devices to obtain information about GC and discussed it with their peers. Amir's decision to make his students use mobile devices indicated that he utilised mobile technology to facilitate his student's interactions with online content and to promote collaborative work.

Table 5.2

Amir's Second Observed Lesson

No	Type and time of activities	Language focus	Technology use
1	Introductory discussion about homework and online assignment submission (8 minutes)	Speaking skills	Lecturer's laptop use (22 minutes)
2	Outline of the lesson (2 minutes)		

3	Lecture about OneNote and Immersive Reader (20 minutes)		Students' usage of mobile phones (28 minutes) Disrupted Wi-Fi and lecturer's sharing of his mobile data internet
4	Installation of Microsoft OneNote app and Immersive Reader as its Add-in (10 minutes)	Technology focus	
5	Writing and listening activities using installed apps (18 minutes)	Writing and listening skills	
6	Setting homework (2 minutes)		

In the second observed lesson (Table 5.2), Amir repeated the order of the activities as in the first lesson with a lecture, installation and then teaching focused on EFL skills. He then introduced PowerPoint slides about OneNote and Immersive Reader. The introductory sessions showed that all the students knew about OneNote, and some of them had used it, but never for L2 learning. None of the students had any knowledge about Immersive Reader.

In the lecture (Activity 3), Amir explained how they could use OneNote to take notes in the class, record any information while working outside the class, insert images, share with their peers, and access OneNote from any device. Then he introduced Immersive Reader, which could be installed as an Add-in to OneNote to enhance reading and writing skills. He demonstrated how to import documents to OneNote and customise the app's settings, including font size and colour, the speed of reading aloud feature, and a tool to highlight grammatical features.

After the lecture (Activity 4), the students installed OneNote and Immersive Reader on their mobile devices. Disrupted Wi-Fi signals were again reported, and the lecturer shared his mobile internet to ensure the installation of the apps. Amir, then, asked the students to write a short paragraph about OneNote and Immersive Reader using the OneNote app (Activity 5). The students were advised to listen to their self-written paragraphs using their earphones by customising Immersive Reader settings. The students appeared to be engaged in writing and listening activities.

The vignette below illustrates how his observed pedagogical practices reflected his beliefs about language teaching and technology integration.

5.2.1.2 *Vignette one: An illustration of Amir's observed pedagogical practices*

In the observed lessons, Amir provided his students with an opportunity to install and execute mobile apps by introducing GC, Microsoft OneNote, and Immersive Reader. His pedagogical decision to make students install apps in the class seemed contingent on his students' needs as some students sought assistance related to the installation process and online assignment submission. It appears that many students did not use their mobile devices for learning, including EFL learning, despite extensive use of mobile technology for communication in their personal lives.

Amir also seemed to promote mobile technology's affordances of personalisation and collaboration. For example, he makes his students aware of mobile technology's affordances for enhancing their EFL skills through customising settings at the OneNote app and Microsoft Immersive Reader (e.g., font size, font colour, and voice for text-to-speech). Amir also taught his students how to initiate discussions with GC inside and outside the classroom. By doing so, he seemed to make his students notice the collaborative affordances for L2 learning across times and spaces.

In sum, through the observed mobile-mediated activities, Amir taught digital literacy to his students making them aware of the potential of mobile-enabled apps for personalising content and enhancing their EFL skills in formal and informal environments.

5.2.2 **Huria**

Huria, an EFL lecturer with a master's degree in English Language Teaching and Linguistics, had five years of EFL teaching experience in a public sector university in Pakistan. She articulated her beliefs about EFL teaching and using technology for language teaching in her interviews in her initial interview. She said:

By the time they [students] come here [university], they have already learned English, which is a compulsory subject in schools and colleges. However, in an environment where English is taught as a foreign language, students rarely get any chance of speaking English. You know that English is taught through the GTM. That's why most students can't express themselves adequately while speaking English.

Huria’s pedagogical practices appeared to be focused on enhancing the skills they have already learnt.

In her initial interview, she also reported that mobile technology's primary purpose was course-related communication because “*mobile is one handy thing that everybody has*”. Another purpose of using mobile technology was to disseminate course-related content. She said: “*I use mobile technology to share sound clips... [and] links to webpages which have useful stuff related to the course. Now, I can plan lessons without worrying about students’ excuses about not having books or handouts*”. Huria’s pedagogical decision of incorporating mobile technology for EFL teaching indicated that she perceived mobile technology's availability as an affordance to facilitate students for storing and accessing EFL resources responding to the contextual constraints.

5.2.2.1 An outline of Huria’s observed lessons

At the time of lesson observations, the second and third of the semester, Huria was teaching the course of English Language Skills. The primary purpose of teaching this course was to enhance students’ educational use of the English language. There was no computer system in the classroom, therefore, the lecturer used her laptop attached to a projector to display PowerPoint slides. An overview of the observed lesson is presented in the tables below (see Appendix N for details), followed by a description of the main activities. Table 5.3 outlines Huria’s first observed lesson focused on academic reading.

Table 5.3

Huria’s First Observed Lesson

No	Type and time of activities	Language focus	Technology use
1	Discussion about academic English (8 minutes)	Speaking skills	Lecturer’s laptop use (15 minutes)
2	Lesson outline (5 minutes)		Students’ use of mobile phones (30 minutes)
3	Lecture on academic reading techniques (15 minutes)		
4	Pre-reading activity and use of mobile phones to access and read the text (20 minutes)	Reading skills	

5	Lecturer's sharing and students' solving of post-reading online quiz using mobile devices taken from agendaweb.org ⁹ . (10 minutes)	Self-assessment	
6	Homework to read and write a summary of an article (2 minutes)	Reading and writing skills	

In her first observed lesson (Activity 3), Huria delivered a lecture about academic reading techniques (e.g., skimming, scanning, inferring). It was an interactive session as she engaged her students by asking questions and inviting their comments while explaining the techniques with examples.

Then she referred to an article (Activity 4), which was already shared by her and was available on students' mobile devices. The topic of the article was Culture Shock. In a pre-reading activity, she questioned students on whether they had visited other countries. Three students shared their experiences of foreign visits. She asked students to read the text and make a note or highlight any important information. While the students used mobile technology to access and read the text, they used pen and paper to take reading notes.

Following the reading activity, the lecturer shared a quiz-link through WhatsApp based on students' reading activity. Using their mobile devices, the students solved the quiz designed to provide results after submission instantly. In her post-observation interview, in answering a question about the quiz, Huria explained that she did not design the quiz herself. Instead, she usually drew on a website agendaweb.org because it provided "*useful teaching and mobile-friendly automated assessment resources*". Table 5.4 outlines Huria's second observed lesson focused on academic writing.

Table 5.4

Huria's Second Observed Lesson

⁹ www.agendaweb.org is a website that provides links to other websites about EFL/ESL sources. Multiple resources are available such as grammar exercises, audio-visual clips, IELTS preparation exercises, and automated assessment activities.

No	Type and time of activities	Language focus	Technology use
1	Discussion about homework (10 minutes)	Speaking skills	The lecturer's laptop use (15 minutes) Students' use of mobile devices for four minutes actively and ten minutes intermittently
2	Introduction to the topic (5 minutes)		
3	Lecture and demonstration of a well-written paragraph (20 minutes)		
4	Writing activity (15 minutes) Students' use of pen and paper	Writing skills	
5	Use of mobile devices for sharing (via WhatsApp) and listening to a YouTube video academic vocabulary Assessment of listening activity (8 minutes)	Listening skills	
6	Homework: Sharing of two YouTube videos (2 minutes)		

In her second observed lesson (Activity 2 and 3), Huria described the significance of academic writing. She also provided details about its characteristics (e.g., planning via mind-mapping, freewriting, writing and editing). She primarily focused on planning using mind maps, and then explained the process of writing an academic paragraph and displayed well-written paragraphs by renowned authors, pointing out connections among sentences.

Then, she advised her students to write a paragraph referring to an article given as a homework-reading and available on students' mobile devices. While the students were using mobile devices to refer to the article, they used pen and paper for writing the paragraph. The assignments written on paper were given to the lecturer for feedback.

A listening activity followed the writing activity described above. The students watched a YouTube video about academic vocabulary using mobile devices and earphones shared by the lecturer in the classroom at WhatsApp. The lecturer assessed students' listening comprehension by displaying a list of words and asking students to provide synonyms from the video.

Huria's use of mobile technology in her observed pedagogical practices was primarily for disseminating content to be accessed to enable learning in the classroom and to access web-based

resources for assessment. She did not appear to use mobile technology for engaging her students beyond the classroom.

The vignette below illustrates Huria's observed pedagogical practices.

5.2.2.2 *Vignette two: An illustration of Huria's observed pedagogical practices*

Huria's pedagogical practices that illustrate her teaching philosophy were related to the use of mobile technology as a primary vehicle for sharing and accessing EFL resources such as YouTube videos, PDF articles, and links to websites. The use of mobile technology included: students' accessing and reading the text; referring to an article stored on mobile devices during the writing activity; accessing and solving the quiz to self-assess their reading techniques and the lecturer sharing links to a YouTube video and quiz.

Her pedagogical decision to make EFL resources available at students' mobile devices seemed to be driven by contextual constraints such as the absence of well-resourced libraries and students' inability to buy books or computers. Her students' preference for paper for their writing activity, submitting the same to the lecturer, also suggested that she did not encourage mobile devices for academic writing. Her pedagogical decision to teach academic vocabulary through YouTube videos, however, suggested that she was aware of YouTube's popularity among her students.

Huria seemed to use mobile technology as a substitute for printed books or computers without taking advantage of its flexibility for mobilising learning for her students.

5.2.3 **Aly**

Aly, an EFL lecturer, with a master's degree in English Language and Literature and a postgraduate diploma in English Language Teaching, had ten years of teaching experience in a private sector university in Pakistan. He articulated his beliefs about language teaching and technology integration for EFL teaching in his interviews.

Aly described that there was a strong connection between him knowing his students' L2 learning backgrounds and his beliefs on how he would teach. In his initial interview, explaining L2 teaching in Pakistan, he said, *"In a country like Pakistan, the traditional GTM for teaching English still dominates. So, students have already gained basic knowledge of English grammar and have developed fairly good vocabulary."* Therefore, his pedagogical practices aimed at *"building confidence by providing them [students] opportunities of practising their English*

language skills". He also described his pedagogical philosophy: *"My purpose is to help them develop EFL skills and increase knowledge about their chosen field of study"*. As two EFL courses are mandatory for each undergraduate degree, and the medium of instruction is also English in Pakistani universities, Aly appeared to believe that EFL courses could help students better comprehend other courses not directly related to EFL.

In his initial interview, he repeatedly mentioned mobile technology's integration in his pedagogical practices as *"a good way to learn and teach a language"*. He also incorporated mobile technology in EFL teaching because it was an integral part of everyone's life, further adding: *"Mobile technology is there in everything we do. There is no other option left for me. How can I teach a language if I isolate my teaching from real life?"* He seemed to perceive the ubiquitous availability of mobile technology as a significant affordance to be used for EFL teaching.

He also utilised mobile technology for L2 learning beyond the class. In this initial interview, he said, *"If I can't use it [mobile technology] in the class, I always give some activities which students can do after the class on their mobile devices in their free time."* It appears that he drew on the affordances of mobile technology to provide his students with opportunities to engage with EFL content in formal and informal environments.

5.2.3.1 *An outline of Aly's observed lessons*

At the time of data collection, Aly was teaching Intercultural Communication to 49 students in their seventh semester, the second to last semester of their bachelor's degree. The course focused on enhancing their understanding of interacting in a multi-cultural world and equipping them with intercultural communication skills; the lessons observed were in the fourth and fifth lessons of the semester.

Aly's observed pedagogical practices incorporating mobile technology for EFL teaching are in Tables 5.5 and 5.6 (see Appendix O for details). A description of observed pedagogical practices follows each table.

The first observed lesson was about The Influence of Culture on Communication.

Table 5.5

Aly's First Observed Lesson

No	Type and time of activities	Language focus	Technology use
1	Aly's mentioning of WhatsApp communication about a picture and its captions (2 minutes)	Speaking skills	Students' use of mobile phones (15-17 minutes) Aly's use of his mobile phone (1-2 minutes) and laptop (13 minutes)
2	Lecture's use of PowerPoint slides and students' use of mobile phones to browse terms (13 minutes)		
3	Group discussion about the influence of cricket on Pakistani English Use of mobile phones for web-browsing and accessing links shared at WhatsApp (15 minutes)	Reading and speaking skills	
4	Sharing the main points of group discussion (15 minutes)	Speaking skills	
5	YouTube video about non-verbal intercultural communication and its interpretation (10 minutes)	Listening and speaking skills	
6	Homework: listening to a TEDx talk (3 minutes)		

In Activity 1 (Table 5.5), Aly briefly discussed the students' captions given to pictures shared by him on WhatsApp outside the class time. He then delivered a lecture, using PowerPoint slides, on the Influence of Culture on Communication. The students used their mobile devices for a couple of minutes to search for the explanation of terms (i.e., cultural stereotypes and racism).

The students' use of mobile technology was observed during their group work (Activity 3) when they were asked to discuss cricket's influence on Pakistan's English language. The students browsed the links to a local cricket tournament shared by Aly on WhatsApp before the class. This activity resulted in students' presentations of the main points of their discussion in the class.

In the fifth activity, he played a video about non-verbal intercultural communication followed by the students' interpretation of the video according to Pakistani culture. Because this activity focused on explaining non-verbal communication, and initiated a discussion about the topic, mobile technology was not used. Listening to a TED talk on how cultures drive behaviours was assigned as homework

In summary, Aly's pedagogical decision to share content beyond the classroom indicated that he drew on mobile technology to engage students in EFL learning at times and places convenient for them. His incorporation of video content to initiate a discussion and assign homework tasks also suggested that he was aware of students' interest in video content.

The second observed lesson was about Barriers to Intercultural Communication. Twenty-six out of 49 students were present due to political unrest in the city.

Table 5.6

Aly's Second Observed Lesson

No	Type and time of activities	Language focus	Technology use
1	Discussion about the homework assignment about listening to a TED talk Introduction to the topic (8 minutes)	Speaking skills	Students' use of mobile devices (10 minutes) Aly's use of mobile technology to share a link
2	Due to power failure, students' use of mobile phones to access course content (12 minutes)		
3	Playing a YouTube video about strategies of overcoming cultural barriers (5 minutes)	Listening skills	
4	Discussion and preparation of PowerPoint slides Use of mobile technology to access and read a blog post shared on WhatsApp by Aly (10 minutes)	Reading and speaking skills	
5	Presentations followed by the discussion (20 minutes)	Speaking skills	
6	Aly' displaying of pictures and students' several interpretations of the same pictures (5 minutes)	Speaking skills	

In his second observed lesson (Table 5.6), he asked questions about the TED talk. Then he delivered a lecture about Barriers to Intercultural Communication. During the lecture, the data projector was shut down due to power failure, but there was no disruption to the planned activity as students had content on their mobile devices.

The lecturer used mobile technology to share a link to a blog post on WhatsApp. The students also used mobile technology to access and read the blog post, followed by a paired discussion to identify communication barriers as well as strategies to overcome the barriers. The paired discussions, based on the content accessed through mobile devices, resulted in students' presentation of main discussion points in the class.

To conclude, Aly's pedagogical decisions about incorporation of mobile technology in teaching seemed to be prompted by students' interest in video content and the lesson topic's requirements (e.g., non-verbal communication video and its interpretation). His pedagogical decisions to share lesson-related content beyond the class also appeared to respond to the disrupted internet connectivity in the classroom; it demonstrated his efforts to engage students in learning by overcoming contextual constraints.

The vignette below illustrates Aly's pedagogical practices regarding mobile technology integration.

5.2.3.2 Vignette three: An illustration of Aly's observed pedagogical practices

Aly can be portrayed as a teacher who took advantage of mobile technology's affordances to enrich EFL activities and engage his students through their preferred apps and resources such as WhatsApp and YouTube videos. His practice of interacting with students, and sharing EFL resources, through WhatsApp outside the class time indicated his availability to assist his students anytime, anywhere.

His pedagogical decision to bridge the gap between formal and informal learning in the introductory sessions of both observed lessons is characteristic of his pedagogical practices incorporating mobile technology for EFL teaching. At the beginning of the first observed lesson, Aly mentioned captions given to the pictures shared by him on WhatsApp outside the class time. During the lesson, the students' response indicated their interest in this activity, which focused on developing their writing skills and intercultural understanding, as the pictures represented multiple cultures. He seemed to focus on making learning experiences mobile for learners by capitalising on the affordances of mobile-mediated interactions in and beyond the classroom.

5.2.4 Bina

Bina, an EFL lecturer with a master's degree in applied linguistics, had six years of EFL teaching experience. In her initial and post-observation interviews, she articulated her beliefs about the integration EFL teaching and technology in her pedagogical practices.

In response to a question, in her initial interview, about her language teaching approach, she said, "At the tertiary level, it's more about enhancing their skills"; therefore, "creating an environment which is conducive to communication in the English language" was her priority. She focused mainly on the students who tended to speak their mother tongue in EFL classes due to the lack of spoken English practice. She further explained in her post-observation interview that students in Pakistan "have been taught English through the GTM which doesn't encourage communication as such". She encouraged them "to communicate by writing and speaking in the English language even if their language is not 100 % correct", indicating her tendency towards communicative language teaching.

Mobile technology's ubiquitous availability influenced her pedagogical decision to incorporate it in EFL teaching. As there was no institutional policy in place for the use of technology for EFL teaching, therefore, she explained, "*It [technology integration] depends on the convenience of teachers. As everything is online now, my students also find it easier to use mobile technology for EFL learning because they always have their mobile devices with them.*" Besides mobile technology's availability, students' interest in its use also informed her pedagogical decisions and practices.

She incorporated built-in mobile cameras and recorders because she believed that her students could capture several events in their routine lives, providing the "*robust opportunities for language learning*". Moreover, alluding to the practical benefits of embedding mobile technology into her EFL teaching, she said, "*It becomes very easy to flip through a book or multiple pages of a website*" during group work. She also believed that her use of "*mobile technology could help them [students] overcome their communication barriers*".

5.2.4.1 *An outline of Bina's observed lessons*

Bina taught Communication and Presentation Skills to 28 students enrolled in the second semester of their Bachelor in English Language and Literature in the observed classes during the third and fourth lessons of the semester. The course focused primarily on developing students'

written and oral communication. Bina’s observed pedagogical practices are listed in Tables 5.7 and 5.8 (see Appendix P for details). They are then briefly described, and followed by a vignette illustrating her key pedagogical practices.

As outlined in Table 5.7, the first observed lesson focused on The Basics of Effective Communication (Asking clear questions and giving relevant answers).

Table 5.7

Bina’s First Observed Lesson

No	Type and time of activities	Language focus	Technology use
1	Bina’s introduction to the topic, sharing a link to a blog post on WhatsApp Students’ using mobile phones to access and read the blog post and follow-up questions (13 minutes)	Reading skills	Students’ use of mobile technology to access and read a blog post (12 minutes) The lecturer’s use of mobile technology to share a link
2	Lecture about the basics of effective communication Students turning off their mobile devices on Bina’s advice and taking notes using pen and paper (7 minutes)		
3	Bina’s playing of a video recorded as homework Feedback on the video assignments (15 minutes)	Listening skills	
4	Pair discussion followed by watching a YouTube video about students’ communication about university admission Students’ use of paper to make notes (8 minutes)	Listening and speaking skills	
5	Role-play session based on the discussion (15 minutes)	Speaking skills	
6	Homework to attend and record a TEDx talk (2 minutes)		

In Activity 1, Bina shared a link to a blog post about asking exact questions while communicating at a workplace. The students were given five minutes to read one topic from the blog post. The students accessed and read the text using mobile devices. A spoken English practice followed this reading activity as Bina engaged her students by asking questions about the reading activity.

Another observed pedagogical practice (Activity 3) was based on a video-recorded group homework assignment, which focused on teaching students how to ask questions using clear language and how to seek clarification if any answers were ambiguous. In the video assignment, the students were required to ask three questions about any topic at any place (e.g., market, campus, and playground) from anyone. Bina played a video recorded using mobile video-recorder by a group of students as an out-of-class assignment. The video played by her was about three students' argument with a restaurant manager. In the video, the students complained that they were not served the dishes they ordered. The restaurant manager apologised and explained the situation. Bina gave feedback on students' conversation, providing an alternative way of asking questions and seeking clarifications. She also invited the students' comments.

Bina also played a YouTube video (Activity 4) about the students' communication with a university official to obtain information about the enrolment process. After watching the video, the students discussed in pairs how they would seek similar information. Although the activity drew on a YouTube video, no students used mobile technology. This video was followed by a role-play activity, emulating the conversation in the video.

At the end of the lesson (Activity 6), Bina assigned a video-recording assignment to be recorded at a TEDx event on campus which the students would attend, accompanied by the lecturer. In summary, Bina's observed pedagogical practices seemed to be based on video content taken from YouTube and recorded by students beyond the classroom using mobile video-recorder.

Bina's second observed lesson focused on The Principles of Effective Communication (7Cs of Communication: how to be clear, concise, concrete, correct, coherent, complete, and courteous.)

Table 5.8

Bina's Second Observed Lesson

No	Type and time of activities	Language focus	Technology use
1	Bina's introduction to the topic and unsuccessful attempt to play a video due to internet disruption (2 minutes) Students' powering off mobile phones at Bina's advice		Students' use of mobile phones (18 minutes) Internet disruption
2	Lecture about the principles of effective communication using PowerPoint slides (8 minutes)		
3	Students' use of mobile devices to listen to the first part of the recorded TEDx talk and follow-up writing of critical evaluation of the talk using pen and paper (17 minutes)	Listening and writing skills	
4	Students' use of mobile devices for web-browsing during a group discussion about the lesson topic Preparing PowerPoint slides inserting an image (10 minutes)	Reading and speaking skills	
5	Oral presentation (20 minutes)	Speaking skills	
6	Information about the syllabus for monthly tests (2 minutes)		

In her second observed lesson (Activity 2), Bina delivered a lecture providing an overview of effective communication principles. The students then utilised mobile devices to listen to a Pakistani entrepreneur's TEDx talk about business communication, which had been recorded by themselves as an out-of-class assignment (Activity 3). Following the listening activity, the students were asked to write a critical evaluation of the talk. All the students used pen and paper for the writing activity.

In the next two activities (Activity 4 and 5), the students utilised mobile technology for web-browsing during a group activity while discussing and making two slides for a presentation. The students browsed the web to read examples related to effective communication principles and

prepared two slides. Each group gave a digital presentation and answered questions asked by their classmates.

Bina's primary purpose in integrating mobile technology for EFL teaching was to provide personalised solutions to the students who lacked confidence in communicating in the English language due to their limited exposure to L2 in an EFL context. Her pedagogical decision to draw on the built-in technological affordances of mobile technology for video recording assignments and playing student-created artefacts in the classroom suggested that she facilitated her students' immersion in the English language in the formal and informal environments. Her pedagogical approach seemed to encourage students' participation in their learning through mobile-mediated experiences.

The vignette below illustrates Bina's pedagogical practices which integrated mobile technology.

5.2.4.2 *Vignette four: An illustration of Bina's observed pedagogical practices*

In the observed lessons, Bina's practice of embedding multiple resources, accessed through mobile devices, indicated that she drew on mobile technology's various affordances. She enriched her language teaching by incorporating the content stored on students' mobile phones and available online, YouTube videos, blog posts, and web-browsing. She also gave equal importance to artefacts created by students beyond the formal environment (e.g., video-recorded assignments).

The distinctive feature of Bina's EFL teaching was encouragement of her students to create video-recorded artefacts, drawing on their interactions with various people and places in authentic contexts, as homework assignments. She incorporated videos recorded in authentic contexts into formal lessons to teach communication skills and improve students' listening and writing skills

Overall, Bina's distinctive pedagogical practices were based on her decisions of utilising mobile technology affordances to situate EFL activities in authentic contexts to bridge the gap between informal and formal learning.

5.2.5 Adam

Adam, an EFL lecturer with a master's degree in English Language and Literature, had eight years of teaching experience in a public-sector university in Pakistan. In his initial and post-

observation interviews, he articulated his beliefs about language teaching and incorporating technology for EFL teaching.

Adam's beliefs about EFL teaching were informed by his students' L2 learning background and professional careers requirements. In his initial interview, he said: "*I believe that Communicative Language Teaching should be adopted at the university level. In our schools, EFL is taught by the GTM; therefore, most of the students are not good at listening and speaking*". He also added, "*I aim to develop their proficiency in all four skills so that they can benefit from it [proficient in the English language] now and for their subsequent job-searching*". Adam's pedagogical practices appeared to be responding to his students' personalised needs.

In regard to mobile technology for EFL teaching, Adam said in his initial interview, "Mobile technology is becoming much more advanced with every passing year. Today, smartphones present a full package of communication and entertainment. I would say that these days, mobile technology provides more opportunities for collaboration as compared to the past." He further mentioned that he was "the follower of a model called Self-Organized Learning Environment (SOLE)", which necessitated the use of mobile technology. Providing more details, he said:

In this model, the role of a teacher is to raise a simple, big question. This question is not a question which anyone can google and answer. The students have to work in groups. They are free to make their groups themselves instead of the teacher making their groups. If students are compatible with their group fellows, then they feel comfortable in communication and collaboration.

He also explained how he used mobile technology while following the SOLE model. His students "work together using their mobile devices, google many things and then afterwards, they discuss what should be included and what should not be included in order to answer the questions raised by the teacher". He also added, "What fascinates me the most about mobile technology is that I can engage students in their learning". Adam appears to acknowledge learners' agency and promote collaboration by utilising mobile technology's affordances.

5.2.5.1 *An outline of Adam's observed lessons*

In the observed lessons, Adam was teaching a subject named Business Communication Skills to 33 students in the fourth semester of a Bachelor of Business Administration, the purpose of

which was improving students' communication skills in the English language. The observed lessons were the fourth and fifth lessons of the semester.

The in-class teaching activities observed in Adam's two lessons are presented in Tables 5.9 and 5.10 (see Appendix Q for details). A description of the activities follows each table, followed by an illustration of Adam's observed pedagogical practices, which reflects his pedagogical approach. Table 5.9 presents Adam's pedagogical practices in his first observed lesson, which focused on writing Effective Business Emails.

Table 5.9

Adam's First Observed Lesson

No	Type and time of activities	Language focus	Technology use
1	Discussion about a video-recording assignment Introduction to the topic (5 minutes)	Speaking skills	The lecturer's playing a video on a desktop (3 minutes)
2	Listening to a YouTube clip about writing business emails and using pen and paper to take notes Mobile phones on desks upside-down (8 minutes)	Listening and writing skills	
3	Follow-up discussion about writing business emails Mobile-mediated web-browsing (15 minutes)	Reading and speaking skills	Students' use of mobile devices (23-25 minutes)
4	Use of mobile devices to write and send an email to the lecturer (13 minutes)	Writing skills	
5	Adam's feedback on three emails (12 minutes)		
6	Homework for editing a text to make it a useful business message at shared Google Sheet (2 minutes)		

In the first observed lesson (Activity 1), Adam asked questions about a video-recording group assignment given as homework. The assignment was to video-record a mock business meeting anywhere beyond the classroom. He, then, played a YouTube video clip about writing a business

email (Activity 2). The students were required to take notes using pen and paper because their phones were placed on desks upside down to avoid distractions.

The use of mobile technology was observed in Activity 3 and 4. In the third activity, Adam followed the SOLE model because the students were required to work in groups, browse the web, discuss, and share the main points of their group discussion. Adam facilitated group discussions by moving around the class and answering students' questions. The use of mobile technology was also observed (Activity 4) when the students were asked to practise writing an email following the rules learnt during the lesson. The students wrote and sent emails to Adam, inviting him to an event; Adam displayed three emails written by students and provided feedback.

Overall, it appears that Adam decided to utilise mobile technology in his pedagogical practices to situate teaching in real-life contexts through video recordings and to enable students' access to online content. In-class group discussion following the SOLE model also indicated that he fostered autonomy and collaboration through mobile devices.

Adam's second lesson was about Project Presentations.

Table 5.10

Adam's Second Observed Lesson

No	Type and time of activities	Language focus	Technology use
1	Feedback on a recorded assignment about a mock business meeting Introduction to the lesson topic (8 minutes)		Video played at a desktop computer (8 minutes)
2	Listening to a YouTube clip about project presentations Mobile phones placed on desks upside-down (9 minutes)	Listening skills	Students' use of mobile phones (23 minutes) Use of mobile internet due to Wi-Fi issues
3	Students using mobile devices to access and solve the quiz shared by Adam through email (5 minutes)		

4	Group discussion about projects of the entrepreneurial week Web-browsing for more information about the topic Preparation of slides at Google Slides (18 minutes)	Speaking and reading skills	
5	Presentations based on group discussion (20 minutes)	Speaking Skills	

In his second observed lesson (Activity 1), Adam played a video-recorded assignment about a mock business meeting and gave feedback. He engaged students by inviting their comments on the recorded meeting. He also advised that all assignments with feedback were emailed to their group leaders.

In Activity 2, Adam played a video clip about the project presentation to give his students an overall understanding of the topic. The students took notes using pen and paper. As in the first observation, he advised his students not to use mobile phones during this activity to avoid distractions. Although mobile technology was not used in Activity 2, the lecturer used it to email a link to a follow-up quiz, which students accessed to solve the quiz in Activity 3. His pedagogical decision not to make students use mobile technology for watching the YouTube video indicated that he did not deem mobile technology beneficial for all activities requiring technology; he appeared to decide whether or not to use mobile technology according to the activity's objective.

Activity 4 in the second observed lesson was dependent on mobile technology as the lecturer followed the SOLE model. The students worked in groups, browsed the web about the salient features of a project presentation and discussed what to include in presentations about their projects completed during the entrepreneurial week as a follow-up activity.

To conclude, in both observed lessons, Adam seemed to incorporate the affordances of mobile technology for flexible access to online content for EFL learning in and out of class. Being a SOLE model follower, he adopted a participatory pedagogical approach as he acknowledged students' agency by ensuring their active participation. Adam's advice to students to place their

mobile devices upside-down on their desks, and use pen and paper to take notes, indicated his awareness of the distractions caused by mobile technology.

The vignette below illustrates how Adam's pedagogical practices, in the observed classes, reflected his beliefs about language teaching and technology integration.

5.2.5.2 Vignette five: An illustration of Adam's observed pedagogical practices

Two activities, which incorporated mobile technology, illustrated the distinctive characteristics of Adam's EFL teaching. First, following the SOLE model to encourage autonomous and collaborative work as students worked in groups, used mobile technology, and evaluated the available online information to filter facts from fiction to answer the lecturer's questions about writing business emails and project presentations. During this process, he moved around the class, facilitated the group discussions, and provided feedback in the follow-up presentations.

Second, the pedagogical decision to situate video-recording assignments outside the classroom indicated how he optimised mobile technology's affordances to enable EFL learning across times and spaces. His decision to play student-recorded video in the class and his practice of giving feedback on the assignments illustrated his pedagogical decision of integrating informal learning, enabled by mobile technology, into formal classroom learning.

Adam's pedagogical practices seemed to acknowledge students' agency by giving them voice and choice in selecting EFL content, and by facilitating them to work autonomously and collaboratively inside and outside the classroom.

5.2.6 Sara

Sara, an EFL lecturer with a master's degree in English Language and Literature, had 13 years of teaching experience in a public-sector university in Pakistan. She articulated her beliefs about language teaching and the incorporation of technology for EFL teaching in her interviews.

Sara's approach to EFL teaching drew on the needs of her students. In her initial interview, Sara said, "*I have always believed in task-based language teaching.*" She assigned tasks to her students to enhance their comprehension of the English language saying:

They have learnt English through the GTM. They can translate from Urdu to English, but sometimes they cannot comprehend and infer a simple message given in a text. I give them

various tasks of listening and reading. They are required to comprehend and communicate by writing and speaking.

Sara capitalised on mobile technology due to its widespread ownership by her students to minimise disruptions caused by power-failure during the lessons. In her initial interview, she stated, “*Sometimes, when we have interruptions like electricity break down during the lessons, I ask them to open their e-books on their mobiles.*” She also explained how the availability of mobile technology ensured students’ access to EFL content, “*When they are assigned group work, then they use mobile devices in the classroom as I cannot open multiple pages on one computer and they are required to work on different parts of the same chapter.*” Sara’s use of mobile technology appeared to be primarily practical as mobile technology was a substitute for books/computers.

5.2.6.1 *An outline of Sara’s observed lessons*

At the time of data collection, Sara was teaching a subject, English Comprehension and Communication, to 40 students in the first semester of the Bachelor of Business Administration degree. The purpose of the course was to enhance the students’ skills for comprehending academic English texts and communicating in English for academic purposes. The observed lessons were in the third and fourth in the semester.

Sara’s observed pedagogical practices are outlined in tables (see Appendix R for details). Table 5.11 outlines Sara’s first observed lesson about Listening Comprehension.

Table 5.11

Sara’s First Observed Lesson

No	Type and time of activities	Language focus	Technology use
1	News-report like presentations by four students Only presenters were advised to use mobile dictionaries to build a vocabulary list (12 minutes) Mobile phones of other students were turned off	Speaking skills Dictionary use Vocabulary building	Sara’s use of mobile technology (2-3 minutes) Students’ use of mobile phones (27 minutes)
2	Lecture about active listening (8 minutes)		
3	Pre-listening activity (10 minutes)	Speaking skills	

	Sara's incorporation of two audio clips taken from a website Intermittent internet disruption		Connectivity issues due to power failure
4	Students' listening at mobile devices and their writing answers on the printed sheets (27 minutes)	Listening skills	
5	Homework of listening to a video clip shared in the class (1 minute)		

Because the lesson's topic was listening comprehension in her first observed lesson, Sara delivered a short lecture providing an overview of active listening strategies using PowerPoint slides. Students were advised to switch off their mobile devices and take notes using pen and paper, suggesting she was aware of distractions that mobile technology might cause.

The use of mobile technology was evident in Activity 3 as Sara incorporated two audio clips taken from a BBC learning English website. Although a temporary internet disruption was experienced due to power failure, the internet connection was restored quickly so she could provide pre-listening information about the clips.

In Activity 4, the students used their mobile devices to listen to the clips. They were also given printed sheets to write answers based on the listening activity.

In the first observed lesson, Sara's decision to integrate mobile technology into her pedagogical practices appeared to be driven by contextual constraints or as an alternative to computers. She did not appear to draw on the advantage of mobile technology's mobility.

Table 5.12 gives an overview of Sara's second observed lesson, which was about Reading Comprehension.

Table 5.12

Sara's Second Observed Lesson

No	Type and time of activities	Language focus	Technology use
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1	News-report like presentations by four students Only presenters were advised to use mobile dictionaries to build a vocabulary list (8 minutes) Other students' mobile phones were turned off	Speaking skills Dictionary use Vocabulary building	Students' use of mobile devices to consult dictionaries, access and read an article (20 minutes)
2	Speaking practice based on homework Pair work to identify similarities between the American president and Pakistani politicians (15 minutes)	Speaking skills	
3	An overview of the topic: Influence of social media on students' lives (3 minutes)		
4	Pre-reading activity (8 minutes)	Speaking skills	
5	Reading activity (20 minutes) Use of mobile devices to access and read the text Use of paper for a follow-up writing activity	Reading and writing skills	
6	Homework of video-recordings at a job fair in the university (2 minutes)	Speaking skills	

In the second observed lesson, Sara used the listening clip assigned as homework, which contained the election campaign speech by Donald Trump, the USA president at data collection time. The students worked in pairs to identify similarities between the election campaigns of Donald Trump and Pakistani politicians. Each pair shared their discussion points in the English language. The the class became excited as many similarities were identified.

Students used mobile technology during their reading comprehension activity to access and read an article about influence of social media on students' lives from a language learning BBC website. Students' interest in the topic was evident from their enthusiastic comments during the pre-reading activity (Activity 4).

In summary, Sara's pedagogical approach about the place of mobile technology for EFL teaching was responsive to the contextual constraints of technology (e.g., power failure, the absence of

well-resourced libraries), as evident in students accessing content stored on mobile devices. Her decision to make students turn off their mobile devices in both lessons' introductory sessions indicated her understanding of mobile technology's distractions. The selection of reading and listening activities also indicated that she drew on students' interests by building on connections among various elements within students' learning ecosystems.

5.2.6.2 *Vignette six: An illustration of Sara's observed pedagogical practices*

In the observed lessons, two examples of Sara's pedagogical practices using mobile technology illustrate her beliefs. She used mobile technology as a transmission tool, a storage device or a substitute for the printed books/computers for teaching listening and reading skills in her teaching. Sara's students accessed EFL content stored on their devices or available online such as dictionaries, audio-visual resources, and language learning websites in her observed lessons.

She also took advantage of mobile technology's mobility element in making a pedagogical decision to assign video-recording homework assignments at a job fair on campus during the second observed lesson. By doing this, she provided an opportunity to speak English in real-life situations, which were fun for her students.

In this vignette, Sara's observed pedagogical practices suggested that she drew on mobile technology affordances for EFL teaching in the formal lessons which extended her students' opportunities to learn beyond the formal lessons. Her pedagogical decisions and practices also reflected her awareness of contextual constraints (e.g., connectivity issues), in that she made minimal use of mobile technology inside the classroom.

5.3 Concluding remarks

The overview of the pedagogical dimension presented in this chapter indicates that the lecturers' pedagogical decisions and practices were based on various affordances and constraints within Pakistani universities' learning ecosystem.

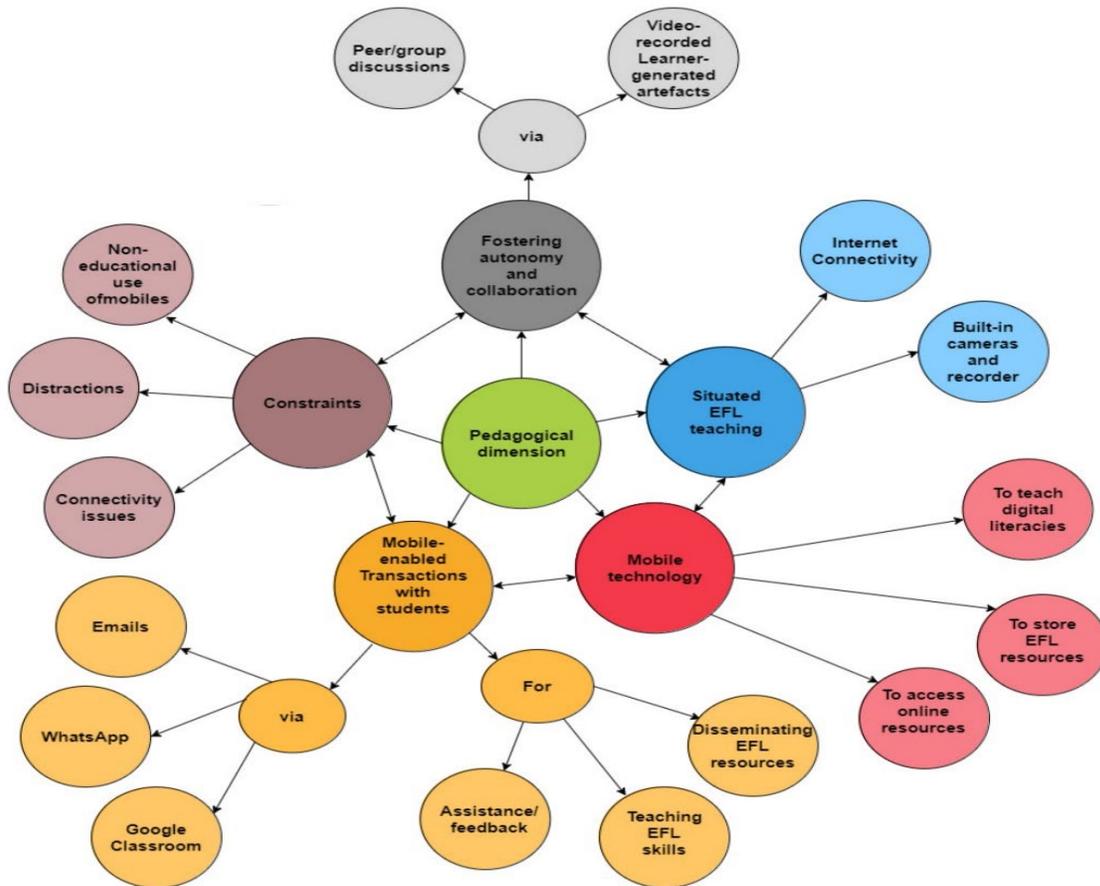


Figure 5.1. The pedagogical dimension in the MALL ecosystem of Pakistani universities

As shown in Figure 5.1, the lecturers took advantage of various mobile-enabled affordances (e.g., WhatsApp, emails, GC) to communicate with their students and disseminate EFL teaching content. The lecturers' reported and observed pedagogical practices provide evidence that the primary reason for their pedagogical decisions to incorporate mobile technology was the contextual factors (e.g., connectivity issues, non-availability of educational resources) in the MALL ecosystem of Pakistani universities. Mobile devices were used primarily as storage devices and for access to resources and communication in all the observed lessons.

Another observed pedagogical practice using mobile technology common to all lecturers was web browsing during group/peer discussions, as illustrated in Figure 5.1. They appeared to promote collaboration with devices where both the learners and devices were mobile.

Another salient pedagogical use of mobile technology was to enable situated EFL learning with a built-in mobile camera recorder, as illustrated in Figure 5.1, thus, mobilising learners, devices and learning experiences. The decision to assign out-of-class assignments suggest that mobile technology could be pedagogically employed to enable MALL beyond the classroom. The lecturers' decision to provide in-class feedback on student-created artefacts demonstrated how they integrated formal and informal learning.

In conclusion, the lecturers' use of video content and mobile technology for web-browsing indicated that they adapted their pedagogical practices according to the students' learning ecosystem (e.g., students' interest in video content and their previous EFL learning through the GTM).

As illustrated in Figure 2.1 (Chapter 2, Section 2.5), affordances related to all five dimensions can enable teaching and learning in a learning ecosystem. The next two chapters go deeper into the layers of ecology in the Pakistani university sector by highlighting relationships among various elements and actors in MALL.

