Mobile Assisted Language Learning in Türkiye: A Systematic Review Study of Postgraduate Theses Produced during the Period 2009-2022

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Abstract

The present study reviewed the mobile-assisted language learning postgraduate theses (MALL-PGTs) produced in Türkiye during the period 2009-2022. The aim was to provide a broad insight into the general research trend of Turkish MALL-PGTs. In this regard, seventy-nine MALL-PGTs (60 master's theses, 19 doctoral theses) were collected and analyzed based on the coding scheme presented by the author. The schema was made up of six key categories: year of publication, MALL perception, research purpose, research focus, instructional approach, and research design. The results revealed that an increasing trend of producing MALL-PGTs in Türkiye continued steadily in the thirteen-year interval, and MALL was perceived as complementary method to conventional learning. In addition, most MALL-PGTs aimed to investigate the affective domains of learners and therefore focused on general perceptions of learners in MALL environments. However, most MALL-PGTs did not specify the instructional approach adopted. The most common adopted research method was mixed-method research. MALL implementations were mostly conducted with the preparatory class students at the universities and the sample size of most MALL-PGTs corresponded to the number of participants that ranged from 50 to 100. The most common target language was also English as a foreign language. Perhaps the most important findings of the present study were that an increasing trend of not specifying the types of mobile devices used and the learning contexts regarding MALL designs continued steadily in the last five years. Overall, the results indicated that most Turkish MALL-PGTs suffered from the principles of MALL design and thus did not meet the minimum requirements for generalizability of research outcomes.

Keywords: *Literature review, Mobile-assisted language learning, Postgraduate theses, General research trend.*

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INTRODUCTION

One of the aims of education is to ensure that individuals in a society grow up to be compatible with other societies. The branch of pedagogy that produces knowledge in this field is foreign language education (Toprakçı, 2016). The specificity of the field requires the use of different methods, techniques and tools in providing the content to the students (Toprakçı, 2017). On this basis, computer and communication technologies (Internet, mobile devices, etc.) have influenced foreign language education and the question of what it means to integrate mobile devices into the language learning process has been an issue that has attracted the attention of many researchers for more than two decades. To overcome this problem, researchers conducted a series of research studies, taking advantage of the potential of intense student-mobile device interaction. However, unpredictable developments in mobile technologies used in language education led to the emergence of new ones in a very short time or to the updating of the features of existing devices. This requires regular analysis of "trends in mobile device types and functionality, along with learner types and the use of mobile devices in various disciplines and courses" (cited in Krull & Duart, 2017 from Wu, Wu, Chen, Kao, Lin & Huang, 2012). Therefore, a review of the effectiveness and types of mobile devices, research focus, methodological approach, and results of previous studies on MALL can provide insight for educators and researchers in terms of redesigning MALL environments in the future (Frohberg, Göth & Schwabe, 2009; Krull & Duart, 2017).

The relevant literature offers a number of review studies conducted to identify MALL research trends. In particular, the relevant studies have focused on literature reviews (Shadiev, Hwang & Huang, 2017) and meta-analyses (Lin & Lin, 2019; Chen, Chen, Jia & An, 2020) of research articles indexed in SSCI journals. However, there is no study that examines postgraduate theses (henceforth PGTs) written on MALL in the context of a specific country. Each country's level of development and the process of accessing and integrating mobile technologies into foreign language teaching may differ. Accordingly, the effects of mobile technologies on the language learning skills of students from different backgrounds may not be realized at similar levels.

On the other hand, producing a PGT is a primary requirement for an individual to have an academic identity as well as one of the most important determinants in terms of proving research ability and academic competence (Hart, 2004). Therefore, postgraduate research programs play a key role in training good researchers for the development of higher education globally. This is also a result of the reflection of societal expectations and mentality on the discipline in parallel with the level of scientific development in countries. In this context, it is important to examine the scope of postgraduate MALL studies, and there is a need to equip the literature. To the author's best knowledge, review studies that focus on MALL theses in the context of a particular country have not received much attention either in Türkiye or elsewhere. As mentioned above, the existing studies included a cross-sectional review of articles, papers, and PGTs searched in specific databases. This review study aimed to fill this research gap by examining the MALL-PGTs produced in Türkiye. The starting point was chosen as the year 2000, when the concept of mobile learning was first introduced to the literature as mobile e-learning by Clark Quinn (2000). The initial results of the screening of theses revealed that the first MALL-PGTs in Türkiye were written in 2009, and therefore, it was decided to examine the PGTs produced between 2009 and 2022. To achieve the research objectives, the following research questions were addressed:

(1) What were the trends regarding MALL in Turkish PGTs from 2009 up to 2022?
(2) What was the perception of MALL in Turkish PGTs from 2009 up to 2022?
(3) What were research purposes in Turkish PGTs on MALL from 2009 up to 2022?
(4) What was research focus in Turkish PGTs on MALL from 2009 up to 2022?
(5) What research designs (research method, mobile device, application type, learner profile, sample size, data collection tool, and treatment duration) were used to implement MALL in Turkish PGTs from 2009 up to 2022?

Mobile Assisted Language Learning (MALL)

The concept of "mobile learning", which was first introduced by Quinn (2000) with the term mobile e-learning, does not have a clear pedagogical definition today. Many researchers have described mobile learning as an extension of e-learning (Quinn, 2000; Sepherd, 2001; Keegan & O'Hare, 2002; Pinkwart, Hoppe, Milrad & Perez, 2003; Georgiev, Georgieva, & Trajkovski, 2006; Peters, 2007; Orr, 2010), technology-based learning (Leung & Chan, 2003; Jacob & Issac, 2008; Cochrane, 2010; Traxler & Vosloo,

2014), collaborative learning (Klopfer & Squire, 2008; Sharples, Taylor & Vavoula, 2010; Chan, 2011; Crompton, 2013), situated learning (O'Malley et al., 2005; Chen & Hsu, 2008; Peng, Su, Chou, & Tsai, 2009; Crescente & Lee, 2011; Al Mosawi & Wali, 2016) and student-centered learning (Naismith, Lonsdale, Vavoula & Sharples, 2004; Yi, Liao, Huang & Hwang, 2010; Bassam Nassuora, 2013; Ciampa, 2014; Andujar, 2016). Based on all these initiatives, it can be assumed that innovations and transformations in mobile devices, mobile applications software and operating systems have made it difficult to define the concept of mobile learning. However, the "anytime and anywhere" learning discourse, which researchers have sloganized based entirely on the portability and flexibility of mobile devices, still remains popular.