Chapter 6. Findings

The Technological Dimension

6.1 Introduction

The previous chapter presented an overview of the pedagogical dimension by introducing the lecturers and presenting a synopsis of their observed pedagogical practices. This chapter examines mobile technology's role in the lecturers' pedagogical decisions and practices to enable EFL learning and draws connections between the technological and pedagogical dimensions by presenting the findings of mobile technology affordances for EFL teaching and learning within the Pakistani universities' learning ecosystem. The operational definition of affordances adopted for this study, as introduced in the second chapter (Section 2.2.2), takes two strands of affordances into account. The first strand refers to the affordances inherent in mobile devices in the form of their technical and installed features. The second strand is about the affordances that emerge from participants' mobile-mediated interactions within a learning ecosystem. The operational definition also highlights that affordances may lead to or constrain an action within a learning ecosystem.

Data on the affordances and constraints of mobile technologies, related to the technical dimension, are presented in this chapter. The features and characteristics of mobile technology, and why there were perceived as affordances or constraints by the participants for L2 teaching and learning, provide a rationale for the lecturers' decisions for using the affordances.

This chapter is largely an account of the participants' perceived affordances and constraints related to the use of mobile technology for EFL teaching and learning. It does not provide evidence of how the perceived affordances of mobile technology were used for EFL teaching and learning, but does refer to the constraints in some detail. In contrast to the data related to affordances which do not include how they impacted EFL teaching, the findings related to constraints are presented in greater detail. Findings related to mobile technology constraints provide evidence through the reported and observational data: 1) on the features or characteristics perceived by the participants as inhibiting EFL teaching and learning; 2) and on how the lecturers controlled or minimised the impact of constraints. Findings related to the

utilisation of perceived affordances leading to linguistic actions for teaching and learning core EFL skills are presented in the next chapter.

There is rationale for presenting more evidence of mobile technology's constraints than affordances in this chapter. It seemed appropriate to explain how the participants controlled or minimised the impact of constraints to create an environment where actions triggered by affordances could be conducive to EFL teaching and learning.

The findings related to the technological dimension precede those of the other three dimensions to ensure a thorough understanding of the technological affordances and constraints as perceived by the participants of the current study. Comprehensive information about the technological dimension is also needed to understand how the lecturers employed mobile technology affordances for EFL teaching in the transactional, temporal and physical dimensions. The next chapter will present findings on how the technological affordances influenced the lecturers' pedagogical practices by connecting the pedagogical and technological dimensions with the transactional, temporal and physical dimensions.

The current chapter is organised into four sections based on the lecturers' initial interviews, lesson observations, lecturers' post-observation interviews, students' survey, three focus groups, and online platforms' observation. The lecturers' and their students' voices have been integrated to reflect the study's ecological nature. After introducing the purpose of the chapter and mode of presentation in the first section (6.1), an overview of mobile technology's technological affordances is presented in the second section (6.2). The third section is about the technological constraints, with the chapter concluded in the fourth section.

6.2 Affordances of mobile technology for EFL teaching and learning

This section presents the contextual and technological affordances of mobile technology perceived as significant for EFL teaching and learning by the current study participants. First, data collected from the lecturer-participants about the contextual affordances (Section 6.2.1) and the technological affordances of mobile technology are presented (Section 6.2.2). Then data collected from student-participants are presented in Section 6.2.3.

6.2.1 Contextual affordances

The analysis of all data-sets, informed by the operational definition of affordances used in this study, revealed a range of characteristics and features of mobile technology perceived as affordances for EFL teaching and learning. This section presents two linked categories of affordances reflecting the complexity inherent in a learning ecosystem. Firstly, it presents the affordances that emerged within Pakistani universities' learning ecosystem as determined by contextual factors, such as affordability, availability, and students' expertise. Secondly, data related to the affordances within mobile devices in the form of technical or installed features and web-based resources perceived as affordances for L2 teaching and learning are presented.

6.2.1.1 *Affordability and ubiquitous availability*

Mobile technology's affordability was perceived as an affordance in Pakistani universities' learning ecosystem because each learning ecosystem is a network of interactions among multiple internal and external elements and actors (See Section 2.2.1). Affordability may not be considered an affordance in other learning ecosystems, but the participants regarded it as the most significant affordance to ensure optimum availability of mobile technology for EFL teaching and learning.

Analysis of the data revealed that the lecturer-participants repeatedly mentioned the significance of affordability. In their initial interviews, all six lecturers identified mobile technology's affordability compared to laptops, or desktop computers as a major reason for integrating mobile technology into EFL teaching. For example, Amir thought that there were *“almost 30 % of students who don't have their laptops”* because a laptop's cost was too high for every student to afford. Aly also said, *“My students who come from lower financial backgrounds and can't afford a laptop or a [computer] system; therefore, they use mobile phones for learning”*. Sara likewise indicated, *“The cost of a good laptop is not affordable for every student”*; therefore, *“a mobile phone is an affordable alternative”* for her students.

All six lecturers agreed that the students who belonged to underprivileged areas may not have mobile devices at the beginning of their university study, *“but after two or three semesters, they also buy smartphones”* (Bina). Huria also stated, *“If any student doesn't have a phone, he/she buys a second-hand phone because it's usually required for communication with peers.”* Mobile devices appeared to be a necessity that most of the students owned, or managed to buy, after

admission to their undergraduate degrees. They were therefore convenient and practical for the lecturers to incorporate in EFL teaching.

The affordability of mobile technology was perceived as an affordance because it ensured the availability of mobile technology. The lecturer-participants of the study referred to the ubiquitous availability of mobile technology and its inherent flexibility as the primary determinant of their decisions to integrate it in EFL teaching. For example, in their initial interviews, all six lecturers mentioned smartphones as *“the most popular devices”* (Sara) among students. Its availability also prompted Huria’s decision to integrate mobile technology into her pedagogical practices. She said about mobile technology, *“It’s handy, it’s easy, and it’s available at all times.”*

Another reason for the lecturers’ perception of mobile technology as a ubiquitous affordance and their pedagogical decisions to use it for L2 teaching was the contextual constraints of the learning ecosystem of Pakistani universities such as students’ inability to buy books, the absence of well-resourced libraries and well-equipped computer labs in the universities. According to Bina, it was difficult for her students to buy books or get them photocopied. She claimed that, *“They store stuff on their cell phones. They don’t need to buy resources. They download complete files on their mobile phones”*. Her students just needed to buy *“memory cards of 5 GB, 10 GB and then they enjoy the whole semester”*. Other lecturers also mentioned the inadequate IT infrastructure, which made the affordability and ubiquitous availability of mobile technology to be viewed as affordances because they ensured easy and flexible access to EFL resources. Providing rationale for his pedagogical decision to use mobile technology for EFL teaching, Aly stated in his initial interview:

I don’t have to ask them to bring their mobile devices for the classes as they carry them all the time. So, it’s easy for me to conduct any activity in any class. Most of the students don’t have laptops with them. The number of computers in university computer labs is also not sufficient for large classes. I always have more than 40 students in my class. If we decide to go to the departmental computer lab, there are only 25 computers.

Bina’s decision to use mobile technology for EFL teaching was also driven by its availability and the inadequate IT facilities in the university. She said:

It's convenient for me as everything is online now, and all the students have mobile devices. I don't have to wait for any IT facilities in the class. I can plan anything without worrying about getting notes photocopied and booking computer labs which are mostly occupied.

Likewise, Adam considered mobile technology as an affordance because it was a viable alternative to other facilities due to its availability and flexibility. He said:

I often want to conduct an activity in the classroom, but the non-availability of computer labs, internet connectivity and many other things become a challenge for me. However, smartphones are always there, and students can access their devices at any time.

Data collected from students also confirmed the lecturers' claims of extensive ownership of mobile technology. For example, the survey asked a question about students' preferred devices for EFL learning to explore the students' ownership of mobile devices. Most respondents (93.25 %) indicated their preference for smartphones to other mobile devices. The rest of the students also had other mobile devices such as e-book readers, tablet computers and MP3 players. The survey results about mobile technology availability were confirmed as all the students in 12 observed lessons and three focus groups owned smartphones.

It appears that mobile technology's affordability was perceived as an affordance by the lecturers because mobile technology's ubiquitous availability was a direct result of affordable prices. Likewise, mobile technology's availability was perceived as a fundamental affordance as it was a dependable alternative to computer labs and printed books in Pakistan, as universities struggle to cater to a large number of students' needs. Data presented in this section also indicated that the lecturers' planning and pedagogical practices were aligned with the contextual affordances and constraints within Pakistani universities' learning ecosystem.

6.2.1.2 Learners' technological expertise

Learners' technological expertise was also perceived as an affordance. It was another reason for the lecturers' decisions to incorporate mobile technology into their pedagogical practices. In their initial interviews, all six lecturers stated that students' technical expertise was one reason for them to integrate mobile technology into EFL teaching. For example, they described their students as "*genius in this field [IT]*" (Sara), "*very expert in handling*" (Amir) and "*very much*

proficient in the use of mobile devices” (Adam). They believed that their students had “sufficient knowledge of these gadgets, and they don’t need to learn these things” (Amir). Providing further details about students’ expertise, Huria stated:

All students in my class are expert in using mobiles though some of them are not expert in using computers. They don’t know the basics of Word and PowerPoint, but they know everything about their cell phones because they love their smartphones. So, it’s convenient for me to plan activities that can be accomplished on mobile devices.

Similarly, Bina said:

My students know every bit of it [mobile technology]. They are expert in using built-in features of mobile devices and installing and manipulating other apps. Whenever I tell them about some new app, they already know it and tell me about its functions.

Four of six lecturer-participants also acknowledged that their students were more expert and knowledgeable about mobile technology than themselves. For example, Adam felt “*very much deficient in mobile literacy*”. Elaborating on students’ information about mobile devices, Sara said: “*The students are smarter than me in using these devices and apps. They approach this technology before I approach it.*” Likewise, acknowledging students’ dexterity in manipulating mobile technology, Aly commented:

They [students] are from this age. I bought my mobile phone when I was doing my master’s degree, but they have these gadgets since their childhood. They know many things. If you ask anything, you get an answer within no time. Even if I plan an activity with any mobile app or feature that they don’t already use, I have no issues because I know they will get all relevant information from the web.

It appears that Aly’s decision to incorporate mobile technology in EFL teaching was prompted by his students’ existing knowledge and their readiness to learn new features of mobile technology.

The observed lessons provided evidence for the lecturers’ claims of students’ expertise in using mobile technology as, in 11 of the 12 observed lessons, the students’ practices confirmed the lecturers’ claims of students’ expertise in handling mobile devices as none sought technical

assistance. Data analysis, however, also provided evidence of constraints, presented later in this chapter (see Section 6.3.2), which was somewhat contrary to the lecturers' claims about students' expertise.

To conclude, the students appear to have gained technological expertise due to mobile technology's ubiquitous availability providing opportunities to experiment with its various features at convenient times and places. The students' knowledge about multiple apps, resources, and their expertise in operating mobile technology appears to be another reason for the lecturers' perception of mobile technology as an affordance, and for their pedagogical decision to incorporate it in EFL teaching.

6.2.2 Technological affordances

The technological affordances introduced in the second chapter of this thesis (see Section 2.5.1) refer to a group of affordances enabled by the built-in features, installed mobile apps, and EFL resources, which were made available through internet connectivity. Technological platforms used to disseminate EFL resources (e.g., SMS, emails, WhatsApp, Facebook) and the technological spaces (e.g., built-in storage and LMS) to store information have also been regarded as technological affordances in the current study.

This section presents findings related to mobile technology's built-in and installed technological features perceived as affordances for L2 teaching and learning. In the learning ecosystem of Pakistani universities, the affordances of mobile technology, which were "*technological enablers*" (Palalas, 2013, p. 89), included connectivity, built-in mobile camera/recorder voice calls, text messages, emails, WhatsApp, Facebook, YouTube, other websites (e.g., agendaweb.org, Engvid.com, BBC learning English, Quora.com), and LMSs. This section presents these affordances and analyses why they were incorporated in the lecturers' pedagogical decisions. The next chapter presents data on how the lecturers' decisions of incorporating these affordances shaped their pedagogical practices for teaching core EFL skills.

First, this section presents data relevant to the lecturers' perceived technological affordances in six sub-sections (6.2.2.1- 6.2.2.6). Then it reports students' perceived technological affordances.

6.2.2.1 *Internet Connectivity*

All six lecturers perceived internet connectivity as the most significant enabler for L2 teaching because it facilitated flexible access to web-based affordances. The lecturers indicated that, on campus, they utilised Wi-Fi and mobile data to access resources and stay connected with their students anytime, anywhere. For example, acknowledging the benefits of connectivity provided by the university, Bina said:

Wi-Fi on campus is a huge support for me as I can keep working even if I am not in my office. IT department updates every system regularly; so, you are connected with your students all the time. If Wi-Fi signals are not strong, I use my mobile data.

Sara also indicated that Wi-Fi enabled her to access MALL resources during the lessons. She said:

Since Wi-Fi access is available, we can access any resources while teaching. When Wi-Fi is not available, I use my mobile data. A couple of years ago, I used to bring a portable router to share the internet with my students during the lesson, but now I share my mobile data if required.

Adam explained that connectivity facilitated his L2 teaching. He said:

I use the SOLE model for teaching. For that, I have to browse a lot in order to gain an understanding of relevant websites for the lesson. I don't rely on Wi-Fi because sometimes its signals disappear when you are in the middle of something. I have unlimited mobile data, so I usually prepare a list of relevant resources using my mobile device whenever I get a few moments and email it to my students. For me, mobile technology is extremely helpful for pre-class preparation and in-class teaching.

Similarly, answering a question about the role of mobile technology in her pedagogical decisions and planning practices, Sara said:

I use mobile technology to prepare for my lessons. Initially, I decided to use it to make fair use of time wasted during travelling. I don't drive. I travel by cabs. On my way to the campus, I go through my lecture notes and read online about the topic. Since I am always

connected to the internet, I often access my Google Drive to revisit and refine other activities which I have already prepared.

It appears that the lecturers' decisions to use mobile technology for EFL teaching were driven by its connectivity and provision of flexible access to EFL resources. Data indicated that the lecturers relied on mobile technology for their planning practices across times and spaces to enable MALL.

6.2.2.2 Mobile camera and audio/video recorder

Built-in mobile camera and recorder were also perceived as affordances for EFL teaching by five of six lecturers. For example, in his initial interview, Aly mentioned that his pedagogical decision to use the mobile camera was due to its benefits for L2 teaching. He said:

Mobile camera is highly beneficial for engaging students in L2 learning. I often take pictures of interesting scenes and share them with my students through WhatsApp. When I am teaching creative writing, pictures become a starting point for in-class teaching and pre-writing activities. I also ask them [students] to caption the pictures.

A mobile video-recorder was also perceived as an affordance for L2 teaching. For example, in her initial interview, Sara mentioned, *"I assign video recording homework assignments which students record working as a group"*. For homework, Bina also assigned her students to *"capture their routine activities"* using a mobile camera/recorder. Explaining the purpose of assigning video recording assignments, Bina said: *"I make my students use the mobile camera to teach English through real-time communication with others."* Describing the use of mobile video recorder, Adam, in his initial interview, stated:

The mobile video recorder is an integral part of my teaching. As I have said that I focus on enhancing their communicative skills in the English language, I give assignments to record videos. Students enjoy recording their voices. These recordings become an interesting way of learning English through practice.

While the mobile camera/video recorder was perceived as an affordance for L2 teaching by the lecturer-participants, Amir also used the audio-recording feature of mobile technology to communicate with his students. He said, *"Although I prefer written communication, sometimes I*

record an audio message for my students to make some announcement at GC.” Adam appeared to engage his students, frequently, through multi-modal communication.

The lecturers’ pedagogical decision to use mobile cameras and audio and video recorders reflected their efforts to teach EFL, not only through books and online resources, but also through students’ artefacts created at informal times and spaces encompassing students’ relationships with various contexts in their learning ecosystems.

6.2.2.3 *Google Assistant*

Two of six lecturers considered Google Assistant as an affordance for L2 teaching. In response to a question about the most exciting activity enjoyed by her students, Sara, in her post-observation interview, said, *“I encourage them to practise speaking English with Google Assistant because they can ask questions about any topic of their interest. They have interesting stories to tell when we discuss their conversations with Google Assistant in the class.”* Similarly, Adam incorporated Google Assistant in his teaching saying that: *“I tell my students that Google Assistant is an excellent tool for learning English in an entertaining way.”*

The lecturers appeared to make students notice Google Assistant's affordances to promote autonomous learning in students’ convenient times and spaces based on their unique interests and learning practices.

6.2.2.4 *Websites and YouTube videos*

All six lecturers perceived various web-based resources as affordances for language teaching. YouTube videos were perceived as affordances by all six lecturers because they were used for *“getting more information about the lesson topic”* (Aly) and *“watching movies for improving listening comprehension”* (Huria). Bina also integrated TED Talks accessed through YouTube to engage her students in listening to *“sensible stuff in English to learn about the lesson topic”*.

A learning English website by BBC was also perceived as an affordance by Sara. Responding to a question on the rationale for her pedagogical decision to incorporate resources from this website, she explained in her post-observation interview:

The course I teach is about general comprehension of English. Therefore, EFL teaching and learning resources at this website by BBC are beneficial. I always browse it during

lesson planning. I ask my students to install its app, and I often assign homework tasks based on this website.

Huria also incorporated resources from a website (i.e., agendaweb.org). Explaining why she perceived this website as an affordance for teaching, she said, “*Agendaweb.org is a hub where you can get all kinds of resources for EFL teaching. I refer to it for teaching and in-class assessment.*” Huria and Sara appeared to incorporate web-based affordances due to the availability of various EFL-related teaching resources.

Data analysis also revealed that the technological affordances of mobile technology were primarily employed to disseminate and store EFL resources. All six lecturers agreed that they drew on the technological affordances of mobile technology to disseminate EFL-related resources such as “*e-books, PowerPoint slides, links to YouTube videos*” (Aly), “*PDF, Word documents and screenshots*” (Bina) and “*e-books, book chapters, newspaper articles, audio-video clips*” (Huria).

All six lecturers also agreed that EFL resources were stored on mobile devices or in the cloud at LMS. Most of these resources were used as a “*back-up plan*” (Bina) in the absence of computer labs, laptops and printed material. These resources were also helpful when “*power breaks down or when the overhead projector doesn't work well*” (Sara). The technological affordances used to disseminate, and store EFL resources included WhatsApp, email, LMS and mobile devices' built-in storage space.

6.2.2.5 *WhatsApp, Facebook, emails and LMS*

WhatsApp was considered an affordance by all six lecturers for EFL-related managerial communication and content dissemination. They all mentioned their pedagogical decision to set up a course-specific WhatsApp group to share course-related resources and communicate with their students. In their initial interviews, the lecturers listed several benefits of WhatsApp, which had led to their decision to use it for their planning and pedagogical practices. For example, Bina said:

Instead of sending an email that may not be read, I send messages or links to the WhatsApp group. WhatsApp is very convenient, and it is the most popular app among students. At WhatsApp, sending or sharing through files is extremely easy.

Aly also described his decision to use WhatsApp in his initial interview to share resources as a way of pre-class preparation for his teaching. He said:

I share all kinds of files through WhatsApp. Particularly, I share resources that are not given to students at the start of each semester. If I want to discuss some point and want my students to come prepared, I share links to blogs or videos. Most of the students browse links sent through WhatsApp.

Likewise, in her initial interview, explaining why she decided to communicate and disseminate resources through WhatsApp, Huria said:

WhatsApp is very handy. In the past, I used to communicate through email, but many of my students won't bother opening their emails and downloading files. Some of them would come and say that they did not receive my email. Therefore, I decided to send resources and messages through WhatsApp too.

Two of the six lecturer-participants also considered that emails were affordances for managerial communication and resource sharing and beneficial for lesson planning and in-class teaching. For example, Adam regarded emails as a formal communication channel:

All course-related communication exchanged between me and my students is through email. My students can contact me anytime through emails. I consider emails a more professional way of communication than social media. I can also keep track of my communication if it is done via emails.

Sara, similarly, allowed her students to communicate through emails. She said:

My students are allowed to contact me via emails. I discourage them from coming to my office for every little thing. I ask my students to email me writing their name and questions in the subject line. In this way, I can prioritise emails for answering.

The most significant aspect of the lecturers' communication was its immediacy. Both lecturers accessed emails on their mobile devices immediately after receiving them. For instance, Adam said, "I prefer checking emails on my cell phone. One of the reasons is that it's always there with me and the second reason is that it always lets me know that an email is there." Sara showed the

same sense of urgency with regards to answering emails. She said, *“I am not in front of my laptop very often. I reply instantly via my mobile device whenever I receive an email”*.

As well as for communication, emails were also preferred for the *“quick dissemination of course content”* (Adam) to be stored on students’ mobile devices and used during the lesson.

Explaining his practice of disseminating EFL resources, Adam said:

At the beginning of every semester, I email them [students] course outline and other resources like books, articles, pictures, videos, and PowerPoint slides. It is understood that these resources should be available on students’ mobile devices to be accessed for EFL learning whenever required.

Sara also mentioned her pedagogical decision to disseminate course-related content through emails, advising her students to store them on their mobile devices. She said: *“I share course-related resources via email and ask my students to access them on their mobile devices when power fails, and our computer is shut down.”* The use of email appeared to be the primary enabler of EFL teaching for Sara in response to the contextual constraint of power failure.

It appears that WhatsApp and email were utilised mainly for course-related communication and resource sharing because of mobile technology’s availability and contextual constraints. The use of mobile technology as a storage device and as an access point also suggested that the affordances and constraints in Pakistani universities’ learning ecosystem influenced the lecturers’ pedagogical decisions.

6.2.2.6 **LMS**

Google Classroom (GC) was also regarded as an affordance for L2 teaching by one of the six lecturers. Amir referred to GC as an official platform for managerial communication and disseminating course content. For instance, alluding to course-related communication, Amir said, *“Google Classroom is an official platform for communication and other study-related tasks during this semester. I also upload all course-related resources at Google Classroom to access anytime during the semester.”* In his post-observation interview, Amir also mentioned that he decided to use GC as a platform for L2 teaching because of its flexible access through an app. Amir appeared to use GC in the absence of a university-managed LMS to teach pre-service EFL teachers.

This section describes the student-participants' reported perceptions of the affordances of mobile technology for EFL learning.

6.2.3 Students' data about the affordances of mobile technology for EFL learning

The students' data from the survey confirmed the lecturers' data identifying that the availability of mobile technology was the primary affordance for EFL teaching: 100% of survey respondents reported mobile technology ownership. The survey also had a question which sought to understand why the students utilised mobile technology for EFL learning. A large number of students (78.05 %) reported that they preferred using mobile technology for EFL learning because it enabled them to learn EFL at times and in places they would not typically have studied in the past. The students' response indicated that they were drawing on mobile technology affordances such as availability, flexibility, and mobility for EFL learning.

In response to another question in the survey asking for students' preferred times and places for accessing language learning resources, 42.07 % of students indicated that mobile technology was used during their planned learning activities (i.e. classes). Many students (43.29 %), however, reported having accessed language learning resources while travelling to and from the university, and 34.76 % of students reported that mobile technology was used to access EFL resources in the library. Other times and places reported by the students for EFL learning were gaps between classes (23.17 %), watching TV (12.80 %), sitting in the café (12.80 %), and during the slots of power shut down (15.85 %).

The survey also sought to identify popular apps and resources that were perceived as affordances for EFL learning. The students' data confirmed the lecturer's claims about the use of multiple apps and resources, with 42.68% of students reporting emails as their first choice to contact their lecturers if required after the working hours for EFL learning. Many students (73.62 %) exchanged EFL-related messages through WhatsApp and short messages enabled by cellular companies using their mobile devices. Language learning websites were accessed by 24.39% of students, while YouTube videos were considered as affordances for L2 learning by 57.67% of students.

Consistent with students' responses in the survey, the 17 participants in three focus groups reported that mobile technology affordances enabled their EFL learning inside and outside the classrooms. All participants in three focus groups confirmed lecturers' claims that mobile

technology was used primarily to disseminate, store and access course-related resources. For example, one of the students said, *“Our lecturer provides us with soft copies of different articles, which we read and discuss inside the class.”* (S3-U2). Five students in the U3 focus group agreed that they used mobile technology to *“communicate, comment, and ask for details about assignment, quiz deadlines, and syllabus prescribed for exams”* (S1-U3).

The focus group participants agreed with the lecturers’ reported data indicating that they used mobile technology to store and access EFL resources. For example, in reporting the use of mobile technology as a storage device, U2-S6 said, *“I download and store EFL content which is required for the class. I also send assignments and other stuff to my email so that I can open it anywhere.”* (U2-S6). Likewise, S4-U3 said, *“All the content sent by the lecturer is stored on my mobile device. I can access whatever I want at my own convenient time.* Explaining how flexible access to EFL resources enabled EFL learning across times and spaces, another student (S2-U3) said, *“I work part-time as a tutor; so, I manage my study with my mobile device. I store all EFL resources on my cell phone and access them when it’s feasible for me. For example, I often listen to clips about the lesson topics for the week while I am exercising in the gym.”* Students all appeared to agree that the availability of mobile technology enabled flexible access to EFL resources.

Moreover, consistent with their lecturers’ reported perceptions, WhatsApp was identified by all 17 focus group participants as the primary technological enabler for EFL-related communication with their peers and lecturers. The provision of getting immediate response made WhatsApp students’ preferred platform. For example, at WhatsApp, they could *“get quick and to the point answers”* (S2-U1) to their EFL-related queries.

The students’ preference for using WhatsApp also influenced the lecturers’ decision-making. For example, S3-U2 said: *“Although our lecturer sends EFL content in emails and it is available at the campus printing shop too, all students in our class use WhatsApp. Therefore, our teacher shares resources for the class via WhatsApp.”* Describing the lecturers’ pedagogical practice of using WhatsApp, S1-U2 also said:

Our lecturer provides relevant material related to the topic to be discussed in the next class through the WhatsApp group. So, we can research the topic, take help from the links sent by him. Basically, this activity helps us in contributing to in-class activities.

The focus group participants also commented on the usefulness of WhatsApp for peer discussion and interactions. For instance, S4-U2 described dynamic interactions within the group:

As far as the WhatsApp group is concerned, it's a group full of diversity. One member sends a file from one source at the group, and someone else sends it from another source. This diverse range of people having various mind-sets exists at WhatsApp. So, there are many chances of learning in this kind of groups.

The popularity of WhatsApp, as indicated in the students' data, appeared to motivate the lecturers to set up course-specific WhatsApp groups. The lecturers' decision to communicate and share resources through WhatsApp also indicated that they drew on the communication channels that enabled an immediate response.

Videos accessed through YouTube were also identified as affordances for EFL learning by all 17 focus group participants. For example, one of the students said, "*Last week, I had a presentation as an EFL class assignment. I got many practical tips by watching YouTube videos*" (S4-U1). The focus group students reported accessing other video content through YouTube: for example, the videos by Khan Academy and Engvid.com. All the focus group participants said they regularly accessed Khan Academy as they provided further explanation and clarification of the assignments given by their lecturers. One of the students (U3- S3) said:

We use it [Khan Academy] for checking references and getting extra information. For example, sometimes, our EFL lecturer gives us topics for assignments, and the information provided in our course handbook is not sufficient. Then we need to look for more details to understand the topic. Therefore, we consult websites like Khan Academy.

As a rationale for using Khan Academy, another student said: "*It is regularly updated and free to use.*" (U2-S4); therefore, "*almost all the students in our class have subscribed to Khan Academy*" (U3-S3). Khan Academy appeared to be a popular website for EFL learning as it provided access to resources.

Videos uploaded by Engvid.com to YouTube were also accessed by 12 of the focus group participants for L2 learning. As S4-U1 said, "*Our lecturer told us about this website. There are outstanding short video lessons about academic writing. I always watch videos when I can get time.*" Another student (S2-U3) stated: "*At Engvid.com, I watched a video about writing*

academic essays.” This website was also reported beneficial for spoken English practice. For example, S1-U2 said: *“I have so many pauses when I speak English. I am taking help for my conversation skills form Engvid.com. There are many videos which give tips on how to overcome pauses and keep talking.”* The students identified Engvid.com as an affordance because of the availability of EFL resources on various topics.

There were some differences identified between the lecturers’ and students’ perceptions of mobile technology’s affordances for EFL teaching and learning. For example, Facebook appeared to be a popular platform among students, as 54.60 % of students indicated using it in the survey. In contrast, although all six lecturers set-up course-specific Facebook pages, none of the lecturers reported its use for EFL teaching.

Likewise, 11 out of 17 focus group participants utilised another website called Quora.com, on which students communicated in the English language with people worldwide. When asked how they learnt English at Quora.com, S3-U1 said, *“We don’t learn English as such. But you can say that we practise writing in English to communicate with others.”* The students provided further details about the topics of their communication, for example, S1-U1 said:

One of our class fellows is very active at Quora.com in answering questions about sports. He introduced this to us. Now many people have joined it. I rarely ask questions, but I read people’s questions and answers about healthy eating.

Another student (S4-U1), who considered himself an expert in cricket, answered *“people’s questions about Pakistani cricket legends”* at Quora.com.

Overall, it appears that the ubiquitous availability of mobile technology among students, its inherent flexibility and the students’ learning practices of drawing on various affordances of mobile technology influenced the lecturers’ pedagogical decisions to use mobile technology for EFL teaching. The lecturers’ data, related to mobile technology affordances, also indicated their pedagogical decisions were influenced by the students’ mobile-enabled interactions with content, contexts, and people. Students’ interest in Khan Academy, Quora.com and Engvid.com allude to a gap among students and their lecturers’ perceptions of affordances suggesting a need for more adaptive pedagogical approaches for EFL teaching.

6.3 Technological constraints

As this study's operational definition also includes affordances that inhibit the actors from acting, findings related to the barriers that restricted mobile technology's full incorporation into the lecturers' pedagogical practices are presented in this section. Four constraints were identified by the lecturers: they included connectivity issues (Section 6.3.1); non-educational use of technology (Section 6.3.2); distractions (Section 6.3.3); and time constraints (Section 6.3.4). Evidence of the lecturers' pedagogical practices of minimising the impact of constraints is also provided.

6.3.1 Connectivity issues

The study participants identified two interrelated connectivity issues that restricted them from taking optimal advantage of the benefits of mobile technology affordances for L2 teaching and learning. This section provides evidence about the connectivity issues and how they were dealt with in the classroom.

The lecturer-participants mentioned two inter-related technological barriers: Wi-Fi disruption and mobile internet cost. For instance, in their initial interviews, all six lecturers reiterated disrupted internet connectivity as the major barrier influencing their planning and pedagogical practices. They repeatedly mentioned "*power shut-down and internet connectivity*" (Adam) as the significant barriers. Sara elaborated the issue saying, "*Internet [university-provided Wi-Fi] has many interruptions. At one moment, the internet is there, and the very next moment, it's not there*". Alluding to Wi-Fi in the university, Bina said, "*It's very slow, it gets stuck, and wastes your time*". Huria mentioned that her students could not "*listen [to sound clips] in the class because...internet is usually not available*". Her students were also unable to "*open or download documents because they don't have internet available*". The lecturers reported disruptions to Wi-Fi as a barrier to the full incorporation of mobile technology affordances into their pedagogical practices.

Mobile internet was also not considered a realistic option by five of six lecturers due to its cost. In his initial interview, Amir said: "*Mobile data is not affordable for many students.*" Adam and Aly's comments highlight why mobile internet was not a viable option for the lecturers. Aly said, "*Mobile internet is also available, but even then, it's problematic.*" In his post-observation interview, when asked why connectivity was problematic, despite the presence of high-speed

mobile internet, Aly explained, *“High-speed internet is available, but students don’t like to use their mobile data for the lessons.”* Describing his students’ habits regarding mobile-internet use, Adam also stated, *“Students purchase mobile data for their personal use, but it becomes costly for some of them. They prefer to use campus Wi-Fi.”* Of the six lecturers, only Bina expressed a different opinion. She said, *“If the internet in the campus is not working, students do have their mobile data connections, and they readily share information within seconds.”* It appears that the students did not use mobile internet routinely for educational purposes. They could use it, however, for specific tasks as cellular companies allowed free use of WhatsApp and Facebook for a limited amount of time for text messages and browsing.

The data also indicated that connectivity issues influenced lecturers’ pedagogical decisions on whether to incorporate mobile technology into their pedagogical practices. For example, Aly said in his initial interview, *“You plan something, and it may be blocked in the middle”*. He added that, *“In the absence of good quality internet connection, we have to postpone or reschedule our planned activities”*. Huria also stated in her post-observation interview that, due to disruptions in the Wi-Fi, she was not able to *“plan lessons which are dependent on mobile devices”*. Sara, likewise, claimed that mobile technology was restricted to *“a kind of backup or an aid”* for her pedagogical practices, due to disrupted internet connections. The reliability of Wi-Fi connectivity seemed to restrain the lecturers from making optimal use of mobile technology.

The lecturers also described their strategies for dealing with connectivity issues. In response to a question in his post-observation interview on whether connectivity issues affected his pedagogical decisions and practices to incorporate mobile technology, Amir replied emphatically:

Yes! I am not exaggerating. I face internet connectivity issues in most of my classes. But I am prepared for that. When I plan an activity that requires students’ internet use, I share my mobile data. If I depend on on-campus Wi-Fi, I may never plan any activity incorporating mobile technology in the class.

Sara, similarly, stated that due to regular Wi-Fi disruption, she decided to integrate mobile technology in homework assignments. She explained:

Complete reliance [on mobile technology] is not possible due to Wi-Fi issues and mobile data cost. If you talk about classroom teaching, I don't think that I am using mobile technology very often. Therefore, I normally plan out-of-class activities where students can benefit from mobile technology by using Wi-Fi at home. Some out-of-class activities do not require the internet.

To tackle connectivity issues, Aly mentioned his practice of bringing in his “own portable Wi-Fi router” to provide internet during the lessons and described alternative arrangements to counter the absence of seamless connectivity, “I send e-books when the semester starts, and I also send all pictures/videos required for the lesson one day before the class so that they can download at home.” The lecturers appeared to deal with the connectivity issues by providing alternative connectivity arrangements, making students store EFL resources on their mobile devices and planning activities that could be completed beyond the class.

The observed lessons confirmed the severity of connectivity issues as described by the lecturers. Issues associated with Wi-Fi provided by the university were experienced in six out of 12 observed lessons. In one, Adam's first observed lesson, students were willing to use their own mobile data; in the other three, when connectivity issues were experienced, the lecturers shared their mobile internet with the students to ensure the completion of planned activities.

There was also evidence that internet connectivity issues influenced the lecturers' pedagogical practices. For instance, in her second observed lesson, Bina had to modify her planned activity, a video with an overview of the topic related to effective communication principles, as it could not be played due to internet issues. She decided then to provide an overview using PowerPoint slides. In her post-observation interview, she described this change in her planned activity as a “*plan B if the internet doesn't work*”. Likewise, in Sara's first observed lesson, although power failures disrupted internet connectivity, she did not have to change her planned activity as the power was restored quickly.

It appears that connectivity issues prevent the lecturers from planning lessons, which depend largely on mobile devices. Although Amir shared his mobile data in his observed lessons, when answering a question about mobile-data sharing, said explicitly, “*I cannot share mobile data in every class. I just share when I cannot manage without it*”. The intermittent internet connectivity

probably made Adam state that a computer lab could provide a better “*learning environment*” despite being a strong advocate of using mobile technology for EFL teaching and learning.

Confirming the lecturers’ claims about connectivity issues, the students also reported connectivity issues in the survey and three focus groups. In the survey, a question about the students’ preferred way of connectivity was asked to identify students’ perceptions about technological barriers. The survey data indicated that 64.63% of students used Wi-Fi at home, whereas only 22.56 % relied on university-provided Wi-Fi. Fifty per cent of students subscribed to mobile internet packages. Similarly, all students in the three focus groups agreed that the Wi-Fi in the university was a massive barrier to their EFL learning. For example, they mentioned that university-provided internet was “*better in the library and the main corridor*” (S2- U1) as there were “*fluctuations in Wi-Fi signals*” (S6-U2). Other students explained:

Sometimes, we do have Wi-Fi connectivity, and sometimes we don’t have. It depends on the location. For example, if we are in N-block, then we have access to student Wi-Fi. However, in the last semester, we had all our classes in another block, and Wi-Fi was not available there. (S3-U3)

There is only a symbol but no signal. It doesn’t work. Even if it does, you need to sit close to the [Wi-Fi] router. Internet speed is so slow that you cannot download anything. You can only surf the internet. That is a real issue in the classrooms and at many places on the campus. (S4-U1)

All participants in three focus groups identified affordability issues, confirming the lecturers’ claims about internet cost. For example, the students would usually “*switch off*” (S2-U2) their mobile data and used it “*during travelling*” (S6-U2). For them, it was “*very expensive to use mobile internet all the time*” (S5-U1). They just used it to search “*key points for assignments*” (S1-U3) and “*use a dictionary*” (S5-U3). Two of focus group participants had subscribed to “*unlimited mobile data packages*” (S3-U2), and were ready to “*share [mobile data] with other students in the class*” (S4-U1) if required.

In summary, disrupted connectivity seemed to influence the lecturers’ pedagogical practices as it prevented them from harnessing multiple affordances for in-class teaching. Although they incorporated mobile technology for EFL teaching, it was used primarily as an alternative to

books and desktop computers. Affordability appeared to be a major driver behind the lecturers' decision to make course-related resources available at their students' mobile devices. Their planned in-class learning activities requiring little or no use of connected mobile devices also seemed to be the direct consequence of affordability related to the universities' IT infrastructure and mobile internet cost.

6.3.2 Students' reluctance to use mobile technology for learning

Data analysis revealed that despite being adept in operating mobile devices, the students were either reluctant or not equally proficient in using them for EFL learning. In their interviews, four out of six lecturers explicitly stated that their students needed guidance for the use of mobile technology for EFL learning. For example, in her post-observation interview, answering a question about students' mobile-mediated learning practices, Huria emphatically answered: "*No doubt, they are technically very expert, but they didn't buy their mobile phones to learn English. So, I have to tell them how they can use their devices for EFL learning.*" Similarly, Amir stated in his initial interview:

The students' personal use of mobile technology is not a guarantee that they will automatically use it for learning. They seem to reckon that laptops are for study and mobiles are for entertainment. Therefore, I have to tell them how to use smart devices for language learning from scratch.

When asked if his students needed technical assistance while learning EFL using their mobile devices, Aly expressed a somewhat different opinion in his post-observation interview:

It's not about their technical expertise. We know that they are technically very expert, but the real problem is their attitude and perception about using mobile technology for learning. Let me give you an example. I know that my students use mobile internet to chat, listen to music, and watch live cricket, but they are never willing to use their mobile data for classroom activities.

Evidence provided by some of the observed lessons also confirmed the lecturers' assertion that students lacked technical proficiency and their disinterest in using mobile technology for EFL learning. For example, Amir provided a detailed overview of GC, OneNote, and Immersive Reader in his observed lessons and ensured that his students installed these apps on their mobile

devices. He spent approximately 17 of the 120 minutes in his two observed lessons on app installation, demonstrating his pedagogical decision to teach digital literacy to his students.

Amir, in his second observed lesson helped five students who had reported a problem during the Microsoft Immersive Reader installation, as well as some other students who sought assistance to submit their homework assignments through GC. Likewise, despite lecturers' perception that students' technological expertise was an affordance, Amir delivered a 20-minute lecture in his second observed lesson to demonstrate and explain how the students could customise the settings of Immersive Reader for listening practice.

The focus group participants expressed a range of opinions on their digital literacy training and non-educational use of mobile technology. For example, ten focus group participants were appreciative of their lecturers' pedagogical decision to dedicate class time to teaching digital literacy. For example, according to U3-S3, *"There are many students in our class who don't even know how to email. They may not be able to install apps on their own."* (U1-S1) Another student said, *"I can install apps, but it is helpful if our lecturer tells us how to use them for learning English."* (U3-S3).

In addition, despite their expertise in manipulating multiple apps and resources, five of the 17 focus group participants indicated that they needed their lecturers' assistance in selecting authentic resources. The students mentioned their lecturers' practices of sharing links, but they were not sure about websites where they could *"search some [EFL] books or related material"* (S1-U2). Another student stated, *"We are often confused as we cannot decide which source is better for learning English. Sometimes, a lot of time is wasted in searching for the relevant sources."* (S3-U2). Data suggested that the students also needed their lecturers' guidance to discern authentic EFL resources.

To conclude, it appears that despite students' technological expertise, they needed to hone their digital skills to use mobile technology for EFL learning. The lecturers' data presented above indicated that they deemed it necessary to teach digital literacy to enable their students to benefit optimally from mobile-enabled EFL activities. Furthermore, some students in the universities of Lahore came from remote, underprivileged areas of the country and did not own mobile devices, and so not be technically expert in installing educational, before getting admission to the

university (see Section 6.2.1.1). By dedicating class time to app installation, Amir, thus, attended to students' technical needs.

6.3.3 Distractions

The lecturers and their students, who participated in the study, reported various distractions caused by mobile phones in the classrooms, such as social media posts and text messages, which were affordances of mobile technology that inhibited their EFL learning.

In their initial interviews, four of six lecturers mentioned that, at times, the distractions caused by mobile technology made it a disadvantage rather than an advantage. For example, Huria considered a mobile device “*an individual gadget*”. She also believed that “*for in-class activities, there is minimal use of mobile technology*”. Adam also found it difficult “*to have a look at every student’s mobile screen to see whether or not she/he is doing the [assigned] task in the class of 50-60 students*”. For him, “*Mobile technology is not very helpful either*” to “*monitor students in a large-sized class*”. He believed: “*Even if an EFL teacher uses mobile technology, he/she has to design certain strategies*”. Bina expressed her concerns about distractions within mobile devices in these words:

It’s as simple as that! If some message appears on my cell phones, I will be interested in knowing who has called or texted. The same goes for the students. So, just for making them focused on the lesson, I tell them to keep their cell phones away for some time.

Likewise, Sara said, “When I am in the preparatory mode, mobile devices might be an interruption”. She further explained:

One obvious thing is that a mobile device has multiple channels. Many things are going on at the same time. The students can be looking at the book being read in the class or maybe chatting or enjoying a game or a video. So, you never know! It is quite possible when I am around, they can flip it, but the very next moment, they can open that again.

In the excerpt above, Sara alluded to her students’ practices of accessing EFL resources stored on their mobile devices. She indicated that it was possible that her students could pretend to access EFL resources during a lesson but might be simultaneously using social media or playing games. She also indicated that students were smart enough to change their mobile displays from games to books instantly and, due to their over-reliance on mobile devices, did not focus on the lecture.

Therefore, they would “*rush towards their teacher’s office and ask different questions about the topics which have been discussed in the class several times*”. She believed: “*They are physically present but mentally absent. Probably, they might be doing something else on their phones during the lesson*”. Due to such distractions, she asked her students to turn their mobile phones off so that they could “*focus on the board or the projector*”. Most of the lecturers appeared to be aware of the distractions caused by the mere presence of mobile devices, and, like Sara, would ask their students to turn off their mobile devices during certain activities.

The focus group participants also reported distractions caused by apps and resources within mobile devices. For example, S4-U3 said, “*I get distracted by Facebook and WhatsApp. There is always something interesting shared by friends.*” Describing distractions caused by social media, another student said, “*If I am to search the meaning of a word, I will get my mobile phone, but before searching this word, I will check my Facebook and WhatsApp.*” (S5- U2). Another student admitted that, “*I read a lot using my mobile phone, but I am distracted by social media whenever I am reading at my mobile phone.*” (U2-S2). Mobile-enabled social media platforms appeared to be a significant distraction to students’ EFL learning.

Web-based information overload was another distraction delimiting students’ EFL learning. Six of the 17 focus group participants mentioned having been overwhelmed by web-based resources. For example, in describing distractions caused by internet browsing, S1-U3 said, “*If we search anything on the internet..., it shows so much information that I get confused and distracted*”. S1-U2 mentioned “*an issue related to the relevant links. For example, we don’t know the websites where we can search for EFL books or related material*”. S3-U3 expressed a similar opinion as,

It consumes a lot of my time determining the importance and sequence of the content provided by different websites. Sometimes, I feel lost and confused among so many resources and don’t know which one to trust to obtain authentic information.

The distractions related to web-based resources signal the need for explicit discussions among the lecturers and their students about the strategies to critically assess resources. The data also suggest that the lecturers needed to negotiate with their students to determine which digital literacy skills should be taught.

The participants' claims about distractions were confirmed in the observed lessons as the lecturers employed various strategies to minimise the distractions caused by mobile devices. In six of the 12 observed lessons, the students were given explicit instructions to switch off their mobile devices, or place them upside down for a few minutes. For example, Adam advised his students to put their phones upside down when playing video clips. Sara, similarly, advised her students to switch off and place their phones in the bags or pockets in her observed lessons' introductory sessions. Bina also advised her students to turn off their mobile phones in both her observed lessons and when introducing the lesson topics. From the observations of the lessons, it appeared the lecturers had devised their ways to reduce distractions caused by mobile technology and were highly dependent on the content stored at students' mobile devices.

In summary, mobile social media distractions seemed challenging for the participants making it difficult to benefit fully from mobile technology affordances. The student-participants' data also suggested that they needed their lecturers' support and guidance to cope with web-based information overload. The data indicated the need for negotiation among the students and their lecturers during all stages of lesson planning to help the lecturers make informed decisions about teaching digital literacy.

6.3.4 Time constraints

Apart from the distractions mentioned above, the lecturers reported that a shortage of time was another significant barrier to incorporating mobile technology for EFL teaching. In their initial interviews, four lecturers indicated that they could not avail themselves of the benefits of mobility for EFL teaching due to time constraints. Time constraints were the major reasons for their absence from social media groups which were set up for the EFL courses as Huria stated: *“Facebook is a socialising kind of place where I socialise with my family and friends, and I keep my students away from it because I can't manage to cater to so many students at Facebook.”* She explained that she was a group member of WhatsApp but *“quit after a few days”* because it was difficult for her to *“answer so many students' questions”* because of lack of time. Likewise, although Adam was willing to communicate through email, he did not communicate on social media platforms due to time constraints. He said:

Due to the scarcity of time, I cannot chat with my students. I cannot manage to answer all the questions asked by my students [at mobile-enabled social media platforms]. If I join

these groups, it becomes understood for me to address their concerns. I prefer not to join the groups.

It appears that, like other lecturer-participants, insufficient time restricted Adam in maintaining a smooth and seamless flow of interactions with their students inside and outside the classes using mobile technology.

The lecturers' decision to impose certain limits regarding their mobile mediated EFL content dissemination and communication through voice calls or text messages was also indicative of time constraints. Their initial interviews indicated that they communicated with their students through the Class Representatives (CRs), who had the lecturers' contact numbers. For example, Sara allowed the CR to communicate on behalf of other students. She said, *"My contact number is not available to everyone, but CR can call me if something needs to be discussed on an urgent basis. For example, if there are some sudden holidays or a change in class timetable."* Bina had a slightly different practice of dealing with time constraints. She explained, *"You know students have cell phones in their hands, and they can call to discuss even non-issues. I tell my students that I am available on text but attending calls is not feasible for me."* Bina's strategy indicated that, as she understood students' practices about using mobile devices, she encouraged them to communicate through text messages.

In sum, the lecturers' decision to avoid communication on social media platforms is indicative of their workload due to large classes. To cater to their students' needs, however, they took advantage of mobile technology's affordances (e.g., emails, text messages), which did not require an immediate response.

In this section (6.3) the data about barriers to integrating mobile technology in EFL teaching, as perceived by the participants, have been presented. Evidence suggested that these barriers had a significant impact on the lecturers' pedagogical decisions, because they were constrained from making optimal use of mobile technology's affordances for their pedagogical practices. This section also presented data about the strategies devised by the lecturers to overcome or minimise the impact of barriers, which indicating their awareness of the positive and negative effects of mobile technology within Pakistani universities' learning ecosystem.

6.4 Concluding remarks

This chapter partially answers the overarching research question that seeks to examine mobile technology's role in Pakistani EFL lecturers' pedagogical decisions and practices to enable MALL. Data have provided evidence as to which technological features and characteristics were perceived as affordances by the lecturer-participants, establishing, thus, the relationship between the pedagogical and technological dimensions. Data were also presented about the student-participants' perceived technological affordances. Within the learning ecosystem of Pakistani universities, a wide range of technological affordances and constraints have been identified, as illustrated in Figure 6.1.

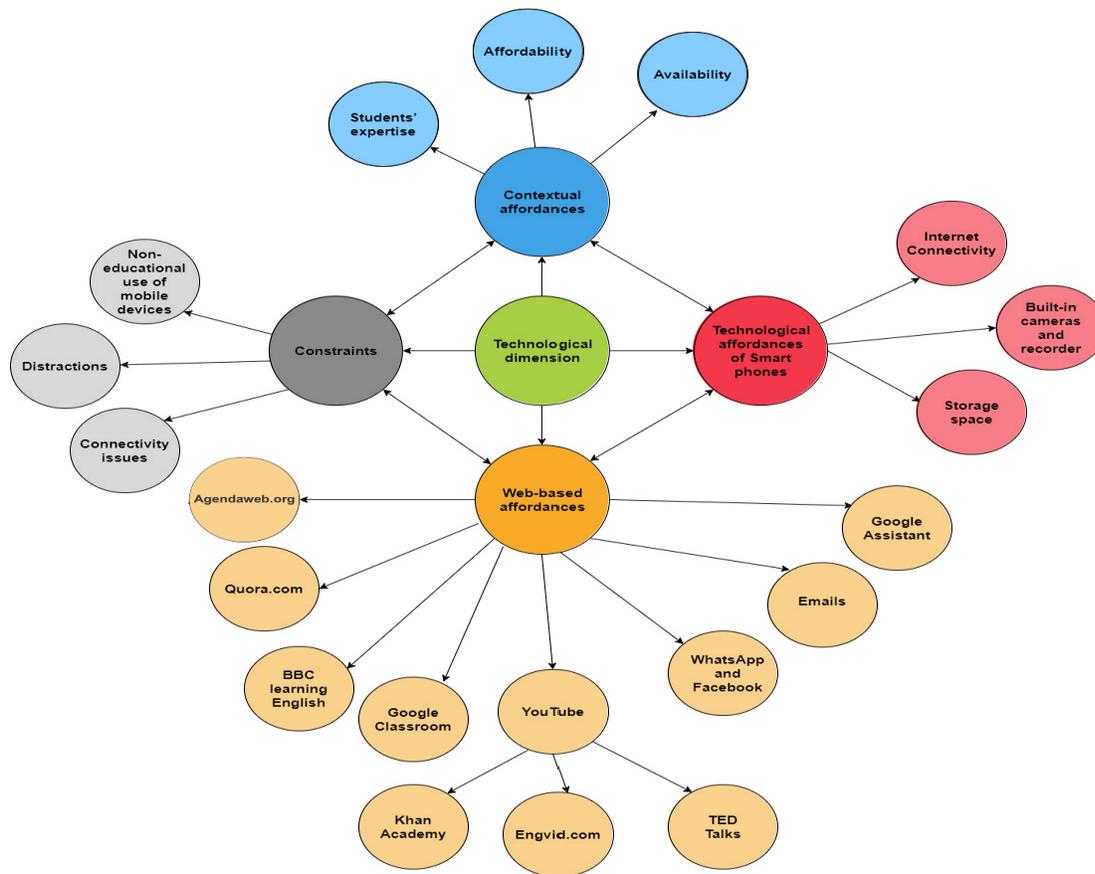


Figure 6.1. The technological dimension of MALL ecosystem in Pakistani universities

As shown in Figure 6.1, the analysis of the technological dimension identified two categories of technological affordances: contextual and technological. The contextual affordances indicated that the lecturers' pedagogical decisions and practices were determined by local dynamics, and that they perceived affordability, ubiquitous availability, and learners' technological expertise as

mobile technology affordances. As illustrated in Figure 6.1, a range of technological affordances also suggests that pedagogical decisions and practices were influenced by multiple elements within the specific ecosystem of each group of students and/or classroom.

The technological constraints shown in Figure 6.1 indicated the lecturers' awareness of constraints within a learning ecosystem that restrict participants from taking linguistic actions. In addition, the lecturers' pedagogical practices of dealing with the technological constraints, such as providing internet connectivity through portable routers and sharing mobile data, alluded to their adoption of pragmatic solutions within the MALL ecosystem of Pakistani universities.

While this chapter has presented data about the technological dimension by drawing connections between the technological and the pedagogical dimensions, the next chapter establishes connections between these two and temporal, physical, and transactional dimensions of mobile technology within Pakistani universities' MALL ecosystem. Therefore, both the pedagogical and technological dimensions relate to and inform the presentation of the findings in the next chapter to answer the remaining aspects of the overarching research question of this research.

Chapter 7. Findings

The Transactional, Temporal and Physical Dimensions

7.1 Introduction

An overview of the pedagogical dimension was presented in Chapter Five. Chapter Six identified the affordances and constraints of mobile technology in the MALL ecosystem of Pakistani universities. The current chapter builds on the findings presented in the previous two chapters and presents findings related to the transactional, temporal and physical dimensions of the MALL ecosystem in Pakistani universities. As described in the second chapter of this thesis, five dimensions have been described as corresponding affordances (see Section 2.5 for details).

The definition of affordances providing the framework of this study refers to the affordances that exist within mobile technology's technical features and those that emerge through mobile-mediated contextual interactions (see Section 2.2.2), which may lead to or inhibit linguistic actions. The operational definition of affordances and the affordances associated with the temporal, physical, and transactional dimensions inform the presentation of findings in this chapter. This chapter primarily presents findings related to mobile technology's role in the lecturers' pedagogical decisions and practices to teach core EFL skills and provide personalised assistance to the learners.

Figure 7.1 illustrates the significant findings related to the temporal dimension. The temporal dimension corresponds to the affordances of time and length of learning activities. Temporal affordances may emerge during short and unplanned periods that may be utilised for learning, such as driving, walking and travelling in the buses (see Figure 7.1).

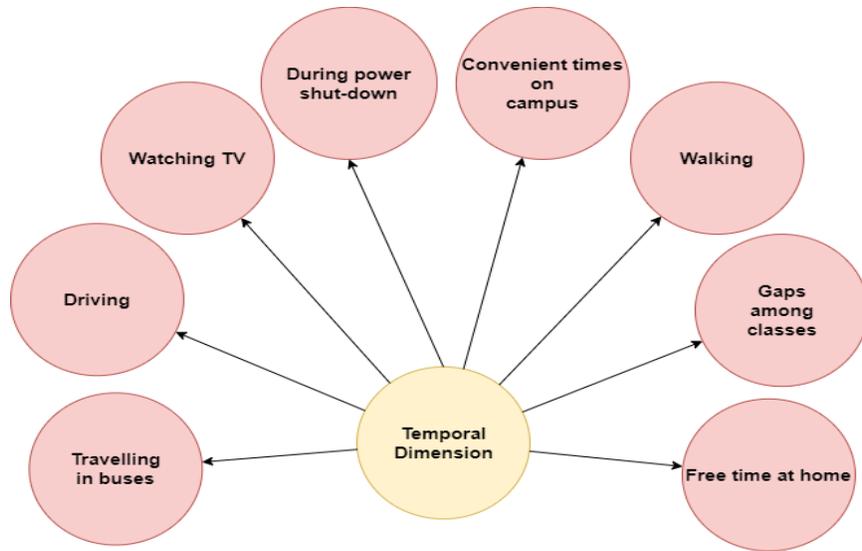


Figure 7.1. The temporal dimension

Temporal affordances also include extended and planned periods used for learning, such as convenient times at home or on campus for which extended learning activity has been planned. The current study found various informal physical spaces (e.g., cafes, campus grounds, markets, restaurants) used for EFL teaching and learning in the Pakistani universities' MALL ecosystem (see Figure 7.1).

Temporal affordances overlap with physical affordances. Although the physical dimension encompasses the affordances about locations or places, it also refers to the times spent at these locations. For example, in Figure 7.2, classrooms and libraries refer to the formal places of learning, but at the same time, they indicate extended and planned times used for learning.

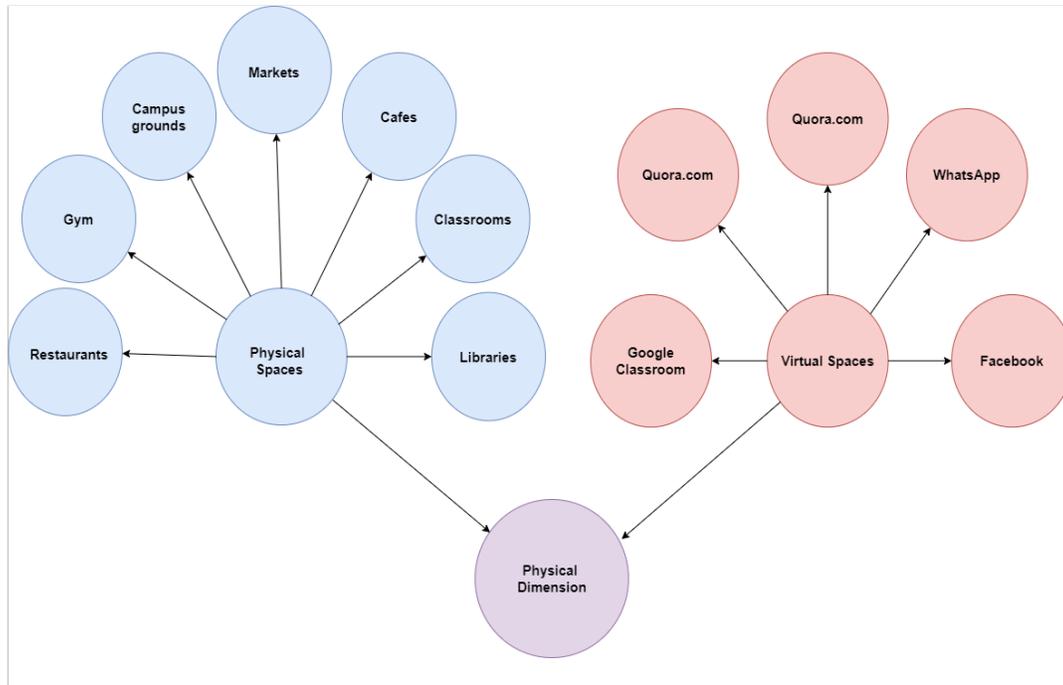


Figure 7.2. The physical dimension

As illustrated in figure 7.2, the physical dimension also includes mobile-accessible virtual places (e.g., WhatsApp, Facebook, Quora.com) used for learning by the student-participants.

In the current study, the transactional dimension refers to the affordances, which facilitate mobile-mediated interactions with content, contexts and people for EFL teaching and learning. The transactional affordances, as found in the current study, are illustrated in Figure 7.3. The transactional affordances also intersect with those of other dimensions. For example, transactions with contexts in Figure 7.3 (e.g., local festival, markets) also represent physical affordances.

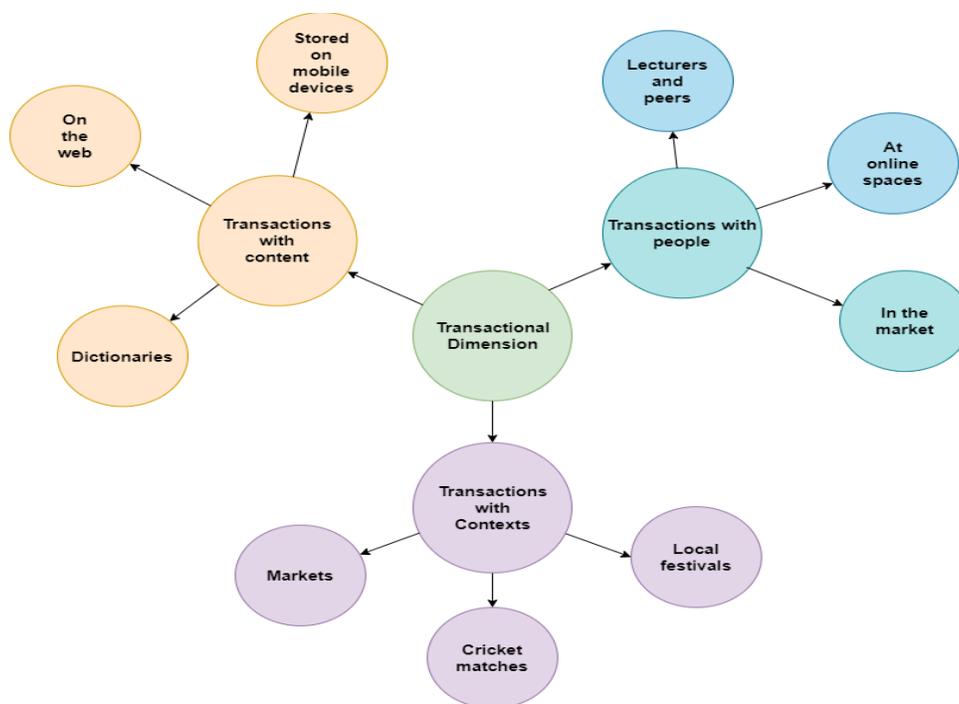


Figure 7.3. The transactional dimension

Findings related to core skills and personalised assistance are presented in the chapter because data revealed that the lecturers utilised mobile technology affordances to facilitate students' interactions with content, contexts and people in and beyond the classrooms. Mobile-facilitated interactions were pivotal in enabling MALL in the ecosystem of Pakistani universities. Hence, the presentation of the findings related to core skills and personalised assistance reflects the highly interconnected and complex nature of these three dimensions and establishes a strong link with the pedagogical and technological dimensions.

Following the organisation of the previous chapter, this chapter is an integrated presentation of all the data-sets: the lecturers' initial interviews, lesson observations, their post-observation interviews, the students' survey, focus groups and the observational data from online platforms (e.g., WhatsApp, Facebook and GC). The study examined how the lecturers planned mobile-mediated EFL activities within the MALL ecosystem in Pakistani universities, taking into account students' learning practices with mobile devices and the impact of their contexts. Therefore, the lecturers' and students' data from all data sets are presented in an integrated way throughout the chapter, reflecting the interdependent relationships of all actors within an ecosystem, as in the previous chapter.

This chapter is organised as follows: the first section (7.1) introduces the chapter and establishes its connection with the previous two chapters; Section 7.2, is further divided into five sub-sections to present findings related to the use of mobile dictionaries and other core EFL skills; Section 7.3 reports lecturers' use of mobile technology affordances for providing personalised assistance; data related to the lecturers' redefined role are presented in Section 7.4, and the chapter is concluded in Section 7.5. Each section provides evidence for how the lecturers pedagogically harnessed mobile technology affordances for teaching core EFL skills and assisting their students synchronising all five dimensions throughout the chapter.

7.2 The transactional, physical and temporal affordances of mobile technology for EFL teaching

This section presents the study's key findings by providing evidence for how the lecturers utilised mobile technology to optimise transactional, physical and temporal affordances to teach core EFL skills and assist their students.

7.2.1 Mobile-accessible electronic dictionaries

The use of mobile dictionaries by EFL learners was prevalent practice in the three participating universities. All six lecturers mentioned how they encouraged their students to use dictionaries accessible through mobile devices. For example, Huria provided her students with a list of electronic dictionaries and advised them *“to install at least one dictionary on their mobile phones”*. Amir also described his practice of giving an assignment to search and install dictionaries because he wanted to *“encourage students to use smart devices for EFL learning”*. He further explained that his students could benefit from mobile dictionaries to search for *“correct prepositions... pronunciation and meanings of different words”*. Sara, in her initial interview, stated, *“I have suggested them to download the app of www.thefreedictionary.com where they can find both American and British versions of pronunciation. There are very interesting exercises for learning vocabulary, providing an instant score.”* The use of mobile dictionaries seemed to be an integral part of the participant-lecturers' pedagogical practices.

The use of mobile dictionaries was observed in two of 12 observed lessons. In both Sara's observed lessons, students consulted their mobile dictionaries to add new words to a vocabulary list for the class at a shared Google Sheet. In her post-observation interview, answering a question about in-class vocabulary building, Sara explained that, *“We aim to add five new words*

in every class. The first few minutes in my classes are focused on providing students with spoken English opportunities, but students enjoy this add-on activity of vocabulary building". Sara appeared to make students notice linguistic affordances of mobile dictionaries by using them in class.

The student-participants also reported the use of mobile technology to access dictionaries. In the survey, 34.15 % of students reported that they accessed dictionaries and other online translation tools through their mobile devices. All 17 participants in the focus groups concurred on the use of mobile dictionaries. For example, according to S2-U1, the lecturers advised them *"to install any dictionary of our choice on our mobile devices"*, which they used to check *"pronunciation of difficult words"*. Another student (S3-U2) said, *"I use my mobile device in order to look up meanings and synonyms of difficult words in a dictionary or a thesaurus."* S5-U3 frequently accessed his mobile dictionary because, as Urdu was the medium of instruction in his school, he found it *"difficult to understand some words and expressions of English language"*. These EFL learners appeared to benefit from mobile-enabled dictionaries for EFL learning during the lessons and while learning autonomously.

Overall, the lecturers' pedagogical decision to make students install dictionary apps on their mobile devices indicated their awareness of the importance for EFL learners of consulting dictionaries, and the benefits of flexible access to dictionaries. Although the use of mobile dictionaries was not widely used in the observed pedagogical practices, the students' data provided evidence that the lecturers' pedagogical decision regarding mobile dictionaries facilitated their interactions with content (i.e. English vocabulary) both in and outside their classrooms.

In the three Pakistani universities, the lecturers' focus was on enhancing their students' core English language skills. The lecturer-participants did not mention grammar teaching nor was it observed during observation of lessons. Data analysis suggested two reasons for the lack of focus on grammar teaching. First, as the medium of instruction in Pakistani universities is English, students are expected to have an intermediate proficiency level in the English language before admission to their undergraduate degrees. Second, most students develop a good command of English grammar in schools as they are taught through the Grammar-Translation method. Therefore, the focus of EFL teaching at the university level is on enhancing students'

communicative competence to help them compete in the global job market (see Chapter 5 for details).

The following sub-sections present the major findings related to mobile technology's role in enhancing Pakistani university students' core English language skills. Evidence is presented related to the lecturers' pedagogical decisions for incorporating the temporal and physical affordances to facilitate students' mobile-mediated interactions with content and contexts for EFL learning. Data related to the integration of informal learning into formal classroom learning is also presented in Sub-section 7.2.3.2.

7.2.2 Listening skills

This study found evidence of the lecturers' pedagogical use of mobile technology to enhance their students' listening skills in formal lessons and facilitate their listening practice across times and spaces. All six lecturers in their initial interviews claimed that flexible access to EFL content with mobile technology, both in and outside the classrooms, played a pivotal role in enhancing students' listening skills. Explaining mobile technology use in her pedagogical practices for enhancing students' listening skills in English, Sara said:

I provide them with listening clips and other EFL resources to store on their mobile devices. When I teach listening comprehension, I let them [students] listen to listening clips in the class using their mobile devices. These clips are mostly a conversation between two people (e.g., a lady and the postman).

Adam also regarded mobile technology as helpful because his students could access audio clips stored on their mobile devices to “*listen to the same clip repeatedly to comprehend the accent*” because “*listening clips are usually from the native speakers*”. Adam, therefore, claimed that repeated exposure to audio content, on mobile devices, was a key to enhancing his students' listening comprehension.

Likewise, Amir and Sara also mentioned how built-in storage capacity of mobile devices facilitated flexible access to audio-visual content for his students. Describing in-class listening activities, Amir said, “*I assign listening tasks in my EFL classes, and students usually use their mobile devices to accomplish the tasks.*” In response to a question about the nature of listening tasks, he replied, “*I believe that introducing lesson topics through videos followed by questions*

is a good way of making students focus on the topic.” Huria also provided details about her in-class listening activities accomplished using mobile technology. She said:

Since I started using mobile technology in my phonetics class, I have found audio-video clips highly effective for teaching vowels. During listening exercises in my phonetics class, I want them to listen to cardinal vowels and short vowels during class time.

Mobile technology seemed to provide significant assistance for the lecturers carrying out in-class listening activities without well-equipped computer labs in the universities.

Furthermore, two of six lecturers also reported the use of mobile technology for teaching listening skills using clips taken from the Listening Module of IELTS. For example, in response to a question on whether mobile technology helped teach listening skills, Bina answered emphatically:

Yes, this [mobile] technology is very handy when I teach listening comprehension. I normally take listening clips used in IELTS tests. In the past, when I used to teach listening, I had to arrange speakers, but this was always problematic. My lecture had been a failure for a year or two, but now I always send them listening clips beforehand.

She further elaborated that her pedagogical decision of making content available on students’ mobile devices made her feel more comfortable with her in-class teaching. She said, “Now I know that they [students] can practise listening using their mobile phones. I don’t have to worry about speakers or computers in the classroom. So, my classroom teaching is hassle-free.”

Mobile technology appeared to be used as an alternative to computers in the classroom.

Likewise, Sara drew on listening exercises from IELTS books and another website by BBC for learning English. She further added, “I also suggest to them certain websites where they can do their listening practice. I also suggest other things (e.g., English movies/songs) which they can practise listening while they are on the move.” Huria also assumed that her students used mobile devices for out-of-class listening activities assigned by her. She said, “I share YouTube links ... and they practise listening independently on their mobile phones.” As Sara and Huria were teaching courses related to English comprehension and communication to students of the first semester who had learnt English through the GTM, they considered mobile technology beneficial; as Sara put it: “Mobile technology is useful in providing them [students] an extended

exposure to EFL content to improve their overall listening comprehension". Listening exercises, completed at informal times and spaces, also provided an opportunity for spoken English practice in Sara's pedagogical practices, as discussed later in the current chapter.

Moreover, two of six lecturers reported integrating YouTube videos to enhance their students' listening skills through mobile devices. For example, Aly integrated YouTube videos "*related to the topic of the lesson*" because he believed that "*YouTube videos improve their [students'] listening skills and give them more information about the topic.*" Although Aly's focus was not particularly on teaching EFL listening skills, he regarded his pedagogical decision to integrate YouTube videos to teach intercultural communication as beneficial for his students to "*understand various accents of the English language*". The lecturers' integration of YouTube videos also indicated that they were cognisant of the students' preference to watch video clips compared to audio clips.

Two of six lecturers also incorporated Google Assistant to enhance their students' listening and speaking skills. Adam stated in his initial interview: "*For my students, it's fun to communicate with Google Assistant. I usually assign a topic to get information through Google Assistant in their own time. In the class, they share interesting stories about their communication with Google Assistant*". He further explained: "*It's a useful tool which is easy to access and use.*" Describing the benefits of Google Assistant, Sara stated: "*It's a tool full of potential for EFL learning. I decided to incorporate it in my teaching when my students shared in the last lesson how they asked all kinds of questions from Google Assistant*". The lecturers' pedagogical decisions to incorporate Google Assistant appeared to be informed by their students' mobile-mediated learning practices.

In nine out of 12 observed lessons, the lecturers used mobile technology and desktop/laptop computers, five of which were mobile technology, to enhance students' listening skills. For example, in one of Amir's observed lessons, after he had introduced Microsoft Immersive Reader, and the students installed it, they used it to practise listening to a self-written text (see Section 5.2.1).

The listening activity in Amir's lesson demonstrates his effort to encourage his students' use of mobile technology. In his post-observation interview, Amir provided a rationale for his use of mobile technology for listening activities. He said, "*They [students] usually enjoy listening using*

Immersive Reader because it gives them the liberty of customising [font colour, size and style] listening activities according to their own choices.” He further explained the benefits of Microsoft Immersive Reader, *“It is designed for language learning. They can listen to almost anything. They can import files to OneNote and listen to them through Immersive Reader.”* Amir seemed to believe that listening practice using Immersive Reader in the class might encourage his students to use it for autonomous listening practice. His pedagogical decision to conduct a listening activity using Immersive Reader also appeared to focus on equipping his students, pre-service EFL teachers, with the skills to use various tools independently.

Other lecturers also incorporated mobile technology for EFL listening activities in the observed lessons. For example, in Sara’s first observed lesson, the students listened to two clips taken from the website, bbclearningenglish.com. The students accessed this website through an app already installed on their mobile devices. Bina’s students also drew on mobile technology to listen to a TEDx talk recorded by themselves at a local event as their homework assignment.

Similarly, Huria’s students listened to a YouTube clip about academic vocabulary in the observed lesson. She also assigned listening to YouTube clips as an out-of-class activity. Huria’s pedagogical decision to employ mobile technology for listening activities, instead of providing a list of academic words in the printed or soft form, indicates the contextual constraints such as the absence of computers in the classroom, time and cost involved in getting notes photocopied. The lecturers appeared to provide students with more opportunities for L2 listening, because they had been previously taught EFL through the GTM, by incorporating a video to teach academic vocabulary and enhance students’ listening skills.

Adam and Aly’s pedagogical decision to incorporate videos for teaching about academic vocabulary, writing business emails, giving presentations, overcoming cultural barriers, and non-verbal communication appeared to be driven by students’ previous EFL learning background with the GTM. Adam and Aly did not draw on students’ mobile devices to incorporate the videos but used video clips through laptop/desktop computers to enhance their students’ listening comprehension and give more information about the lesson topic. The lecturers’ decision not to use mobile technology for these listening activities indicated that they decided to use resources aligned with particular activities’ objectives. For example, the lecturers may have decided not to incorporate mobile technology because the three video clips did not explicitly focus on

enhancing their students' listening skills. Instead, as Adam explained in his post-observation interview, *"I often use videos to recapitulate the whole lesson, which could also be an opportunity for listening practice."* That is, mobile technology was not considered indispensable for all listening activities.

Data collected from students' survey and focus groups confirmed the lecturers' descriptions of using mobile technology to teach listening skills. In the survey, 38.27 % of students reported using mobile devices to improve their listening skills and 57.67 % of students reported the use of YouTube to obtain additional information about lesson topics. All participants in three focus groups confirmed the lecturers' reported and observational data regarding the incorporation of mobile technology for listening activities. For example, all six participants in the second focus group agreed with S3-U2, who claimed that the lecturer provided the class with *"some clips taken from YouTube or any other online platform. It's easy to obtain information through listening"*. The students also described how they enhanced their listening skills in other times and spaces. For example, S1-U2 said: *"I also listened to YouTube clips to improve my listening skills in the English language when I am in the gym"*. All six participants in the first focus group agreed with S2-U1 when he said, *"We literally listen to everything at our mobile devices"*. Another student (S2-U3) in the third focus group explained the benefits of YouTube videos by saying:

At the beginning of this semester, there were certain things that I couldn't understand in our English class. Therefore, on reaching home when I got free, I used to search for YouTube videos about the lesson topics on my mobile phone. Video tutorials have been very helpful. YouTube played a significant role in my learning.

Students in the second and third focus group mentioned other videos accessed through YouTube (e.g., TED Talks and Khan Academy). For example, S5-U2 mentioned, *"We were guided by our lecturer for listening to a TED talk"*. S1-U2 endorsed his comments by adding, *"TED talks are very informative. Due to TED talks, I now can understand various accents of English"*, while another student (S3-U2) stated, *"When I go for a walk in the morning, I finish all my listening tasks assigned by our lecturer."* Other participants described how they drew on Khan Academy to understand grammar rules while studying independently because they could access videos through their mobile devices. As S1-U2 said:

Video tutorials at Khan Academy are beneficial for revising basic grammar rules. Although grammar is not a part of our EFL course as such, I enjoy watching videos when I am free to refresh my knowledge of tricky English grammar rules.

It appears that YouTube was the students' preferred channel to enhance their listening skills across multiple times and spaces, because of their interest in the video content.

All five participants in the third focus group reported that they used Google Assistant in their everyday lives. All students concurred when S2-U3 said. *"When we are sitting together in the café and waiting for our next class, we enjoy talking to Google Assistant in English."* Another student (S1-U3) added, *"I mostly ask Google to tell me weather predictions for the day"*, while S3-U3 said:

When I am driving, I ask Google Assistant to tell me about a nearby restaurant. Sometimes, when I am getting bored, I ask Google Assistant to tell me jokes though it tells very boring jokes, which rarely makes me laugh. However, it kills my time, and I practise listening and speaking in the English language.

When asked if their teacher prompted them to communicate with Google Assistant, S5-U3 instantly replied, *"Our lecturer mentioned it for the first time in today's lecture. Most of our classmates already use it."* The students appeared to enjoy communicating in the English language with Google Assistant about their favourite topics.

Data presented in this section suggest that the lecturer's pedagogical decisions were informed by their students' learning needs and their specific learning ecosystems' affordances and constraints. The lecturers' decisions to incorporate video content indicated that because of their awareness of students' language learning background through the GTM, they provided them with more opportunities to enhance their listening skills. The lecturers' pedagogical decisions and practices also reflected their students' interest in video content, as evident in students' data. The lecturers' incorporation of various mobile accessible resources enabled students to choose time, space and content for listening activities according to their personal needs.

7.2.3 Speaking skills

This section presents data about the lecturers' pedagogical decision and practices regarding the use of mobile technology for enhancing their students' speaking skills in English. It also presents

data about the lecturers' pedagogical decisions to situate EFL activities in authentic contexts as well as integrating them into formal lessons.

This study found that the lecturer-participants incorporated mobile technology to enhance their students' speaking English skills in multiple contexts. When asked about mobile technology's role in teaching EFL speaking skills, all six lecturers reported how web-browsing with mobile devices helped improve students' speaking skills. In their initial interviews, Aly, Huria and Sara mentioned the development of students' speaking skills through reading on the web. For example, according to Aly, *"The simple activity of browsing content related to the given questions provides more information and builds students' confidence. As a result, they actively participate in class discussions which improve their spoken English."* Huria also stated in her initial interview that mobile technology could give *"a prompt in the class"* to teach speaking skills. Explaining the concept of prompt, she said, *"Students can take hints by browsing the web when they are short of ideas."* Likewise, Sara's students also capitalised on web-browsing during multiple activities such as *"role-play sessions, extempore speeches, discussions and competitions"* to enhancing students' speaking skills. Sara also drew on the topics related to mobile technology to initiate discussions about *"smartphones and smartwatches"*. She said:

It's an ice-breaking technique. I ask them about their activities on WhatsApp or Facebook. Sometimes, I try to pretend that I don't know anything about a new app. Then, you can see their excitement. They tell about everything, including its benefits and the strategy of using it.

It appears that mobile technology indirectly played a role in enhancing students' speaking skills by providing them ideas and encouraging them to participate in class discussion.

As well as online reading on the web with mobiles, listening activities with mobiles were considered a way of initiating in-class discussion. For instance, Adam considered mobile-enabled listening activities helpful in enhancing students' speaking skills. In his initial interview, he commented that, *"Mobile technology helps in teaching speaking skills through listening activities. The more they listen, the better they speak because speaking requires listening."* Aly also described that he incorporated YouTube clips about students' familiar content to provide spoken English practice in the classroom, saying:

Last week, I gave my students a topic about the uses and abuses of language. I shared a related [YouTube] video of a local religious cleric who was playing on words to serve his own purpose. This video was a good example of how people in different cultures could use or abuse a language.

When asked about mobile technology's role in this activity, he explained that mobile technology enabled him *“to share this video in the class. My students watched it on their mobile devices. Then, we had a discussion.”* These activities suggest that the lecturers considered reading and listening activities, made possible with mobiles, were beneficial for enhancing students' speaking skills indirectly by providing prompts or ideas for speaking.

In eight of 12 observed lessons, speaking activities drew on reading or listening content made available through mobile technology. For instance, in both Aly's observed lessons, speaking activities were based on students' web-browsing. In one of his observed lessons, Aly's students browsed the links to a local Pakistani cricket tournament, which he shared through WhatsApp; this was followed by an enthusiastic discussion about cricket, the most popular game in Pakistan (see Section 5.2.3 for details). Similarly, a vibrant spoken English activity, based on a video clip, was observed in Sara's second observed lesson when the students discussed similarities between an American president and Pakistani politicians (see Section 5.2.6). Listening and reading resources accessible through mobile technology were used to provide speaking opportunities inside the classroom.

7.2.3.1 *EFL Spoken activities in authentic contexts*

The lecturers pedagogically exploited mobile technology affordances to encourage students' interactions at various times and contexts to provide spoken English practice.

Four of the six participating lecturers reported using the basic built-in features of mobile technology (e.g., video recorders) to situate EFL activities in authentic contexts to enhance students' speaking skills. For example, in her initial interview, Bina mentioned her decision to situate an out-of-class video-recording group assignment *“in real-life contexts that are well-known to students to ask questions about any topic from anyone”*. When asked about the objective of the assignment, she said:

The purpose of this assignment was to encourage students to practise their speaking skills in English and learn the art of asking sensible questions using appropriate words. I want my students to gain confidence by speaking English in real-time, not just inside the classroom.

She also gave as a rationale for using a mobile video recorder that, “*They [students] enjoy making videos of everything they do. They tell me that these assignments are fun for them.*”

Bina’s pedagogical decision of situating EFL activities in real-life situations was informed by students’ practices of using mobile technology in their lives.

Likewise, Sara also reported in her initial interview that she incorporated mobile video-recorder for situating group EFL activities in authentic contexts to enhance students’ speaking skills, by saying:

I gave them an activity to make a video clip around 5-7 minutes long about any social-welfare topic of their choice. They came up with exciting topics like drug abuse and ‘Peer Babas’ (illiterate people who befool others pretending to be religious scholars) etc. I made it mandatory that the medium of communication should be English irrespective of the topic.

Sara also mentioned another group assignment in which her students “recorded commentary on the university matches”. Providing more details of this video recording, she said, “The students’ reaction was very interesting. They mimicked real commentators’ native accents, and they assumed that they could also be commentators. They were actually pretending to be real commentators by saying the words like ‘over to you’.” Sara’s pedagogical decision also appeared to be informed by her students’ interests in particular topics.

Similarly, Adam also reported that he incorporated mobile technology to provide his students with more speaking English opportunities in authentic contexts. Describing his pedagogical practices of situating EFL activities related to communication in the workplace in students’ familiar contexts, Adam said:

Sometimes, I ask them to create a situation where people of different cultures are sitting together. This is a group activity where they have to sit together at some place like a garden or university cafeteria and create a situation [related to the work environment].

They make a videorecording of their conversation, and then they submit it to me so that I may evaluate to what extent they were successful.

Adam appeared to promote autonomy and collaboration through group assignments beyond the classroom by allowing students to choose their preferred times and places for spoken English practice video recordings.

Overall, in all the situated activities described in this section, the lecturers decided to use mobile technology to facilitate students' transactions or interactions with people and contexts at informal spaces and times. Therefore, these activities are an example of how each of the five dimensions operated in Pakistani universities' MALL ecosystem.

7.2.3.2 *Blending of formal and informal learning*

Evidence was also found that mobile technology affordances enabled the lecturers to integrate formal and informal learning. The lecturers used the advantages of mobile cameras and video recorders to situate EFL activities in various authentic contexts and then connected those learning activities to formal lessons.

Four of the lecturers who situated EFL activities in informal contexts reported their pedagogical decisions of linking formal and informal learning by providing in-class feedback. For example, Sara stated in her initial interview that her students used mobile technology to “*record their own voice ..., then we can correct them by watching/listening to those clips*”. Describing her decision of asking students to submit videos as assignments, she said, “*I give feedback on these recordings. When I play some of them in the class to give feedback, they become beneficial for all the students who are present.*” Adam reported similar pedagogical practice of providing feedback on students' video recordings.

Aly also described, in his initial interview, how mobile technology was beneficial for enriching his pedagogical practices. As he explained:

You know, within Pakistan, people follow different regional cultures. When I teach Intercultural Communication, I ask students to make and share pictures or videos of their regional festivals. Then, during the lesson, I ask students to interpret the pictures according to their cultures. Mobile cameras and video recorders bring real-life scenes to the classroom.

Aly's decision to enrich his pedagogical practices with student-created artefacts demonstrated that he promoted autonomous learning by encouraging students to contribute to designing their learning experiences.