Mobile learning has attracted the attention of many researchers in the field of foreign language learning and has taken its place as a special field called "Mobile Assisted Language Learning (MALL)". In this regard, the effectiveness of mobile devices such as tablet computers, cell phones, laptops, personal digital assistants (PDAs), MP3s, iPods, and smartphones in the language learning process has been tested in a variety of learning contexts, both in and out of the classroom and in laboratories. Some researchers (e.g., Elaish, Shuib, Ghani & Yadegaridehkordi, 2019; Tanır, 2023a) have argued that it differs from Computer Assisted Language Learning (CALL) in that tablets and smartphones have a sort of function such as internet access, privacy, and the application to download, whereas MALL is considered a subdivision within CALL (Stockwell & Hubbard, 2013; Chen, et al., 2020). This is because mobile devices enable learners to easily access learning materials whenever and wherever they want, liberating them from the influence of conventional teaching approaches carried out in the classroom or laboratory and making them autonomous (Reinders & Benson, 2017; Cerezo, Calderón & Romero, 2019; Zou, Xie, Wang & Kwan, 2020; Li, Fan & Wang, 2022). In this respect, it is argued that MALL implementations increase learners' motivation and sense of learning a foreign language with mobile technologies (Shadiev et al., 2017; Fathi, Saharkhiz Arabani & Mohamadi, 2021; Jeong, 2022) by making learning activities more interesting than printed materials (Elaish, et al., 2019; Lei, Fathi, Noorbakhsh & Rahimi, 2022). Designing content-rich learning environments in real-life contexts, especially with the help of multimedia tools such as audio, video, and pictures (Huang, Yang, Chiang & Su, 2016; Shadiev et al., 2017), can help learners monitor and evaluate their own learning processes and outcomes according to their own linguistic competence (Lin & Lin, 2019; Hung, Hwang, Su & Lin, 2012; Norris, Hossain & Soloway, 2011). Thus, language learners can improve their basic language skills such as speaking (Huang et al., 2016; Sun, Lin, You, Shen, Qi & Luo, 2017; Almadhady, Salam & Baharum, 2021; Zhen & Hashim, 2022), listening (Jia & Hew, 2022; Li, 2023; Nguyen, 2023), writing (Eubanks, Yeh & Tseng, 2018; Hashim, Rojalai, Sarangapani, Kana & Rafiq, 2023; Yeşilel, 2023), reading (Chang & Hsu, 2011; Dehghani & Zamorano, 2023) as well as supporting skills such as vocabulary (Çakmak & Erçetin, 2018; Rachman, Taswin, Agustina, Zulfa & Manuhutu, 2023), grammar (Chu, Wang & Wang, 2019), and pronunciation (Wongsuriya, 2020; Ebadi & Azizimajd, 2023) through mobile devices.

The literature presents an optimistic picture that the most important factor in the success of MALL implementations is directly linked to the type of mobile device used. Some researchers (e.g., Looi, Zhang, Chen, Seow, Chia, Norris, & Soloway, 2011; Martin & Ertzberger, 2013; Hwang, Huang, Shadiev, Wu & Chen, 2014; Gao, Sun, Fu, Jia & Xiang, 2020) have claimed that learners, especially those using smartphones, show better learning performance compared to teacher-centered learning. However, there is no consensus on which mobile device is more effective in improving learners' language skills (Chen et al., 2020). Moreover, there is evidence that learners use mobile devices for online services and social networking, not as a type of learning tool, and are reluctant to use them for learning purposes (e.g., Lin & Lin, 2019; Liu & Yu, 2013; Stockwell, 2008, 2010). This is thought to be due to the insufficient technology knowledge of researchers who design MALL contents and courses that ignore the collaborative and communicative learning features of mobile devices and do not promote learner-centered knowledge production (Lin & Lin, 2019). In this regard, Tanır (2023a) argued that MALL practices require high pedagogical and design knowledge based on a teacher-centered learning approach and that current practices ignore learning goals and outcomes. In addition, he claimed that learners need instructor guidance to organize their own learning strategies and evaluate their learning process and performance when learning a foreign language through mobile devices.

In this chapter, the author tried to gain an insight into mobile learning and its role in the language learning process. An in-depth analysis of the relevant literature was not conducted. To ensure the

sustainability of the results of the review of MALL-PGTs in Türkiye produced between 2009 and 2022, it may be important to provide a broad perspective on the relevant literature.

Previous Review Studies on MALL

In recent years, many review studies have been published to explore the tremendous MALL literature and provide suggestions for further research. Chen et al. (2020) reported that the first review study on MALL was conducted by Kukulska-Hulme and Shield (2008). The relevant review study revealed that publications between 2002 and 2007 focused on mobile devices and their use in designing course content and that a teacher-centered learning approach was adopted in MALL implementations (Chen et al., 2020; Kukulska-Hulme & Shield, 2008). In another review study, Viberg and Grönlund (2012) systematically analyzed MALL publications between 2007 and 2012 in terms of research focus, methodology, language proficiency, learning theory and models. They reported that many researchers tend to develop a new theory for mobile learning. However, these theories were extensions of existing learning theories based on cognitive psychology. Most of the reviewed studies attempted to answer the question to what extent the use of mobile devices in second language acquisition had an impact on learners' attitudes and perceptions. Therefore, there was a lack of empirical studies with large sample sizes that included a long-term treatment process to improve learners' basic language skills. The most notable issue in the limited number of empirical studies was the investigation of the impact of MALL on the development of vocabulary, speaking and listening skills.

Burston (2014a) conducted a meta-analysis of 345 MALL implementation projects between 1994 and 2012. In his review, he painted a pessimistic picture of the pedagogical implications of MALL for further research. Most of the reviewed publications consisted of survey studies that inquired learner self-assessments and teacher evaluations. However, he argued that MALL projects did not meet the minimum requirements set for statistical generalizability of results due to the short-term interventions and small sample size, and therefore did not provide reliable results. Only 15 out of 345 studies focusing on reading, listening, and speaking provided valid evidence of the effectiveness of MALL implementation. In this regard, Burston (2014b) underlined that MALL has not continued its theoretical and methodological development. He suggested that MALL designs should be learner-centered, collaborative, and learning models that make it possible to monitor learners' learning processes. In other review study, Duman, Orhon, and Gedik (2015) examined 69 MALL publications between 2000 and 2012 in journals indexed in Social Science Citation Index (SSCI) in terms of their characteristics and research trends. They reported that the number of MALL studies continued to increase steadily in the twelve-year interval. In addition, they revealed that quantitative inquiries were commonly adopted, and the studies reviewed primarily focused on vocabulary teaching, usability of mobile devices and students' or teachers' general perceptions of MALL implementations. However, they underlined that However, research on the development of writing skills and grammar acquisition in the target language were neglected. On the other hand, Shadiev et al. (2017) analyzed 37 articles on authentic mobile language learning published between 2007 and 2016 in journals indexed in ACM Digital Library, EBSCO Discovery Service, ERIC, PsychINFO, and SSCI databases. They revealed that most studies were based on exploring learners' perceptions and improving their language proficiency. However, they noted that a teacher-centered learning approach was adopted in designing the course contents and learning activities, and the integration of wearable devices such as smartwatches into the language learning process in authentic settings to overcome real-life problems was ignored. Moreover, empirical studies testing the effectiveness of MALL activities in the target language were limited, and therefore, they suggested that the measurements used in the reviewed studies were not sustainable and scalable in the long term. In another review study with a larger sample size, Hwang and Fu (2019) analyzed 93 research articles published in SSCI journals between 2007 and 2016 to explore trends in MALL in terms of research designs and research outcomes. They found that learning outcomes were complex and MALL applications in various learning contexts were not fully clarified and therefore did not provide insight into how to develop language skills in the target language. They also concluded that the effects of MALL interventions on vocabulary learning as well as on all language skills need to be examined, which required a long treatment course and rigorous studies designed within a mixed research approach. More recently, Chen et al. (2020) conducted a meta-analysis of 84 publications published between 2008 and 2018 to determine the effects of mobile devices on MALL. They revealed that mobile devices used in MALL implementations led to moderate to high levels of learning achievement in the target language.

However, they underlined that their impact on learning English was much higher compared to other languages. Finally, they pointed out that mobile devices were adopted to improve language skills such as speaking, listening, writing and vocabulary, while reading skills were neglected.

In sum, the aforementioned review studies presented a pessimistic picture that the outcomes of the previous MALL studies suffer from statistical generalizability due to sample size and treatment process. It was also noted that there is a growing body of research investigating the effects of MALL interventions on the affective domain rather than on students' basic language skills. Vocabulary teaching has received the most attention from researchers, whereas grammar, reading, and writing have been neglected for more than two decades. In conclusion, the pattern of the general MALL literature will provide deep insights to compare the results of postgraduate MALL studies in Türkiye and contribute to the growing MALL literature.