The observed lessons confirmed that mobile technology enabled the lecturers to situate EFL teaching in multiple real-life contexts. Bina's practice of integrating informal learning into a formal lesson, described earlier (see Sections 5.2.4 and 7.2.2) and later in this thesis (7.2.5), shows that mobile technology enabled Bina's students to not only record Pakistani businessman's talk at a TEDx event held in the campus about communication for business, but also write about it after listening to it in the class.

Another example of situating EFL activities to enhance students' speaking skills in real-life contexts, and then blending informal learning into formal lessons, was observed in Bina's first observed lesson. She played a video recorded outside the classroom about three students' argument with a restaurant manager (see Section 5.2.4 for details). Bina's pedagogical practice of providing in-class feedback and inviting students' comments linked formal and informal learning.

Aly's second observed lesson also provided evidence of integrating student-created artefacts in the form of images capturing different scenes. Aly displayed the pictures, and students belonging to various parts of the country interpreted the same pictures differently. This activity provided opportunities for spoken English practice while connecting authentic scenes captured in authentic contexts with classroom learning.

Evidence of blending formal and informal learning was also observed in Adam's second observed lesson when he played one of the video assignments about a mock business meeting, recorded by a group of students beyond the classroom (see Section 5.2.5). The video generated an opportunity for vibrant spoken English as students enthusiastically commented on the video's content. The lecturer's pedagogical decision to play the recorded assignment indicated that he wanted to provide his students with opportunities to speak English outside and inside the class.

In contrast to the lecturer's data reporting mobile technology's critical role in enhancing students' speaking skills, the students did not consider mobile technology beneficial in enhancing their English-speaking skills. In the survey, although 21.60 % of students reported using mobile

devices for practising their speaking skills in English, most of the participants in the three focus groups did not report a significant role of mobile technology in polishing their speaking skills in English. For instance, 15 of 17 students in three focus groups did not believe that “*mobile technology has any role in improving speaking skills*” (S1-U2). The students did not appear to perceive mobile technology's indirect role (e.g., through reading and listening to EFL content) helped them improve their spoken English.

Two of 17 students, however, seemed to perceive mobile technology's role in speaking skills in a slightly differently. For example, in the second focus group, S4-U2 acknowledged, “*We speak English when we record assignments, but mobile technology has nothing to do with our speaking skills.*” Similarly, in the third focus group, all five students did not accept mobile technology as beneficial for enhancing their speaking skills, but they agreed with S3-U3 when he stated that they “*were given an assignment which required us to record some people communicating in English*”; thus, indirectly acknowledging mobile technology’s benefits for improving spoken English. The students did not seem to realise that their lecturers were utilising various affordances (e.g., web-browsing, recording their communication in authentic contexts) of mobile technology to improve their speaking skills in English. The difference in the lecturers’ and students’ approaches suggests a need to make the purpose of the activities known to students or engage them in lesson designing/planning.

To conclude, evidence provided in this subsection (7.2.3) indicated that the lecturers’ pedagogical decisions of incorporating web-based reading and listening resources using mobile technology enhanced the students’ speaking skills integrated with other skills. The lecturers appeared to boost their students’ confidence in speaking English in an EFL context in which they had little or no opportunities of speaking English in real-life contexts.

7.2.4 Reading skills

This study found that the lecturers employed mobile technology to disseminate, store and access EFL content to enhance the students’ reading skills, as mentioned in Chapter 6. In their initial interviews, the lecturers frequently mentioned using mobile technology to facilitate their students’ access to multiple resources which would enhance their reading skills.

All six lecturer-participants mentioned that EFL resources related to their courses were disseminated mostly at mobile-enabled platforms and stored by students on their mobile devices.

For example, Huria said in her initial interview, *“I don’t provide printed articles anymore to my students because I send all readings beforehand, and they have resources available on their mobile devices for reading activities”*. Bina also shared most resources electronically and believed that *“It’s easy for them to read anytime if it’s [the content] on their cell phones in front of them.”* To justify her decision to use mobile technology for EFL in-class reading activities, Bina, in her post-observation interview, said,

The university and the government are going through a struggling stage. Libraries cannot cater to a growing number of students. Students also can’t afford to buy books. In these circumstances, mobile technology is the best possible available option for teaching reading in the English language.

Sara also believed that mobile technology was helpful “in developing my students’ reading skills”. She added, “For reading comprehension lessons, I use different IELTS e-books stored at my students’ mobile devices.” Interestingly, Sara also utilised “the manuals of their mobile devices and information reports in English” to engage her students in reading about the topics of their interest. Even though mobile technology enabled students’ flexible access to EFL resources, Huria, Sara and Bina used it, predominantly, as transmission and storage technology.

Adam expressed a different perspective, however. Although he said he believed that “Mobile technology is very much handy as far as reading is concerned. The students can read anywhere and literally everywhere.”, his pedagogical practices of teaching EFL reading did not always require mobile technology. He explained, “They have course content stored at their mobile devices, but I often provide additional readings in the printed form. Then, they don’t need technology or mobile technology at all in the classroom.” While this lecturer seemed to consider hard copies of the readings more practical for in-class reading comprehension, his pedagogical decision to make content available on students’ mobile devices appeared to facilitate them to access and read EFL content in the absence of books/printed copies. Furthermore, resources stored on the students’ mobile devices may also encourage them to read in informal settings (e.g., travelling in crowded buses) where reading from the printed notes/ books might not be practical.

The lecturer-participants also referred to using mobile technology to promote reading by incorporating online resources (e.g., web-browsing). For example, Aly stated in his initial interview:

My students use mobile technology in the class to search for course-related content. When I want to discuss a topic in the class, I refer to relevant blog posts or websites. I believe that they [students] get ideas, even vocabulary, when they read on the web. They use the same words and sentence structures when we have follow-up discussions.

Sara's students also accessed web-based resources through an app on the BBC English learning website. In her post-observation interview, she explained how she taught reading comprehension to her students in the first semester by drawing on a mobile-friendly web-based resource to provide content for reading:

There are courses for students with various proficiency levels. I select one course after assessing students' requirements. I give them the task of reading a short text. This website provides comprehension questions, an explanation of keywords and phrases. You can find the same content in audio, video or text formats. Through reading aloud exercises, I can teach listening and reading together.

The observed lessons provided evidence of the participants' claims about using mobile technology to store, access and read EFL content. In eight of 12 observed lessons, mobile technology was used to access and read online content stored on students' mobile devices. For instance, in Adam's observed lessons, students used mobile devices for reading on the web to search for strategies to use when writing effective business messages and giving project presentations. In Sara's second observed lesson, the students used mobile devices to access, and read an article from a website about the influence of social media on students' lives. Similarly, in Amir's first observed lesson, his students accessed, and referred to, a document about GC's salient features during group discussion. For Amir's students, web-browsing before a group discussion, seemed to enhance their reading skills. Reading and listening skills also appeared to be encouraged through the reading aloud feature of Immersive Reader in the class.

In Aly's first observed lesson, during a group discussion about the influence of cricket on Pakistani English, his students used mobile technology to browse the web and access the links he

shared at the WhatsApp group. Similarly, Huria's students accessed and read a text on the topic of culture shock stored on their mobile devices. In Bina's first observed lesson, her students also used mobile technology to read a blog post about the basics of effective communication.

Amir's interactions at GC, were observed to encourage students to read and write in English. He wrote short messages in paragraphs to explain assignments topics, remind students about assignment submission deadlines, introduce recommended readings, and inform them about social events in the city. His students' interest and engagement indicated that they read and responded to his messages.

The students, in the survey and focus group interviews, also referred to using mobile technology for reading. In the survey, 56.79 % of students reported using mobile technology to enhance their reading skills. Consistent with the lecturers' assertions, all students in three focus groups agreed with the use of mobile technology to access and read EFL resources. In the first focus group, all six students agreed that they used their "*smart phone[s] for searching and reading*" (S2-U1) so that they might not "*have to print the handouts sent by their lecturer*" (S6-U1). One of the students (S2-U3) said, "*I work part-time as a tutor; so, I manage my study with my mobile device. I store all the EFL resources on my cell phone. I can access and read whenever it's feasible for me.*" Likewise, nine out of 11 participants in the second and third focus groups also claimed that mobile technology was useful for improving their reading skills. For S1-U3, his mobile phone was his "*reading companion on the campus*". All six participants in the second focus group agreed with S4-U2 when he said:

I have stopped keeping traditional hard copies of the books as everything is saved at Google Drive. I access it anytime on my mobile phone. This morning, when I was coming to the university, I was reading a book chapter on my mobile phone for my English class. This is the real utilisation of my time that, otherwise, would have been wasted.

It appears that the lecturers' decision to make EFL content available on students' mobile devices not only resolved the contextual financial constraints but also appeared to counter temporal and physical barriers by enabling students to read anytime, anywhere.

Some students expressed a slightly different perspective, however, on the use of mobile technology for enhancing their reading skills. For example, S3-U3 did not agree with other

participants' views about using mobile technology for reading e-books and articles as he said, "*I mostly have my laptop with me, which I use to read during the classes. My mobile phone is mostly for reading messages.*" S4-U2 expressed a similar opinion, "*I read most of the time using my mobile device. My best pastime is reading about the activities of my friends on Facebook.*" S5-U3 also said:

My smartphone saves me from getting bored when I am going to the university. It takes almost an hour to reach the university in the morning hours. I read my friends' status updates on Facebook and update my status too.

The students' responses indicated that they used mobile technology for academic and recreational reading that included books and articles provided by their lecturers as well as reading on social media. The primary reason for students' preference for using mobile technology to read EFL content seemed to be its availability and portability. The students' responses also alluded to missed opportunities for promoting reading habits; lecturers did not seem to incorporate the students' English language interactions on social media platforms which were an integral part of the students' everyday lives.

In summary, data presented in this subsection (7.2.4) indicates that the lecturers' pedagogical decisions to make EFL resources available on students' mobile devices benefited their reading skills development in a resource-constrained context in which the purchase of books and computer/laptops was difficult. Another reason for incorporating mobile technology for teaching EFL reading skills was that the technological affordances enabled students to access the transactional, physical and temporal affordances of mobile technology's widespread availability. The positive impact was evident from the students' use of mobile technology to access reading content in informal settings (e.g., travelling in the crowded buses and other free patches of time). It was noted, however, that the lecturers could have capitalised even more on students' reading habits on social media platforms to increase reading opportunities.

7.2.5 Writing skills

This section presents data on the incorporation of mobile technology for teaching EFL writing skills. It also describes one lecturer's pedagogical decision to integrate a video recorded in informal settings into the formal classroom teaching of writing skills.

Data analysis revealed that mobile technology was not generally incorporated into the lecturers' pedagogical practices for teaching EFL writing. Only two of six lecturer-participants referred to using mobile technology for writing. For example, Amir said in his initial interview:

We must plan to use it [mobile technology] as students are writing on their social media platforms all the time. I encourage my students to take lecture notes on their mobile devices [using OneNote] in the class. If mobile devices are their favourite writing pads, why should I ban them in the class?

Amir's suggestion to his students regarding OneNote for notetaking indicated that he encouraged his students to take advantage of mobile technology's mobility as OneNote can be accessed on various devices. As mobile devices were available in class, he suggested his students to take notes using the OneNote app so they could be accessed anytime, anywhere through multiple devices.

Aly, likewise, claimed that mobile technology was suitable for writing. Although he did not mention teaching writing skills using mobile technology, he used mobile technology's widespread availability for written communication with his students. In his initial interview he stated:

All my communication at WhatsApp is through written text messages. Students text me to ask questions. I can quickly write and text to my students, even if I am in the middle of something else. I think written communication through mobile technology doesn't interrupt the flow of other activities.

The lecturer's pedagogical decision to exchange written text messages through WhatsApp indicated that he was aware of his students' practices of interacting using WhatsApp. Aly also believed, "*WhatsApp is the best tool to communicate with students when travelling is not feasible for them*". Aly referred to his written WhatsApp communication with his students in the event of travel disruptions making face-to-face interactions difficult due to political unrest in the city. In such situations, mobile technology's mobility and flexibility could facilitate written interactions at various times and places among the lecturers and their students. This communication focused on personalised assistance, as discussed later in this chapter (see Section 7.3).

In contrast, four of the six lecturers, in their initial and post-observation interviews, commented on mobile technology's inappropriateness for developing students' writing skills. For example, Bina did not consider that mobile technology was suitable for teaching writing skills. She believed that *"If they [students] write on paper, they are more involved in what they are writing."* Sara's students *"are allowed to browse the web for extempore essay writing"* to gain an understanding of the topic but were advised to use pen and paper for writing.

Adam and Huria, similarly, commented explicitly mobile technology's unsuitability for enhancing students' writing skills in their initial interviews. Huria referred to *"a kind of shorthand writing when they [students] write at their mobile devices"*. In response to a question about the use of mobile technology for teaching EFL writing, Adam articulated his view emphatically,

I think mobile technology is not suitable for teaching writing skills. I have tried many times, but it didn't work. While writing on mobile devices, students tend to write abbreviations, which are not recommended for academic writing and professional communication.

These lecturers did not seem to believe in the appropriateness of mobile technology for writing because their students tended to ignore academic writing protocols.

In the observed pedagogical practices, mobile technology for teaching EFL writing was used in only two of 12 observed lessons. Interestingly, despite being against the use of mobile technology for teaching EFL writing skills, Adam incorporated it for teaching EFL writing in his second observed lesson, when teaching how to write effective business emails. His students also used mobile technology to write and send an email to invite him to an exhibition on campus, on which Adam provided feedback on three randomly selected emails in the class. When asked about this decision to incorporate mobile technology for writing an email, Adam, in his post-observation interview, explained:

Normally, I don't recommend mobile technology for written activities. In this class, I was teaching them how to compose a short but effective business message. For this kind of writing practice, mobile technology is a handy option as I can access their written texts and instantly give feedback.

Mobile technology was also used in Amir's second observed lesson when his students wrote a short paragraph on the topic of using OneNote for EFL learning on their mobile devices. Amir's written interactions, on various topics, with his students were also observed on GC, as noted earlier in this chapter (see Section 7.2.4).

However, in ten of 12 observed lessons, students used pen and paper for writing. For example, consistent with her beliefs, none of Huria's students used mobile devices for writing in her two observed lessons in which she was teaching academic writing; her students wrote an academic paragraph on paper. Likewise, in Bina's both observed lessons, and Aly's first observed lesson, students made notes using pen and paper during group discussions.

In her second observed lesson, Bina's students also used paper to write a critical evaluation of a TEDx talk after listening to a part of it in class using their mobile devices. As indicated earlier in this chapter (see Sections 7.2.2 and 7.2.3.2), this TEDx talk was recorded by students as a part of a homework assignment. Although mobile technology was not used for writing in this written activity, Bina's decision to make her students listen to the recording in the class was evidence that she integrated informal learning into formal lessons. It was also an example of her pedagogical practice of teaching more than one skill together.

Students also reported a range of views regarding the use of mobile technology for EFL writing. In the survey, 38.89 % of students reported that they used mobile devices to practise their English writing skills, while the participants in all three focus groups expressed diverse opinions about the use of mobile technology for writing assignments. For example, in the first focus group, four of six students preferred laptops as it was "*difficult to write at mobile devices*" (S2-U1), as "*mobile devices were too small to make an assignment*" (U1-S6). Likewise, in the third focus group, four of five participants reported their preference for laptops, agreeing when S2-U3 said, "*When some topic is given to us by our lecturer, and we have to write about it, then we use laptops for writing on Word.*" All six participants in the second focus group mentioned usability issues, which restricted their use of mobile technology for writing. For example, according to S6-U2,

The basic reason is that cell phone devices are so small. It's very difficult to write, edit documents and insert material from other extra sources, so we mostly use laptops. Actually, we use mobile devices because they are connected to social media.

However, all the focus groups participants considered mobile technology suitable for written communication on social media. One of the first focus group participants said, *“I update my status on Facebook, comment on my friends’ posts, and type text messages many times during a day”* (U1-S3). Another student (U1-S4) stated:

Sometimes, I don’t write at my computer for a whole day, but I can’t recall any day when I don’t write on my cell phone. Whether we accept it or not, consciously or unconsciously, we use mobile devices for writing.

The use of mobile technology for writing on social media platforms/apps was also advocated by students in other focus groups. All the students in the second focus group agreed with S6-U2 when he said, *“I chat with my friends using my mobile device, but I never write my assignments.”* Similarly, in the third focus group, S5-U3 said, *“If you talk about writing for friends and myself on social media, my mobile phone is the only device I use.”*

In summary, the students expressed a preference for mobile technology for written transactions on social media and other platforms, but did not like writing assignments on their mobile devices. The small display-screens of mobile devices did not provide the focus required for academic writing, and so they preferred to write academic assignments using their laptop or desktop computers.

Data presented in this sub-section indicated that the lecturers and the students did not consider mobile technology suitable for academic writing. Although Adam’s example of incorporating mobile technology for teaching EFL writing appeared to be contrary to his beliefs, he may have employed it because, in this instance, it was a short email of 150-200 words. His claim about the unsuitability of mobile technology for writing appeared to allude to longer academic texts. Similarly, Amir’s students may have drawn on mobile devices for writing as it aligned with their course content (i.e., Instructional Technology-CALL). Students’ preference for mobile technology for writing, as reported in the survey, appeared to refer to their social media writing practices, confirmed by the extensive exchange of messages through WhatsApp and Facebook groups.

However, a gap between the lecturers’ pedagogical and their students’ learning practices was also noted as the students’ written transactions on social media were not taken advantage of for

teaching EFL writing skills. The lecturers seemed to miss an opportunity to develop their students' writing skills by incorporating their collaborative writing practices and peer feedback on social media platforms.

Overall, the data presented in this section (7.2) indicates that mobile technology's affordances were optimised for teaching the core skills of the English language. Mobile-enabled transactions appeared to be an integral part of the lecturers' pedagogical practices for enhancing their students' listening, reading, and speaking skills. Although the lecturer-participants did not consider mobile technology affordances beneficial for developing the students' writing skills, students utilised their mobile devices to write on social media and text messages at other apps. The students, however, were not made aware of the multiple opportunities of incidental language learning generated by mobile-enabled transactions. Similarly, the opportunity to enhance students' core writing skills through collaborative work did not seem to be appropriately harnessed by the lecturers.

7.3 Personalised assistance for EFL learning

This study regards personalisation as a teaching approach that takes account of individual, or group, differences (see Section 3.4.4). The data suggest that lecturers utilised mobile technology to personalise EFL teaching activities contingent on their students' needs as individuals and as groups.

The study found that five of the six lecturers who participated in the current study mentioned, in their initial interviews, that they used mobile-enabled platforms such as emails, WhatsApp, and GC to cater to their students' individual needs. For example, Amir provided personalised assistance to his students at GC. Of the six lecturer-participants, only Amir incorporated GC to provide multi-modal personalised assistance to his class. He said, *"Recently, I marked some assignments and provided feedback to my students. I used LMS for giving feedback where I could comment even through voice."* In his post-observation interview, Amir explained, *"I mostly access Google Classroom through its app [at my mobile device]. I reply to my students immediately if I am free."* It seems that Amir's primary purpose of using mobile technology was to provide an immediate response to his students and multimodal feedback on their assignments.

Although Amir was the only lecturer-participant to provide multimodal feedback, the notion of immediacy was evident in other lecturers' personalised assistance provided through mobile-enabled platforms. For example, Adam and Sara provided assistance to their students through emails accessed on their mobile devices. They would “*reply as soon as an email is received*” (Sara) and “*depending on the nature of questions if an instant feedback is required, I provide that instantly*” (Adam); or, as Sara explained, “*I give an appointment at my convenient time... if it needs a discussion*”. Adam and Sara used mobile technology to provide personalised assistance to their students by providing an immediate response to their students' questions.

Similarly, in their initial interviews, Bina and Aly described mobile technology as beneficial in assisting their students. For example, Aly described his practice of responding to his students on WhatsApp with instant and quick transactions. As described earlier, Aly was teaching EFL to the students of the seventh semester, the second last semester of their degrees, when they started to work on their final dissertations' topics. According to Aly:

I prefer text messages. Many students in my class text me to discuss their issues, and I instantly reply. For example, in the 7th semester, when they select their dissertation topics, instead of travelling 200-300 kilometres just to discuss which topic is good, they can use WhatsApp. I can suggest some suitable topics. It saves my time and my students' time, which would be wasted on travelling.

Although the students were not required to attend face-to-face lessons, they needed their lecturer's guidance while selecting their dissertation topics or areas. Mobile technology appeared to help provide personalised assistance related to dissertation topic selection.

Likewise, Bina mentioned, “*I provide instant feedback to my students whenever it is required*” through a “*WhatsApp group...I send individual messages to the concerned students*”. She explained how she attended to the needs of a group of students from Afghanistan:

I am teaching some Afghani students this semester. They are here through the HEC [Higher Education Commission of Pakistan] Exchange Programme, and they need special help... Since they are here on scholarship, they are very keen learners. If they

have submitted assignments, they won't wait for the next class or next week. They will text or call me. So, instant feedback is given through mobile technology.

Bina's pedagogical practice indicated that she understood students' needs and utilised mobile technology affordances to address their concerns.

In contrast, when Huria was asked about mobile technology's role in assisting students, her answer was explicit and emphatic. She said, "No, it's not on mobile." She further elaborated:

I haven't used it [mobile technology] for checking their work and giving feedback ever... I don't have time to cater to all the students through my mobile device. I only contact the CR [Class Representative] directly. I don't use my mobile phone for giving individual feedback.

Huria seemed to consider mobile technology unsuitable for assisting students because of the time constraints, as she explained in her post-observation interview, "I am teaching approximately 150 students in one semester in four different courses. If I provide feedback at WhatsApp or any other platform, students expect quick answers to their questions. It is not possible for me to manage." Adam also did not provide feedback through WhatsApp but would reply to his students' queries through email. He stated in his initial interview:

I don't communicate with my students at WhatsApp group because of the scarcity of time. The students ask very complex questions that are supposed to be answered by me if I join the WhatsApp group. I cannot answer every single question.

Overall, all six lecturer-participants except Amir seemed to provide general assistance to students to help them while working independently. The lecturers' data also indicated that students expected immediate response from their teachers at mobile-enabled platforms and while it was unlikely for the lecturers to meet their students' expectations.

Students also alluded to the use of mobile technology for seeking EFL-related assistance. In the survey, a question was asked to identify the students' preferred people from whom to seek assistance while learning EFL with mobile devices. The survey data indicated that 40.24 % of students would prefer to contact their friends and 29.88 % of students choosing to seek assistance from online contacts using their mobile devices. As indicated in Chapter 6 (see Section 6.2.2.2),

many students regularly made online transactions to seek assistance, related topics such as grammar, pronunciation, from the people who managed their YouTube channels/websites/blogs such as Engvid.com and Quora.com for EFL. Surprisingly, despite the lecturer-participants' readiness to assist their students through mobile-enabled interactions, only a small number of students (14.02 %) opted to seek help from their lecturers.

The focus group participants also mentioned that their lecturers were not their first preference if they needed EFL-related assistance outside the class. For example, according to S4-U3, even though the lecturer had *"provided them [students] with his email address"* and replied, *"within a few hours"* (S1-U3), the students *"never felt the need to email"* (S5-U3) them. Instead, they preferred to seek help from their friends through text messages. All the focus group participants agreed that they would seek EFL-related assistance at the platforms where they could *"get quick and to the point answers"* (S2-U1). Another student commented that their *"interactions at WhatsApp are more frequent than emails or other platforms"* (S5-U2). Describing the use of WhatsApp for EFL-related assistance, S2-U1 said:

If anyone has any problem, she/he can initiate a discussion about that particular issue (at WhatsApp). For instance, one student uploaded an image of a question related to his English comprehension assignment. The solution was provided by different students within minutes.

The notion of immediacy also drove students' interactions to seek assistance with people in various countries. For example, S4-U1 said, *"When I am confused about sentence structure in my English assignments, I ask questions at Quora.com. I quickly receive a response from so many people."* Similarly, another student S2-U2 said that, *"Engvid.com is my first choice for taking help if I face any problem with the English language. Whenever I post a question at Engvid.com, there is always someone to answer immediately."* Getting an instant response from multiple people to solve their problems was the primary reason for resorting to online contacts for seeking assistance and their use of WhatsApp for seeking assistance from peers.

The data presented in this section indicated that, although the lecturers used mobile technology to meet individual students needs whenever possible, their practice of providing EFL-related assistance through mobile devices did not conform to the students' expectations for assistance or feedback. Data suggested that despite the lecturer-participants' intentions, the students expected

more specific and quick answers. Students, therefore, opted to contact their friends and other online contacts to seek quick answers to their questions.

The next section analyses how the students' transactions with EFL content inside the classrooms with mobile technology shaped the lecturers' pedagogical decisions and practices, which is another aspect of the transactional, temporal and physical affordances already discussed.

7.4 Redefinition of the lecturers' role

As described in the previous sections, the lecturers' decisions of making EFL resources available on students' mobile devices played a pivotal role in the lecturers' in-class pedagogical practices and facilitating students' access to EFL content anytime and anywhere. The ubiquitous availability of mobile technology also drove the lecturers' pedagogical decisions to situate EFL learning activities in authentic contexts. While access to EFL resources through mobile technology is critical for MALL, it required radical changes in the lecturers' traditional roles and influenced their pedagogical decisions and practices.

In their initial and post-observation interviews, all six lecturers participating in the study described how their students' transactions with EFL content using mobile technology inside the classrooms were redefining their roles. The lecturers mentioned repeatedly "*The role of a teacher is entirely changed.*" (Adam) because "*Now the students have everything at their fingertips.*" (Amir). All the lecturer-participants drew comparisons between their current and past planning and pedagogical practices. The lecturers stated that in the past, teachers were "*considered right*" (Aly) as they were "*the only source of information*" (Adam), but in the current times, "*information is accessible. They [students] can search anything within seconds like pronunciation, spellings, meaning etc.*" (Aly). Making a similar comparison, Amir said, "*In old times, the source of knowledge was just books and teachers. But now, they [students] have numerous sources of knowledge just at the distance of a single click.*" The lecturers expressed the realisation of a definite change caused by students' interactions with EFL resources using mobile technology.

All six lecturers commented on the mounting pressure caused by the students' transactions with online content and its impact on their pedagogical practices. For example, Huria said, "*When I teach them pronunciation, they can instantly check and tell if I am pronouncing words correctly*

or not...*If I am in doubt of something, I don't write that on the board*". Alluding to the same phenomenon, Bina said, *"If I misspell or mispronounce a word, many students are sitting in the class who check instantly and tell me that I have not spelt that word correctly"*. She explained how students' access to EFL resources had changed her pedagogical practices:

You have to go more prepared in the classroom because students are prepared too. They have all the resources in their hands. If I refer to some source that is not authentic, they can question me, which also questions my reliability and worth as a teacher.

The students' interactions with EFL content using mobile technology in the classrooms made the lecturers realise that they had to be fully prepared to cope with informed learners in their classes.

Other lecturers also mentioned a *"kind of complexity and pressure for the teachers"* (Adam) in their pedagogical decision-making due to the immediacy of students' interaction with readily available resources on their mobile devices. For example, Sara alluded to a change in her pedagogical practices due to the students' cross-checking practices related to the authenticity of content used by her in the lessons. She said:

When you share something in the class, they [students] instantly check the source of information and say bluntly at your face. They ask certain questions in order to imply that they have been visiting those websites too. We have to be very careful in using online resources.

Adam also mentioned how his pedagogical decisions and practices were influenced by his students' interactions with EFL content. He said, *"Sometimes, it happens when I am discussing some point; at the same time, the students are accessing that information online."* He further added that the students could *"raise many tricky questions"* to challenge *"the information shared by the teacher"*. Therefore, he believed that they must be well prepared and have *"enough information to cope with such situations"* (Adam).

However, the lecturers not only acknowledged the changes in the traditional *"authoritative role of a teacher"* (Huria) as *"a disseminator of knowledge"* (Adam) but also appeared to embrace willingly the role of a teacher *"as a facilitator and a collaborator"* (Huria) and *"a participant sitting ... among my students instead of standing in front of the class"* (Adam). In her post-observation interview, Sara acknowledged that today's *"students possibly know more than their*

teachers”. She further elaborated that a teacher “*just needs to provide guidelines on how to use the wealth of information which is at students’ disposal*”. It appears that the lecturers have identified and are embracing a noticeable change in their roles brought about by the affordances of mobile technology.

In the observed lessons, however, there was no evidence of either the pressure or the higher degree of accountability by students, as mentioned by the lecturers in their interviews. In contrast, in all the observed lessons, mobile technology's affordances seemed advantageous rather than disadvantageous. For example, mobile technology enabled the students to carry out multiple activities such as browsing the web, consulting online dictionaries, watching YouTube videos inside the classrooms. The affordances of mobile technology also helped the lecturers teach digital literacy to their students, as evident from Amir and Bina’s pedagogical practices of helping students install apps and insert images in PowerPoint slides. Mobile technology also seemed to enable the lecturers to promote autonomous learning in their observed lessons by allowing their students to browse the web and discuss information with their peers.

Evidence provided in this section indicates that the students’ use of mobile technology for transactions with EFL content were redefining the lecturers’ roles. The participant-lecturers not only acknowledged the radical changes in their roles but were also prepared to adapt to their roles. The lecturers’ specific mention of the pressure indicated, however, that despite having a fair understanding of a shift in their roles as teachers, they did not realise the degree of change occurring in their students’ role as a result of flexible access to resources. The lecturers appeared to be reluctant to embrace the full spectrum of changes in Pakistani universities' MALL ecosystem. It is argued that the lecturers could enrich their pedagogical practices by allowing students to contribute to the design of their learning activities.

7.5 Concluding remarks

The previous two chapters have answered partially the overarching research question and the two sub-questions by providing an overview of the pedagogical dimension and details about mobile technology's affordances and constraints. This chapter has built on the data reported in the previous two chapters to complete the answer to the overarching research question. It has analysed how the lecturers harnessed the transactional, temporal, and physical affordances to enable MALL. These chapters, together, have also investigated the role of mobile technology in

Pakistani lecturers' pedagogical decisions and practices in relation to their students' learning practices.

The analysis of all the data-sets identified that the transactions using mobile devices by the participants were to 1) disseminate, store and access EFL content; 2) teach and enhance the core skills of English language; 3) situate EFL activities in authentic contexts; and 4) seek as well as provide personalised assistance for EFL learning. Although the flexible access to EFL resources facilitated the lecturers to enrich EFL activities in and beyond the classroom, mobile devices seemed to be used largely as transmission tools and storage devices. In addition, the analysis also revealed that the students' transactions at online platforms were not used, pedagogically, to make students aware of incidental language learning opportunities within the temporal and physical dimensions.

The results also indicated that the students' in-class interactions with resources accessed by mobile devices influenced the lecturer-participants' planning and pedagogical practices. The lecturers also seemed to be aware of the changes in their own role brought about by their students' use of mobile technology. However, the analysis indicated that the lecturers did not consider the redefinition of students' roles and, consequently, felt pressured due to their students' changed transactional roles in the classrooms.

The figure below (Figure 7.4) illustrates how the lecturers incorporated mobile technology affordances for enabling EFL-related interactions with content, contexts, and people across times and spaces (i.e., in the temporal and physical dimensions). It is reiterated that mobile devices as enablers of EFL learning (i.e., the technological dimension) and the lecturers' decisions and practices (i.e., the pedagogical dimension) are embedded in the interactions or activities illustrated in Figure 7.4.

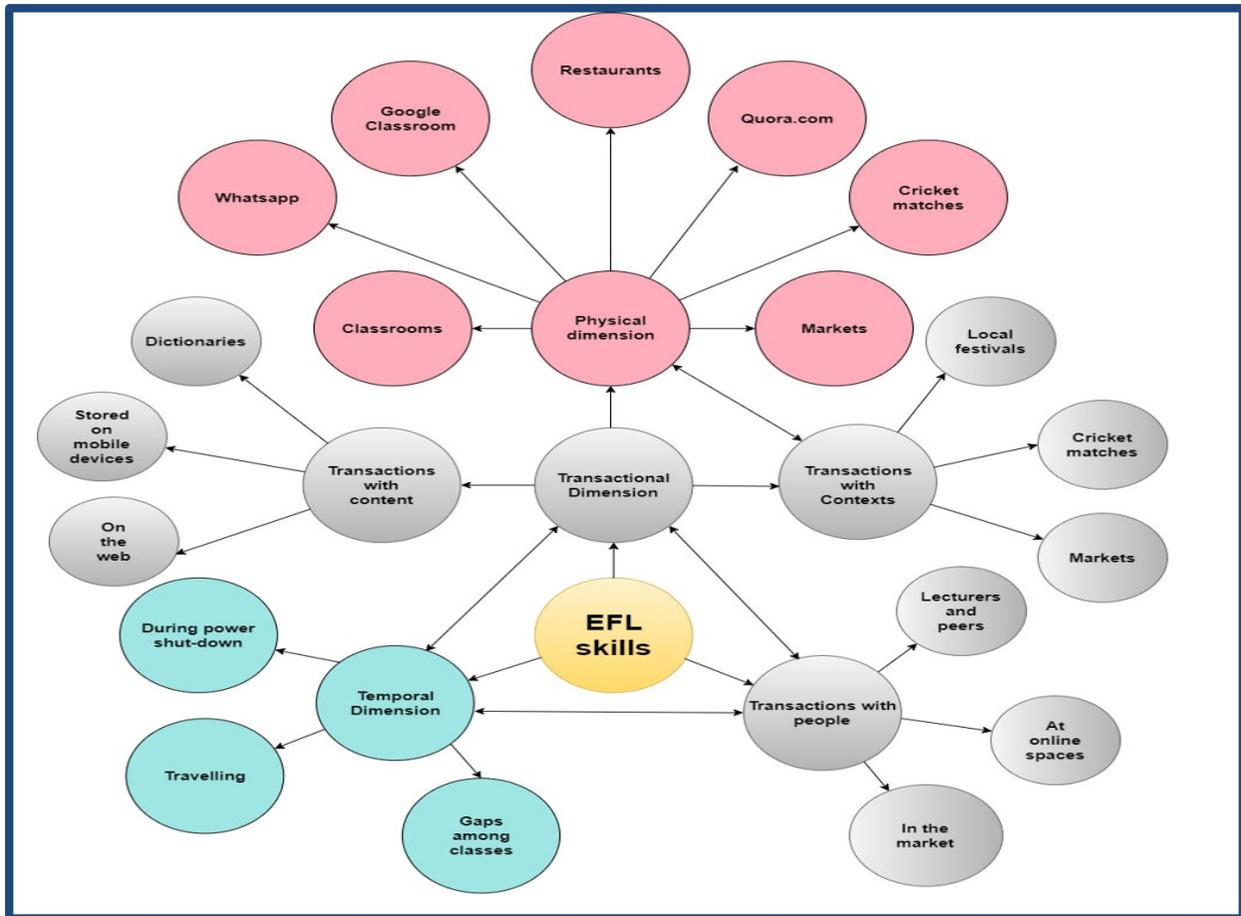


Figure 7.4. Blending of the transactional, temporal and physical dimensions for EFL teaching

As presented in the current chapter, the evidence of blending the transactional, temporal, and physical dimensions, Figure 7.4 shows that the transactions with context are related to the physical dimension. As mobile-enabled transactions at various spaces are made across times, the transactional and physical dimensions are connected with the temporal dimension. Figure 7.4 also demonstrates the interconnectedness of these three dimensions, alluding to the challenges for pedagogical decisions and practices. Since the relationships of multiple elements and people within a learning ecosystem are ever evolving, the lecturers had to adapt their pedagogical decisions and practices accordingly.

Overall, this chapter documented findings related to the integration of the affordances of mobile technology, associated with five dimensions, to elucidate the ecology of EFL teaching and learning in the Pakistani university sector; Figure 7.4 illustrates the complex entanglement of individuals, tools and environments. The next chapter discusses these findings and highlights the

implications of this research. In doing so, it revisits the research questions, synthesises the findings and links them back to the literature review and theoretical framework that informs this study.

Chapter 8. Discussion

8.1 Introduction

This research has investigated mobile-assisted EFL teaching and learning in Pakistan. As mentioned in the introduction to the thesis, there is growing evidence that the 21st century has witnessed mobile technology ownership on an unprecedented scale in people's everyday lives and educational settings worldwide. Therefore, this study responds to the sustained calls in contemporary literature to investigate pedagogies employed for language teaching with the integration of mobile technology (Burston, 2014b; Kukulska-Hulme et al., 2017). It also responds to researchers' call for more empirical studies investigating MALL from ecological perspectives to gain an in-depth understanding of L2 learning eco-systems (Godwin-Jones, 2018a; Hoven & Palalas, 2016; Pachler et al., 2010; Pegrum, 2019). As previous studies in the Pakistani context have investigated EFL teachers' and students' perceptions and practices related to mobile-assisted language teaching and learning separately, an integrated examination of EFL teachers' and their students' perceptions and practices underpinned by ecological perspectives was merited.

The primary focus of this research was to examine the role of mobile technology in the pedagogical decisions and practices of Pakistani EFL lecturers to enable MALL. As students are integral to a learning eco-system, university students' perceptions and practices related to MALL have also been investigated. The study participants were six EFL lecturers, and their 229 students enrolled in EFL classes in three Pakistani universities. This study is informed by an ecological paradigm which entails studying a phenomenon holistically (see Chapter 2).

An ecological paradigm also informed the methodological decision to adopt mixed-methods research approach for the study. Data were collected through the lecturers' semi-structured initial interviews, lesson observations, post-observation interviews, students' survey, and focus groups to gain insights into various layers of Pakistani universities' learning ecosystem.

The overarching research question (RQ) posed for this inquiry was: What is the role of mobile technology in the pedagogical decisions and practices of Pakistani EFL lecturers to enable MALL? This overarching research question was answered through two specific sub-questions.

RQ1. How do the lecturers in three Pakistani universities harness the affordances of mobile technology for EFL teaching?

RQ2. What are the learners' perceptions and practices regarding the use of mobile technology for EFL learning?

The Mobile Learning Eco-System (Figure 2.1) informed the data analysis process, which contains five intertwined dimensions related to EFL teaching and learning: the pedagogical, technological, transactional, temporal, and physical dimensions. This chapter combines findings from Chapters Five, Six and Seven to answer the overarching research question by interpreting the findings and linking them to the literature review and theoretical framework.

The chapter is organised as follows: 8.1 provides an introduction; 8.2 synthesises the findings reported in the previous three chapters; 8.3 analyses how the pedagogical harnessing of ubiquitous availability of mobile technology became a significant enabler for EFL teaching and learning in the Pakistani context; 8.4 also discusses how the lecturers incorporated mobile technology for teaching core EFL skills; 8.5 discusses the role of mobile technology for enabling EFL-related assistance/feedback; 8.6 discusses tensions between the lecturers' linear pedagogies and their students' non-linear learning practices; 8.7 concludes the chapter. It is reiterated that the pedagogical dimension underpins the interpretations and discussion of the findings, as was the case for the previous three chapters.

Importantly, since the role of contextual factors is significant in decision-making in a learning ecosystem (Tudor, 2003; Hoven, 2007), the discussion of the findings has been framed around core skills because enhancing learners' core skills is the primary focus of EFL teaching and learning in Pakistani universities. Therefore, the structure of the current chapter around core EFL skills reflects the ecological approach underpinning this study and underscores the importance associated with core skills by the participants.

8.2 An integrated overview of key findings

This section provides an overview of the integration of significant findings relevant to the five interconnected dimensions introduced in the second chapter of this thesis (see Figure 2.1): technological, physical, temporal, transactional, and pedagogical. Five dimensions have been described as having corresponding affordances. The data analysis revealed the intricate

relationships of multiple components and people within the three Pakistani universities' learning eco-systems.

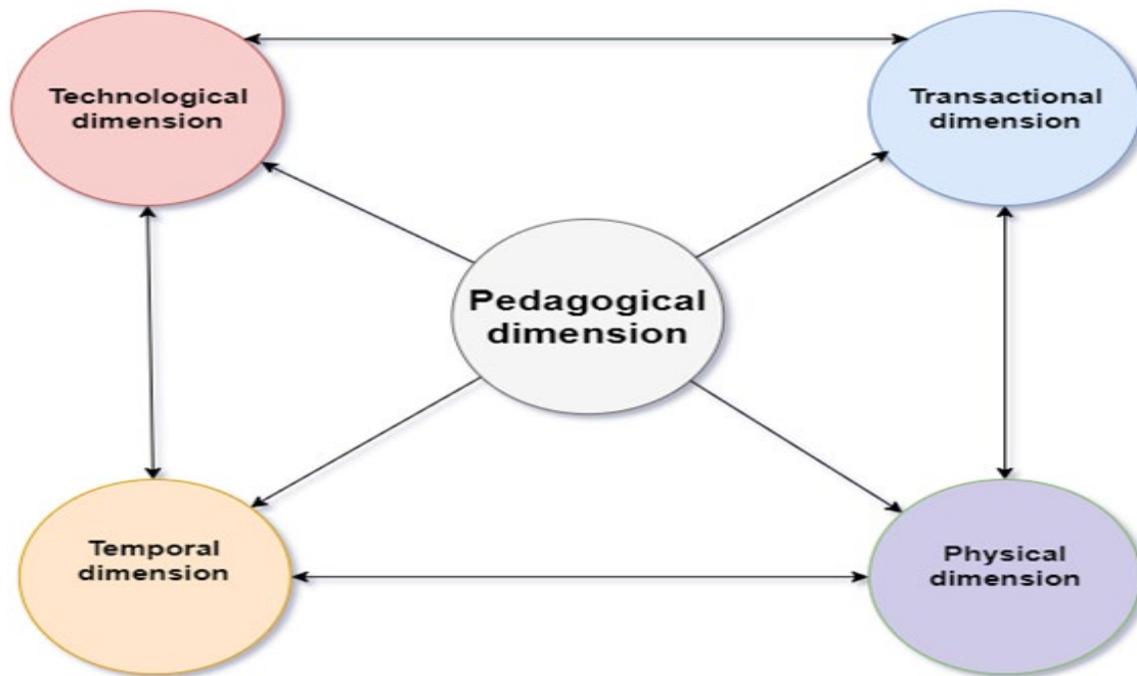


Figure 8.1. The MALL ecosystem in Pakistani universities

Illustrated by Figure 8.1, the previous three chapters' findings, which are related to the interconnected relationships of all five dimensions of the MALL ecosystem in Pakistan, are summarised in this section. In contrast to the original illustration (see Section 2.5) by Palalas (2013), Figure 8.1 illustrates the pedagogical dimension in the centre, signifying its pivotal role in a learning ecosystem. Figure 8.1 also illustrates the complexity faced by the lecturers in making pedagogical decisions regarding the use of mobile technology in their pedagogical practices for MALL.

8.2.1 The pedagogical dimension

The pedagogical dimension is associated with approaches, strategies, and procedures of incorporating mobile technology adopted by the lecturers to enable L2 learning for their students (see Section 2.5.4). The major finding of the current study is the centrality of the pedagogical dimension in enabling MALL in Pakistani universities' learning ecosystem. As illustrated in Figure 8.1, the pedagogical dimension's central position influenced all other dimensions in the ecosystem. The study found that, despite the interplay of all five dimensions, the lecturers'

pedagogical decisions and practices were the determining factors in enabling MALL. Detailed diagrams presented in Chapters Six and Seven illustrate the various technological, temporal, physical and transactional layers. The complexity of the pedagogical dimension and its centrality in relation to the other four dimensions has been illustrated in Figure 8.1 and in Chapter Five (Figure 5.1).

While summarising the key findings related to the significance of the lecturers' pedagogical decisions and practices about incorporating the affordances of the technological, physical, temporal, and transactional dimensions, the following sections emphasise the pivotal position of the pedagogical dimension.

8.2.2 The technological dimension

The technological dimension represents the affordances of mobile technology such as availability, flexibility, built-in features, connectivity, software and apps, and the technological spaces where information is stored (e.g., cloud or mobile storage) (see Section 2.5.1). The key technological affordances are related to technological devices and technological spaces in the current study (see Figure 6.2).

This study's findings indicated that the lecturers harnessed various technological enablers/affordances for EFL teaching. The current study found that frequently used technological enablers were electronic dictionaries, WhatsApp, Google Classroom, emails, and built-in mobile camera recorders. The observed pedagogical practices of the lecturers appeared to draw mainly on resources stored on students' mobile devices. Other resources, which appeared to facilitate EFL teaching, included Google Assistant, Agendaweb.org, YouTube, bbclearningenglish.com, and IELTS e-books. As well as WhatsApp groups, all the lecturers had set up Facebook pages, although the use of Facebook was not prevalent in their pedagogical practices.

The primary reason for the lecturers' decision to draw on the technological enablers appeared to be the flexibility provided by the ubiquitous availability of mobile technology. The lecturers' decision to incorporate mobile technology also appeared to be triggered by other contextual and institutional constraints such as inadequate IT infrastructure, the absence of well-resourced libraries, frequent power shutdowns, and mobile internet cost. It appears that technological affordances played a vital role in the participant-lecturers' pedagogical decisions and practices

which enabled them to use the transactional, temporal and physical affordances in their learning ecosystems for teaching core EFL skills and providing personalised assistance to their students.

The students' data revealed that the students frequently used many of the technological enablers incorporated by the lecturer-participants (e.g., electronic dictionaries, WhatsApp, emails, YouTube, Google Assistant and Google Classroom). However, unlike their lecturers, the student-participants also drew on other web-based technological resources at Khan Academy, Quora.com, Engvid.com, and Facebook. The primary reason for the students' use of these technological enablers, accessible with mobile technology, was to capitalise on them for EFL learning and to seek assistance from their peers and other people available online anytime, anywhere. The lecturers and their students also identified various technological constraints such as inadequate IT infrastructure in the universities, power shutdowns, and mobile internet costs.

8.2.3 The temporal, physical and transactional dimensions

The temporal dimension refers to the affordances related to the time and length of learning, such as unplanned, short periods (e.g., travelling, sitting in the cafe) or planned, more extended periods (e.g., planned lessons, studying in the library). The physical dimension represents the places or locations of learning, including particular circumstances at the time of learning, authentic and virtual contexts (see Section 2.5.2). The transactional dimension refers to the participants' interactions with various resources, contexts, and people in the virtual and real worlds (see Section 2.5.3). In Pakistani universities' learning ecosystem, these three dimensions are blended with the technological dimension and driven by the lecturer-participants' pedagogical decisions, as illustrated in Figure 8.1.

There was evidence that the physical, temporal and transactional dimensions were highly interconnected. There was evidence that the lecturers' pedagogical decisions to utilise mobile technology enabled students to interact with content, contexts and people across times and spaces for EFL learning. For example, all six lecturer-participants integrated mobile-accessible audio and video clips to teach listening skills. The students' practices with mobile technology probably informed the lecturers, who made EFL resources available on the students' mobile devices. Nine of 12 observed lessons also provided evidence of how the lecturers' pedagogical decisions to draw on the flexibility of mobile technology helped students exploit the transactional, physical, and temporal affordances of technology to enhance their listening skills.

The analyses of survey and focus group data suggested that the students were extensively taking advantage of mobile technology's flexibility for enhancing their EFL listening skills. The study also found compelling evidence of students' utilising mobile technology's transactional, temporal, and physical affordances. They seemed to improve their listening skills by interacting with resources on mobile technology at multiple times and places such as cafes, slots of power shutdown, buses, and gaps between classes.

The lecturers' pedagogical decisions to utilise technological affordances also provided their students with spoken English practice opportunities across times and spaces. Five out of six lecturer-participants reported using mobile technology to enhance their students' speaking skills in English. Four out of six lecturers indicated that making transactions with EFL resources (e.g., web browsing, e-books, and listening clips) helped students develop their speaking skills because EFL reading and listening enriched students' content knowledge, ideas and vocabulary. Eight of the 12 observed lessons provided evidence of how the technological affordances facilitated students' transactions with EFL resources, resulting in peer or group discussions.

Moreover, perhaps the most exciting finding was the lecturers' use of built-in video camera recorders. The lecturers helped their students optimise mobile technology's transactional, physical, and temporal affordances by assigning out-of-class video recording assignments about various topics. The lecturers encouraged students to speak English by facilitating their transactions with multiple people and authentic contexts. The mobility feature appeared to be utilised optimally by the lecturers to provide opportunities for speaking English across times and spaces.

Interestingly, contrary to the lecturers' practices and perceptions, analysis of the student data suggested that most students did not perceive mobile technology as beneficial for developing their speaking skills. In the survey, only a small number of students (21.60 %) indicated that mobile technology was useful in enhancing their speaking skills. While most of the focus group participants also did not consider the affordances of mobile technology helpful for their spoken English practice, some commented on the benefits of the lecturers' decisions to situate EFL activities in authentic contexts. In both the survey and focus groups, the students' responses indicated the need to include their voices in the design of learning activities.

A key finding was related to the role of mobile technology in teaching reading skills. The data suggested that the technological affordances of mobile technology were fundamental enablers for the lecturers to engage their students in EFL reading because of insufficient resources in the libraries and the cost of purchasing books and photocopying notes. Data from lecturers' reports and observation of their practices provided examples of lecturers' pedagogical decisions to make EFL resources available on students' mobile devices, which helped them harness the affordances of the transactional, temporal, and physical dimensions. The lecturers also reported that they made the resources available so that their students could access and read EFL content anytime, anywhere. In eight of the 12 observed lessons, mobile technology's role appeared to be fundamental in teaching reading skills as the students accessed and read the content stored at and accessed through their mobile devices. Additionally, Amir's pedagogical practices indicated that he engaged his students in EFL reading through interactions in English on Google Classroom.

The students' data confirmed the lecturers' claims of the benefits of mobile technology for accessing and reading EFL content. The students' perceptions and practices were indicative of the interactions of the technological, transactional, physical, and temporal dimensions reinforced by the lecturers' pedagogical decisions (see Figure 8.1). Evidence of the interconnectedness of mobile technology affordances was apparent as all the focus group participants and more than half of the survey respondents confirmed that mobile technology's technological affordances enabled their transactions with EFL resources across times and space, which improved their reading in English. The students accessed and read newspapers, e-books, and web-based resources and read their peers' social media posts.

For the development of students' EFL writing skills, mobile technology appeared to play a limited role in the lecturers' pedagogical practices. Four out of six lecturers did not consider mobile technology to benefit students' writing in English, as students tended to use abbreviations when writing on their mobile devices. In contrast, because of their students' use of mobile social media, two out of six lecturers decided to incorporate mobile technology in teaching EFL writing skills. For example, Amir and Aly used mobile technology to engage their students in making written transactions through GC and WhatsApp in formal and informal environments.

Student-participants' opinions concerning the use of mobile technology to develop EFL writing skills were diverse. Although some students did not like mobile devices for practising their EFL

writing skills because they were difficult to use, most of the students indicated that they were already using portable devices to write social media posts and text messages. Students' writing practices on social media with mobile technology differed from their lecturers' perceptions of their use.

Another significant finding of this study was the role of mobile technology in the lecturers' pedagogical practices for providing personalised assistance and feedback to students. The analysis of lecturers' data revealed that mobile technology was used to assist their students' EFL learning, with five of the six lecturers reporting that they drew on multiple mobile apps and resources such as emails, WhatsApp and GC. For example, the lecturers reported helping their students select their dissertation topics and solve any problems they came across while learning autonomously.

However, one of the lecturers did not consider mobile technology beneficial for feedback or assistance because she found it challenging to cater to all the students' personal needs. Similarly, Adam said he preferred not to join course-specific WhatsApp or Facebook groups because of the time constraints, although he replied to his students' emails as soon as possible using his mobile devices. The lecturers, generally, preferred not to engage in detailed discussions using mobile technology platforms because of large-sized classes, even though they were willing to attend to their students' needs when possible.

From the survey and focus group data, students' views on the use of mobile technology to seek EFL related assistance from their lecturers were mainly contrary to their lecturers' perceptions and practices. Although the lecturers appeared to be ready to answer their students' questions, they were not most students' preferred people to approach for assistance. Instead, the students sought assistance from their peers on Facebook or WhatsApp and from other online contacts (e.g., people at Quora.com or Engvid.com) because they more likely could get immediate and detailed answers.

Overall, all key findings reiterated the interconnected relationship of all five dimensions and the centrality of the pedagogical dimension, as illustrated in Figure 8.1. The data also revealed that mobile technology's affordances are redefining lecturers' roles because their students' learning practices are constantly evolving as a result of the rapid development of mobile technology. This

section also described the lecturers' tensions in making their pedagogical decisions regarding the use of mobile technology in their pedagogical practices.

8.3 Mobile technology as the principal pedagogical enabler

This section discusses the availability of mobile technology in contributing to lecturers' pedagogical decisions to make EFL resources accessible on learners' mobile devices and how these resources enabled student-participants to utilise mobile technology's transactional, temporal and physical affordances. This section also discusses issues related to the technological affordances in teaching and learning core EFL skills.

As established in Chapter Six, mobile technology's pervasive availability was found to be the central enabler of EFL teaching and learning in the Pakistani university context because many students either did not own personal computers due to financial constraints or did not carry their laptops at all times. Likewise, the resource-constrained Pakistani universities were unable to provide well-resourced libraries, workstations, and workspaces for increasing numbers of students. Mobile devices were, therefore, an affordable and available substitute for books and computers for students and the only way of connecting to the internet for many students. The lecturers and their students took advantage of the affordances of various “technological enablers” (Palalas, 2013b, p. 89) (i.e., resources and affordances) for teaching and learning core EFL skills and providing personalised assistance.

The lecturer-participants' major use of mobile technology appeared to be the organisation of their teaching by disseminating EFL resources through various technological enablers (e.g., WhatsApp, Facebook, emails, and Google Classroom) and by communicating with their students about course-related matters such as examination schedules and changes in the timetable. For example, all six lecturer-participants shared EFL resources through either WhatsApp, emails and GC or set up a WhatsApp group to share resources. However, although the lecturers set up Facebook pages, they never directly used them but ensured that course content was disseminated on WhatsApp and Facebook through Class Representatives. All the students were expected to store and access the content on their mobile devices.

Although the lecturers appeared to utilise the affordances of many technological enablers for the practical purpose of sharing EFL resources, their pedagogical decision to draw on these resources seemed to be driven by their students' learning practices which incorporated mobile

technology. As evident from the analyses of the survey and focus group data, the students used WhatsApp for making transactions related to EFL and their non-educational activities, which generally occurred in the English language. All focus-group participants expressed their appreciation of the vibrant discussions on diverse topics on WhatsApp and the possibility of getting immediate responses from their peers. The students' extensive interactions in the English language and the sharing of multimodal content were also observed on Facebook. The students' discussions suggest that the lecturers have decided to set up specific groups at WhatsApp and Facebook to promote autonomous learning and enable peer assistance.

The lecturers' pedagogical decision to make the resources available on their students' mobile devices appeared to encourage student-participants to learn EFL anytime, anywhere. The ease of access to EFL content through mobile technology seemed to be the determinant in enabling students "to access and store...all sorts of knowledge almost instantly and almost wherever they are" (Traxler, 2010, p. 154). It was evident from the students' data that the availability and accessibility of EFL resources on their mobile technology liberated them from the confines of times and spaces. They were able to make transactions with EFL resources in formal (e.g., classroom, library) and informal (e.g., café, bus) spaces and times to bridge the gap between learning at formal and informal places.

Contextual barriers such as disrupted internet connectivity, frequent power shutdowns, and the absence of well-equipped computer labs appeared to be the fundamental reason for the lecturers' decision to use mobile technology as a storage device and an access point. The issues related to internet connectivity and mobile internet cost that echoed in all the data sets seemed to affect the pedagogical decisions regarding using mobile technology as an alternative to traditional resources (e.g., books and computers). As previously noted, the lecturers also seemed to be aware of the financial constraints, making it difficult for some students to buy mobile internet, personal computers, and books.

The lecturers' interview data and observed pedagogical practices provided evidence of the above-mentioned contextual barriers preventing them from optimising mobile technology affordances for in-class teaching. For example, Bina mentioned her failure to teach listening skills effectively in her lessons due to the absence of desktop computers and built-in speakers in classrooms as well as power shutdown issues and disrupted internet connectivity. The severity of

connectivity issues was also evident from the students' reports of switching off mobile data most of the time and lecturers' decisions not to plan in-class activities that required internet connectivity. The lecturers' decision to make EFL content available on students' mobile devices indicated that they were aware that every learner "acts and interacts within and with his environment" (Van Lier, 2004a, p. 246). Because the local environment at the research sites was not conducive to EFL learning using technology, the lecturers decided to make pragmatic use of mobile technology affordances that were available.

The discussion so far has identified that the lecturers in the present study utilised mobile technology in a purposeful manner that matched their students' needs and the contextual affordances and constraints. These notions are in accord with a study by Raghunath, Anker, and Nortcliffe (2016) that reported lecturers' pragmatic use of mobile technology. Raghunath et al. (2016) found that many lecturers from different departments in the UK universities used mobile technology primarily to coordinate their teaching, communicate with students about their study, curate, and share resources.

Evidence from the current study about the role of local factors in decision-making regarding the use of mobile technology for teaching and learning also concur with an observation made by Churchill et al. (2018). Churchill et al. (2018), having analysed m-learning projects in 17 Asian countries, noted that smartphones were used for teaching because of the contextual demands. As observed in the present study, Churchill et al. (2018) also noted that smart phones were "the primary or the sole means of internet access for large sections of the population" (p. 26), unlike many developed nations where mobile devices complemented desktop computers.

Likewise, empirical research conducted in Pakistan by UNESCO (2017) provided evidence of how the mere availability of content at mobile devices proved the primary driver for a successful professional development programme. As reported in these studies (Churchill et al., 2018; UNESCO, 2017), and seen in the present study, it seems that, in the absence of adequate institutional IT infrastructure and the students' personal computers or laptops, mobile-enabled or accessible EFL resources become the fundamental "technological enablers" (Palalas, 2013b, p. 89) for teaching and learning.

Overall, evidence from the present study regarding the lecturers' pedagogical decisions and actions being underpinned by the ubiquitous availability of mobile technology adds to the

existing knowledge that the dynamics of specific times and circumstances are fundamental for teaching and learning in an eco-system (Hoven, 2007; Liu & Chao, 2018). Since the dynamics of a learning eco-system in Pakistani universities appeared to be different from those in other contexts, the lecturers appeared to adopt an “ecological approach to pedagogical decision making” which “entails studying situations “locally” in their terms” (Tudor, 2003, p. 9).

8.4 Mobile technology for teaching core EFL skills

The following four sub-sections discuss how the mobile-enabled accessibility of EFL content was incorporated into the pedagogy for teaching core EFL skills. The current study found that, in some cases, transactions mediated by mobile technology helped the lecturers teach two or more skills together, as consistent with the notion of ecology. Although all four skills have been discussed separately in the following sections, for the sake of clarity in the current chapter’s organisation, the discussion of one skill often overlaps with that of others. However, technology-enhanced language teaching and learning practices do not view “digital writing as separate from reading, nor implements speaking practice in isolation from listening” (Blake, 2016, p. 137).

In the current study, it was observed that, in many cases, the lecturers taught listening and speaking skills together. Likewise, at times, the teaching of reading and writing skills also appeared to be linked, although no specific pattern related to teaching two or more skills together was observed. For example, Bina’s students used mobile technology to record and listen to a TEDx Talk, which she used in class to engage her students in critical writing. In contrast, Amir decided to draw on the OneNote app’s flexibility and richness to enhance his students’ listening skills based on a paragraph written in the observed lesson. The following four sections discuss how the lecturers’ pedagogical decisions of incorporating mobile technology helped them teach core EFL skills separately and in various combinations. The following sub-section also explains how the five dimensions operate in Pakistani universities’ learning ecosystem by illustrating the interconnectedness of all five dimensions through diagrams.

8.4.1 Listening skills

In the Pakistani context, students’ EFL listening skills are not fully developed as there are few adequate opportunities for listening to the English language for extended periods, a typical characteristic of any EFL context. Other contextual barriers (e.g., absence of well-equipped computer labs or classrooms) also work as hurdles in developing students’ EFL listening

proficiency. Extensive ownership of mobile technology among student-participants seemed to provide an opportunity for immersion in EFL listening anytime, anywhere. Figure 8.2 illustrates how all five dimensions interact to facilitate students in enhancing their listening skills in English in their ecosystems.



Figure 8.2. Teaching EFL listening skills in the MALL ecosystem of Pakistani universities

The findings suggested that the provision of access to EFL content through mobile devices played a significant role in the lecturers’ pedagogical decisions to teach listening skills during formal lessons. Data analysis provided evidence on how mobile technology facilitated students’ interactions with EFL content inside the classrooms. For example, Bina and Sara’s students listened to audio clips taken from IELTS practice tests; Amir’s students listened to a short

paragraph written by themselves using Microsoft Immersive Reader; Aly's students were engaged in listening activities through YouTube videos; Huria's students utilised mobile devices to listen to vowels. The lecturers' pedagogical decisions to make EFL content available on students' mobile devices, to enable students to store, access and make transactions with listening clips (see Section 6.3), responded to various contextual constraints (e.g., inadequate IT facilities) in their ecosystem.

As well as in-class listening with mobile technology, data analysis showed that mobile technology enabled students' transactions with audio-visual resources at various informal times (e.g., driving, walking) and spaces (e.g., gym, cafe) (see Figure 8.2). The lecturers also referred to other resources (e.g., YouTube, L2 websites) to engage their students for EFL listening independently. The students reported that EFL content accessible on their mobiles provided or suggested by their lecturers enabled them to make frequent interactions with the resources.

The lecturers' pedagogical decision to engage their students in listening activities in informal environments increased exposure to EFL listening clips, highly beneficial in an EFL context. This finding is crucial as it indicates the potential technological affordances of mobile technology in enhancing students' listening skills in resource-constrained contexts. The significance of the ubiquitous availability of mobile technology is reinforced because it is the only way of increasing learners' engagement with listening content in and beyond the classrooms in many resource-constrained contexts.

These findings, related to enabling students' listening practice in formal and informal environments leveraging on the ubiquitous availability of mobile technology, reiterate the benefits of taking advantage of the technological, temporal, physical, and transactional affordances of mobile technology to support EFL pedagogy in Pakistani universities' MALL ecosystem (see interactions of various dimensions in Figure 8.2). The findings mirror those of the previous studies that have reported the benefits of accessible content for listening activities on mobile technology. For instance, in a study conducted by Read and Kukulska-Hulme (2015), learners' ability to access audio clips on their mobile devices was found to be encouraging for "the prolonged practice of listening comprehension" (p.1327). Similarly, in a Korean university context, Reinders and Cho (2011) reported their students' increased engagement and more chances of accessing EFL content when made available on their mobile phones. Similar to the

students' experience in these studies, the ability "to control when and for how long to listen to the materials" (Reinders and Cho, p.5) was also deemed an exciting experience by the students in the current study.

Furthermore, there was evidence of the lecturers' pedagogical practices of incorporating mobile technology affordances to teach two skills together. For example, Amir harnessed the affordances of Microsoft OneNote and Immersive Reader for teaching listening and writing skills in an integrated way as he engaged his students in listening to a paragraph written by themselves. Amir's pedagogical decision to utilise Microsoft Immersive Reader also engaged learners through personalised choices in terms of font size, font colour and voice control for text-to-speech while practising their listening skills.

The students' observed engagement in experimenting with various functions of the tools in Amir's lesson signalled a pedagogical possibility with the personalisation of language resources that seemed to have been missed by other lecturer-participants. It appears that the lecturers may generate more interest in EFL learning among their students by appropriately utilising mobile-enabled apps, which could increase the scope of personalised activities.

The transactional affordances of Google Assistant were used to engage learners to develop their listening and speaking skills. Two out of six lecturer-participants reported having incorporated Google Assistant to encourage students to overcome their communication barriers to developing listening and speaking skills. It was also confirmed by the students' data (see Section 7.2.2) that the lecturers provided learners with an immersive learning experience by promoting Google Assistant as a chat friend or a communication partner (Fryer et al., 2019; Kukulska-Hulme et al., 2021). This finding has critical pedagogical implications with regard to teachers' awareness of students' learning practices with mobile technology, alluding to the strong possibility of enhancing students' linguistic competence by leveraging existing tools and practices.

Additionally, Sara and Adam used Google Assistant "in ways beyond those envisioned by the developer[s]" (Hubbard, 2013, p.166). Their pedagogical practice of encouraging their students to interact with Google Assistant, although less prevalent as compared to other apps and resources, suggest that they might have incorporated it to enable students' meaning-making in authentic contexts anytime, anywhere, through personalised interactions. These findings, related to interactions with Google Assistant, allude to another pedagogical possibility for expanding

listening and speaking practice opportunities in EFL contexts by incorporating the affordances of easily accessible virtual assistants for language teaching.

The use of Google Assistant aligns with the results of recent empirical studies (Alm & Nkomo, 2020; Fryer, Nakao, & Thompson, 2019), which have reported learners' readiness to use virtual assistants as conversational partners for L2 practice in informal environments. Similar to the current study's findings, the aforementioned studies noted students' more positive attitude towards EFL learning through virtual assistants, which expanded opportunities of speaking English in authentic contexts in more interactive, enjoyable, and engaging ways.

Overall, the lecturers' pedagogical practices indicated that they took into account various mobile-enabled affordances (e.g., YouTube, Google Assistant, GC and L2 learning websites) and constraints (e.g., Internet disruption and affordability issues) for EFL teaching, which indicated an awareness of students' use of mobile technology within their ecosystems. The lecturers' pedagogical decisions to incorporate mobile technology affordances for teaching listening skills is consistent with the findings of another study (Palalas, 2012) which is also informed by the ecological paradigm. Similar to the use of mobile technology in the current study, in Palalas's (2012) study, mobile technology facilitated the pedagogical harnessing of the entire network of interactions with mobile-enabled resources and environmental affordances in students' ecosystems, providing learners with more opportunities for L2 listening (see Section 2.5 for details of Palalas' s study).

However, the findings of this study are not consistent with Palalas's (2012) significant finding concerning students' interactions through a specifically designed website to develop their EFL skills. Palalas examined how a website or a web-based ecosystem could facilitate interactions among various components and actors of a learning ecosystem. In Palalas's (2012) study, learners completed specifically designed eight listening tasks "which were related and fed into each other". The students completed individual as well as collaborative listening activities and interacted through a web-based platform which encouraged collaboration. In contrast, the listening activities assigned by the lecturer-participants in the current study were primarily individual tasks. The students were not provided with any opportunity to collaborate at virtual platforms with regard to listening activities.

The differences are due to two reasons. Firstly, the time allocated for data collection for the current study was limited, whereas Palalas's (2012) study was longitudinal and employed an iterative data collection process. Therefore, an examination of the impact of a web-based ecosystem was beyond the scope of this study. Secondly, the current study examined the existing pedagogical decisions and practices of six lecturers who were teaching various courses; therefore, the focus of the listening activities also varied in each lesson. For instance, in some observed lessons, listening clips were played by the lecturers to introduce a topic or to give further information about the topic (e.g., listening clips about intercultural communication and conducting business meetings). Although these were examples of collective listening, the lecturers primarily did not plan them as collaborative listening activities. The objective of these listening activities was, instead, to provide details about the topics.

The findings discussed in this study are also not consistent with a seminal study by Demouy and Kukulska-Hulme (2010). They reported that their learners needed some quiet place for interactive listening and speaking activities while learning in authentic contexts with mobile technology. In contrast, in the current study, when asked about issues related to their EFL learning with mobile devices outside the classrooms, none of the focus group participants reported having been interrupted by any outside distractions despite their extensive use of mobile technology for listening in authentic contexts. However, they were bothered by the distractions that existed within their phones (e.g., social media notifications mentioned in Section 6.3.3). It appears that the use of mobile technology has become more normalised for the student-participants of the current study as compared with those who participated in Demouy and Kukulska-Hulme's (2010) study a decade ago. In the present study, participants appeared to have developed strategies to control or minimise outside distractions. The findings related to listening in informal contexts also do not corroborate those reported by Liu et al. (2018) because they investigated students' listening in informal contexts through specifically designed software. In contrast, the current study's focus was to examine the existing pedagogical practices.

An analysis of lecturers' pedagogical decisions about the use of mobile technology for enhancing their students' listening skills and students' learning practices suggests that lecturers in the present study adopted pedagogies that responded to their students' mobile technology ownership. The pedagogical decisions also responded to the need to provide ample opportunities for

immersion in the English language, a significant aspect of language pedagogies in foreign language contexts. These findings complement the current understanding of the role of mobile technology in providing extended exposure to second language learners within their learning ecosystems which span from educational institutes to their social lives in the authentic and virtual spaces.

In summary, this sub-section discussed how mobile technology's technological affordances helped the lecturers overcome barriers related to institutional IT infrastructure. The lecturers' decision to incorporate EFL mobile-mediated resources appears to be fundamental for teaching EFL listening skills in formal lessons. The lecturers' pedagogical decisions and practices regarding EFL listening skills appeared to influence their students' learning practices for enhancing their listening skills in informal environments. The students were able to make transactions with EFL resources in formal and informal settings due to the lecturers' pedagogical decisions of optimising the transactional, temporal, and physical affordances of mobile technology.

How the technological affordances were utilised by the lecturers and their students for teaching and learning speaking skills will be discussed in the following section.

8.4.2 Speaking skills

In the Pakistani context, despite studying EFL as a compulsory subject in schools, university students are not confident English language speakers because there are limited opportunities for listening and speaking English in EFL contexts (Shadieva, Hwang, Huang, & Liu, 2015). As indicated in Chapter One, as a result of a new education policy for learners of the 21st century, EFL courses in Pakistani universities focus mainly on developing students' communicative competence; lecturers, therefore, make efforts to provide spoken English opportunities. While answering the overarching research question about mobile technology's role in EFL lecturers' pedagogical decisions and practices, this study also investigated how the lecturer-participants used mobile technology to enhance their students' speaking skills.

This section discusses mobile technology's pedagogical use for enhancing students' speaking English skills in formal and informal environments.

8.4.2.1 *Spoken English practice in the classrooms*

Analysed data from interviews and observation revealed that mobile technology played an indirect but significant role in the lecturers' pedagogical decisions to enhance students' EFL speaking skills in the classrooms. Speaking activities during the formal lessons included: students' activities on mobile-enabled social media activities; discussion about cricket after browsing links to a local cricket tournament; and speaking practice after watching YouTube videos about a local religious cleric and the president of the USA (see Sections 5.2.6 and 7.2.5). There was also evidence that students' mobile-enabled transactions with EFL content (e.g., web browsing and watching YouTube videos) increased participation in class discussions by providing them with content knowledge, ideas and vocabulary (see Section 7.2.3).

The lecturers' pedagogical decisions to engage students in speaking English in the classrooms suggested that their pedagogical practices were student-centred as students' interests in specific topics drove spoken English activities (e.g., cricket and social media). Data also suggested that the students' use of YouTube to obtain information about various educational and recreational topics informed the lecturers' pedagogical decisions to include YouTube videos to teach listening skills. Lecturers' decision to incorporate their students' transactions with EFL resources using mobile technology as "discussion starters or warm-up activities" (Godwin-Jones, 2018b, p. 9) appeared to enable them to integrate the teaching of language skills (e.g., speaking based on web-based reading and listening/watching YouTube videos).

8.4.2.2 *Spoken English practice at informal spaces*

There was also evidence that the lecturer-participants utilised mobile technology affordances to provide learners with opportunities for spoken English practice in authentic contexts. Figure 8.3 illustrates how the lecturers connected various components of the MALL ecosystem in Pakistani universities to enable their students' interactions with authentic contexts and people.

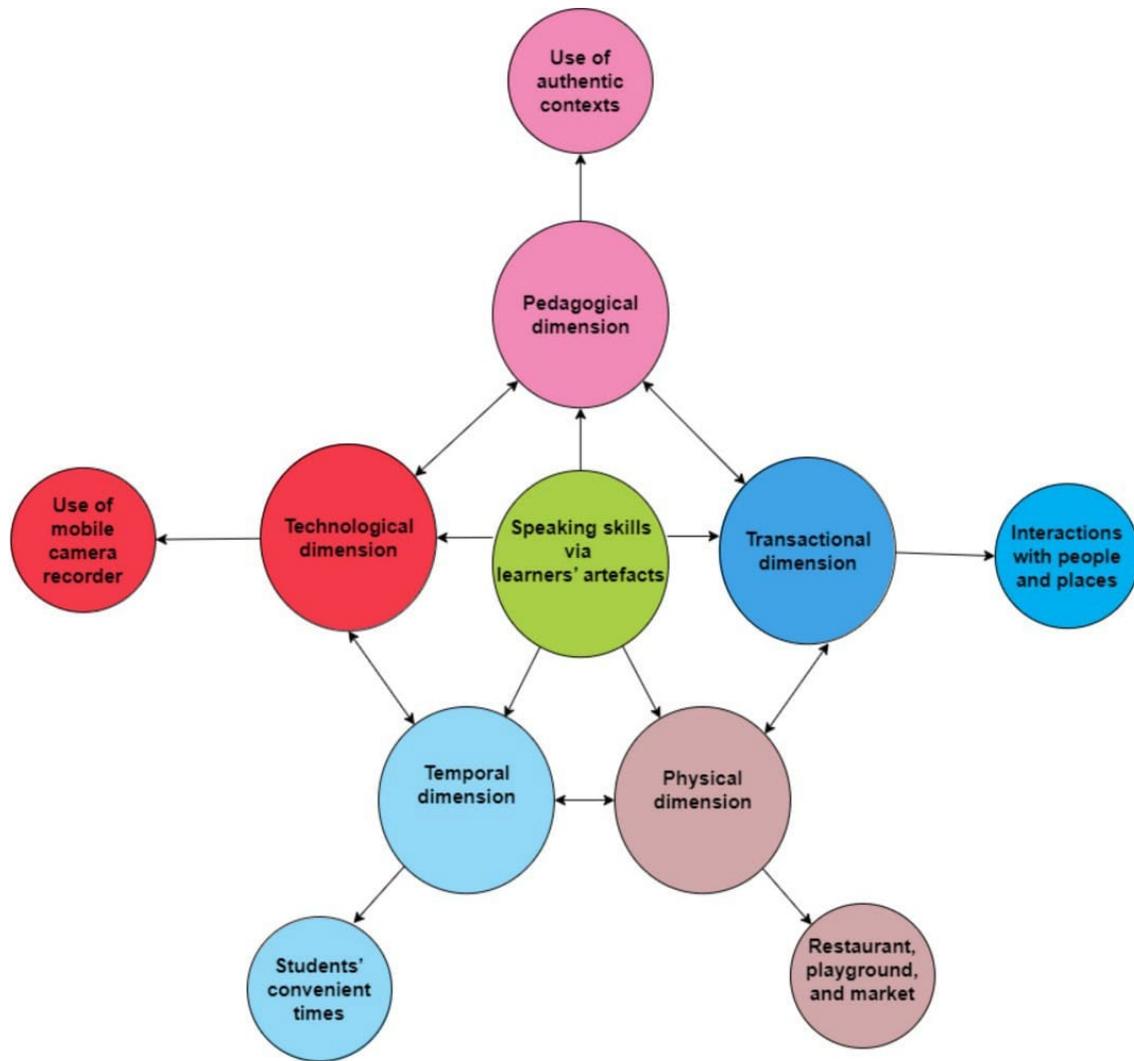


Figure 8.3. Teaching EFL speaking skills in the MALL ecosystem of Pakistani universities

Lecturers incorporated mobile technology to enhance students' speaking skills through out-of-class assignments using a mobile camera-recorder (see the technological and pedagogical dimensions in Figure 8.3). Four out of six lecturers reported that they drew on mobile technology's technological affordances to harness the transactional, temporal, and physical affordances to provide their students with more spoken English opportunities. The reported and observational data provided a number of examples of video-recording assignments in authentic contexts. The videos recorded in authentic contexts include communication with people in the market, people representing multiple countries, a mock business meeting, a talk by a Pakistani

business entrepreneur and commentary on university cricket matches (see the transactional, temporal and physical dimension in Figure 8.3 and Section 7.2.3.1).

One interesting finding was the lecturers' pedagogical decisions to situate spoken English activities in real-life contexts drawing on mobile devices; thus, making learning experiences mobile for their students. As well as experiencing mobile learning, the students were not only able to collaborate around mobile devices (e.g., recording of a mock business meeting), but also to make transactions with various people (e.g., recording of a conversation with random people), and contexts (e.g., recording commentary on cricket matches). The lecturers ensured that their pedagogical decisions about situated activities could enable students to learn from dynamic contexts, which could “feed directly into their unfolding learning” (Pegrum, 2014, p. 19).

The lecturers' contextualisation of spoken English activities is particularly significant in an EFL context, as there are limited or no opportunities of speaking L2 in real-life. The video recording assignments in informal environments appeared to be an outcome of the lecturers' pedagogical decision to transform everyday activities of “the life-world of users” (Pachler et al., 2010, p. 13) into rich language learning experiences using the affordances of basic built-in features of mobile technology. Figure 8.3 illustrates how all five dimensions intersect to facilitate EFL teaching and learning in Pakistani universities' MALL ecosystem.

8.4.2.3 *Bridging the gap between formal and informal spaces of learning*

The current study also revealed a unique but significant feature of mobile technology for enhancing students' speaking opportunities. Instead of replicating real-life scenarios for L2 teaching in an EFL context, the lecturer-participants drew on mobile technology's flexibility to incorporate student-created artefacts (e.g., video recordings and pictures) captured in authentic contexts. Four of the six lecturer-participants utilised mobile technology to incorporate informal learning into formal lessons linking informal and formal language learning through student-created artefacts (e.g., video-recorded assignments and pictures), as recorded in Chapter 7 (see Section 7.2.5.2).

The informal video-recordings were not stand-alone assignments; they appeared to be based on the lecturers' informed pedagogical decisions as evident in their observed pedagogical practices in which recorded videos were played (e.g., students' conversation with a restaurant manager, TEDx talk by a young entrepreneur, and the mock business meeting). In one observed lesson,

Aly also incorporated students' written captions for pictures he had shared on WhatsApp outside the classroom, thus blending informal learning and formal lessons through feedback. They also engaged students in the classroom with peer feedback opportunities, making students notice linguistic, collaborative and social affordances inherent in student-created artefacts using mobile technology.

The lecturers' pedagogical decisions to contextualise EFL activities through mobile technology's technological features appeared to generate more spoken English practice opportunities for learners. The contextualisation of spoken English activities also seemed to signal the possibility of EFL teaching beyond the artificiality of in-class language teaching, which is a typical characteristic of EFL environments.

Moreover, the rationale behind the lecturers' pedagogical decision to incorporate students' language learning at informal spaces into formal lessons appeared to be an informed decision for the creation of "reflective scenarios" to enable students to notice linguistic affordances "from captured mobile data being brought back into the classroom" (Kukulska-Hulme et al., 2017, p. 4). The lecturer's pedagogical practice of leveraging the situated EFL activities in formal lessons, evident in playing video-recorded assignments and discussing captions given on photos, maintained "a continuous flow of meaning-making despite changes in the physical and social context" (Sharples, 2015, p. 41). The lecturers' pedagogical decisions regarding the bridging of a gap between learning at formal and informal spaces make a significant contribution to MALL literature as it raises the possibility of considering language learning at informal and formal places "as a continuum or integrated approach" (Socokett & Toffoli, 2020, p. 472) rather than considering learning at both spaces as "discrete categories" (Hubbard, 2020, p. 405).

The lecturers' pedagogical actions with regard to breaking down the barriers between learning at formal and informal spaces extend our understanding of how the pedagogical use of mobile technology could facilitate students' learning across times and spaces. It also contributes to the growing body of literature about language teaching using an ecological perspective, which encompasses the totality of language learning experiences occurring as the result of mutually interdependent interactions among knowledge resources, contexts, teachers, and learners.

In contrast, analysis of the survey and focus group data suggests that the students did not perceive the role of mobile technology as advantageous in enhancing their speaking skills in

English as intended by their lecturers. Only 21.60 % of the survey respondents considered mobile technology beneficial for enhancing speaking skills. Likewise, most survey respondents did not view mobile technology as helpful for their spoken English practice. Many of the focus group participants did not seem to realise the intended outcome of video-recording assignments. Nevertheless, five out of 17 participants acknowledged that their communication with Google Assistant helped the development of their English-speaking skills.

The difference, as mentioned above, between the lecturers' intended and the students' perceived outcomes of various EFL activities suggests that planning and pedagogical approaches should include students as co-designers of their own learning experiences. Involving students in course design and acknowledging their agency in pedagogical decisions may lead to a greater shared understanding of learning strategies. Godwin-Jones (2018b, p. 12) has pointed out the importance of "explicit discussion with students of optimal strategies" for language learning that could potentially enrich language teachers' pedagogical practices.

In the present study, the lecturers' pedagogical actions regarding enhancing students' speaking skills concur with those reported in a study by Thoms (2014), which was informed by ecological perspectives. In Thoms's study, teachers' feedback on students' oral interactions became an affordance for the entire class, resulting in students' increased participation in the whole class discussion. Similarly, in the current study, the lecturers' feedback on student-created artefacts emerged as an affordance for other students leading to increased oral interactions. The empirical evidence of students' increased participation in class discussions because of teachers' feedback also supports Thoms's observation that adopting ecological pedagogies by exploiting available affordances can expand and enrich learning opportunities. These findings are consistent with those reported in previous studies that have documented the pedagogical affordances of different mobile devices features, including video recording function for enhancing learners' listening, speaking, and presentation skills of EFL students (Lys, 2013; McCarty et al., 2017a; Toland et al., 2016).

However, this study is unique as it also focuses on the development of the students' speaking skills in authentic contexts by recording their voices, which is unlike Sockett and Toffoli's (2020) observation that "informal activities mostly involve listening and rarely involve speaking" (p. 479). Contrary to the findings of other empirical studies (Hoi & Mu, 2021; Qian &

Tang, 2018) reporting teachers' limited role in students' out-of-class language learning, the lecturers in the current study played a significant role in designing and situating EFL activities in the authentic contexts to enhance students' speaking skills. This study also does not align with the studies that developed particular software or app to integrate formal and informal language learning (e.g., Palalas, 2012; Uosaki et al., 2012), as the development of a dedicated app or software for L2 teaching and learning was beyond the scope of this research.

8.4.3 Reading skills

Mobile technology has been heralded as a reading revolution as people increasingly access texts through their mobile devices, with mobile screens being transformed into portals for accessing various kinds of texts (UNESCO, 2014), notably in developing countries. With the rising popularity of mobile technology for reading instruction, this study investigated mobile technology's role in Pakistani lecturers' pedagogical decisions and practices to facilitate their students' EFL reading. Students' perceptions and practices regarding their use of mobile technology for reading were examined as components of an ELF learning ecosystem.