METHOD

Data Sources and Search Strategy

MALL-PGTs were searched in the central database of the National Higher Education Board (YÖK), where all PGTs produced in Türkiye are published as open access. To retrieve the relevant literature, PGTs produced between 2000 and 2022 were electronically and manually scanned using terms such as "mobile, mobile learning, m-Learning, mobile assisted language learning, MALL, foreign language, language, educational technology, and multimedia". All terms were searched in Turkish as it would be advantageous for the author. The reason for this is that PGTs, regardless of the language in which they are written, must contain a title and abstract in Turkish. In this way, the first PGT reference checklist matching the search terms was prepared. A second round of electronic search was conducted, considering the possibility of missing any relevant PGTs. Search results revealed that the first MALL-PGT in Türkiye was produced in 2009. In this regard, the date range of Turkish MALL-PGTs was to 2009-2022. As a result, a total of 88 MALL-PGTs matching the search terms were recorded. The collected records were then screened according to the following inclusion/exclusion criteria.

Inclusion/Exclusion Criteria

The MALL-PGTs must meet the following criteria to be included in the study: They must include MALL implementations in the analysis and results. They must be completed in the following languages that the author can understand: Turkish, German, French, Russian, and English. However, MALL-PGTs that met the following criteria were excluded from the study: Literature reviews on MALL. MALL-PGTs completed at any university abroad. Based on the above criteria, a total of nine theses were excluded from the study. According to the screening results, one master's thesis was excluded because it focused on a literature review, three doctoral theses were completed abroad, and five master's theses were published in Arabic. Consequently, a total of 79 PGTs completed during the period 2009-2022 were identified in accordance with the purpose and scope of this study.

Data Extraction and Coding Scheme

A coding scheme was designed by the author to make an in-depth analysis of the general research trends of MALL-PGTs produced in Türkiye during the period 2009-2022. The current coding scheme of the present study was composed of six major categories: year of publication, perception of MALL, research purpose, research focus, and research design. The categories and their sub-categories are described as follows:

The first category, "year of publication", focuses on the distribution of MALL-PGTs by year of publication. It also provides detailed information on how often each level of relevant MALL-PGTs was produced in specific years. The aim was to gain a better understanding of the trend in the production of MALL-PGTs by year.

The second category, "MALL perception", refers to the belief or opinion held by the researcher focusing on how mobile technologies are viewed in the process of learning a foreign or second language. The current category consisted of the following coding items: anytime anywhere, technology-based, distance learning, e-Learning, ubiquitous, technology-based, distance learning.

For the third category, "research purpose", a copy of Krull and Duart's (2017) adapted version of the coding scheme developed by Wu et al. (2012) for the general mobile learning literature was used to classify the research purpose in each MALL-PGT. The adapted version included six major categories: (1) Evaluate effects, (2) Explore potential, (3) Investigate the affective domain, (4) Design a system, (5) Develop theory, and (6) Influence of learner characteristics on the learning process (Krull & Duart, 2017, p.7). In the present study, the relevant category was redesigned into seven sub-categories as follows:

- *Evaluate the effectiveness (EE):* investigates whether mobile devices or applications can improve or enhance language skills in the learning process.
- *Design a mobile system (DMS):* designs a system or application to propose solutions to existing problems and explores how to use it in the language learning process.
- *Investigate the affective domain (IAD):* refers to the investigation of learners' affective domains such as motivation, beliefs, attitudes, perceptions, anxiety, and values.
- *Influence of learner characteristics (ILC):* examines how to affect the learner characteristics such as age, gender, ability, culture, experience, learning style, and strategy.
- *Develop a new theory (DT):* suggests new pedagogical approaches, models, or frameworks for language learning supported by mobile devices or applications.
- *Design a curriculum (DC):* explores the creation of a new course outline for mobile assisted language learning, improving the content with learning objectives, and the impact of the created course on the learning process.
- *Adapt to the existing learning theories (AELT):* examines the adaptation of existing learning theories, frameworks, models, and approaches to the language learning process supported through mobile devices or applications and its effect.

The "research focus" category relates to the topic or problem that a researcher is interested in finding solutions to the problems experienced in the target language learning process through mobile devices or apps. In the present study, this category was made up of four sub-categories adapted from the classification presented by Shadiev et al. (2017): language proficiency, perceptions, learning differences, and instructional design/use. For each of these, coding items were assigned. More details are described below:

- *Language Proficiency (LP):* is the capability of an individual to successfully experience the language skills, which are the minimum requirement for knowing a language, in a real-life context. LP consisted of the coding items, including four basic language skills separately (listening, reading, speaking, and writing) or all language skills (integrated skills). LP also covers supportive language skills such as vocabulary and grammar.
- *Learning Differences (LD):* refer to the learning motivators of an individual to determine the rates at which he/she learns across a wide range of subjects and settings. LD includes the following coding items: acceptability, cultural background, self-regulation, engagement, orientation, habits, task completion, learning style, strategy use, age, and gender.
- *Perceptions (P):* are mental representations that an individual creates in his/her mind about the information presented through stimuli in a specific learning environment. P was made up of the coding items related to the affective domains such as perceptions in general, attitude, motivation, cognitive load, anxiety, readiness, metacognition, and expectation.
- *Instructional Design/Use (IDU):* is related to the designs of instructional sequences and strategies used to promote the desired learning achievements of the learners. Coding items such as Augmented Reality (AR), application design, gamification, interface design, and pedagogical use were assigned to IDU.

The fifth category, "instructional approach", is related to the learning theories of how the target language is taught in each learning situation. Learning models used to select and structure teaching strategies, methods, skills, and student activities for a particular instructional emphasis provide a broad perspective on familiarity with the instructional approach adopted in the reviewed MALL-PGTs. The didactical principles used to describe how to facilitate learning were classified into the following coding items: collaborative, social, technology-based, blended, game-based learning, etc.

The last category, "research design", refers to a well-planned process within the research focus and research objectives to implement MALL and achieve desired research outcomes. The current

category consisted of nine sub-categories: research method adopted, learner profile, sample size, mobile device used, application type, learning context, target language, data collection, and treatment duration. Further details are described below:

- *Research Methods adopted (RM):* refers to the way a researcher utilizes the techniques, processes, or strategies to gather data, allowing his/her to give evidence for analysis to reach research objectives. This sub-category includes coding items such as quantitative, qualitative, mixed, design-based, and unspecified.
- *Learner Profile (LP):* is related to the diversity of research participants. In the present study, LP refers to learners from primary school to university, including occupational groups. In addition, the concept of "mixed" was assigned as a coding item if more than one type of participant was included in any research within the specified range of learner profiles.
- *Sample Size (SS):* is the total number of responses to each data collection tool used in the study. Since the sample of the studies differed, the closest number range was taken into consideration. In this context, seven coding items were created for SS: up to 25, up to 50, up to 100, up to 150, up to 200, up to 300, and over 300.
- *Mobile Devices used (MD):* refers to mobile devices with portable features such as laptops, tablet PCs, mobile phones, MP3, iPods, and smartphones. Coding items were used for the most commonly used mobile devices, i.e., mobile phones, smartphones, and tablet PCs. In addition, in the case of the use of named pairs of devices in a survey, coding items were assigned to denote their use together. The coding item "unspecified" was used in cases where the device used was not specified.
- *Application Type (AP):* refers to applications that become functional with mobile devices used in designing learning activities and the learning environment. To generate coding items for AP, the author was inspired by the classification presented by Chen et al. (2020). The original two application types were: general-purpose and educational-purpose applications. In the present study, AP was made up of four coding items: educational-purpose, profit-oriented, non-profit, and research-specific applications. First, educational-purpose applications refer to platforms that are not specifically developed for educational purposes, such as WhatsApp, Facebook, Twitter, and YouTube, and enable educators to design or use them for learning purposes. Second, profit-oriented applications refer to paid educational tools, such as Duolingo, that are released by companies where educators can produce learning content within the options offered by the app. Third, non-profit applications refers to freeware programs that are specifically designed for educational purposes, such as Kahoot!. Finally, research-specific applications refer to programs that are designed for learning purposes by the researchers to test their usability or acceptability during the learning process.
- *Learning Context (LC):* refers to the settings where learning is facilitated through mobile devices. LC consisted of six coding items: outdoor, unrestricted, classroom, campus, museum, and laboratory.
- *Target language:* refers to the language taught, including English as a foreign language, English for specific purposes, German as a foreign language, Turkish as a native language, and Turkish as a foreign language.
- *Data Collection (DC):* refers to tools used for data gathering. DC includes seven coding items: test, interview, observation, questionnaire, survey, and logging.
- *Treatment Duration (TD):* refers to how long groups of learners are exposed to any method, technique, or tool to achieve any learning goal. TD includes codes with weekly slots ranging from one day to more than one semester. For example: up to 1 week, up to two weeks, etc.