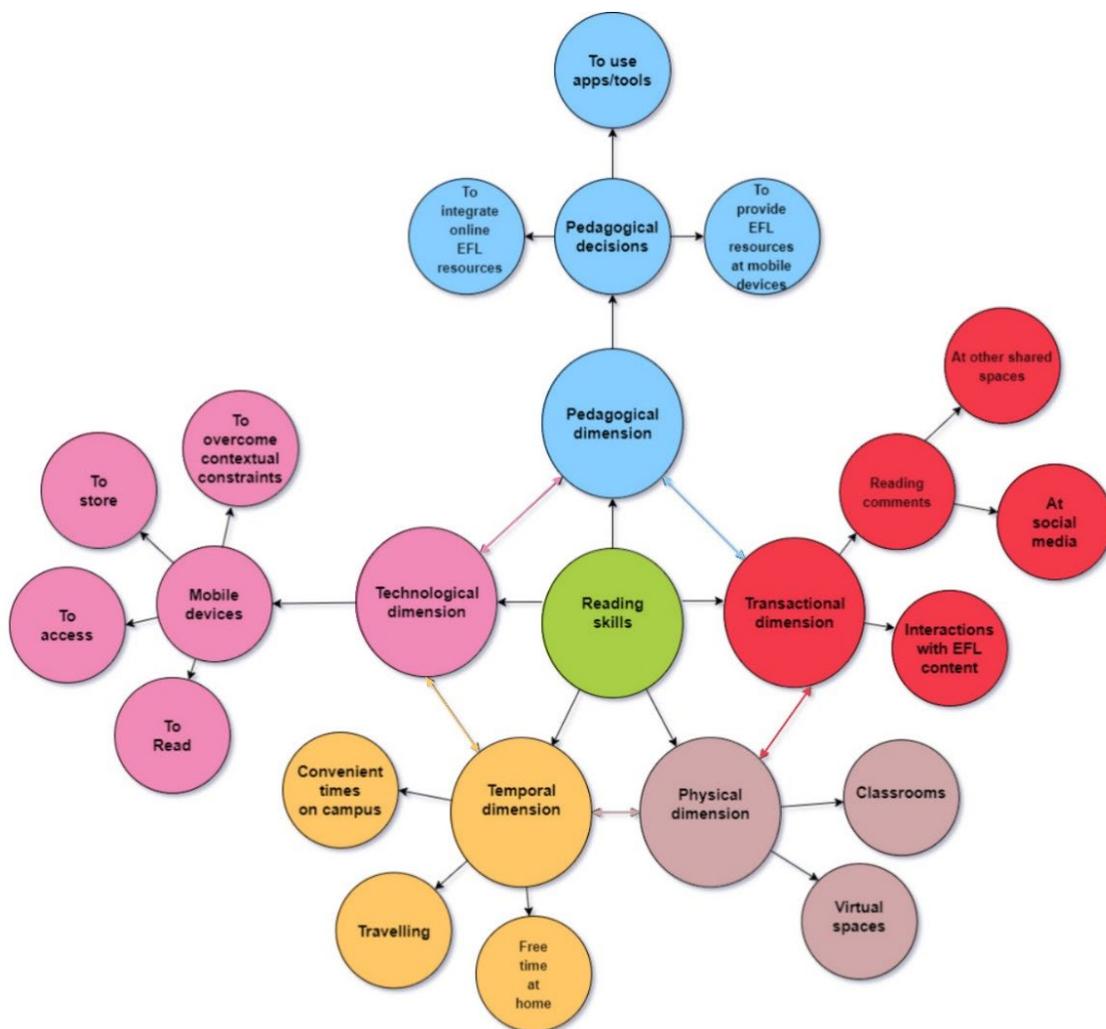


Figure 8.4. Teaching EFL reading skills in the MALL ecosystem of Pakistani universities

Figure 8.4 illustrates how the five dimensions operate in the MALL ecosystem of Pakistani universities. It illustrates how the lecturer-participants utilised mobile technology to connect various components to facilitate their students' use of mobile technology to develop their reading in English. Lecturers utilised the technological affordances of mobile technology for teaching reading skills by making resources (e.g., e-books, newspaper articles, and links to web sources) available to be stored and accessed at students' mobile devices (see the pedagogical and technological dimensions in Figure 8.4).

The lecturers' pedagogical decision addressed many contextual constraints identified previously. In eight of the ten observed lessons, the students made transactions with the resources stored on

their mobile devices or available online (see the transactional dimension in Figure 8.4). For example, Aly's students accessed a local cricket tournament website; Huria's students accessed and read an article about culture shock stored on their mobile devices; Sara's students accessed and read a newspaper article about the influence of social media on students' lives.

Besides responding to the contextual constraints to facilitate students' in-class L2 reading, the lecturers' decision to incorporate mobile technology facilitated students' L2 reading beyond the classroom (see the transactional dimension in Figure 8.4). For example, Adam indicated that he provided both electronic and printed versions of EFL reading resources for his students to enable students' reading at times and spaces (e.g., crowded buses) where carrying books might not be practical (see the physical and temporal dimensions in Figure 8.4).

There was strong evidence for the benefits of the lecturers' pedagogical decision of making reading content available on students' mobile devices. Students reported transactions with various articles, e-books, and web sources across multiple times and spaces such as: travelling in buses, during the slots of power shut-down, and gaps among classes (see Figure 8.4 and Section 7.2.3). While the students also described their reading habits of accessing and reading various books/articles independently, it appeared that the lecturers' pedagogical decisions encouraged students' recreational reading using their mobile devices.

Discussion so far has established that the students were supported and encouraged to capitalise on mobile technology's technological and transactional affordances to enhance their reading skills. However, several missed opportunities were identified, which could have become robust learning opportunities. For instance, the affordances of social media platforms/apps seemed to be overlooked by the lecturers. Students referred to their frequent interactions in the English language and their tendency to share multimodal information on Facebook and WhatsApp using their mobile devices, which could be a context for developing students' reading and writing skills in engaging, interactive, and collaborative ways.

Amir's pedagogical practices of incorporating GC, which appeared to be an exception to other lecturers' practices, illustrates a novel pedagogical approach of teaching EFL reading and writing skills in an integrated way in collaborative spaces. For example, he shared various course-related announcements such as explaining different components of assignments, informing students about assignment submission deadlines, writing short introductions of recommended readings for

the course and sharing information about social events happening in the city. The observation of online data revealed students' engagement in these transactions, indicating their interest in reading their lecturers' posts and peers' comments. Although Amir did not explicitly report on or make his students notice the affordances of collaborative reading, his pedagogical practices on GC suggested that his decisions encouraged students' collaborative reading and writing because they responded to their lecturer's messages and commented on their peers' responses.

The lecturers' pedagogical practices also included web browsing to encourage students' L2 reading. In six out of 12 observed lessons, the lecturers utilised mobile technology to engage their students in web-based reading related to lesson topics (see section 7.2.4 for details). Despite the lecturers' practice of engaging their students in web-based reading, they seemed to overlook the pedagogical possibilities of developing students' reading skills online because none of the lecturers explicitly explained online reading strategies. Huria's observed pedagogical practices illustrated how the lecturers missed opportunities to equip their students with online reading skills. She taught skimming and scanning skills in one of her observed lessons, but the students were never taught how to apply these skills while reading online using mobile devices, which was indicated a norm by the student-participants. The need to teach the techniques of skimming and scanning in the context of online reading cannot be overemphasised as most of the online interactions of mobile learners are "within genres that are exclusively or primarily text-based" (Godwin-Jones, 2015, p. 11).

Another possibility to enrich pedagogical practices by incorporating resources customised for EFL teaching available online was alluded to in the data. In this study, Sara drew on a BBC website, accessible through an app, to utilise EFL lessons customised for students of various proficiency levels. Sara's use of mobile-enabled web-based resources for teaching L2 reading suggests enriching pedagogical practices by incorporating content tailored for L2 readers with diverse proficiency levels. Although random web browsing may be beneficial for L2 reading to extend students' vocabulary and grammatical knowledge, as reported by Aly, customised EFL lessons could be more beneficial in developing students' L2 reading skills, as evident from Sara's practices.

Moreover, the lecturers' pedagogical decisions of drawing on the topics and content (e.g., social media influence, manual of mobile devices and cricket) for enhancing their students' EFL

reading skills signals that they were cognisant of students' interests in their everyday lives. The lecturers' decisions to enhance students' reading skills through exciting topics also suggest that they saw students' personal and academic lives as interconnected components of an ecosystem. The finding that students' reading skills are enhanced by including multiple topics supports the findings of another study by Ma (2017), who reported a multidisciplinary approach for EFL learning which enhanced students' reading skills as they read about their preferred topics.

The finding that the development of reading skills draws on mobile technology affordances corroborates the findings of a large-scale study conducted by UNESCO in seven developing countries, including Pakistan, in which ownership of mobile devices exceeds that of books and computers (West & Ei, 2014). Similar to the findings of the current study, the results of UNESCO's study demonstrated that people tended to read more at their convenient times and places due to the availability of content on their mobile devices.

In the current study, the pedagogical practices of the lecturers for teaching reading skills using mobile devices did not support prior research that documented the affordances of mobile technology to promote the skills of social and collaborative reading (Ahmad, 2019; Blyth, 2014; Khan, 2016; Thoms, Sung, & Poole, 2017). For example, Blyth and Thoms et al.'s studies investigated collaborative reading through a digital annotation tool called eComma. In contrast, the lecturers in the present study decided to develop students' reading skills using electronic copies of textbooks or newspaper articles. Although in some cases, the lecturers assigned the task of online reading when the students browsed the web to obtain information for in-class discussion, they did not teach students the skills of collaborative reading, which could have been an enriching reading experience for learners. Despite one of six lecturers' pedagogical use of Google Classroom, the students were not made of the affordances of collaborative reading. A possible explanation of the lecturers' decision not to teach collaborative reading skills might be that, unlike Blyth and Thoms et al.'s studies, five of six lecturers did not use any LMS or specific tool for EFL teaching that did not leave much room for teaching collaborative reading.

Other MALL research has also reported students' tendency to read other people's comments on social media and respond to them in written form (Blyth, 2014), thus alluding to the blurring of boundaries between reading and writing skills. Therefore, in this digital world, reading no longer remains "a static, solitary activity, but can also entail collaborative digital writing" (Blake, 2016,

p. 136). The following section discusses how mobile technology was incorporated for the teaching of writing skills. Pertinent to the interconnectedness of all elements of an eco-system, in Pakistani universities' learning eco-system, the discussion of writing skills intersects with that of other core skills.

8.4.4 Writing skills

Written communication is a significant feature of mobile-enabled interactions, such as text chat, microblogging, instant messaging, status updates on social media platforms, feedback, comments, and discussions. Although most mobile-enabled interactions are primarily text-based, mobile technology affordances have not been typically harnessed for teaching L2 writing due to usability issues. The teaching of L2 writing is usually limited to some grammar rules and vocabulary acquisition with teacher-led drill activities (Duman et al., 2015; Pegrum, 2014; Viberg & Grönlund, 2012).

Since problems with mobile technology usability are decreasing, its role in teaching L2 writing is becoming widely acknowledged. This study investigated mobile technology's role in lecturers' pedagogical decisions and practices for teaching EFL writing skills as well as students' perceptions and practices regarding the use of mobile technology for enhancing their writing skills.



Figure 8.5. Teaching EFL writing skills in the MALL ecosystem of Pakistani universities

This study found that the lecturer-participants emphasised mobile technology constraints more than its affordances for writing. For example, four out of six lecturer-participants expressed the view that mobile technology was not suitable for teaching writing skills due to the students' low engagement with the writing process, their tendency to write abbreviations and short texts (see the technological dimension in Figure 8.5). In contrast, being aware of the use of mobile technology in students' routine lives, two of the lecturer-participants saw pedagogical

possibilities in the affordances of mobile technology to develop short forms of writing, such as note-taking and text messages. However, it was interesting to note that all the participant-lecturers had set up course-specific WhatsApp and Facebook groups (see virtual spaces in Figure 8.5).

There appeared to be a disconnection between the lecturers-participants' mobile-incorporated pedagogical practices for teaching writing skills and their students' learning practices. Although usability issues were highlighted by nine out of 17 focus groups participants, they all considered mobile technology highly suitable for short forms of writing, such as social media transactions and text messages. Likewise, many survey respondents (38.89 %) also favoured using mobile technology to practise their writing skills.

The reported and observational data suggest that all the lecturer-participants considered mobile technology unsuitable for writing long documents (e.g., essays). For instance, the use of mobile devices was apparent in only two of the 12 observed lessons: a short paragraph at OneNote in Amir's class and a business email in Adam's. Amir's written interactions on GC, which engaged his students in written communication in the form of comments, were also observed. However, in the other ten observed lessons, pen and paper were used for all the writing activities (e.g., note-taking and writing a critical analysis of specific videos or articles). A rationale for preferring pen and paper or laptops to mobile technology for L2 writing in the formal lessons was the possible distractions caused by other interactions on the device, such as reading social media posts and replying to text messages.

Nevertheless, the use of mobile technology for EFL writing, as reported by Aly on WhatsApp as well as observed in Amir and Adam's lessons, suggests they saw the possibility of providing opportunities for students to practise shorter forms of writing (e.g., text messages and paragraph writing). Aly, Adam, and Amir incorporated the transactional affordances of mobile technology to encourage their students to use mobile technology for written communication. Amir also appeared to upskill his students' digital literacies by teaching them how to use OneNote for EFL writing.

However, there were various missed opportunities to utilise the affordances of mobile social media and apps to encourage students to write in English and teach EFL writing skills through mobile devices. Ironically, despite four out of six lecturers' reporting that mobile technology was

unsuitable for L2 writing practice, the students predominantly used course-specific WhatsApp groups and Facebook pages set up by the lecturers for written communication in English. The lecturers' perceptions about the inappropriateness of mobile devices for teaching writing skills were in sharp contrast to their pedagogical decision to encourage students' written communication through various mobile-enabled platforms (e.g., text messages, WhatsApp, emails). The students' extensive exchange of written text messages in the English language on WhatsApp and Facebook suggests that incorporating students' written transactions at social media offers a pedagogical possibility for developing L2 writing skills.

Although it is possible that students' writing practices might have informed the lecturers' pedagogical decision to establish WhatsApp and Facebooks groups on social media platforms, their decision not to use these to teach EFL writing was due to time constraints associated with large classes. It is also possible that lecturers may have planned to utilise students' social media transactions to notice linguistic affordances later in the semester once students got used to exchanging written communication on social media for educational purposes.

Two out of four lecturers appeared to incorporate shared spaces (e.g., WhatsApp and GC) to make students notice the collaborative and linguistics affordances of mobile-enabled written transactions. Amir and Aly used shared spaces to promote collaborative writing because they taught mature students (e.g., pre-service teachers and students in the final years of a bachelor's degree).

Likewise, there were missed opportunities to enhance EFL writing and reading skills through YouTube videos in the current study. For example, all the lecturers incorporated YouTube videos for various purposes, such as teaching listening skills, building academic vocabulary, and obtaining additional information. Nevertheless, this widely incorporated platform was not employed to develop L2 writing and reading skills. The affordances of comments given at YouTube videos appeared to have an immense potential to engage students in collaborative reading, writing and social negotiation of meaning.

Evidence of the lecturers' explicit focus on fostering communicative competence was apparent in the observed lessons such as Aly's lessons on intercultural communication; Sara's lessons about English comprehension and communication; Adam's lesson about business communication skills, and Bina's lessons about communication and presentation skills (see Chapter Five).

However, while the lecturers' pedagogical practices focused on fostering communicative competence, there were numerous missed opportunities for teaching writing and reading skills in students' use of web-based platforms. Data revealed the possibility of using students' online transactions to teach topics such as the influence of cultural influence on communication, barriers to intercultural communication, as well as reading and listening comprehension.

Moreover, despite being aligned with the topics taught by many of the lecturer-participants, the affordances of mobile-enabled social media platforms/apps (e.g., Facebook, WhatsApp, YouTube), and other collaborative spaces (e.g., Engvid.com and Quora.com), the lecturers did not take advantage of them for teaching EFL writing skills. They seemed to have missed an optimum opportunity to incorporate students' transactions at online collaborative spaces to develop communicative competence through authentic written conversations that were obviously of interest to the student-participants. The differences identified between the lecturers' pedagogical practices and their students' learning practices signal a need to embrace a flexible pedagogical approach built on students' evolving learning practices and interests.

This discrepancy among the lecturers' decision to set up and encourage communication at social media platforms and not use them to teach collaborative reading and writing skills signals the need for pedagogical training. It is possible that the lecturers might not be aware of pedagogical scaffolding of students' virtual interactions for EFL teaching. This possible rationale for the lecturers' contradictory approaches accords with the conclusion of Song and Kong's (2017) study. Lecturers in Song and Kong's (2017) study, on the one hand, encouraged students for bringing devices in the classroom, while on the other hand, they considered students' devices distracting and time-consuming and did not design lessons leveraging the ubiquitous availability of students' devices. The authors conclude as the researcher does that the lecturers' pedagogical training was required for exposing them to various ways of drawing on students' devices for teaching.

The findings related to mobile technology use for writing short texts or writing in small chunks are consistent with prior MALL research, which deems mobile technology suitable for shorter forms of writing (Pegrum, 2014). The student-participants' communication with YouTubers and presenters of Engvid.com is consistent with Benson (2015)'s study that has documented learners'

written comments at YouTube videos, which helped negotiate meaning and enhanced intercultural competence.

The current finding that lecturer-participants did not use mobile devices for teaching writing skills reflects the scarcity of studies in the field of MALL documented by Burston's bibliography (2013), in which only 5 % out of 345 MALL publications were about writing skills. These findings are also consistent with the evidence provided by Zaki and Yunus (2018) in an empirical study in the Malaysian context in which mobile technology was deemed as unsuitable for developing writing skills by the study participants who were pre-service EFL-teachers.

Another significant finding of the current study was that all the writing activities supported by mobile technology in the observed lessons were teacher-driven. Teacher-centred pedagogies are contrary to the current technology-enhanced writing trends that advocate for learner-led participatory L2 writing practices (Zheng, & Warschauer, 2017). Findings in the current study are inconsistent with research which shows that the proliferation of technology and mobile technology, as noted by Kern, Ware, and Warschauer (2017) and reported in various empirical studies (e.g., Andujar, 2016; Rambe & Bere, 2013a), has increasingly made writing the part of a socio-cultural paradigm. These differences might be due to different pedagogical approaches adopted by the lecturers in the present study and those adopted by the lecturers in the studies by Andujar (2016) in Spain and Rambe and Bere (2013a) in South Africa. In the present study, the lecturers' pedagogical decisions regarding writing skills did not capitalise on students' expanding learning horizons in the virtual spaces. In contrast, the lecturers in the referenced studies specifically leveraged the affordances of students' extensive interactions at WhatsApp to make them notice opportunities for improving their EFL writing skills.

In addition, the conclusions drawn by these studies (Andujar, 2016; Rambe & Bere, 2013a) also signal robust opportunities that were missed by the lecturers in the current study. For instance, the studies mentioned above signal an array of pedagogical possibilities inherent in WhatsApp interactions which have "evolved to become a new hybrid of spoken, written and electronic chat discourse" (Andujar, 2016, p.64); and provided "extended learning times and augmented traditional consultation spaces" (Rambe & Bere, 2013a, p. 552). These conclusions suggest that it is highly likely that if students' learning practices had informed the pedagogical decisions of the lecturers in the present study, they could have led to more sustainable, enriching and

engaging learning experiences. This conclusion, thus, adds to the growing body of research about the need to adopt student-centred pedagogies.

8.5 Pedagogical use of mobile technology for personalised learning assistance

It is increasingly acknowledged that mobile devices can play a significant role in providing “ad hoc or ongoing support for language learners inside and outside the classroom” (Kukulska-Hulme, 2019, p. 10). This study also examined mobile technology's role in the lecturers’ pedagogical decisions and practices in providing personalised assistance and feedback, as well as students’ perceptions and practices in seeking assistance in an EFL context. Although feedback and assistance are embedded in all forms of teaching, this section discusses personalised assistance for language learners in a separate section because the characteristics of mobile technology are redefining the entire notion of assistance (Kukulska-Hulme et al., 2021).

The provision of personalised assistance or feedback is a significant feature of MALL. Personalised assistance becomes crucial for learners learning in resource-constrained EFL contexts where no, or only a few, institutional systems are available for students to seek assistance except their teachers. The current study found that five out of six lecturers endeavoured to assist their students using mobile technology made through various platforms (e.g., emails, WhatsApp, and GC). For instance, mobile-mediated transactions were used to address Afghani students’ study-related issues by Bina; provide written or audio feedback on students’ assignments through GC by Amir; and help students select dissertation topics and motivate them for EFL learning through interactions at WhatsApp by Aly (see Section 7.3).

Overall, the assistance provided with mobile technology by all the lecturers except Amir was at surface-level or related to the organization of students’ learning. Amir's assistance was in the form of detailed feedback on students’ assignments. He also seemed to engage his student in EFL learning through ongoing support via multimodal messages at GC. Notwithstanding the level or purpose of assistance, generally, the lecturers tried to utilise the affordances of mobile-enabled transactions to address their students’ EFL-learning related issues by quickly responding to students’ queries across times and spaces.

However, the lecturers' feedback and assistance did not seem to cater to the students’ requirements, who wanted immediate feedback on EFL-learning topics while learning

independently. Although the lecturers addressed their students' needs whenever possible by quickly replying to their messages and emails, it was not possible for the lecturers, because of the large class size, to meet their students' expectations and provide detailed and instant individual feedback after hours. Therefore, the students preferred to seek assistance from online contacts at Quora.com, Engvid.com and their peers on Facebook and WhatsApp because they could get immediate and detailed answers to their questions using their mobiles on these platforms.

The students' practices of seeking help from other sources besides their lecturers illustrate their tendency and effort to be autonomous learners. They appeared to understand that providing immediate assistance was not possible for their lecturers because of their workload. Therefore, they sought other sources to get pedagogical assistance to supplement the feedback provided by their lecturers. Their practices of resorting to other networks for EFL-related assistance, using mobile technology, signalled that their learning contexts were expanding to informal environments. They seemed to be empowered by the flexibility and connectivity of mobile technology to make independent decisions about seeking assistance contingent on their needs at such times when they needed it the most.

Moreover, students' extensive conversations and discussions on WhatsApp and Facebook for EFL-related assistance from their peers appeared to have been triggered by the lecturers' well-planned pedagogical decision to foster autonomous learning among their students. Since learner autonomy is a "multifaceted construct that operates on several dimensions" (Reinders & White, 2016, p. 144), the lecturers might have encouraged their students' mobile mediated learning practices to foster learner agency, as well as to promote independent learning. The lecturers were aware of their time constraints and inability to cater to a large number of students' needs who expected immediate response from the lecturers. Therefore, they may have planned to empower their students by setting up a learning support mechanism through course-specific collaborative spaces (e.g., WhatsApp, Facebook, and GC). As a result, the students could engage in collaborative meaning-making through peer interactions by giving feedback or seeking assistance. Transactions with their peers at class-specific mobile platforms also appeared to optimise their language learning as "scaffolding can occur not only in an expert-novice context but also among equal peers" (Van Lier, 2008, p. 62).

The lecturer-participants neither incorporated other online platforms used by the students to get assistance (e.g., Engvid.com and Quora.com) nor did they mention any of them in their interviews. It appears that either the lecturers did not fully understand their students' expanding learning horizons, or they may have intentionally decided to allow their students to navigate through these alternative spaces autonomously. It is also possible that the lecturers might have considered these transactions as robust opportunities for students' immersion in the English language without being intimidated by a teacher's presence.

Two out of six lecturers also mentioned the use of Google Assistant for providing mobile assistance, which **indicated that they perceived it as a tool with promising pedagogical possibilities related to EFL-learning assistance. Although the lecturers advised students to communicate with Google Assistant to enhance their speaking skills, the pedagogical decision to incorporate it for language teaching clearly signalled that they could seek assistance anytime, anywhere. The lecturers' may have encouraged students to use Google assistant because their students were already using it. This suggests that their students' learning practices informed the lecturers' pedagogical decisions and practices.**

Sara and Adam's **incorporation of Google Assistant into their pedagogy might be a response to students' expectations of getting immediate and instant assistance from their teachers. As indicated earlier, the lecturers could not meet students' expectations of providing immediate assistance at mobile-enabled platforms due to time constraints. Therefore, they may have decided to make students aware of Google Assistant's potential for L2 development and assistance. Their use of Google Assistant resonates with Kukulska-Hulme et al.'s (2021, p. 23) claim that virtual assistants provide opportunities for "an immediate problem diagnosis and interventions" to offer personalised solutions to learners' problems.**

However, despite the limitations to the lecturers' pedagogical actions caused by time constraints, there was a scope for more robust pedagogical actions to cater to their students' need for feedback and assistance. As there is no definite line between formal and informal learning spaces and times when learning with mobile technology, the lecturers could have viewed the use of mobile technology "within a broader ecology of digital and real-world resources in which they are, or might be, used" (Kukulska-Hulme & Lee, 2020, p. 169). For example, instead of isolating themselves from the students' transactions at shared spaces (e.g., Facebook, Quora.com), the

lecturers could incorporate learners' everyday activities for feedback using alternative asynchronous ways that have proved time-efficient and useful in other contexts (e.g., screen-cast feedback and multimodal feedback). The lecturers could mediate learning in virtual spaces through asynchronous, "dynamic, adaptive and localised feedback to learners" (Lafford, 2009, p. 685), which could, arguably, facilitate ecological language learning across times and spaces.

The current finding related to personalised assistance and feedback using mobile technology is consistent with some of the options (e.g., direct help, individual requirement, motivation, and organisation of learning) as outlined by Kukulska-Hulme (2016). This study also corroborates Liu and Chao's (2018) study, which found that teachers' role is crucial in making students aware of the affordances that exist within a technological tool. The lecturer in Liu and Chao's study makes her students notice linguistic affordances in various technological features available in their local LMS and mobile-enabled apps and tools. Similarly, the lecturer-participants in the current study integrated various apps and tools, which were being used by the student-participants. Pedagogical decision-making in Liu and Chao's and the current study seemed to be informed by the lecturers' understanding of their students' unique learning patterns, their perceptions and use of apps or tools, which are fundamental tenets of ecological decision-making based on the local cultures of learning (Kramsch, 2008; Tudor, 2003).

The finding on personalised feedback in this study is interesting as it is similar to Bakla's (2020) as well as Elola and Oskoz's (2016) studies in some aspects while different in others. For instance, on the one hand, both these studies found that asynchronous feedback could compensate for the synchronous presence of teachers to provide feedback. The provision and efficacy of asynchronous feedback accord with the lecturers' stance in the present study that immediate and synchronous feedback was not a pragmatic solution given time constraints associated with large-sized classes. On the other hand, the methods used in these studies to provide feedback are different from those utilised by the lecturers in the present study. For example, these studies have reported asynchronous screen-cast and multimodal feedback, whereas the lecturers in the present study did not resort specifically to asynchronous screen-cast feedback, and all but five of them also did not provide multimodal feedback. The difference among the studies may also be due to the short time allowed for data collection for the current research. Later in the semester, the lecturers might have utilised asynchronous multimodal

feedback. It is also possible that the lecturers might not be aware of the efficacy and practicability of asynchronous multimodal and screen-cast feedback; thus, signalling a need for professional development about the use of mobile technology for EFL teaching.

The current findings, likewise, differ from other studies which have reported that students' transactions at shared virtual spaces (e.g., wikis and social media) enabled peer feedback resulting in students' improved EFL writing skills and extended vocabulary (AbuSeileek & Abualsha'r, 2014; Ko, 2019; Ma, 2020). These differences might be attributed to the rationale behind the lecturer-participants' pedagogical decisions, which focused on achieving specific learning outcomes in the Pakistani university context with regard to improving students' overall communicative competence instead of focusing on a specific skill, vocabulary or grammar. The studies mentioned earlier in this paragraph investigated how peer feedback at virtual platforms could improve vocabulary and increase interest in EFL writing. In contrast, the current study neither specifically examined peer feedback at virtual platforms nor assessed engagement of any specific skill due to its much broader focus, which aligned with the EFL teaching and learning practices in the Pakistani university context.

8.6 Tensions among the lecturers' linear pedagogies and learners' non-linear learning practices

This section responds to the overarching research question by discussing the intricate relationships of various components of the MALL ecosystem of Pakistani universities, which seemed to redefine the lecturers' and learners' roles. This section discusses what and why mobile technology affordances were utilised for EFL teaching. This section has underscored the tensions between the lecturer's linear pedagogies, which refer to teacher-led teaching approaches for predictable environments and learners' non-linear learning practices, which refer to dynamic, ever-changing and mobile-enabled learning practices (see Chapter 1). Therefore, this section discusses how the lecturers missed opportunities to embrace the dynamism, non-linearity, and complexity of their students' mobile-mediated learning practices.

The current study found that the provision of mobile-enabled transactions redefined the learners' role by enabling them to participate actively in their learning, as discussed earlier in this chapter (see Section 8.3). The analysis of students' data established that they were harnessing the affordances of formal and informal environments for EFL learning. For students' transactions

enabled by mobile technology inside formal lessons, the lecturers made their students access course-related EFL content, which either was stored on students' mobile devices or was available online. For EFL learning in informal environments, the lecturers' pedagogical decision to make course-related resources available on students' mobile devices facilitated their EFL learning beyond the classrooms. In informal environments, as well as interacting with the course-related content, the students also drew on other tools and resources available online (e.g., YouTube videos and Google Assistant) referred to by their lecturers or accessed by them independently. They also made written transactions autonomously with their peers on WhatsApp, Facebook, and other interlocutors at Engvid.com and Quora.com.

The lecturers seemed to be confronted with various profound tensions arising primarily from the unpredictability of students' transactions using mobile technology in and beyond the classroom. Since the students appeared to make autonomous decisions about their EFL learning by making a range of transactions across times and spaces, the lecturers seemed to grapple with tensions between their roles as traditional teachers following the behaviourist model and their redefined roles as facilitators and enablers of EFL learning. For example, on the one hand, the lecturers appeared to use mobile technology as a continuation of their traditional teaching approaches as manifested through the lecturers' use of mobile technology to disseminate EFL resources through mobile technology platforms (e.g., emails, WhatsApp). These teacher-centred pedagogical actions treated mobile technology as a storage space or a transmission tool. On the other hand, despite the lecturers' pedagogical decision to use mobile technology as an alternative to books and computers and as storage space, EFL resources stored on students' mobile devices seemed to be working as "technological enablers" (Palalas, 2013, p. 89) to facilitate students' learning in and beyond the classrooms.

Another tension that illustrated the degree of complexity faced by the lecturers was evident from their readiness to acknowledge the changes in their students' learning practices. The provision of easy access to numerous sources of knowledge provided by mobile technology and the lecturers' reluctance to adapt their pedagogical practices to incorporate the entire range of changes occurring in students' learning practices (see Section 7.4) led to the tensions. For example, all lecturer-participants set up course-specific groups at WhatsApp and Facebook to facilitate students' transactions, probably informed by the students' mobile-mediated "curation and

communication practices” (Kukulska-Hulme et al., 2017, p.3). The lecturers, however, did not seem to make their students notice linguistic affordances in the “superdiversity and multimodality” (Godwin-Jones, 2018a, p. 8) of the robust discussions on these social media platforms.

Similar tensions were evident from the lecturers’ pedagogical approaches in relation to students’ mobile-mediated transactions with EFL-related content during the formal lessons. The lecturers depended primarily on the resources stored on students’ mobile devices; therefore, they encouraged their students to use mobile technology to access EFL content. The lecturers’ pedagogical practices, however, did not seem to accommodate students’ in-class transactions with EFL content made to check spellings, pronunciation, and the sources of content being used for teaching using mobile technology. Instead of being considered enriching, such autonomous in-class transactions with online resources were deemed challenging, intimidating, and a source of pressure by the lecturers (see Section 7.4). Instead of being pressurised and secretive about the source of content used for teaching, lecturers could resolve this kind of tensions by “providing opportunities to negotiate tasks [with learners], allowing them to select resources of interest and encouraging groups to make learning decisions” (Kukulska-Hulme et al., 2017, p. 7). Encouraging learners’ participation in designing learning activities, incorporating learner-centred pedagogies encompassing all components of a learning ecosystem could be a key strategy.

Furthermore, data analysis revealed another tension regarding the incorporation of student-generated artefacts to promote autonomous and collaborative learning. For example, to enhance students’ listening and speaking skills, the lecturers assigned homework to make video recordings using built-in mobile camera recorders to take pictures of their local cultural events. The assignments covered a range of topics such as so-called religious scholars and commentary on university cricket matches assigned by Sara; TEDx talk of a Pakistani businessperson about communication for business and conversation with people by asking two questions on random topics assigned by Bina; discussion of people representing various countries and a mock business meeting assigned by Adam. The lecturers’ pedagogical decision to situate learning activities in authentic environments seemed to respond to students’ interests and learning practices using mobile devices while fostering autonomous and collaborative learning. The lecturers appeared to acknowledge the role of students’ transactions, assigned as homework, with various people and

contexts, thus making learning experiences mobile. However, none of the lecturer-participants appeared to incorporate student-generated artefacts, which were independently created and shared on Facebook and WhatsApp about a host of topics. These artefacts could have evolved as “a new hybrid of spoken, written and electronic chat discourse” (Andujar, 2016, p. 64).

Moreover, another layer of complexity seemed to be added to the lecturers’ pedagogical decisions due to the lack of clarity regarding students’ requirements and expectations for pedagogical support. For example, students’ extensive mobile-enabled transactions with different contacts at diverse platforms, times, and places indicated their tendency to prefer collaborative and autonomous language learning. In contrast, all 17 focus group participants expected their lecturers’ support in the challenging process of selecting appropriate EFL resources amid information overload on the web, as well as dealing with distractions caused by social media apps and forums, the students’ hubs for mobile-enabled transactions (see Section 6.3.3).

Despite being informed by the students’ learning practices to some extent, the pace of adaptations of the lecturers’ pedagogical practices did not seem to respond to the unpredictable, complex, and rapid changes in their students’ learning practices defined by the pervasiveness of mobile technology. For example, the lecturers drew on various resources (e.g., IELTS e-books, BBC learning English, agendaweb.org), primarily to utilize pre-designed teaching and assessment resources. Likewise, probably, being aware of their students’ affinity with video genres, the lecturers also incorporated YouTube videos in their EFL teaching. For example, YouTube videos were utilised for teaching academic vocabulary by Huria; introducing the topics of non-verbal intercultural communication and strategies of overcoming cultural barriers by Aly; initiating discussions to teach listening and speaking skills by Bina; and providing explanations about the topics of giving project presentations and writing business emails by Adam.

Nevertheless, the lecturers did not seem to be aware of the extent of change occurring in students’ language learning practices who were not fettered by the resources referred to or provided by their lecturers. Instead, being resourceful learners, they sought pedagogical support through other channels (e.g., Quora.com and Engvid.com). It appears, therefore, that although the lecturers integrated a myriad of web and video resources pedagogically, they did not appear to fully navigate through “student-centred learning ecologies” (Brook, 2011, p. 40), which could

enrich EFL learning experiences for their learners. Hence, despite drawing on a wide range of web resources, the lecturers' pedagogical practices appeared to be lagging "the fluidity and fragmentation of language, brought about by the multicultural influence of different groups communicating online, extending its vocabulary and syntactic structures" (Traxler, Read, Kukulska-Hulme, & Barcena, 2019, p. 91).

Overall, as established in the preceding paragraphs, it appears that the entanglement of a web of various agents, elements and dimensions (see figures in the previous three chapters and Figure 8.1) made student-participants of the current study "often engage with the technology in unexpected, and at times, highly innovative ways" (Dooly, 2018, p. 184). The current study identified students' various mobile-enabled transactions that were neither predicted nor planned by the lecturers nor integrated into their pedagogical practices; for example, the students' tendency to transact with people at Quora.com, Engvid.com, YouTube videos and other online content at Khan Academy at various places and times. The learners' constantly evolving mobile-mediated learning practices appeared to diverge from their lecturers' planning and pedagogical practices.

As described in the previous paragraph, the student-participants' fluid, unpredictable and rapidly changing learning practices required the lecturers to have flexible pedagogical approaches. In contrast, the lecturers in the current study did not seem to "design [EFL activities] to meet learners on their terms, with their devices, in their spaces" (Kukulska-Hulme & Traxler, 2019, p. 254). On the one hand, the lecturer-participants appeared to make efforts to shed off the "entrenched pedagogical cultures" (Cochrane et al., 2015, p. 3), as illustrated through their practices of situating EFL activities in authentic contexts. On the other hand, most of the lecturer-participants' pedagogical actions appeared to be isolated from the learners' "diversity, agency... patterns of mobility and ubiquitous social interaction" (Kukulska-Hulme & Traxler, 2019, p. 253).

The students' search for additional and instant pedagogical support at social media forums and other virtual spaces arguably is also an indication of their expanding learning horizons, which could be scaffolded by learner-centred pedagogical practices. Lecturers should consider drawing on "natural and fluid digitally-assisted human interactions" occurring "in the digital wilds", which could expand and enable learner-driven pedagogical practices. (Sauro & Zourou, 2019, p.

1). Even though student-participants' mobile mediated activities were less controllable than those in the traditional classrooms, there were compelling opportunities for lecturers to scaffold the process of meaning-making. By embracing mobile-mediated transactions, rich with linguistic affordances, there could be opportunities for collaborative and personalised L2 learning in the learners' expanded learning spaces.

Tensions among teachers' pedagogies and students' learning practices have also been noted by other researchers (e.g., Dooly, 2018; Tolosa, 2017a). These authors have reported the complexity associated with the redefined roles of lecturers and students. They highlighted tensions among teachers' pedagogical decisions in technology-enhanced environments and their students' reception of their teaching. This tension emphasises that the teachers need to be "aware of and willing to acknowledge and validate unanticipated and novel uses [of technology] that the students might put forth" (Dooly, 2018, p. 215).

The finding in this study about tensions between students' tendency towards independent learning in informal environments and their expectations regarding more pedagogical support from their teachers corroborate those reported by prior studies (e.g., Imtinan, 2013; Qian & Tang, 2018). Despite students' positive perceptions of using mobile devices for learning and their tendency to be autonomous learners, as reported in the current study and the studies by Imtinan (2013) and Qian and Tang (2018), many of them expected more support from their teachers because they considered their teachers' role crucial for their learning.

The findings of the current study of the students' enthusiasm for WhatsApp interactions and lecturers' intentional avoidance of participating in students' interactions mirrored those reported by Hamad (2017). Students' multimodal interactions at WhatsApp increased their collaboration and enhanced core EFL skills in both the current and Hamad's study. Similar to the lecturers in the current study, the lecturer in Hamad's study indicated it was difficult to cope with the pressures of meeting her students' expectations regarding providing immediate response.

There are similarities between the students' use of YouTube for L2 learning at Egndvid.com in this study, and those described by Wang and Chen (2019), who reported students' tendency to search and watch YouTube videos across times and spaces. The student-participants in the current study and Wang and Chen's study watched YouTube videos because they found them a more exciting and interactive way of learning the L2. The finding of the lecturer-participants'

incorporation of YouTube videos in this study lends support to Wang and Chen's observation that teachers can make students notice the affordances of linguistic, collaborative and autonomous L2 learning.

In the current study, the lecturer-participants' pedagogical practices are contrary to the current approaches of meaning-making driven by social media in the fields of m-learning and its sub-field MALL, as reported by researchers (Cochrane et al., 2015; Lomicka & Lord, 2016; Smith, Pacheco, & de Almeida, 2017; Zourou, 2020). The findings of this study are also contrary to those of other studies reporting transformative pedagogical approaches which respond to mobile learners' use of WhatsApp (e.g., Andujar, 2016; Rambe & Bere, 2013a) and multimodal Facebook interactions (Alm, 2015; Korkealehto & Leier, 2021). These studies have described pedagogical practices that sustain L2 students' interest by extending learning times, spaces, and students' interactions with teachers to enhance EFL writing skills and increase their collaborative engagement with language learning.

Some of these authors (e.g., Andujar, 2016; Korkealehto & Leier, 2021; Rambe & Bere, 2013a), mentioned in the preceding paragraphs, have also suggested that the core skills of L2 can be enhanced by pedagogical scaffolding of students' multimodal interactions at social media platforms, which can be an "unending source [s] of authentic materials of varied genres" (Blake, 2016, p. 133). Possible explanations of these differences may be contextual differences. In developed countries, teachers have access to ongoing professional development opportunities, through which they adopt new pedagogies and adapt the existing ones to keep abreast of the changing demands of teaching and learning supported by technology. In contrast, the lecturer-participants, in this study, without regular professional development opportunities, might not have realised the possibilities of incorporating students' interactions facilitated by mobile technology.

This study's findings are also contrary to Hoven's (2007) study, which incorporated various online platforms such as emails, discussion forums, and blogs (see Section 2.4) to teach the use of technology to pre-service ESL teachers. As Hoven's study participants were mature international students with professional and family commitments, the researcher might have decided to engage them in flexible online interactions. In comparison, most of the student-participants of the current study were enrolled in their undergraduate degrees who attended

classes on campus. The lecturer-participants of the current study might have decided to have in-class discussions about students' L2 learning practices instead of interacting with them through online spaces.

Moreover, whereas Hoven's study was a longitudinal study, which allowed her to collect data over time about students' learning practices to inform her pedagogy, in the current study, it was not possible for the lecturer-participants to collect formal data to inform their pedagogical practices due to contextual constraints. Instead, their pedagogical practices were based on their prior knowledge about their students' ecosystems, as they were part of the same ecosystem. If it were possible for the lecturers to collect formal data about students' EFL learning practices, incorporating mobile technology with institutional support, the current study might have yielded different results. These differences are because each ecosystem is different, and participants' interactions generate different affordances according to their ecosystems' dynamics.

8.7 Concluding remarks

This chapter responded to the overarching research question through two sub-questions about the role of mobile technology in the pedagogical decisions and practices of EFL lecturers in Pakistan to enable their students' EFL learning by highlighting the centrality of the pedagogical dimension in the MALL ecosystem (see Figure 8.1). This chapter discussed how student-centred pedagogical approaches could create enabling learning environments and help learners notice multiple linguistic affordances in the temporal and physical dimensions through transactions mediated by mobile technology. This study reiterates the significance of the non-linear, holistic pedagogies, which can encompass “the full complexity of the entire process [of language learning], over time and space, in order to capture the dynamic forces that are at work” (Van Lier, 2010, p. 5) in an unprecedented learning eco-system that incorporates mobile technologies.

The significance of the technological affordances was highlighted by arguing that the ubiquitous availability of mobile technologies was the central driver in enabling MALL in Pakistani universities because of the affordances they generate. It was also established that the availability of mobile technology facilitated the lecturers in making EFL resources available, which helped them overcome contextual constraints related to IT infrastructure.

A discussion about the pedagogical harnessing of mobile technology's transactional, temporal, and physical affordances to enhance core EFL skills formed the central argument of this chapter. The pedagogical practices of employing mobile devices to capture linguistic affordances in authentic environments, which provided the learners with opportunities to practise their EFL skills in informal environments, were also discussed. Suggestions for how the lecturers could bridge the gap between formal and informal language learning through student-generated artefacts were also posited.