The data that emerged under the categories mentioned above was transferred to a Microsoft Excel file by the researcher, and a comprehensive data set was created.

Data Analysis

Content analysis (CA) was performed to analyze the data in the present study. CA allows researchers to discover the presence of words, concepts, and terms within qualitative content and provides a systematic way for researchers to identify larger themes. Using CA, data can be transformed

into quantitative analyses to improve the quality of literature reviews (Kleinheksel, Rockich-Winston, Tawfik & Wyatt, 2020). On the other hand, Columbia University's Mailman School of Public Health (2023) argued that CA is divided into conceptual analysis and relational analysis. Accordingly, conceptual analysis determines the presence and frequency of concepts in a text, while relational analysis examines the relationship between concepts in a text. In this regard, the conceptual analysis of the present data was carried out to determine the research trends of MALL-PGTs produced in Türkiye during the period 2009-2022.

RESULTS

1. The Number of MALL-PGTs Produced by Year

Table 1 presents the number of MALL-PGTs produced in Türkiye in a certain year. The highest number of MALL-PGTs was completed in 2019 (n = 15) whereas the lowest number was completed in 2009 (n = 1). However, no MALL-PGT was produced in Türkiye between 2011 and 2013. The results revealed that there was no steady increase considering the distribution of MALL-PGTs by year. Especially between 2020 and 2021, there was a severe decrease in the number of MALL-PGTs.

Table 1. *Distribution of Turkish MALL -PGTs Produced during the period 2009-2022*

Level	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Sum
Master	-	2	-	2	-	2	3	5	8	5	14	8	5	6	60
Doctoral	1	-	-	1	-	1	1	2	2	5	1	1	-	4	19
Overall	**1**	**2**	**-**	**3**	**-**	**3**	**4**	**7**	**10**	**10**	**15**	**9**	**5**	**10**	**79**

In terms of levels of MALL-PGTs, the first MALL doctoral thesis in Türkiye was produced in 2009. In other words, the researchers started to produce the first thesis at the higher education level in 2009. The number of doctoral theses remained stable between 2014 and 2017 (n = 1). As for 2018, a marked increase in doctoral MALL theses (n = 5) was recorded. Across the last thirteen years, this was the largest quantity of MALL doctoral theses produced in Türkiye. However, a significant decline in the number of doctoral theses (n = 1) was seen, though the largest recorded number of MALL theses completed for the thirteen-year interval was reached in 2019 (n = 15). In 2021, no MALL doctoral theses were produced in Türkiye. In 2022, there was an increase again, and a total of 4 doctoral theses were recorded.

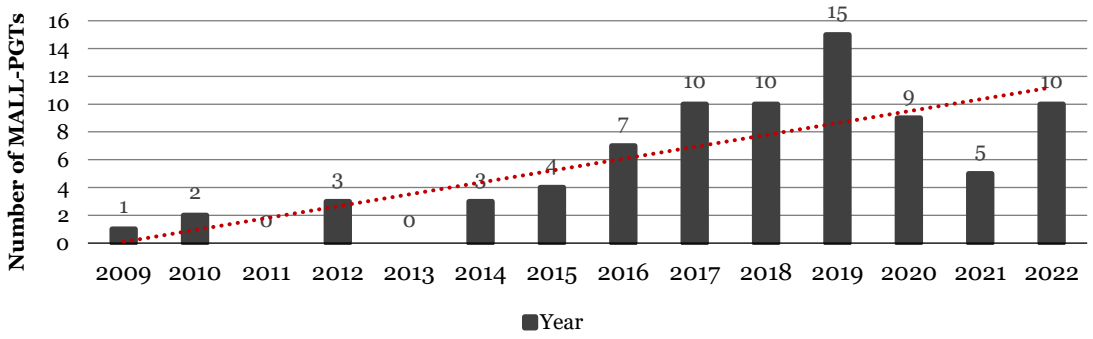
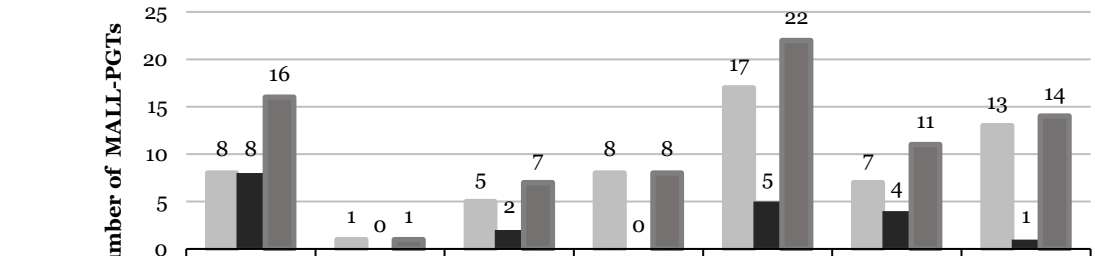


Figure 1. *Trend in producing MALL-PGTs in Türkiye*

In Türkiye, the greatest attention to MALL was paid to master's theses. However, no master's theses were recorded in 2009, 2011, and 2013. The number of master's theses increased steadily over the intervals from 2014 to 2017. In 2018, the number of master's MALL theses (n = 5) was equivalent to the number of theses produced at the doctoral level. On the other hand, the greatest increase in respect for master's MALL theses (n = 14) was recorded in 2019. Finally, the MALL-PGTs saw the biggest decline of the last six years, with only 5 master's theses being produced in 2021. In 2022, a total of 6 master's theses were recorded. The reason why the number of MALL-PGTs declined between 2020 and 2022 may be related to the COVID-19 pandemic that affected the whole world in 2020. For the first time in world history, face-to-face education was suspended, and the quarantine process began. The decline in the number of MALL-PGTs may be directly related to the fear of survival that researchers, educators, and learners were prioritizing. Overall, the present study indicated that the trend in producing MALL theses for the last thirteen years was steadily increasing.

2. Perception of MALL in Türkiye

This section provides a clear perspective on how mobile learning or MALL is perceived in Türkiye. As depicted in Figure 2, in most of the 79 MALL-PGTs produced in the thirteen-year interval, MALL was perceived as technology-enhanced learning (TEL) (*n* = 22). This was followed by anytime, anywhere learning (AAL) (*n* = 16), ubiquitous learning (UL) (*n* = 11), subdivision within computer-assisted language learning (CALL) (*n* = 8), and extension of e-Learning (EEL) (*n* = 7). Finally, MALL was described as a distance learning model (DLM) in only one master's thesis in 2010. However, a total of 14 MALL-PGTs did not address the perception of MALL. This corresponded to 17.72% of the total number and was a significant number.



	Anytime, anywhere	Distance Learning Model	Extension of e-Learning	Subdivision within CALL	Technology -enhanced	Ubiquitous	Unspecified
Masters Theses	8	1	5	8	17	7	13
Doctoral Theses	8	0	2	0	5	4	1
Overall	16	1	7	8	22	11	14

Figure 2. *Perception of MALL in Türkiye during the period 2009-2022*

In terms of the levels of the MALL-PGTs, MALL was frequently perceived as anytime, anywhere learning in doctoral theses, it was perceived as technology-enhanced learning in master's theses. Another important finding was that MALL was considered a distance learning model in the first produced master's thesis, but this changed in the following years. In parallel to this, MALL was perceived as a subdivision within CALL in master's theses, whereas this perception was not observed in any doctoral theses (see Table 2).