Missed opportunities for the pedagogical integration of students' interactions with social media apps and other online spaces for EFL teaching were identified. This research further supports the notion of ecological language teaching by showing how the use of fragmented but frequent transactional episodes on social media forums could become meaningful language learning experiences for mobile learners. This chapter also emphasised that acknowledging and incorporating learner agency into the lecturers' planning and pedagogical practices could reduce the pressures on EFL teaching in the classrooms.

The notion of harnessing mobile technology affordances for providing study-related assistance is also discussed in the current chapter. By highlighting the dichotomy between students' learning practices and lecturers' pedagogical practices, this study complemented the premise that learners' constantly evolving mobile-assisted learning practices should be capitalised for EFL teaching. Despite the lecturers' readiness to provide help, the students preferred to seek pedagogical support from their friends and other online contacts at the forums where immediate assistance was available. The students had expectations for immediate assistance from their lecturers, which they felt, were not met. Their search for pedagogical support at virtual platforms indicates a tendency towards autonomous learning and highlight tensions among various forces at work in Pakistani universities' learning ecosystems.

Overall, this study has provided compelling empirical evidence of the complexity of ecosystems, which envision teaching and learning as the process of interdependent interactions among learners, teachers, their environments, and technological and mobile devices (Palalas, 2012). Significantly, this study also identified gaps among the lecturers' pedagogical practices and their students' learning practices at shared online spaces and social media apps, indicating the need to scaffold learning beyond the formal lessons across times and spaces (see Section

7.6). The study provides empirical confirmation of the learners and teachers “as mutually inter-dependent mobile agents immersed within a system [/ecology]” (Hoven & Palalas, 2016, p. 129).

In summary, the tensions among the lecturers’ pedagogical and their students’ learning practices, as outlined and discussed in this chapter, are indicative of the multifaceted role of mobile technology in the lecturers’ pedagogical decisions and practices acknowledging its equally significant role in students’ learning practices. In line with the dynamism and complexity intrinsic to the ecological paradigm, this study strongly supports the pedagogical incorporation of learners’ lived experiences (Tudor, 2003; Van Lier, 2004). The student-participants’ transactions using mobile technology across the physical and temporal dimensions also signals the need to adopt novel teaching and learning approaches and be ready to adapt as rapidly evolving mobile technology continues to redefine teachers and students’ roles.

The following chapter concludes the discussion presented in the current chapter. Moving beyond the findings' interpretations, it discusses the implications of the findings for educational research and practice. The next chapter also considers the limitations of the study and suggests further research directions.

Chapter 9. Conclusion

9.1 Chapter overview

This chapter presents the conclusions and significance of the study derived from the research findings, followed by an acknowledgement of the study's limitations. In section 9.5, suggestions for future research are made. The last section (9.6) documents the contributions of this study to the current knowledge.

9.2 Conclusions

The purpose of this research was to gain a deep understanding of the role of mobile technology in the EFL lecturers' pedagogical decisions and practices to enable MALL in the Pakistani university context. The research yielded substantial information on the complexities and intricacies entailing the lecturers' pedagogical decisions and practices using mobile technology for EFL teaching. The research also revealed that the students' evolving learning practices mediated by mobile technology added another layer of complexity to the lecturers' pedagogical decisions for integrating mobile technology for EFL teaching.

This inquiry is situated in the paradigm of ecology and its related constructs of affordances and ecosystems. Therefore, this research adopted a mixed-method research approach with multiple data collections methods to investigate the integration of mobile technology for EFL teaching and learning in Pakistani universities. This study identified the interconnectedness of the lecturers' pedagogical decisions, practices and students' unpredictable and uncharted mobile-influenced language learning practices. The following paragraphs report conclusions based on the findings of the study.

The study revealed that contexts determine the role of mobile technology in teachers' pedagogical decisions and practices, which predicts that the role of mobile technology differs in each context, determined by its specific constraints and affordances. As an example, the lecturer-participants' use of mobile technology to store and access learning resources was determined by contextual constraints such as insufficient educational and technological resources. This scenario may differ from other contexts where mobile technology is merely an addition to many other technological devices.

The role of mobile technology in teachers' pedagogical decisions and practices is also influenced by students' learning practices, which, in turn, are influenced by mobile technology. Teachers' pedagogical decisions for incorporating mobile technology can potentially play a significant role in developing core L2 skills if they are informed by students' mobile-dependent learning practices. By taking advantage of the technological, transactional, temporal and physical affordances of mobile technology for teaching core L2 skills, teachers can foster students' collaborative and autonomous learning practices in the formal and informal environments. For example, in the current study, the lecturers' decisions to utilise mobile technology for teaching core L2 skills appeared to be driven by the student-participants' mobile-mediated learning practices. They were, therefore, able to facilitate their students' interactions with EFL resources, available on their mobile devices, and with their peers on WhatsApp. Hence, the lecturers were able to draw on a unique interplay of the technological, transactional, physical and temporal affordances of mobile technology for fostering collaborative and autonomous language learning practices among their students who were highly dependent on mobile technology for many of their learning tasks.

Further compelling evidence provided by this research was that appropriate pedagogical use of built-in technological affordances of mobile technology could play a transformative role in developing speaking skills, particularly in contexts where an L2 is taught as a foreign language. Evidence was also found regarding the advantages of optimising the affordances of virtual assistants (e.g., Google Assistant) to enhance speaking and listening skills at different times and spaces. For example, the lecturer-participants' incorporation of video camera-recorder and Google Assistant expanded learning opportunities for L2 students considerably. The use of video camera-recorder and Google Assistant also provided evidence that the lecturers were able to generate learning experiences for mobile learners by utilising mobile devices to situate EFL lessons in authentic contexts.

Furthermore, this study also highlighted the use of mobile technology for providing mobile assistance for learners to facilitate their autonomous learning practices. Although the role of mobile technology in the lecturers' pedagogical practices in providing assistance or feedback was limited, a comparative analysis of the lecturers' pedagogical and students' learning practices indicated considerable scope for pedagogical assistance inherent in the mobile-mediated

transactions. For example, with time constraints reported by lecturer-participants, pedagogical assistance through asynchronous transactions by incorporating collaborative spaces (e.g., GC, YouTube, Quora.com) could be considered. The use of Google Assistant also indicated the transactional, temporal, and physical affordances of readily available and user-friendly virtual assistants to assist independent L2 learning anytime, anywhere.

However, this study reiterated the significance of keeping abreast of rapid changes occurring in learners' learning practices due to technological advancements happening at an unprecedented pace. There was evidence that the lecturers' lack of awareness about their students' expanding learning horizons, and the degree of change occurring in their learning practices, appeared to create a gap between the lecturers' pedagogical and their students' learning practices. For example, in some cases, the lecturers' pedagogical decisions to use mobile technology, and their practices, appeared to be distanced from their students' learning practices on social media apps and platforms or in other collaborative spaces. There is a need for adaptive pedagogical practices, which accommodate the unpredictability, spontaneity and complexity of students' mobile-mediated learning practices.

Furthermore, the study highlighted a need to acknowledge learner agency by including students' voices in designing their learning activities. Open discussions or negotiations among the lecturers and students could also create learner-centred ecologies and help decrease the tensions and pressure felt by the lecturers due to students' transactions with mobile technology in the classrooms. The findings suggest that it is critical for the lecturers to accept not only a change in their role as teachers but also to acknowledge that students' learning practices are evolving and they are active participants in all the processes of learning.

9.3 Significance of the current study

This section presents the significance of this research for theory, pedagogical practice and policy.

9.3.1 Theoretical significance

This study responds to a sustained call in m-learning literature for an appropriate theoretical perspective to understand and examine the complexity of various layers of the current learning ecosystems influenced by rapidly changing technological tools (see Chapter 2). This study extends our understanding of the use of ecological perspectives for examining technology-

enhanced teaching and learning as various players and other components adapt and evolve according to the changing environments.

The central argument of this study is that teaching and learning cannot be viewed in isolation because both teachers and learners' perceptions and practices are informed and influenced by one another's decisions and practices. The interdependence of teaching and learning incorporating mobile technology, highlighted in this study, provides compelling evidence for using ecological perspectives for holistically understanding and investigating a learning ecosystem in which mobile technology is incorporated.

The major theoretical contribution of this study is an evidence-based proposal for the modification in the illustration of the ecological model (i.e., The Mobile Learning Eco-System) by Palalas (2013), as introduced in the second chapter of this thesis (Figure 2.1). While the framework (Figure 2.1) by Palalas (2013), which informed the entire research procedure starting from the conceptualisation and design of the study to data collection, analysis, presentation as well as discussion, may be appropriate for investigating an overall phenomenon of m-learning, the findings of this study suggest that it has limitations for investigating teachers' pedagogical decisions and practices.

Given the centrality of teachers' pedagogical decisions in enabling m-learning within an ecosystem, the proposed illustration of the model places the pedagogical dimension at the centre while drawing connections with other dimensions, as shown in Figure 8.1 presented in the eighth chapter of the thesis. The modified figure is also presented in the current chapter in Figure 9.1, which provides a comparative view of the original model by Palalas (2013) and the modified model proposed by this research.

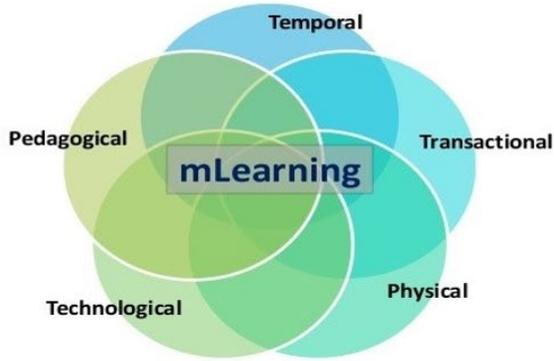


Figure 2.1. The Mobile Learning Eco-System (Palalas, 2013)

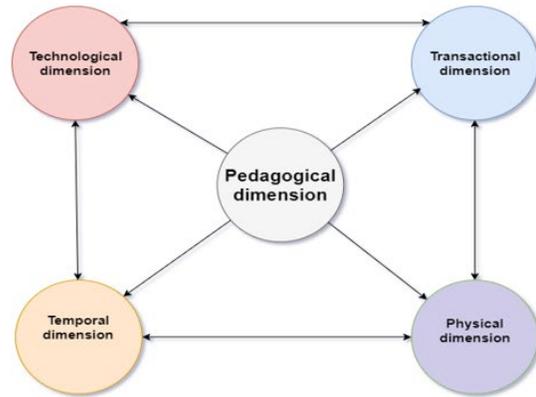


Figure 8.1. The MALL ecosystem in Pakistani universities

Figure 9.1 shows both figures (i.e., Figure 2.1 and 8.1). Figure 2.1 consists of the pedagogical, technological, temporal, physical and transactional dimensions, which are interconnected and overlapping. Elaborating The Mobile Learning Ecosystem, Palalas (2013, p. 90) argues that “The intersection of the physical, transactional, temporal, pedagogical, and technological spaces [/dimensions] forms mobile learning space which may further produce the optimal m-learning zone: the most favorable interplay of the five components.”

While the findings of the current study confirm that the blending of five dimensions is vital in creating “the optimal m-learning zone” (Palalas. 2013, p. 90) within an ecosystem, strong evidence was found in the current study regarding the pedagogical dimension as the central driver for mobilising and enabling learning. The significance of teachers’ role in a learning ecosystem has also been underscored by Davies (2019), who uses ecological science vocabulary to describe the critical impact of teachers’ decisions. Davies (2019, p. 10) contends that teachers are “keystone species and their introduction or removal severely disrupts the normal balance of the ecosystem”.

In conclusion, this study makes a significant contribution to an ongoing theoretical debate in m-learning and MALL literature by proposing an alternative illustration to the m-learning model by Palalas (2013). It is emphasised in the current research that when investigating teachers'

pedagogical decisions and practices regarding the incorporation of mobile technology, the pedagogical dimension should be given prominence in the diagram (see Figure 8.1 and 9.1).

9.3.2 Practical significance

The current study makes the following noteworthy practical contributions to m-learning and MALL literature in the Pakistani as well as broader international contexts.

9.3.2.1 *Pedagogical decisions based on the dynamics of local ecosystems*

The evidence from this study suggests that the availability of mobile technology helped the lecturers overcome institutional barriers, such as inadequate IT infrastructure and poorly resourced libraries to cater for a large number of students. The lecturers' use of mobile technology as a substitute for IT and other educational resources is not necessarily an indication of their lack of awareness of the mobility element of mobile technology. Instead, as illustrated from their pedagogical practice of situating EFL activities in authentic contexts, they appeared to have an understanding of the potential of mobile technology for mobilising learning.

Nonetheless, their decision-making had to be cognisant of the relationships of various components of the learning ecosystem in Pakistani universities. Therefore, this research has noted the usefulness of mobile technology's ubiquitous availability for contexts with insufficiently resourced libraries, workspaces and workstations. This research implies that flexibility inherent in mobile technology could be beneficial not only for institutions but also for teachers in responding to the needs of their students and the constraints of their ecosystems.

Moreover, the current study also provides insights for MALL practitioners worldwide in general and for those in foreign language settings in particular because learners' exposure to L2 is limited to formal lessons in EFL contexts (Shadiev, Hwang, Huang, & Liu, 2015). For example, one of the findings was the lecturers' practice of utilising the technological affordances of mobile technology to situate EFL activities in authentic contexts with video-recorded assignments. Since recording such activities with mobile devices does not require internet connectivity, EFL teaching and learning opportunities can be expanded across times and spaces. The evidence related to the possibility of harnessing the ubiquitous availability of mobile technology for EFL teaching should prove to be particularly valuable for the contexts with inadequate infrastructures and compromised internet connectivity.

9.3.2.2 *Transformative pedagogies around learning ecosystems' constraints*

Another practical implication of this study, which is connected to the one described in the preceding section, is the possibility of transformative pedagogical actions despite multiple constraints within a learning ecosystem. For instance, multiple constraints were recorded in the ecosystems of Pakistan universities (e.g., connectivity issues, distractions, and time constraints) which posed a barrier to incorporating mobile technology for teaching. Data suggested a course of action to mitigate the impact of these constraints in the Pakistani and other similar contexts. For instance, to mitigate the impact of internet disruptions, teachers could give more assignments to be done at home where students could rely on Wi-Fi available at their homes. This simple approach appeared to transform language teaching in this current study, particularly to enhance students' speaking skills. Similarly, regarding time constraints, asynchronous communication could be a pragmatic solution for lecturers in Pakistani universities and worldwide so that teachers might not feel pressured to stay connected.

Moreover, findings also suggest that teachers' explicit in-class policy about using mobile technology in the classroom could be instrumental in mitigating in-class distractions. The current study provided evidence that language pedagogy could be transformed if teachers' in-class use of mobile technology is informed by clear instructional goals of which students are also made aware. In the current study, the lecturers primarily used mobile devices for shorter periods, which served specific goals (e.g., listening to clips, consulting dictionaries, solving an online quiz and web-browsing to start discussions). Evidence of this study suggests that teachers' decisions about the strategies to mitigate distractions informed by the specific environment of their classrooms' or their institutes' ecosystems could lead to enriching learning experiences for their students.

9.3.2.3 *The significance of virtual assistants for enabling L2 learning*

This study has provided crucial evidence to the less explored niche of the use of virtual assistance for L2 teaching and learning in MALL literature. Although at a smaller scale, this study has documented the usefulness of virtual assistants, which are increasingly becoming critical in enabling learners to enhance their listening and speaking skills as well as to seek personalised assistance (Kukulaska-Hulme et al. 2021).

This is the first study in the Pakistani context that has revealed the pedagogical implications of using Google Assistant to teach listening and speaking skills. The use of virtual assistants may

also have practical implications for other similar contexts where teachers get little or no professional development opportunities as well as time to design and operate dedicated speech recognition software. Notably, in contexts where English is taught as a foreign language, the use of freely available virtual assistants can expand practice opportunities for listening and speaking skills. Teachers could also help students immerse themselves in English through their preferred topics anytime and anywhere using such virtual assistants.

Additionally, on a broader level, the finding regarding the use of mobile-accessible virtual assistants may also have practical implications for teaching adult learners in migrants and refugee communities who may not be able to dedicate specific time for learning a second language. The use of virtual assistants could help migrants and refugees learn second languages at their convenient times and spaces, facilitating their integration into the local communities.

9.3.2.4 Pedagogical decisions as a response to learners' learning practices

Another significant practical implication of this study is that teachers should be ready to embrace adaptive pedagogies in the context of students' ever-evolving learning practices. Evidence from data suggests that despite the lecturers' readiness for help, their students preferred to seek assistance from their friends and other online contacts at forums (e.g., Quora.com) where immediate assistance was available. The disconnect between the students' learning practices and the lecturers' pedagogical practices suggests that pedagogical planning should be informed by the students' rapidly changing learning practices in using mobile technology. In addition, this finding also has implications for scaffolding learning in mobile-mediated shared spaces used by students for making interactions with multiple EFL resources and people so that teachers' pedagogical practices may not be isolated from students' expanding learning horizons.

Furthermore, another practical implication connected to the one described in the preceding paragraph is about the role of students as learning designers. Teachers and learners are interdependent actors within a learning ecosystem; therefore, teachers should provide their students with opportunities to participate in designing their own learning activities. In this way, teachers' pedagogies could draw on students' diverse mobile-mediated social interactions.

9.3.2.5 Mobile literacy about teachers' work-life balance

Another important practical implication of the current study is that students should be made aware of teachers' work-life balance. Students' disregard for their lecturers' work-life balance

was the primary reason for the lecturers' absence from the groups they set up for course-specific communication. Therefore, creating awareness about private spaces for teachers should be an integral part of students' mobile literacy.

9.3.2.6 *Post-Covid changes in mobile pedagogical integration in Pakistani universities*

The current study also highlights the significance of mobile pedagogical integration in the post-pandemic world in the Pakistani context because remote learning has become a new normal. Evidence was found that all the students owned mobile technology and cellular companies provided economical mobile internet packages for mobile users. This scenario suggests scope for new pedagogical approaches to teaching university students whose access to mobile technology exceeds laptops/desktop computers. Lecturers may resort to plan microlearning activities, which could be carried out using mobile technology and then incorporated into learning either in the classrooms or at a virtual classroom such as Google Classroom.

In sum, the study provided evidence that teachers' decision-making should be informed by the affordances and constraints of their local ecosystems to maximise the benefits of the ubiquitous availability of mobile technology for mobilising students' learning experiences.

9.3.3 Significance for policy

The current study also has policy implications for EFL teaching in the higher education sector in Pakistan. For example, this study found that as none of the universities provided explicit instructions on the use of technology and mobile technology, each lecturer-participant had his/her unique method of using mobile technology for EFL teaching. In some instances, there were noticeable differences among the lecturers' pedagogical approaches, even though they were working in the same department. With an explicit policy for the use of technology and mobile technology for EFL teaching, the lecturers may be able to take advantage of the affordances of mobile technology in more informed and consistent ways. Specific institutional and departmental policies for the integration of mobile technology could promote increased collaboration among lecturers to enrich their pedagogical practices.

Another significant policy implication concerns professional development for lecturers. Although specific pre-service training is not provided for university lecturers in Pakistan, the lecturer-participants' practices indicated the need for increased and ongoing professional

development. Despite a few training workshops offered to lecturers by the Higher Education Commission of Pakistan, only one out of six lecturers attended a CALL training workshop; a workshop, which this one lecturer indicated, was beneficial. If such training workshops are offered frequently, the lecturers would be more aware of the affordances of technology and mobile technology. Professional development programmes could also help lecturers make better informed and consistent decisions to take advantage of the ubiquitous availability of mobile technology.

9.4 Limitations

A few methodological and contextual limitations of this research are acknowledged, which must be considered to understand the scope of usefulness and transferability of the study.

The first limitation relates to the researcher's bias. Being predominantly a qualitative study with only nominal quantitative data carried out by a single researcher, interpretation of the findings might be biased by her personal perspective. Nevertheless, it could be argued that being an EFL student, teacher, and insider of the Pakistani context, the researcher's knowledge of EFL teaching and learning was an advantage as it helped navigate through the multi-layered ecosystem in Pakistani universities to provide an in-depth analysis.

Another limitation concerns observational data. As the current study was not longitudinal, observational data were limited to two lessons for each lecturer. It is possible, the role of mobile technology in the lecturers' pedagogical practices might not have been fully captured. More lesson observations would have yielded more substantial evidence of the ways mobile technology was used in enabling EFL teaching by these lecturers. Additionally, although I, the researcher, made efforts to be a non-participant observer in the classroom, my presence in the classroom might have affected the lecturers' practices in using technology for EFL teaching. Because of the limited lesson observations and the researcher's presence, the use of mobile technology for EFL teaching and learning in the observed lessons might not have captured the full range of mobile-mediated teaching and learning practices.

Another possible limitation was related to post-observation interviews. As indicated in Chapter Four, travel disruptions and public protests were going on in Lahore at the time of data collection, making it difficult to keep to the scheduled meetings. Due to the political unrest, five out of six lecturers advised me to email questions or reschedule the interviews. I preferred to

email questions, as delaying the interviews may not have presented the lecturers' observed pedagogical practices accurately. Four lecturers sent written answers, and one sent her audio-recorded answers through WhatsApp. Analysis of these data provided given by the lecturers was not self-explanatory, and while further explanation through follow-up emails was possible, they were not a substitute for face-to-face interviews. Face-to-face post-observation interviews would have enabled further explanations and opportunities to clarify the researcher's interpretations of their pedagogical decisions and practices to enrich the data.

Moreover, this study was conducted with six lecturers and 229 students representing three universities in Lahore, the second-largest city of Pakistan. Although Lahore is considered an educational hub in Pakistan where people from all parts of the country come for higher education, the study participants were not necessarily the representatives of all the university lecturers and students across Pakistan. A similar investigation with more participants in varied contexts within Pakistan might have led to a greater understanding of the role of mobile technology for EFL teaching and learning. Although the limitations of sample size and lesson observations mean the generalisability of the findings is somewhat limited, the findings may have implications for EFL teaching and learning for other similar contexts where the ownership of mobile technology has surpassed the ownership of desktop and laptop computers.

9.5 Suggestions for future research

Despite the limitations mentioned above, which restrict the generalisability of the findings, this study highlights some possibilities for future research in the domain of MALL.

Since this research focused on the university sector in the second-largest city in Pakistan, it would be advantageous to replicate this research in primary and secondary schools as well as in small towns. Replicating the study with a larger sample size in varied EFL contexts (e.g., primary/secondary schools and small cities/towns) could provide deeper insights into the EFL ecosystem of Pakistan.

Furthermore, although the generalisability of the findings of the current study is limited, this study could be replicated in other similar contexts considered computer/book poor but mobile technology-rich. It is anticipated that the replication of this study in other countries would yield exciting and valuable findings to confirm or challenge the outcomes of the study.

As this study has highlighted the significance of teachers' training regarding the use of mobile technology for EFL teaching and learning, an investigation of the perceptions of EFL teachers for training requirements is recommended. Knowing teachers' needs for training will help policymakers at the institutional and governmental levels develop professional development programmes contingent on teachers' needs.

An examination of teaching and learning incorporating mobile technology using a different methodological approach is also recommended. Future research could develop professional development programmes as part of an investigation and then evaluate the impact of professional development on teachers/lecturers' pedagogical practices and their students' learning. Such studies could demonstrate the degree of teachers' readiness to learn and incorporate mobile technology for EFL teaching. Development and evaluation of a professional development programme would inform educational policy and practice regarding MALL in Pakistan and other similar contexts.

Given the extensive use of mobile social media platforms by the student-participants of the current study, future studies could investigate how learners' social media interactions are incorporated into teachers' pedagogical practices. Such research focus could shed light on how pedagogical practices respond to learners' learning practices. With the proliferation of mobile technology among students in Pakistan, robust conclusions could be drawn if such studies are conducted in a range of contexts (e.g., large cities and remote areas).

As this is the first research within an ecological paradigm in the Pakistani context investigating both EFL lecturers' and students' perceptions and practices belonging to three universities, the focus of the current study was too broad. Future studies could investigate the role of mobile technology in teaching and learning with one or two specific skills. Future investigations carried out in schools may also explore the role of mobile technology in teaching and learning other language components (e.g., grammar and vocabulary) taught primarily in schools in the Pakistani context.

Finally, longitudinal studies may yield different and arguably richer findings. For example, examining the role of mobile technology in EFL teaching and learning over a whole semester could provide robust insights into the complexities of a learning ecosystem. Longitudinal studies could also make researchers and practitioners aware of the strategies employed by teachers for

teaching amid a host of tensions caused by the rapidly changing mobile technology and students' learning practices.

9.6 Concluding remarks

This research set out to investigate the role of mobile technology in the lecturers' pedagogical decisions and practices to enable MALL in Pakistani universities. Findings reported in this thesis contribute to the fields of MALL and m-learning.

The significance of context in teachers' pedagogical decisions and practices is reiterated. The present study departs from the previous understanding, which deems the pedagogical use of mobile technology as a substitute for traditional resources as a continuation of e-learning on small screens because this pedagogical use of mobile technology ignores the potential advantages of mobility of mobile devices. The present research argues that, despite being aware of the potential benefits of flexibility and mobility of mobile technology, teachers' decisions regarding integrating mobile technology as storage or transmission technology cannot be divorced from the contextual demands of their ecosystems. Therefore, the pedagogical decisions of using mobile technology as a substitute to books and computers in their pedagogical practices may not be appropriate in some particular contexts and for some particular lessons but maybe highly valuable elsewhere in other contexts.

MALL literature has generally reported the advantages of mobile technology for the teaching of listening, reading, and writing skills due to its portability. In the current research, the advantages of mobile technology for teaching speaking skills are evident from the affordances of mobile technology for situating video-recording assignments in authentic contexts and for the teaching of speaking skills at students' preferred spaces through their preferred topics. The use of Google Assistant also alludes to the possibility of practising speaking skills anytime, anywhere. Hence, this research has valuable implications for L2 teaching in foreign language contexts.

Another significant contribution of this study is the lecturers' pedagogical decisions of incorporating student-created artefacts to bridge the gap between formal and informal learning. Given the growing interest in mobile-mediated learning in informal spaces and times, the research identifies a range of possibilities for designing activities to ensure seamless learning in and beyond the classrooms. As the creation of students' artefacts did not require internet connectivity, this research has similar implications for the developing and the developed world.

It makes a noteworthy response to the sustained call in MALL/m-learning literature to explore strategies for the incorporation of formal and informal learning.

Moreover, teachers and students' perceptions and practices have been reported separately in most previous MALL studies in Pakistan. In contrast, this is the first study in the Pakistani context informed by ecological perspectives, which has examined how, being the major actors of a learning ecosystem, the teachers and students' perceptions and practices regarding EFL teaching and learning influence one another. For example, this research makes a notable contribution by presenting evidence on how teachers' pedagogical decisions to make EFL content available on students' mobile devices can enable students' EFL learning at informal times and spaces. Likewise, this research also provides empirical evidence on how students' mobile-mediated learning practices could affect lecturers' pedagogical decisions and practices. For example, the student-participants' interactions with EFL content on mobile technology made the lecturers feel intimidated and overcautious with regard to preparing for their teaching.

Most importantly, this research adds to the growing body of research on how students' interactions at shared online spaces can potentially expand learning opportunities for students and enrich the scope of pedagogical activity. However, this study also unravels tensions and confusion resulting from teachers' limited awareness of students' ever-changing mobile-mediated learning practices. The differences between the lecturers' pedagogical practices and their students' mobile-mediated learning practices also confirm previous findings and contribute additional evidence of the need for teachers' ongoing professional development.

Finally, the study acknowledges an ecological view of teaching and learning in which teachers' and students' perceptions, decisions, and practices with mobile technology cannot be seen in isolation as they are informed and influenced by one another. In line with ecological perspectives, this study expands our understanding of the possibilities of teaching and learning within a learning ecosystem with various actors and factors and includes participants' interactions with each other, contexts, EFL resources, and other interlocutors. Hence, this study is expected to provide a more profound and holistic understanding of the intricacies of the phenomenon of mobile-assisted language teaching and learning in a broad spectrum of physical and virtual spaces and contexts.

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Appendices

Appendix A. Participant Information Sheet (HoD)



**EDUCATION AND
SOCIAL WORK**

**SCHOOL OF CURRICULUM AND
PEDAGOGY**

Epsom Campus

Gate 3, 74 Epsom Ave

Auckland, New Zealand

T +64 9 623 8899

Participant Information Sheet (HoD)

Project: Affordances of Mobile Technology for Second Language Learning and Teaching

Researcher: PhD candidate Uzma Rana Shamsi

Supervisors: Dr. Constanza Tolosa and Dr Rena Heap

I am Uzma Rana Shamsi and I am currently pursuing my PhD in Education at the University of Auckland.

Project description

The purpose of this research is to investigate how language teaching and learning is influenced by mobile technology. The research will explore the potential of mobile technology for second language learning and teaching in the context of Pakistani university sector. It is expected that the findings will help both students and lecturers to leverage readily available mobile technology for language learning and teaching. This project will continue for four months.

Invitation to Participate

I want to seek your permission for access to the department of Humanities and Social Sciences as my research site, to the two lecturers teaching English as a foreign language (EFL) and to the students (approximately 70-75) enrolled in EFL courses taught by the lecturer participants. If you grant me the permission to carry out research in the department, I would request your secretary to send an email to all EFL lecturers in the department with an attachment of the Participant Information Sheet (PIS) containing details about the study for lecturers who want to volunteer for the research. I will randomly select two lecturers. For students, I will request your secretary to send an email containing the link to the official email addresses of the students enrolled in EFL courses taught by the participating lecturers. The email will also provide details about the study in the form of a PIS to all the students. A consent form will also be attached with the email so that the students who wish to participate in a focus group discussion can sign and email to me.

Participation in the research is voluntary and the participants may decline this invitation to participation. I would like to ask for your assurance that the participation or non-participation will not affect the lecturers' employment status and students' academic results or relationship of all the participants with the department.

Project procedures

If you allow to conduct research in the department, the lecturer participants will participate in an initial semi-structured interview (approximately for one hour) wherein I will discuss the potential of mobile technology for EFL teaching. I will also observe two EFL classes in order to observe the lecturers' use of

mobile devices for EFL teaching. This non-participatory observation will be followed by another interview (approximately for one hour) in order for the lecturers to discuss the rationale behind their pedagogical decisions as observed in the class. The time and venue of interview will be selected according to the lecturers' convenience. The interviews will be audio recorded with the participants' consent; however, the participants will have the right to have the recorder turned off at any time without giving a reason. A transcription of the interviews will be sent to the participants and they will be able to withdraw, add or delete any information provided by them until the start of data analysis i.e. 15th of March, 2018.. In addition, in order to capture data related to the EFL course, I will also request the lecturers to give me access to the coursework data available in the Learning Management System (LMS) or at any other platform used in the course (if available). In order to avoid any disruption to the normal coursework, I will access this data after the course is completed and the students' grades are locked down.

The students will be asked to complete an anonymous student questionnaire in their own time. This is expected to take approximately 20-25 minutes. For the focus group discussion, I will randomly select 8-10 students who have signed consent forms sent to them in the email along with the link to an anonymous questionnaire and a PIS. The focus group discussion will take approximately one hour. The time and venue will be selected based on the convenience of all the participants. The focus group will be audio recorded. If any of the participants wants to withdraw, he/she can leave the room without giving a reason. Focus group participants will not be able to withdraw any data nor will they have the right to have the recorder turned off because the withdrawal risks compromising the integrity of the data from other participants.

Data management

In New Zealand, the data collected in digital form will be stored in a password protected computer at the University of Auckland server and the hardcopy data will be stored in a secure cabinet located in the School of Curriculum and Pedagogy at the University of Auckland premises. During data collection in Pakistan, the data collected in digital form will be temporarily stored in my own laptop which is password protected. The hard copy data will be stored temporarily in a locked cabinet in my own home. However, all the data in digital form and the hard copy data in scanned form will be transferred to the password-protected University of Auckland hard drive using off-site access. The data will be used by me for the doctoral dissertation, conference presentations and journal publications. The data collected for the study will be securely stored for the period of six years after which time all hard copy data will be shredded and all electronic data will be deleted.

Benefits and Risks

A copy of the findings will be made available to the lecturers which may help inform their pedagogical practices regarding the use of mobile technology for EFL teaching. Moreover, all lecturer participants (including those who may withdraw from the study) will be invited to join a research group about EFL teaching with mobile technology which I will form after my study. The students will benefit from reflecting on their use of mobile devices for their learning and will also have the altruistic benefit of knowing that their involvement in this research could lead to findings that will improve EFL teaching and learning for others. In addition, those students who fill in the questionnaire can opt to be included in a prize draw for a tablet computer worth of 100 NZD. The participants in the focus group will be given a voucher worth 10 NZD for shopping from the campus book shop.

The risks associated with this project are very small. Lecturers and/or students could be uncomfortable if they feel that they lack sufficient understanding of using mobile devices for EFL teaching and/or learning.

I will minimise this risk by avoiding the use of jargons in my communication with the participants. I will try to start the communication in a conversational manner so that the participants may feel comfortable.

Confidentiality

I will make efforts to safeguard the identity of the universities and the participants. Pseudonyms will be given to the lecturers and the universities they belong to. Data yielded through semi-structured interviews, non-participatory class observation and post-observation interviews will be transcribed by me and its content will remain confidential to my supervisors and me. The student questionnaire will be anonymous but the anonymity of the focus group participants cannot be guaranteed due to more than one person being involved in the discussion. I will make efforts to protect their privacy by transcribing and translating data myself and by giving pseudonyms to the participants. I assure you that if the information provided is published, this will be done in a way that does not identify the participants or the university as its source.

CONTACT DETAILS AND APPROVAL

Researcher's contact details

Uzma Rana Shamsi

Email: u.shamsi@auckland.ac.nz

Local Contact: Ph: 0092-333-4737214 (This is the researcher's personal phone number which is dedicated to this study. Official local contact will also be provided after the selection of the research sites.)

Main Supervisor	Co- supervisor	Head of School
Dr Constanza Tolosa	Dr Rena Heap	Helen Hedges
School of Curriculum and Pedagogy	School of Curriculum and Pedagogy	School of Curriculum and Pedagogy
Faculty of Education and Social Work	Faculty of Education and Social Work	Faculty of Education and Social Work
The University of Auckland	The University of Auckland	The University of Auckland
Phone: +64 9 373 7999	Phone: +64 9 373 7999	Phone: +6409 373 7599
Email: c.tolosa@auckland.ac.nz	Email: r.heap@auckland.ac.nz	Email: h.hedges@auckland.ac.nz

For any queries regarding ethical concerns you may contact the Chair, The University of Auckland Human Participants Ethics Committee, The University of Auckland, Research Office, Private Bag 92019, Auckland 1142. Telephone 09 373-7599 ext. 83711. Email: ro-ethics@auckland.ac.nz

Approved by the University of Auckland Human Participants Ethics Committee on 14/06/2017 for three years. Reference number 018942

Appendix B. Consent Form – HoD



**EDUCATION AND
SOCIAL WORK**

**SCHOOL OF CURRICULUM AND
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Epsom Campus

Gate 3, 74 Epsom Ave

Auckland, New Zealand

T +64 9 623 8899

W www.education.auckland.ac.nz

The University of Auckland

Consent Form – HoD

THIS FORM WILL BE HELD FOR A PERIOD OF 6 YEARS

Project: Affordances of Mobile Technology for Second Language Learning and Teaching

Researcher: PhD candidate Uzma Rana Shamsi

Supervisors: Dr. Constanza Tolosa and Dr Rena Heap

I have read the Participant Information Sheet, have understood the nature and purpose of the research. I have had the opportunity to ask questions and have them answered to my satisfaction.

I give permission for the researcher to invite the lecturers and students to participate in this research.

- On behalf of the university, I give an assurance that the participation or non-participation of the lecturers in the research will not affect their employment status or relationship with the department.
- On behalf of the university, I give an assurance that participation or non-participation of the students will not affect their grades or relationships with the department.
- I understand that the researcher will access the lecturers' coursework data available in the LMS or/and at any other online platform related to EFL coursework.

I understand that participation in the research is voluntary.

I understand that participants are free to withdraw from the research without giving any reason before 31st of December, 2017.

I understand that the data will be transcribed and translated by the researcher and its content will be confidential.

I understand that the research data may be used in the researcher's dissertation, conference presentations or publications and that all identifiable information about the lecturer, the students, the university or the department will be removed.

- I understand that data will be securely stored for the period of six years after which time all hard copy data will be shredded and all electronic data will be deleted.
- I understand that the researcher will endeavour to safeguard the participants' confidentiality and privacy.
- I wish to receive a summary of the research findings, which can be emailed to me at this email address: _____.

Name: _____ Signature: _____ Date: _____

Approved by the University of Auckland Human Participants Ethics Committee on 14/06/2017 for three years. Reference number 018942

Appendix C. Invitation to Lecturers (Email Script)

Invitation to Lecturers (Email Script)

Dear EFL lecturers,

This is to inform you that Uzma Rana Shamsi, a PhD student at The University of Auckland has been granted permission by the HoD to conduct research in the Department of Humanities and Social Sciences. You are invited to take part in her research which is related to the use of mobile technology for EFL teaching and learning in the Pakistani university sector.

Please read the details in the Participant Information Sheet (attached) and if you want to volunteer for this research, advise the HoD office by replying to this email. Thanks

Name Designation..... Date.....

Approved by the University of Auckland Human Participants Ethics Committee on 14/06/2017 for three years. Reference number 018942

Appendix D. Participant Information Sheet (Lecturer)

SCHOOL OF CURRICULUM AND
PEDAGOGY



EDUCATION AND
SOCIAL WORK

Epsom Campus

Gate 3, 74 Epsom Ave

Auckland, New Zealand

T +64 9 623 8899

W www.education.auckland.ac.nz

The University of Auckland

Private Bag 92601

Participant Information Sheet (Lecturer)

Project: Affordances of Mobile Technology for Second Language Learning and Teaching

Researcher: PhD candidate Uzma Rana Shamsi

Supervisors: Dr. Constanza Tolosa and Dr Rena Heap

I am Uzma Rana Shamsi and I am currently pursuing my PhD in Education at the University of Auckland.

Project description

The reason that I am doing this research is to investigate how language teaching and learning is influenced by mobile technology. The research goal is to explore affordances of mobile technology for language learning and teaching in the context of Pakistani university sector. It is expected that the findings will help both students and lecturers to leverage readily available mobile technology for language learning and teaching. This project will continue for four months.

Invitation to Participate

You are invited to participate in this research project because you are teaching courses related to English as a foreign language (EFL) in a university in Pakistan. Potential participants (2 EFL lecturers) are EFL university lecturers like yourself who will help the researcher explore the pedagogical affordances of mobile technology for language teaching. Your participation is voluntary and you are free to decline this invitation to participate in this study. Your Head of the Department (HoD) has given assurance that your participation or non-participation will not affect your relationship with the management or access to its services. You can seek clarification from me regarding any point before giving your final consent. I will also seek your assurance that the decision of any students to participate or not to participate in the study will not affect their academic results in any way.

If you choose to participate, you will be invited to participate in three stages. **Firstly**, you will be invited for a semi-structured individual interview which will be approximately one hour long in order to discuss your pedagogical practices related to the use of mobile technology. **Secondly**, I will seek your permission for class observation for two classes. The focus of the observation will be to observe your classroom practices related to the use of mobile technology for EFL teaching. You will not be required to deliver lectures on any specific topic nor will you be required to change

your lesson plan. You will not be asked any question by me during the lectures. Please inform your students about class observation sessions so that they may know that the focus of the observation will be on the lecturers only, not on the students. **Thirdly**, you will be invited for a post-observation interview which will also take approximately one hour. In this interview, you will be provided with the details of the classroom observation as understood and interpreted by me. You can clarify or modify the details about your pedagogical decisions as understood by me during classroom observation.

I will audio record both the interview sessions with your consent. Even if you agree to being recorded, you may choose to have the recorder turned off at any time without giving any reason. You will also be able to withdraw, modify, add or delete any information or interpretation made by me until the start of the data analysis i.e. 15th of March, 2018..

At the end of the semester, after the course has been completed and the students' grades are locked down, I will also seek your permission for accessing the coursework data available in the Learning Management System (LMS) or/and at any other platform, which you use for coursework related to EFL.

Data management

In New Zealand, the data collected in digital form will be stored in a password protected computer at the University of Auckland server and the hardcopy data will be stored in a secure cabinet located in the School of Curriculum and Pedagogy at the University of Auckland premises. During data collection in Pakistan, the data collected in digital form will be temporarily stored in my own laptop which is password protected. The hard copy data will be stored temporarily in a locked cabinet in my own home. However, all the data in digital form and the hard copy data in scanned form will be transferred to the password-protected University of Auckland hard drive using off-site access. The data will be used by me for the doctoral dissertation, conference presentations and journal publications. The data collected for the study will be securely stored for the period of six years after which time all hard copy data will be shredded and all electronic data will be deleted.

Benefits and Risks

A copy of the findings will be made available to you which may help inform your pedagogical practices regarding the use of mobile technology for EFL teaching. Moreover, all lecturer participants (including those who may withdraw from the study) will be invited to join a research group about EFL teaching with mobile technology which I will form after my study. There are no potential risks associated with this project. I will make efforts to make you feel comfortable.

Confidentiality

I will make efforts to safeguard your identity by giving pseudonyms to you and the university you belong to. Data yielded through semi-structured interviews, non-participatory class observation and post-observation interviews will be transcribed by me. I assure you that if the information provided is published, this will be done in a way that does not identify you or the university as its source.

CONTACT DETAILS AND APPROVAL

Researcher's contact details

Uzma Rana Shamsi

Email: u.shamsi@auckland.ac.nz

Local Contact: Ph: 0092-333-4737214 (This is the researcher's personal phone number which is dedicated to this study. Official local contact will also be provided after the selection of the research sites.)