Table 2. *Trend of MALL perception in Türkiye by years*

	Perception	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Sum
Master's Theses	AAL	-	-	-	1	-	-	1	1	1	-	1	1	1	1	8
	DLM	-	1	-	-	-	-	-	-		-	-	-	-	-	1
	EEL	-	-	-	1	-	-	-	1	1	1	-	-	1	-	5
	CALL	-	1	-	-	-	1	-	-	1	2	3	-	-	-	8
	TEL	-	-	-	-	-	-	1	1	3	-	5	4	2	1	17
	UL	-	-	-	-	-	-	-	1	-	-	3	2	-	1	7
	US	-	-	-	-	-	1	1	1	2	1	2	1	1	3	13
Doctoral Theses	AAL	1	-	-	1	-	1	-	1	1	1	-	-	-	2	8
	DLM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EEL	-	-	-	-	-	-	1	-	-	1	-	-	-	-	2
	CALL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TEL	-	-	-	-	-	-	-	1	-	2	-	1	-	1	5
	UL	-	-	-	-	-	-	-	-	1	2	1	-	-	-	4
	US	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
	Overall	**1**	**2**	**-**	**3**	**-**	**3**	**4**	**7**	**10**	**10**	**15**	**9**	**5**	**10**	**79**

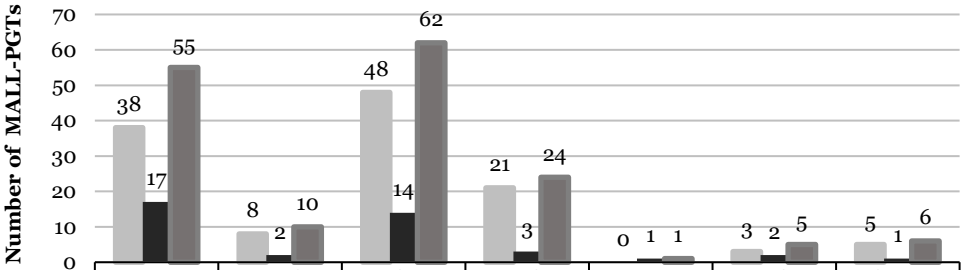
*US = unspecified

Overall, the results indicated that there was no consensus on the concept of MALL among MALL-PGTs produced in Türkiye in a thirteen-year interval. Moreover, this was evidence of the lack of a clear pedagogical picture of the MALL concept and the predominance of technology-oriented perspectives.

3. Research Purposes of Turkish MALL-PGTs

Figure 3 shows the most common research purposes addressed in the Turkish MALL-PGTs during the period 2009-2022. The results indicated that each thesis focused on more than one research purpose. The most emphasized research purpose was "investigate the affective domain (IAD)" (62 theses). Next

most emphasized research purposes were "evaluate effectiveness (EE)" (55 theses), followed by "influence the learner characteristic (ILC)" (24 theses), "design a mobile system (DMS)" (10 theses), "adapting the existing learning theories (AELT)" (6 theses) and then "design a curriculum (DC)" (5 theses). The least addressed research purpose was "design a theory (DT)" (only 1 thesis).



	EE	DMS	IAD	ILC	DT	DC	AELT
Masters Theses	38	8	48	21	0	3	5
Doctoral Theses	17	2	14	3	1	2	1
Overall	55	10	62	24	1	5	6

Figure 3. *Distribution of research purposes in Turkish MALL-PGTs in Türkiye*

As shown in Table 3, the results indicated that the research trend in IAD steadily increased in the last seven years, although there were many MALL master's theses that aimed to evaluate the effects of using mobile devices in various teaching contexts on students' academic achievement and learning performance in the target language. Interestingly, no MALL-PGTs at both levels focused on IAD in 2014. In addition, the tendency to evaluate the impact of mobile devices or applications on the development of learners' language skills in each master's thesis produced in a thirteen-year interval continued steadily. However, the number of master's theses that examined the effects of mobile devices or applications on learners' characteristics such as age, gender, ability, culture, learning styles, experience was far behind the total number of theses produced in the seven-year period from 2015 to 2022. This meant that each study did not address the question of to what extent the effects of MALL implementations on language proficiency and general perceptions of learners differed according to variables originating from learner characteristics.

Table 3. *Trends of research purposes addressed in Turkish MALL-PGTs by years*

	Purpose	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Sum
Master's Theses	EE	-	2	-	1	-	1	2	4	6	4	7	6	3	2	38
	DMS	-	-	-	1	-	1	1	1	-	-	3	-	-	1	8
	IAD	-	2	-	2	-	-	3	5	5	4	10	7	5	5	48
	ILC	-	-	-	1	-	1	-	2	2	1	5	5	2	2	21
	DT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DC	-	-	-	-	-	-	-	-	1	-	-	-	1	1	3
	AELT	-	-	-	-	-	-	1	-	-	-	2	1	1	-	5
Doctoral Theses	EE	1	-	-	1	-	1	1	1	2	5	1	1	-	3	17
	DMS	-	-	-	-	-	-	-	-	1	1	-	-	-	-	2
	IAD	1	-	-	1	-	-	1	1	2	3	-	1	-	4	14
	ILC	-	-	-	-	-	1	1	-	-	1	-	-	-	-	3
	DT	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
	DC	-	-	-	-	-	-	-	-	-	1	-	-	-	1	2
	AELT	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1

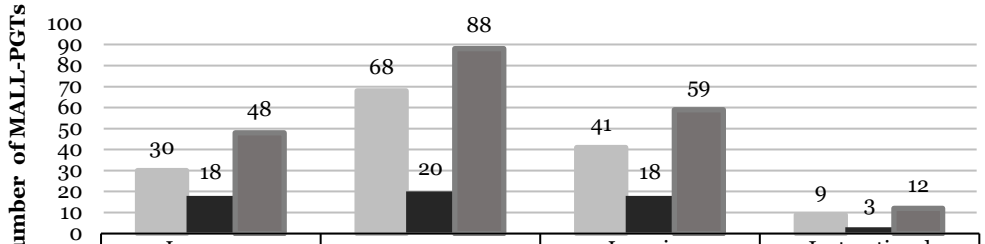
Designing a mobile system to improve learners' language skills and unlock their potential was addressed steadily between 2014 and 2016. Furthermore, DMS reached the highest number in 2019 with three theses. However, no DMS attempts were observed in the following two years, whereas it was determined in one thesis in 2022. In the thirteen-year interval, there was no attempt to develop a new theory for mobile llearning, or MALL. Instead, five master's theses adapted existing learning theories, such as activity theory, multimedia learning theory, which are underpinned by cognitivism, into the language learning process through mobile systems. Finally, a few master's theses designed a curriculum that proposed the creation of educational content and student-friendly materials that learners could access on their mobile devices during the language learning process. In sum, the general trend of

research purpose in reviewed MALL master's theses during the period 2009-2022 was to investigate the affective domains of learners.

Similarly, each doctoral thesis focused on more than one research objective. The results indicated that researchers conducted MALL implementations to improve learners' language proficiency in the target language in the thirteen-year interval, excluding 2021. Secondly, they aimed to explore learners' perceptions of using mobile technologies during the learning process. In doing so, they administered achievement tests and questionnaires to learners before and after the intervention process and presented their findings as evidence. Thus, they could explore the potential of mobile devices or applications as an educational tool. However, attempts to develop a new theory and adapt the existing learning theories to MALL were only detected in 2018, when the most theses were produced. Moreover, addressing learner differences was the subject of only 3 studies between 2014 and 2018. By 2022, the doctoral theses were limited to three research purposes: EE, IAD, and DC. Compared to master's theses, the trend of doctoral theses to evaluate the effectiveness of mobile devices continued steadily during the period 2009-2022.

4. Research Foci of Turkish MALL-PGTs

Figure 4 depicts the most addressed research foci in Turkish MALL-PGTs completed during the period 2009-2022. Since each MALL-PGT focused on more than one research objective, their research foci varied. According to the results, the most addressed research focus in Turkish MALL theses was perceptions (*n* = 88). Next most addressed research foci were learning differences (*n* = 59), followed by language proficiency (*n* = 48). The least addressed research focus was instructional design/use (*n* = 12). Another noteworthy finding was that there was consistency between the two levels of the Turkish MALL-PGTs in terms of the frequency of the research foci addressed. As depicted in Figure 4, perceptions (*n* = 68) were most focused on in MALL master's theses. Next most addressed research foci were learning differences (*n* = 41), followed by language proficiency (*n* = 30), and then instructional design (*n* = 9). Similarly, it was found that the doctoral theses were most focused on perceptions (*n* = 20). The frequency of learning differences (*n* = 18) and language proficiency (*n* = 18) were equal. However, the least addressed research focus was instructional design (*n* = 3).



	Language Proficiency	Perceptions	Learning Differences	Instructional Design/Use
Masters Theses	30	68	41	9
Doctoral Theses	18	20	18	3
Overall	48	88	59	12

Figure 4. *The most addressed research focus in Turkish MALL-PGTs during the period 2009-2022*

First, most MALL-PGTs reviewed focused on the general perceptions of learners towards foreign language learning in MALL environments. The perceptions in general included motivation, learning attitude, satisfaction, readiness, cognitive load, anxiety, expectation, self-efficacy, and self-regulation. The reason why researchers focused so much on perceptions in master's theses was because they aimed to show that mobile devices and applications were positively perceived by learners. Furthermore, they used these results to support their findings on the effectiveness of mobile learning on language proficiency. In the levels of Turkish MALL-PGTs, as shown in Table 4, the subject of perception was emphasized in at least one of all master's theses produced in the thirteen-year interval. Excluding 2014, learners' general perceptions of foreign language learning in mobile technologies, or MALL learning environments, were investigated in each master's thesis. This was followed by learners' attitudes towards MALL. However, the impact of MALL on students' motivation was only addressed in 2016 and 2019. Until 2019, only one thesis out of the total number of theses produced each year addressed the topic of motivation. In addition, satisfaction was addressed in one thesis produced in 2020 and expectations in three theses produced in 2019. However, readiness, anxiety, self-efficacy, and cognitive load were not

addressed in any master's thesis produced. Similar results were valid for doctoral theses. The results regarding the frequency of general perceptions addressed in each thesis produced during the period 2009-2022 are depicted in Table 6. This was followed by motivation. Unlike the master's theses, the topic of attitude did not show a consistent trend of research focus. It was found to be addressed only in one of the total 4 doctoral theses produced in 2022. Unlike the master's theses, cognitive load, anxiety, and self-efficacy were seen in one thesis each, but there was no consistent trend in the following years.

Table 4. *Trend of research focus in master's theses by years*

Focus	Subcategories	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
LP	**Listening**	-	-	1	-	-	-	-	-	-	-	-	-	-	1
(n=30)	**Reading**	-	-	1	-	1	-	1	-	1	-	-	1	-	5
	Speaking	-	-	-	-	-	-	-	1	-	1	-	-	1	3
	Writing	-	-	-	-	-	-	-	1	-	1	-	-	-	2
	Integrated Skills	-	-	-	-	-	-	-	-	-	-	1	-	-	1
	Vocabulary	1	-	1	-	1	3	1	5	2	5	4	3	-	26
	Grammar	-	-	-	-	-	-	-	-	-	1	-	-	1	2
P	**GP**	1	-	1	-	-	2	4	5	3	9	2	4	5	36
(n=68)	**Attitude**	1	-	1	-	-	1	1	2	3	5	3	3	2	22
	Motivation	-	-	-	-	-	-	1	1	1	3	-	-	-	6
	Readiness	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Cognitive Load	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Satisfaction	-	-	-	-	-	-	-	-	-	-	1	-	-	1
	Anxiety	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Expectation	-	-	-	-	-	-	-	-	-	3	-	-	-	3
LD	**Autonomy**	-	-	-	-	-	-	-	1	-	-	-	1	-	2
(n=41)	**Self-regulation**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Strategy Use	-	-	-	-	1	-	-	-	-	-	1	-	-	2
	Task completion	-	-	1	-	-	-	-	-	-	-	-	-	-	1
	Gender	-	-	1	-	1	-	-	-	-	2	4	-	2	10
	Age	-	-	-	-	-	-	-	-	-	1	-	-	-	1
	Experience	-	-	-	-	-	-	1	1	-	1	1	-	-	4
	Aptitude	1	-	2	-	-	-	-	2	2	3	-	2	-	12
	Orientation	-	-	-	-	-	-	1	-	-	1	-	-	-	2
	Engagement	-	-	-	-	-	-	-	-	-	1	-	-	-	1
	Acceptability	-	-	-	-	-	-	-	-	1	2	1	1	-	5
	Habit	-	-	-	-	-	-	-	-	1	-	-	-	-	1
ID	**Augment Reality**	-	-	-	-	-	-	1	-	-	1	-	-	-	2
(n=9)	**App Design**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Gamification	-	-	1	-	-	-	1	-	-	-	-	-	-	2
	Interface Design	-	-	-	-	-	1	-	-	-	1	-	-	-	2
	Pedagogical Use	-	-	-	-	1	-	-	-	-	-	1	1	2	5

**LP* = language proficiency, *P* = perceptions, *LD* = learning differences, *ID* = instructional design, *GP* = general perception.

Second, most MALL-PGTs reviewed focused on learning differences. Learning differences refers to learning behaviors acquired by learners at the end of learning process carried out through mobile devices or applications. Learning differences included learner autonomy, acceptability of MALL, strategy use, task completion, self-regulation, habit, learning style, orientation, learning performance, experience, age, and gender differences. The relevant research focus did not demonstrate a continuity in the Turkish MALL-PGTs. Except self-regulation as a research focus, one of all of them was studied in at least one master's thesis during the period 2009-2022. However, in doctoral theses, two variables such as habit and age were never addressed (see Table 5). Overall, learning differences enabled researchers to evaluate to what extent learners monitored, planned, and organized their own learning processes. Based on these results, they aimed to explain the relationship between learning differences and academic achievement in the target language.

However, the reason why the results were higher in favor of language proficiency as a primary research focus in the MALL-PGTs was because researchers aimed to investigate the effects of mobile devices used or MALL environments designed on vocabulary acquisition. In terms of both levels of MALL-PGTs, the trend toward studying vocabulary as supportive language skills continued to increase steadily in the last ten years. Therefore, very few MALL-PGTs focused on basic language skills. In doctoral theses, no MALL implementation related to writing skills was detected, whereas at least one master's thesis

focused on one of the four basic language skills in the thirteen-year interval. However, listening skills were studied in only one master's thesis. This pattern was no different for the other four basic language skills of reading, writing, speaking, and the supportive language skill of grammar. Overall, language skills were neglected in Turkish MALL-PGTs completed during the period 2009-2022.