Main Supervisor	Co- supervisor	Head of School
Dr Constanza Tolosa	Dr Rena Heap	Helen Hedges
School of Curriculum and Pedagogy	School of Curriculum and Pedagogy	School of Curriculum and Pedagogy
Faculty of Education and Social Work	Faculty of Education and Social Work	Faculty of Education and Social Work
The University of Auckland	The University of Auckland	The University of Auckland
<i>Phone:</i> +64 9 373 7999	<i>Phone:</i> +64 9 373 7999	<i>Phone:</i> +6409 373 7599
<i>Email:</i> c.tolosa@auckland.ac.nz	<i>Email:</i> r.heap@auckland.ac.nz	<i>Email:</i> h.hedges@auckland.ac.nz

For any queries regarding ethical concerns you may contact the Chair, The University of Auckland Human Participants Ethics Committee, The University of Auckland, Research Office, Private Bag 92019, Auckland 1142. Telephone 09 373-7599 ext. 83711. Email: ro-ethics@auckland.ac.nz

Approved by the University of Auckland Human Participants Ethics Committee on 14/06/2017 for three years. Reference number 018942

Appendix E. Consent Form - Lecturer



EDUCATION AND SOCIAL WORK

SCHOOL OF CURRICULUM AND
PEDAGOGY Epsom Campus

Gate 3, 74 Epsom Ave

Auckland, New Zealand

T +64 9 623 8899

W www.education.auckland.ac.nz

The University of Auckland

Consent Form – Lecturer

THIS FORM WILL BE HELD FOR A PERIOD OF 6 YEARS

Project: Affordances of Mobile Technology for Second Language Learning and Teaching

Researcher: PhD candidate Uzma Rana Shamsi

Supervisors: Dr. Constanza Tolosa and Dr Rena Heap

I have read the Participant Information Sheet and I have understood the nature of the research. I have had the opportunity to ask questions and have them answered to my satisfaction.

I agree to take part in this research and my participation is voluntary.

I understand that the HoD of the department Humanities and Social Sciences has given her/his assurance that my participation or non-participation in the research will not affect my employment status, relationship with the department.

I understand that the researcher will conduct one initial semi-structured interview (approximately for one hour), non-participatory class observation for two classes and one post-observation interview (approximately for one hour).

I understand that I am free to withdraw from participation at any time without giving a reason up to 15th of March, 2018.

I understand that I will be recorded but even if I choose to be audio-recorded, I will have the right to have the recorder turned off anytime without giving a reason.

I understand that the researcher will access the coursework data available in the LMS or/and at any other platform related to EFL coursework.

I understand that the researcher will transcribe data yielded from both interviews and I will be offered a transcript to check for accuracy and to add any additional comments.

I understand that the research data may be used in the researcher's dissertation, conference presentations or publications and that all identifiable information about the lecturer, the students, the university or the department will be removed.

I understand that data will be securely stored for the period of six years after which time all hard copy data will be shredded and all electronic data will be deleted.

I give an assurance that the decision of any students to participate or not to participate in the study will not affect their academic results in any way.

I understand that the students will answer one web-based anonymous questionnaire and some of them may choose to participate in a focus group discussion.

I wish to receive a summary of findings, which can be emailed to me at this email address: _____.

Name: _____ Signature: _____ Date: _____

Approved by the University of Auckland Human Participants Ethics Committee on 14/06/2017 for three years. Reference number 018942

Appendix F. Invitation to Students (Email Script)

Invitation to Students (Email Script)

Dear Students,

This is to inform you that Uzma Rana Shamsi, a PhD student at The University of Auckland has been granted permission by the HoD to conduct research in the Department of Humanities and Social Sciences. Her research is related to the use of mobile technology for EFL learning and teaching in the Pakistani university sector.

If you wish to participate in this research, please read the details about this research in the Participant Information Sheet (attached). After reading the details, if you decide to volunteer for this research, please click on this link to the anonymous questionnaire (Link removed). At the end of the questionnaire, you will find a link to Google Sheets where you can leave your details if you choose to be included in the prize draw for a tablet computer worth \$100 NZD.

After you have completed the questionnaire, you may decide that you also want to take part in a small focus group discussion. If so, you can sign the Consent Form and send to the researcher's email (u.shamsi@auckland.ac.nz). (You do not need to sign the Consent Form to participate in the questionnaire because it is anonymous.)

As part of this research, Miss Uzma Rana Shamsi will be interviewing your EFL lecturers and observing their classroom practices for two of your regular classes. However, the focus of the observation will be the lecturers only, not on the students. Thanks

NameDesignation.....Date.....

Approved by the University of Auckland Human Participants Ethics Committee on 14/06/2017 for three years. Reference number 018942

Appendix G. Participant Information Sheet (Students)



EDUCATION AND SOCIAL WORK

SCHOOL OF CURRICULUM AND PEDAGOGY

Epsom Campus

Gate 3, 74 Epsom Ave

Auckland, New Zealand

T +64 9 623 8899

W www.education.auckland.ac.nz

The University of Auckland

Private Bag 92601

Symonds Street

Participant Information Sheet (Students)

Project: Affordances of Mobile Technology for Second Language Learning and Teaching

Researcher: PhD candidate Uzma Rana Shamsi

Supervisors: Dr. Constanza Tolosa and Dr Rena Heap

I am Uzma Rana Shamsi and I am currently pursuing my PhD in Education at the University of Auckland.

Project description

The purpose of this research is to investigate how language teaching and learning is influenced by mobile technology. The study will explore affordances of mobile technology for second language learning and teaching in the context of Pakistani university sector. It is expected that the findings will help both students and lecturers to leverage readily available mobile technology for second language learning and teaching. This project will continue for four months.

Invitation to Participate

You are invited to participate in this research project because you are enrolled in a course related to English as a foreign language (EFL) in a university in Pakistan. Potential participants are university students (70-75) like yourself who are enrolled in EFL courses. Your participation is voluntary and you are free to decline this invitation to participate in this study. Your Head of the Department (HoD) and your lecturer have given assurance that your participation, non-participation, or withdrawal from this study will not affect your academic results or relationship with the lecturer and the department. You can seek clarification from me regarding any point before giving your final consent.

If you choose to participate, you will be invited to participate for two tasks. **Firstly**, you will be asked to fill in an anonymous web-based questionnaire which will take approximately 20-25 minutes. The focus of this questionnaire is to explore your learning practices related to the use of mobile devices for EFL learning. The email you have received contains the link to the questionnaire. This questionnaire will be anonymous and your submission of the questionnaire will indicate that you have agreed to participate in this research. You cannot withdraw the data after submission of the questionnaire.

Secondly, you will also be invited to be a part of a focus group discussion but you can also just choose to submit the questionnaire and not to participate in the focus group discussion. In the focus group, we will discuss your ideas related to the use of mobile devices for EFL learning.

If you wish to take part in a focus group discussion, you will sign the consent form attached in the email. Please be advised that you do not need to sign the consent form if you choose not to participate in a group discussion. The signed consent form will be sent to my email address. Your HoD and your lecturer will not know whether you have chosen to participate or not to participate in this research. I will select 8-10 students randomly for a focus group discussion. The time and venue of the focus group will be decided based on your convenience. I will audio record the focus group discussion. You may decline to answer any questions and are free to stay silent or leave the group discussion without having to give a reason. However, due to more than one person being involved in the discussion, the recording device cannot be turned off during the discussion. If you withdraw from the research, information you have contributed up to that point cannot be withdrawn because the withdrawal risks compromising the integrity of the data from other participants.

Lastly, I will request your lecturer to provide me with the access to the coursework data available in the Learning Management System (LMS) or/and at any other online platform which is used for EFL related course. In order to avoid disruption to the normal coursework, I will access this data at the end of the semester after the course is completed and your grades are locked down.

In New Zealand, the data collected in digital form will be stored in a password protected computer at the University of Auckland server and the hardcopy data will be stored in a secure cabinet located in the School of Curriculum and Pedagogy at the University of Auckland premises. During data collection in Pakistan, the data collected in digital form will be temporarily stored in my own laptop which is password protected. The hard copy data will be stored temporarily in a locked cabinet in my own home. However, all the data in digital form and the hard copy data in scanned form will be transferred to the password-protected University of Auckland hard drive using off-site access. The data will be used by me for the doctoral dissertation, conference presentations and journal publications. The data collected for the study will be securely stored for the period of six years after which time all hard copy data will be shredded and all electronic data will be deleted.

Benefits and Risks

You will benefit from reflecting on your use of mobile devices for your learning and will also have the altruistic benefit of knowing that your involvement in this research could lead to findings that will improve EFL teaching and learning for others. In addition, those students who fill in the questionnaire can opt to be included in a prize draw for a tablet computer worth of 100 NZD. If you choose to be included in a prize draw, please leave your details at the Google Sheet for which the link is provided at the end of the questionnaire. The participants in the focus group will be given a voucher worth 10 NZD for shopping from the campus book shop as a gesture of appreciation (whether or not you stay for the entire focus group). There are no potential risks associated with this project.

Confidentiality

The questionnaire will be an anonymous web-based questionnaire. To ensure anonymity, 'Anonymous Responses' will be turned on in Survey Monkey so the data that makes respondents personally identifiable will not be included in the survey results. The options will be set to **exclude all respondent information** to exclude first name, last name, email address, IP address, and custom data from the data. However, the anonymity of the focus group participants cannot be guaranteed due to more than one person being involved in the discussion. Although, I will make efforts to protect their privacy by transcribing and translating data myself and by giving pseudonyms to the participants and the universities they belong to. I assure you that if the information provided is published, this will be done in a way that does not identify the participants or the university as its source.

CONTACT DETAILS AND APPROVAL

Researcher's contact details

Uzma Rana Shamsi

Email: u.shamsi@auckland.ac.nz

Local Contact: Ph: 0092-333-4737214 (This is the researcher's personal phone number which is dedicated to this study. Official local contact will also be provided after the selection of the research sites.)

Main Supervisor
Dr Constanza Tolosa
School of Curriculum and
Pedagogy
Faculty of Education and Social
Work
The University of Auckland
Phone: +64 9 373 7999
Email: c.tolosa@auckland.ac.nz

Co-supervisor
Dr Rena Heap
School of Curriculum and
Pedagogy
Faculty of Education and
Social Work
The University of Auckland
Phone: +64 9 373 7999
Email: r.heap@auckland.ac.nz

Head of School
Helen Hedges
School of Curriculum and
Pedagogy
Faculty of Education and Social
Work
The University of Auckland
Phone: +6409 373 7599
Email: h.hedges@auckland.ac.nz

For any queries regarding ethical concerns you may contact the Chair, The University of Auckland Human Participants Ethics Committee, The University of Auckland, Research Office, Private Bag 92019, Auckland 1142. Telephone 09 373-7599 ext. 83711. Email: ro-ethics@auckland.ac.nz

Approved by the University of Auckland Human Participants Ethics Committee on 14/06/2017 for three years. Reference number 018942

Appendix H. Consent Form - Students



EDUCATION AND SOCIAL WORK

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Epsom Campus

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T +64 9 623 8899

W www.education.auckland.ac.nz

The University of Auckland

Consent Form- Students

THIS FORM WILL BE HELD FOR A PERIOD OF 6 YEARS

Project: Affordances of Mobile Technology for Language Learning and Teaching

Researcher: PhD candidate Uzma Rana Shamsi

Supervisors: Dr. Constanza Tolosa and Dr Rena Heap

I have read the Participant Information Sheet and I have understood the nature of the research. I have had the opportunity to ask questions and have them answered to my satisfaction.

I agree to take part in this focus group discussion and my participation is voluntary.

I understand that the Head of the Department of Humanities and Social Sciences and my lecturer have given assurance that my participation or non-participation in the research will not affect my academic results or relationship with the lecturer and the department.

I understand that I can withdraw from the discussion anytime without giving any reason.

I understand that if I do not want to answer any question, I can stay silent or go out of the room without giving a reason.

I agree not to disclose any details of the focus group discussion.

I understand that the focus group discussion will be audio recorded and I will not be able to withdraw data.

I understand that if I choose to withdraw from the focus group discussion, I do not have the right to have the recorder turned off.

I understand that the researcher will translate and transcribe data.

I understand that the researcher will access the coursework data available in the LMS or/and at any other platform related to EFL coursework.

I understand that the research data may be used in the researcher's dissertation, conference presentations or publications and that all identifiable information about the lecturer, the students, the university or the department will be removed.

I understand that data will be securely stored for the period of six years after which time all hard copy data will be shredded and all electronic data will be deleted.

I understand that the researcher will endeavour to safeguard the participants' confidentiality and privacy, but that these cannot be fully guaranteed due to the nature of a focus group discussion wherein 8-10 students will take part.

Name: _____ Signature _____ Date _____

Approved by the University of Auckland Human Participants Ethics Committee on 14/06/2017 for three years. Reference number 018942

Appendix I. Initial Semi-Structured Interview Questions to Lecturers

Initial Semi-Structured Interview Questions to Lecturers

Research Q. 1 How do the EFL Lecturers in Pakistan harness the pedagogical affordances of mobile technology for language teaching?

Q.1 Please share what type of mobile devices you and your students use in the classroom?

Possible Prompts

- Smart phones
- Feature/simple phones
- Tablet computers
- Laptops
- others

Q.2 Please describe how you use mobile technology for teaching this EFL course?

Possible Prompts

- Use of mobile technology in prescribed syllabus
- Types of mobile technology used
- Changes planning practices due to mobile technology

Q.3 Has mobile technology played a role in tailoring your teaching to students' needs?

Possible Prompts

- Activities for different types of learners
- Large class size

Q.4 What are some useful features of mobile technology that you use?

Possible Prompts

- Ubiquity
- Flexibility
- Collaboration
- Contextualising learning

Q.5 Please describe how you use mobile devices for giving feedback to EFL learners?

Possible Prompts

- Feedback without mobile devices vs feedback with mobile devices
- Multimodal feedback

- Instant feedback
- On-demand feedback
- Apps and features used for giving feedback

Q. 6 How do you integrate informal language learning into formal classroom practices?

Possible Prompts

- Strategies of embedding informal and formal language learning
- Planning for informal learning
- Use of social media

Q.6 Have you experienced any changes in your role as an EFL lecturer due to the students' extensive use of mobile technology in their lives?

Possible Prompts

- Telling vs discussing
- Facilitator vs an authoritative figure
- Lecturers' mobile literacy vs students' mobile literacy

Q.7 Can you share any difficulties regarding the use of mobile technology for EFL teaching?

Q. 8 Optional question related to LMS or/and any other online platforms

Please describe your practices related to the use of LMS or/and any other online platform for EFL teaching.

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Appendix J. Observation Guide

Observation Guide

Lecturer:

Date:

1. **General Information:** *(a) classroom setting, number of students, overall environment (b) information provided by the teacher about the lesson, feature of mobile technology to be used and its purpose etc.*
2. **Teacher's use of mobile technology during the lesson:**
(a) purpose (b) apps and tools
3. **Teacher's focus regarding the use mobile technology:** *(a) focus on work inside the class for listening/speaking/reading/writing skill (b) focus integrating informal language learning into formal practices*
4. **Students' use of mobile technology in the class:** *(a) activities (b) working in pairs/groups/individual*
5. **Difficulties in the use of mobile technology** *(a) related to the use of any feature/app (soft skills) (b) related to accessing content (c) related to classroom setting/environment*
6. **Questions and comments:** *(a) details to be clarified during stimulated call interviews from the teachers (b) details to be discussed/clarified during focus group discussions*

Approved by the University of Auckland Human Participants Ethics Committee on 14/06/2017 for three years. Reference number 018942

Appendix K. Questionnaire to Students

Questionnaire to students

Project title: Affordances of Mobile Technology for Second Language Learning and Teaching

Researcher: Uzma Rana Shamsi

Supervisors: Dr Constanza Tolosa & Dr Rena Heap

Questionnaire

Please read the instructions carefully before filling in the questionnaire.

- The purpose of this questionnaire is to gather data about your learning patterns with mobile devices.
- Please note that this questionnaire is anonymous. No identifiable information, such as IP addresses, will be gathered.
- You do not need to sign the Consent Form because your submission of this anonymous questionnaire will be regarded as your consent.
- Please note that because the questionnaire is anonymous you cannot withdraw data once you have submitted it.
- If you choose to be included in a prize draw, please fill in your details in the Google Sheets for which the link is provided at the end of this questionnaire.
- At the end of this questionnaire, you will be invited to also participate in a focus group discussion. If you choose to do this, you will need to sign the Consent Form attached with the email.

Approved by the University of Auckland Human Participants Ethics Committee on 14/06/2017 for three years. Reference number 018942

Questionnaire for students adapted from Demouy et al. (2016)

Q1 Which mobile device(s) do you use for language learning? (Please select all that apply)

- A simple mobile phone
- A smartphone (e.g. Android, iPhone)
- An mp3 player or iPod
- An iPod Touch
- An iPad or tablet
- An e-book reader or a Kindle (note: if you have a Kindle Fire it is a tablet, so choose the preceding option)
- Other, please say which: _____

Q2 What was your initial motivation for using your mobile device for language learning? (Please select one only)

- Out of curiosity because you had acquired the device and were interested in what it could do.
- You use your device regularly and wanted to see if you could use the tools, apps (e.g. games) or services for language learning.
- You were inspired by your lecturer, a fellow student or a friend who pointed out an app, a specific resource or functionality.
- You wanted to fill in / maximise gaps in your daily schedule to practice your language skills.
- Other, please say what: _____
-

Q3 Which language skill(s) do you practice most with your mobile device? (Please select maximum of two)

- Speaking
- Listening
- Writing
- Reading

Q4 Has the use of a mobile device enabled you to study at times, or in places you would not have normally studied in the past?

- Yes
- No

Q5 Which resources or apps do you use most for language learning? (Please select all that apply)

- Instant messaging (voice or text) (e.g. SMS, Skype, messenger, WhatsApp etc.)
- Forums or social networks (e.g. Facebook, Twitter)
- Using language learning websites and apps (e.g. Duolingo, Busuu, Memrise, Quizlet, etc.)
- Using authentic audio-visual resources (e.g. TV programmes, YouTube films, audio-books, songs)
- Using authentic reading material (e.g. newspapers, magazines, novels etc.)
- Using reference material (e.g. dictionaries, online translation tools...)
- Other, please specify: _____

Q6 What is your favourite time to access language learning resources through your mobile devices? (Please select all that apply)

- Travelling to and from the university
- Waiting for the next class
- In the library
- In the cafe
- Watching TV
- During the slots of power shut down
- During planned learning session to work with course material

Q 7 If you face any problem while learning a language through a mobile device, who would you like to contact for help?

- lecturer
- Friends
- Family member
- Online contact
- I will not seek help

Q 8 How often do you use a mobile device for enhancing your English language skills?

- Several times a day
- Once a day
- Once a week
- Several times a week
- Less often

Q 9 How do you contact your lecturer if required after working hours?

- Email
- SMS
- WhatsApp
- Facebook
- Phone call
- I will not contact my teacher

Q10 Do you think you are spending more time on language learning due to mobile devices?

- Yes
- No
- Don't know

Q11 How do you stay connected all the time through your mobile devices? (Please select all that apply)

- I subscribe to mobile internet packages
- I have Wi-Fi at home
- I do not subscribe to mobile internet
- I rely on free Wi-Fi provided by the university

Q12 What are the features of mobile phone which are mostly used by you (not just for learning) English? (Please select all that apply)

- Facebook
- Twitter
- WhatsApp
- SMS
- Video and Audio recording
- Music
- Games
- Browsing
- YouTube
- Other-----

Q. 13 Would you like to be a part of a focus group discussion related to the use of mobile devices in EFL learning?

- Yes
- No

Thank you very much for taking the time to complete this questionnaire.

Participation in the prize draw

- If you would like to be included in a prize draw for a \$100 tablet, please enter your details on the Google Sheet:
<https://docs.google.com/spreadsheets/d/1tvPQiNvWy89UK7XLYgQwbXC4wk7-pwGTwyRMLSofoDQ/edit?usp=sharing>
- **Your details will not be able to be traced back to your questionnaire, so your questionnaire responses will remain anonymous.**

Participation in the focus group

- If you would like to be a part of the focus group discussion, please sign the consent form attached with the email and send it to the researcher's email address (u.shamsi@auckland.ac.nz).

Approved by the University of Auckland Human Participants Ethics Committee on 14/06/2017 for three years. Reference number 018942

Appendix L. Group Discussion Protocol- Students

Group Discussion Protocol- Students

Q.1 Please describe how you use mobile technology in the EFL course you are studying in this semester.

Possible prompts

- Use of virtual interaction platform (Facebook page, Whatsapp / Yahoo group, blog, wiki etc,) for your class?
- EFL lecturer's role at virtual platforms
- Activities assigned by your lecturer
- Formal components of EFL course
- Informal components of EFL course

Q.2 Please describe any problems you face while using mobile devices for learning including English language learning.

Possible prompts

- Problems faced inside the class
- Problems faced outside the class
- Mobile internet cost
- Family issues/restrictions

Q.3 Can you describe how you use mobile technology to learn on your own?

Possible prompts

- In EFL course
- For other courses – similarities/ differences
- For self-directed learning

Q.4 Why and how do you collaborate with your lecturers and peers by using mobile devices?

Possible Promptshy:

- For reminding about deadlines about assignment submission etc.
- For rescheduling classes
- For discussing about lectures or exams
- For forwarding funny messages

How:

- Phone talking
- Mobile SMS
- Texts at some app
- Class webpage/wiki etc

Approved by the University of Auckland Human Participants Ethics Committee on 14/06/2017 for three years. Reference number 018942

Appendix M. Amir's Lesson Observations

Amir's First Observed Lesson

No	Type and time of activities	Activities	Activity focus	Vignette
1	Introduction (5 minutes)	Discussion about preferred technology for EFL learning	Speaking skills	Use of laptop by the lecturer for 17 minutes
2	Lecture (17 minutes)	Presentation of details about GC, the LMS for the class	Course content	
3	App installation (7 minutes)	GC app installation	Technology focus	Use of mobile technology by the students for 18 minutes
4	Group discussion (4 students in each group) (10 minutes)	Web-browsing, accessing and reading a document about GC using mobile devices	Reading and speaking skills	Disrupted Wi-Fi and mobile data sharing by the lecturer
5	Oral presentations of 10 groups (17 minutes)	Oral presentations based on the group discussion by one member of each group	Speaking skills	
6	Out-of-class activity (3 minutes)	Setting homework assignment		

Amir's Second Observed Lesson

No	Type and time of activities	Activities	Activity focus	Vignette
1	Introduction (8 minutes)	A question-answer session about homework assignment The lecturer's demonstration of online assignment submission	Speaking skills	Use of laptop by the lecturer for 22 minutes
2	Outline of the lesson (2 minutes)	Introduction of the topics to be covered		Use of mobile technology by the students for 28 minutes
3	Lecture (20 minutes)	Details about the topics were presented using PowerPoint slides	Course content	Disrupted Wi-Fi and mobile data sharing by the lecturer
4	App installation (10 minutes)	Installation of Microsoft OneNote app and Immersive Reader ¹⁰ as its Add-in	Technology focus	
5	Writing and listening activities (18 minutes)	Students' writing activity at OneNote Listening activity using Immersive Reader	Writing and listening skills	
6	Out-of-class activity (2 minutes)	Setting homework assignment		

Appendix N. Huria's Lesson Observations

Huria's First Observed Lesson

No	Type and time of activities	Activities	Activity focus	Vignette
1	Introduction (8minutes)	A question-answer session about academic English	Speaking skills	Lecturer's laptop use for 15 minutes
2	Lesson outline (5 minutes)	Presentation of an outline of the activities related to Academic Reading		Students' mobile technology use for 30 out of 60 minutes
3	Lecture (15 minutes)	Detailed lecture delivered on techniques of academic reading	Course content	
4	Pre-reading and reading activity (20 minutes)	Briefing about topic of the article to be read i.e. Culture Shock and explanation of related terms Accessing and reading text using mobile devices	Reading skills	
5	Post-reading online quiz (10 minutes)	Lecturer's sharing of a quiz-link Students' solving the quiz using mobile devices	Self-assessment of reading activity	
6	Out-of-class-activity (2 minutes)	Reading and summarising an article	Reading and writing skills	

Huria's Second Observed Lesson

No	Type and time of activities	Activities	Activity focus	Vignette
1	Discussion about homework (10 minutes)	Sharing of article summary by randomly selected eight out of 39 students	Speaking skills	The lecturer's laptop use for 15 minutes
2	Introduction (5 minutes)	An outline of the lesson was presented		Students' use of mobile devices for four minutes actively and ten minutes intermittently
3	Lecture (20 minutes)	Presentation of features and process of academic writing Demonstration of a well-written paragraph on PowerPoint	Course content	
4	Writing activity (15 minutes)	Paragraph writing about academic writing based on the article assigned as homework Students' use of pen and paper	Writing skills	
5	Listening activity (8 minutes)	Sharing of a YouTube video through WhatsApp about academic vocabulary Listening activity using mobile devices Assessment of listening activity	Listening skills	
6	Out-of-class activity (2 minutes)	Sharing of two YouTube videos Content of videos to be shared in the next class		

Appendix O. Aly's Lesson Observations

Aly's First Observed Lesson

No	Type and Time of activities	Activities	Language focus	Vignette
1	Introduction (2 minutes)	Aly's mentioning of the captions given by the students to a picture shared by him at WhatsApp		<p>The students' use of mobile technology for 15-17 minutes</p> <p>Aly's use of his laptop attached to a data projector for 13 minutes</p> <p>Aly's use of mobile technology for sharing links</p>
2	Lecture (13 minutes)	Aly's presentation of the content using PowerPoint slides Students' using mobile devices to browse two terms (i.e. cultural stereotype and racism)		
3	Group discussion (15 minutes)	Group work (four students in each group) to discuss influence of cricket on Pakistani English Students browsing the web and links shared at WhatsApp at their mobile devices and at laptops (five students) Students' use of pen and paper for making notes	Reading and speaking skills	
4	Sharing main points of group discussion (15 minutes)	Sharing of main ideas by two students from each group	Speaking skills	
5	YouTube video and a follow-up activity (10 minutes)	The lecturer's playing a video about non-verbal intercultural communication Aly's questions about the video Students speaking English to interpret the non-verbal gestures according to Pakistani culture	Listening and speaking skills	
6	Homework assignment (3 minutes)	Aly's assigning the task of listening to a TEDx talk: How culture Drives behaviours Aly's brief description about the content in the video Sharing of the video-link at WhatsApp Internet disruption		

Aly's Second Observed Lesson

In the second observed lesson, the topic of the lesson was Barriers to Intercultural Communication. Twenty-six out of 49 students were present due to the political unrest in the city.

No	Type and Time of activities	Activities	Language focus	Vignette
1	Introduction (8 minutes)	Discussion in English about homework assignment i.e. the TEDx video Introduction to the topic: Barriers to Intercultural Communication	Speaking skills	The use of mobile devices by 20 students for ten minutes
2	Lecture (12 minutes)	Presentation of the content using PowerPoint slides Shutdown of the data projector due to power failure but no disruption to the planned activity due to availability of content at mobile devices		The lecturer's use of mobile technology to share a link
3	YouTube video (5 minutes)	Aly's playing a YouTube video about strategies of overcoming cultural barriers	Listening skills	
4	Pair discussion and preparation of PowerPoint slides (10 minutes)	Aly's sharing a link to a blog post about barriers to intercultural communication Students' working in pairs to identify possible communication barriers and their strategies of overcoming them Aly's facilitation by moving around the class Six students using laptops and the rest using mobile devices	Reading and speaking skills	
5	Presentations (20 minutes)	Each pair gave presentation with two slides Aly taking notes using pen and paper to give feedback	Speaking skills	
6	Displaying pictures (5 minutes)	Aly' displaying of three pictures of different settings made by students Students' several interpretations Aly's explanation of different interpretations of the same pictures by people belonging to different regions in Pakistan	Speaking skills	

Appendix P. Bina's Lesson Observations

Bina's First Observed Lesson

No	Type and Time of activities	Activities	Language focus	Vignette
1	Introductory session (13 minutes)	Introduction to the lesson topic: Basics of effective communication (Asking clear questions and giving relevant answers) Bina's sharing of a link to a blog post related to the topic at WhatsApp group Bina's advice to the students to read one topic from the blog post Bina's questions and students' answers in English about the blog post	Reading skills	The students' use of mobile technology to access and read a blog post for 12 minutes The lecturer's use of mobile technology to share a link
2	Overview of the topic (7 minutes)	Bina's advice to the students to turn their mobile devices off Bina's overview of the topic using PowerPoint slides Students taking notes using pen and paper		
3	Feedback on video assignments (15 minutes)	Bina's playing of a video recorded as homework assignment by one of the groups about an argument among three students and a restaurant manager Bina's feedback on the communication in the video	Listening skills	
4	Pair discussion based on a YouTube video (8 minutes)	Playing of another YouTube video about students' communication with a university official about enrolment process Students' pair discussion based on the video clip about how they could have sought the similar information The students' use of pen and paper to make notes	Listening and speaking skills	
5	Presentations (15 minutes)	Sharing of main points of discussion by each group in the form of role-play	Speaking skills	
6	Homework assignment (2 minutes)	Bina's providing details about a TEDx event assigning the task of recording a talk about communication for business		

Bina's Second Observed Lesson

No	Type and Time of activities	Activities	Language focus	Vignette
1	Introduction (2 minutes)	Bina's advice to the students to turn their mobile devices off Introduction of the lesson topic! Principles of effective communication Video playing was unsuccessful due to internet disruption		Students' use of mobile technology for 18 minutes for listening and browsing
2	An overview of the topic (8 minutes)	Bina's overview of the topic using PowerPoint slides Explanation with examples of Seven Cs (Clarity, Correctness, Completeness, Conciseness, Concreteness, Coherence and Courtesy) Brief overview of applying the principles while giving oral presentations		Laptop use by six students for browsing Internet disruption
3	Listening to TEDx talk (17 minutes)	Students using mobile devices with earphones to listen to the recorded TEDx talk (first 7 minutes) by a Pakistani entrepreneur on the topic: Communication for Business Students using papers to write critical evaluation of the talk based on the principles of communication (220-250 words)	Listening and writing skills	
4	Group work (three students in each group) to prepare for presentations (10 minutes)	The lecturer's instructions to prepare three slides according to the principles of communication by browsing the web on any topic The lecturer's instructions to insert one relevant image The students' use of mobile technology for browsing Students' discussion in English language The lecturer moving around and assisting students in topic selection Six out of 28 students using laptops while other using mobile devices	Reading and speaking skills	
5	Oral presentation (20 minutes)	Students' giving oral presentations accessing Google slides followed by answering to one question asked by any student in the class The lecturer's feedback after every presentation	Speaking skills	
6	Closing session (2 minutes)	The lecturer's briefing about syllabus for the monthly tests displayed at the data projector		

Appendix Q. Adam's Lesson Observations

Adam's First Observed Lesson

No	Type and time of activities	Activities	Language focus	Vignette
1	Introduction (5 minutes)	Discussion about a group assignment of video recording Briefing about the lesson topic: How to write an effective business email?	Speaking skills	The lecturer's playing a video clip for three minutes through desktop computer and sharing a link using mobile technology Students' use of mobile devices for approximately 25 minutes
2	Listening exercise (8 minutes)	Pre-listening introduction Listening of a YouTube clip about writing business emails Students' note-taking using pen and paper Mobile phones placed on desks upside-down	Listening skills Writing skills	
3	Follow-up discussion (15 minutes)	Students' web-browsing for strategies of writing business emails Discussion in groups (three students in each group) Sharing main points of discussion with the class Adam's use of white board to write main points	Reading and speaking skills	
4	Writing activity (13 minutes)	Students' writing and sending an email to the lecturer using mobile technology	Writing skills	
5	Feedback (12 minutes)	Adam's feedback on randomly-selected three emails		
6	Out-of-class activity (2 minutes)	Assigning the task of editing the text to make it an effective business message shared through email		

Adam's Second Observed Lesson

No	Type and time of activities	Activities	Language focus	Vignette
1	Introduction (8 minutes)	The lecturer's overall feedback on recorded assignment about mock business meeting and on editing work at Google Sheets Introduction to the lesson topic: Project presentations		The students' use of mobile technology for 23 minutes The lecturer's use of a desktop computer for 8 minutes
2	Listening activity (9 minutes)	Pre-listening introduction Listening to a YouTube clip about project presentations played by the lecturer Mobile phones placed on desks upside-down	Listening skills	Students' use of mobile data due to Internet issues

3	Quiz (5 minutes)	The lecturer's sharing of a link to Google Forms through email Students accessing and solving a self-assessment quiz based on the listening activity		
4	Group discussion and preparation of presentation (18 minutes)	Students' work in group (three students in each group) Web-browsing to obtain more information about the topic Preparing slides at Google Slides about their projects completed during entrepreneurial week in the campus	Speaking and reading skills	
5	Oral presentations (20 minutes)	Group presentations using three slides by six groups (three minutes for each group) The lecturer's use of pen and paper to make-notes for feedback The lecturer's intimation about presentations by remaining five groups in the next class	Speaking Skills	

Appendix R. Sara's Lesson Observations

Sara's First Observed Lesson

No	Type and time of activities	Activities	Language focus	Vignette
1	Introductory session (12 minutes)	Short news-report like presentations by four students on TV morning shows All students except the presenters advised to switch off their phones Lecturer's writing a few words on the board Use of mobile dictionaries by the presenters Adding new words to a vocabulary list at shared Google sheet	Speaking skills and dictionary use	Sara's use of mobile technology for sharing listening clips The students' use of mobile technology for consulting dictionaries and for listening (24-26 minutes) Temporary internet connectivity issues due to power failure
2	An overview of the topic (8 minutes)	Introduction to the topic: Listening comprehension An overview of active listening strategies using PowerPoint slides		
3	Pre-listening activity (10 minutes)	The lecturer's use of two audio clips through from http://www.bbc.co.uk/learningenglish and IELTS practice tests Discussion about the clips Internet disruption due to power failure (1-2 minutes)	Speaking skills	
4	Listening activity (27 minutes)	Students' listening using mobile devices and writing answers on the printed sheets The lecturer's displaying answers on the data projector	Listening skills	
5	Homework (1 minute)	Home work of listening to another video clip sent through email		

Sara's Second Observed Lesson

No	Type and time of activities	Activities	Language focus	Vignette
1	Introductory session (8 minutes)	Short news-report like presentations by three students on social media influencers in Pakistan All students except the presenters advised to switch off their phones Lecturer's writing a few words on the board Use of mobile dictionaries by the presenters Adding new words to a vocabulary list at shared Google sheet	Speaking Skills	The students' use of mobile devices to consult dictionaries, access and read an article for 20 minutes
2	Speaking Activity (15 minutes)	Summarising the listening clip, assigned as homework, about election campaign of Donald Trump, the president of the USA, by two students	Speaking skills	

		Students' work in pairs to identify similarities between Donald Trump and Pakistani politicians		
3	An overview of the topic (3 minutes)	An overview of reading techniques by Sara The topic for reading: Influence of social media on our lives		
4	Pre-reading activity (8 minutes)	Discussion about the topic in English language	Speaking skills	
5	Reading activity (20 minutes)	Students' accessing and reading online text at their mobile devices Students' answering comprehension questions on paper sheets provided by the lecturer	Reading And writing skills	
6	Homework assignment (2 minutes)	Sara's proving details about a video-recording to be recorded in a job fair to be held in the university	Speaking skills	

Appendix S. Coding Sample -The Pedagogical Dimension

Examples	Data-driven/ Initial coding	MALL literature- informed coding/ (Categories)	Theoretical model- informed coding (Themes)
<p>“By the time they [students] come here [university], they have already learned English, which is a compulsory subject in schools and colleges. However, in an environment where English is taught as a foreign language, students rarely get any chance of speaking English. You know that English is taught through the GTM. That’s why most students can’t express themselves adequately while speaking English.” Huria (Initial interview)</p> <p>“They [students] have been taught English through Grammar-Translation Method which doesn’t encourage communication as such” Bina (post-observation interview)</p>	<p>EFL teaching through Grammar-Translation Method/ Beliefs about language teaching with technology</p>	<p>Rationale for the integration of mobile technology into EFL teaching</p>	<p>The pedagogical dimension</p>
<p>“My students work together using their mobile devices, google many things and then afterwards, they discuss what should be included and what should not be included in order to answer the questions raised by the teacher”.</p> <p>“What fascinates me the most about mobile technology is that I can engage students in their learning”. Adam (Initial interview)</p>	<p>Focus on developing speaking skills</p>	<p>Affordances of Mobile technology for fostering communicative skills</p>	
<p>“They [students] develop a know-how of using different resources for EFL learning and later in their teaching too.” Amir (Post-observation interview)</p>	<p>Teaching about mobile technology</p>	<p>Teaching digital literacies</p>	
<p>“Last week, their lecturer advised them to record a talk delivered by a Pakistani entrepreneur in a TEDx event which was held at the campus. The students are listening to a part of that TEDx talk on their mobile phones using ear-phones. The students seem engaged in the listening activity as they are silently taking notes using pen and paper.” Field notes during Bina’s second observed lesson.</p>	<p>Use of mobile technology for recording and developing listening skills</p>	<p>Affordances of Mobile technology to foster communicative skills Affordances of mobile technology to integrate formal and informal learning</p>	

Appendix T. Coding Sample-The Technological Dimension

Data samples	Data-driven/Initial coding	MALL-literature informed coding (Categories)	Theoretical-model informed coding (Themes)
<p>“One per cent of the students, who have come from villages, might not have smartphones, but after two or three semesters, they also buy smartphones.” Bina (Initial interview)</p> <p>“If any student doesn’t have a phone, he/she buys a second-hand phone because it’s usually required for communication with peers.” Huria (Initial interview)</p> <p>Simple mobile phone 6.75%, Smart phones (91.94%), An iPad/tablet (9.82%) (Student survey)</p> <p>“All my students have smartphones. They use it throughout the day. I don’t have to ask them to bring their mobile devices for the classes as they carry them all the time. So, it’s easy for me to conduct any activity in any class.” Aly (Initial interview)</p>	<p>Ownership of mobile technology</p> <p>Ownership of mobile technology</p> <p>Ownership of mobile technology</p> <p>Portability of mobile devices</p>	<p>Affordances of mobile technology, e.g., availability, flexibility</p>	<p>The technological dimension</p>
<p>“During the listening exercise, the students’ mobile devices are placed upside down for eight minutes. They are advised to focus on the content of the clip, which is about writing business emails.” Field notes (Adam’s first lesson observation)</p>	<p>Distractions caused by mobile devices</p>	<p>Constraints of mobile technology</p>	
<p>“The lecturer has informed the students about the topic of the lesson, which is about installing Microsoft OneNote and Immersive Reader as its add-in. The lecturer checks Wi-Fi and tells the students that Wi-Fi signals are fluctuating. Therefore, they will need to use their mobile internet for the installation. The students are not willing to use their mobile internet as it will become very expensive. Finally, the lecturer shares his mobile internet with the class for the installation of the apps.” Field notes (Amir’s second lesson observation)</p>	<p>Connectivity issues: Disrupted Wi-Fi in the university, mobile internet cost Lecturer’s sharing of his mobile data</p>	<p>Constraints of mobile technology</p>	

Appendix U. Coding Sample-The Temporal and Physical Dimensions

Data samples	Data-driven coding	MALL-literature informed coding/ (Categories)	Theoretical-model informed coding/(Themes)
<p>“I have stopped keeping traditional hard copies of the books. This morning, when I was coming to the university, I was reading a book chapter on my mobile phone for my EFL class. I finished the whole chapter before reaching the campus. This is the real utilization of your time, which; otherwise, would have been wasted.” Students’ focus group</p>	<p>Reading during travelling</p> <p>Transactions with data through mobiles</p>	<p>Learning at informal times and places</p>	<p>The temporal and physical dimensions</p>
<p>“Sometimes, I ask them to create a situation where people of different cultures are sitting together... This is a group activity where they have to sit together at someplace like a garden or university cafeteria or at any other place... and create a situation [related to work environment]. They make a video-recording of their conversation, and then they submit it to me so that I may evaluate to what extent they were successful.” Adam (Initial interview)</p> <p>“Bina is playing a video clip which was given as an out-of-class assignment. In the clip, three students can be seen arguing with the restaurant manager. The students are complaining that the dishes served were not ordered by them. The manager is trying to explain. The conversation is happening in English. The students’ funny accent of speaking English makes the class laugh.” Field notes (Bina’s first observed lesson)</p>	<p>Setting out-of-class tasks in real-life settings Focus on speaking skills</p> <p>Use of basic built-in features of mobile technology</p> <p>Recording transactions made out-of-class</p>	<p>Situated teaching</p> <p>Integration of informal and formal learning</p>	
<p>Students’ preferred time to access language learning resources: Travelling (43.29%), Gaps between classes (23%), café (12.8%), During power shut-down (15.8%) Students’ survey data</p>	<p>Out of class language learning</p>	<p>Learning at informal times and places</p>	

Appendix V. Coding Sample-The Transactional Dimension

Data samples	Data-driven coding	MALL-literature informed coding/ (Categories)	Theoretical-model informed coding/(Themes)
<p>“Mobile technology is very much handy as far as reading is concerned. The students can read anywhere and literally everywhere. They have course content stored at their mobile devices.” Adam (Initial interview)</p>	<p>Mobile technology to access and read Anytime, anywhere</p> <p>Transactions with content through mobiles</p>	<p>Students’ interactions with mobile-enabled/accessible content</p>	<p>The transactional dimension</p>
<p>“I am teaching some Afghani students this semester. They are here through HEC [Higher Education Commission of Pakistan] Exchange Programme and they need special help... Since they are here on scholarship, they are very keen learners. If they have submitted assignments, they won’t wait for the next class or next week. They will text me or call me. So, instant feedback is done through mobile technology.” Bina (Initial interview)</p>	<p>Mobile technology to access and read Anytime, anywhere</p> <p>Mobile technology to attend to students’ individual needs</p>	<p>Assistance through mobile technology</p> <p>Personalized teaching</p>	
<p>Apps and tools for EFL-related communication: Instant messaging (45.12 %), Social networks (30.49%), Email (42.68%) Students’ survey</p> <p>“Our interaction at WhatsApp is more frequent as compared to email or other platforms” “If anyone has any problem, she/he can initiate a discussion about that particular issue (at WhatsApp). For instance, one student uploaded an image of a question related to his English comprehension assignment. The solution was provided by different students within minutes.” Focus group data</p>	<p>Apps and tools for communication</p>	<p>Platforms for quick interactions</p>	