Table 5. *Trend of research focus in doctoral theses by years*

Focus	Subcategories	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
LP	**Listening**	-	-	-	-	-	1	-	-	-	-	1	-	-	-	2
(n=18)	**Reading**	-	-	-	-	-		-	-	-	1	-	-	-	1	2
	Writing	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	I. Skills	-	-	-	-	-	-	-	-	-	1	-	-	-	1	2
	Vocabulary	1	-	-	1	-	1	1	1	1	4	-	-	-	1	11
	Grammar	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
P	**GP**	1	-	-	1	-	-	1	1	2	1	1	1	-	3	12
(n=20)	**Motivation**	-	-	-	1	-	-	-	-	1	2	-	-	-	-	4
	Cognitive Load	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
	Attitude	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
	Self-efficacy	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
	Anxiety	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1
LD	**Autonomy**	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
(n=18)	**Self-regulation**	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1
	Acceptability	-	-	-	-	-	-	-	-	1	1	-	-	-	1	3
	Aptitude	-	-	-	-	-	-	-	-	1	1	-	-	-	1	3
	Gender	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
	Experience	-	-	-	-	-	-	-	2	-	-	-	1	-	1	4
	Age	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Engagement	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
	Learning style	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
	Strategy use	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1
	Habit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	T. completion	-	-	-	-	-	-	-	1		1	-	-	-	-	2
ID	**App Design**	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
(n=3)	**AR**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pedagogical Use	-	-	-	-	-	-	-	-	-	1	-	-	-	1	2

**LP* = language proficiency, *P* = perceptions, *LD* = learning differences, *ID* = instructional design, *I. skills* = Integrated skills, *GP* = general perception, *T. completion* = Task completion, *AR* = Augmented Reality.

Finally, instructional design/use were the least research focus in the Turkish MALL-PGTs reviewed. Instructional design included virtual reality, gamification, application design, interface design, and pedagogical use. This received much attention as a research focus in master's theses between 2009 and 2022, whereas it was limited to two studies at the doctoral level. In doctoral theses, one researcher designed and tested a mobile dictionary application for learning English vocabulary. An experiment based on pretest and posttest was conducted in a short treatment duration to explore its effect on learners' academic achievements. The other was an evaluation of the interface designs of student response systems such as Kahoot!, Quizlet, Padlet, etc. Based on the results, the researcher made suggestions on what kind of interface design features mobile applications should have to improve learners' language skills. The instructional designs on the master's theses included similar purposes as well. The results of the present study indicated that the Turkish MALL-PGTs neglected the instructional designs for improving learners' language skills.

5. Instructional Approaches Adopted in Turkish MALL-PGTs

Table 6 provides a broad perspective of what instructional approaches were commonly adopted in the Turkish MALL-PGTs during the period 2009-2022. The results revealed that a total of seventeen different instructional approaches were adopted in MALL implementations. Accordingly, the most adopted instructional approach in the majority of MALL studies was collaborative learning (n = 14). Next most adopted instructional approaches were multimedia learning (n = 10), followed by technology-based (n = 8). Overall, the three instructional approaches were equally distributed: game-based learning (n = 6), individualized learning (n = 6), and learner-centered learning (n = 6). These were followed by authentic learning (n = 2). Each of the remaining ten MALL-PGTs adopted a different instructional

approach to MALL, and these were the least adopted: blended learning (*n* = 1), connectivist learning (*n* = 1), contextual learning (*n* = 1), cross-situational learning (*n* = 1), desensitized learning (*n* = 1), seamless learning (*n* = 1), self-regulated learning (*n* = 1), situated learning (*n* = 1), social learning (*n* = 1), and teacher-centered learning (*n* = 1). In terms of the levels of MALL-PGTs, collaborative learning and learner-centered learning approaches showed an increasing trend in master's theses between 2015 and 2022. In doctoral theses, multimedia learning was adopted steadily between 2009 and 2019, but the trend in adopting an instructional approach in MALL implementations for the last four years was inconsistent (see Table 6).

Table 6. *Trend in adopting instructional approach in Turkish MALL-PGTs by years*

	Instructional Approach	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Sum
Master's Theses	Authentic	-	-	-	-	-	-	-	-	-	2	-	-	-	-	2
	Blended	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Collaborative	-	1	-	-	-	-	1	2	4	-	2	2	1	1	14
	Connectivist	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1
	Contextual	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
	Cross-situational	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
	Desensitized	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Game-based	-	-	-	1	-	-	-	-	-	-	-	2	2	-	5
	Individualized	-	-	-	-	-	1	-	-	-	2	3	-	-	-	6
	Learner-centered	-	-	-	-	-	-	1	1	-	1	-	2	-	1	6
	Multimedia	-	1	-	1	-	-	-	-	2	-	-	-	1	-	5
	Seamless	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1
	Self-regulated	-	-	-	-	-	1	-	-	-	-		-	-	-	1
	Situated	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Social	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Teacher-centered	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1
	Technology-based	-	-	-	-	-	-	-	-	-	-	2	-	1	2	5
	Unspecified	-	-	-	-	-	-	-	1	1	-	4	2	-	2	10
Doctoral Theses	Authentic	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Blended	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
	Collaborative	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Connectivist	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Contextual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Cross-situational	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Desensitized	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
	Game-based	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
	Individualized	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Learner-centered	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
	Multimedia	1	-	-	1	-	1	-	-	-	1	1	-	-	-	5
	Seamless	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Self-directed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Situated	-	-	-	-	-	-	-	1	-	-	-	-	-		1
	Social	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
	Teacher-centered	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Technology-based	-	-	-	-	-	-	-	-	1	1	-	1	-	-	3
	Unspecified	-	-	-	-	-	-	1	1	1	-	-	-	-	2	5

Interestingly, collaborative learning was not adopted in any doctoral theses, although it was the most adopted instructional approach in master's theses. As shown in Table 7, the most adopted instructional approach in doctoral theses was multimedia learning (*n* = 5), followed by technology-based learning (*n* = 3). Authentic, connectivist, contextual, cross-situational, seamless, self-directed, and teacher-centered learning approaches were not adopted in any of the doctoral theses, whereas the others appeared once in each of them. In master's theses, blended, desensitized, situated, and social learning approaches were not adopted.

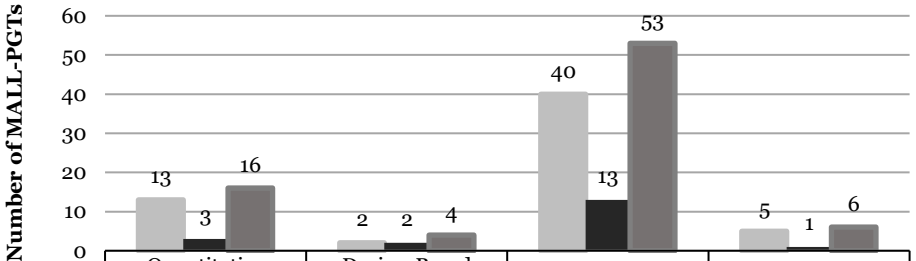
Another noteworthy finding was that 15 (10 master's theses, 5 doctoral theses) out of 79 MALL-PGTs produced between 2009 and 2022 did not emphasize any instructional approach. This number was higher compared to the most widely adopted instructional approach. Considering that an instructional approach relates to learning theories about how a second or foreign language is taught through mobile devices or apps, it plays a critical role in selecting and structuring teaching strategies, methods, skills, and student activities for a particular teaching emphasis. In sum, the instructional approaches adopted

in MALL-PGTs show significant inconsistency in terms of both levels. Moreover, it cannot be said that MALL designs were effectively designed and learning objectives identified.

6. Research Designs Adopted in Turkish MALL-PGTs

This section provides a broad insight into the research design of Turkish MALL-PGTs. The research design consists of nine sub-categories as follows: Results were discussed under each of them.

6.1. Research Methods adopted: Figure 5 depicts the research methods adopted in the Turkish MALL-PGTs produced during the period 2009-2022. The results revealed that the most adopted research method in the reviewed MALL-PGTs was mixed research (*n* = 53). Next most adopted research method was quantitative research (*n* = 16). The least adopted research method was design-based research (*n* = 4). However, no MALL-PGTs adopted a qualitative research method was not detected. Furthermore, no explanatory information was found regarding the research methods adopted in 6 MALL-PGTs. The results showed consistency between the two levels of Turkish MALL-PGTs in terms of the research methods adopted.



	Quantitative Research	Design-Based Research	Mixed Research	Unspecified
Masters Theses	13	2	40	5
Doctoral Theses	3	2	13	1
Overall	16	4	53	6

Figure 5. *The most adopted research methods in Turkish MALL-PGTs during the period 2009- 2022*

The trend in adopting mixed research methods in the thirteen-year interval consistently increased in Turkish MALL-PGTs. The reason for this result was that researchers aimed to find the best way to achieve their research objectives. For this purpose, they attempted to ensure their MALL designs and outcomes by using mixed research methods, such as the combination of qualitative and quantitative measurements, to control the learning contexts under various external conditions. This enabled them to explain the effects of using mobile devices or applications in the language learning process on the affective domains, academic achievements, and characteristics of learners.

On the other hand, the results indicated that the design-based research method was adopted only in four MALL-PGTs (2 master's theses, 2 doctoral theses), though it is considered a research approach that examines innovative learning tools, including modern technology, and complex teaching approaches in real teaching environments. However, the researchers adopting this approach attempted to concretize the theories about teaching and learning and make the relationship among educational theory, artificial design, and practice more understandable. In doing so, they designed mobile applications for foreign language learning and took the learning process via mobile devices beyond the boundaries of the school and carried it out in real-life conditions.

6.2. Learner Profile: Figure 6 depicts the details about the learner profile in the Turkish MALL-PGTs produced during the period 2009-2022. The result revealed that the researchers most preferred to conduct their studies with the preparatory class students at the universities (*n* = 26). Next most preferred study groups were non-linguistic undergraduate students (*n* = 12), followed by pre-service teachers (*n* = 9), secondary school students (*n* = 7), and high school students (*n* = 7), and then primary school students (*n* = 6) and instructors (*n* = 6). The least preferred study groups were mixed groups (*n* = 2), followed by occupational groups (*n* = 1), pre- and in-service teachers (*n* = 1), and linguistic students (*n* = 1).

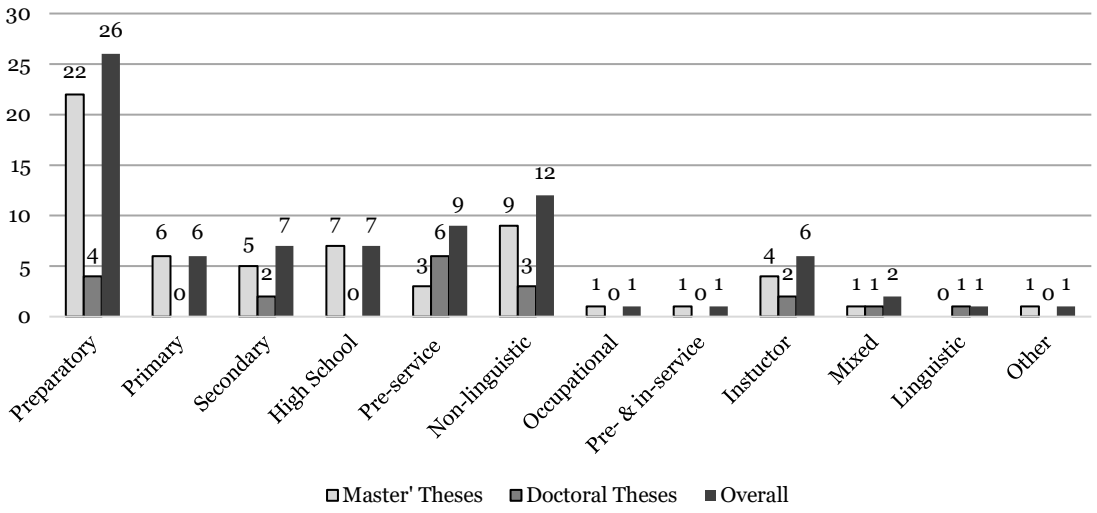


Figure 6. *Learner profile in Turkish MALL-PGTs produced during the period 2009- 2022*

In terms of the levels of MALL-PGTs, master's theses most frequently focused on preparatory class students at the universities, whereas MALL implementations at the doctoral level were conducted with pre-service teachers. Moreover, no doctoral theses whose participants were composed of occupational groups or primary and high school students were detected compared to those of master's theses. To summarize, the study groups differed at the two levels of Turkish MALL-PGTs.

6.3. Sample Size: Figure 7 depicts the sample size in MALL implementations of the Turkish MALL-PGTs completed during the period 2009-2022. The results indicated that 31 of the total 79 MALL-PGTs had sample sizes of up to a maximum of 100 participants. This was followed by sample sizes of up to 50 in 24 theses, up to 25 in 11 theses, and up to 100 in 7 theses. There were only 3 theses with a sample size of over 300. In addition, 2 theses had a sample size of up to 200 participants. Only 1 thesis had a sample size of up to 300 participants.

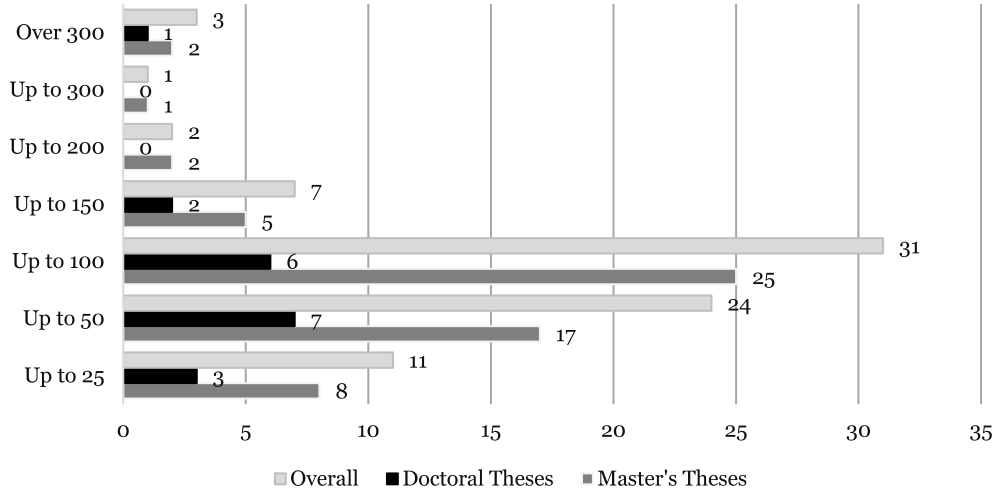
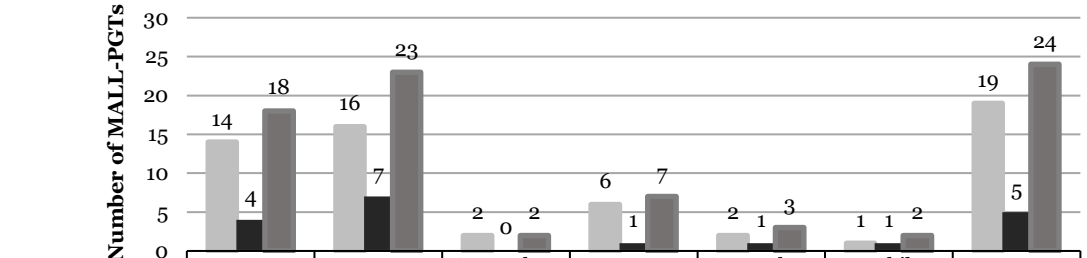


Figure 7. *Sample size in Turkish MALL-PGTs produced during the period 2009-2022*

The number of MALL-PGTs was proportionally consistent with each other in terms of sample size in both master's and doctoral theses. However, out of a total of 19 doctoral theses, only one had a sample size of over 300. However, out of a total of 19 doctoral theses, only one had a sample size of over 300. Furthermore, no doctoral thesis was identified that included participants ranging between 150 and 300. The reason for the sample size of less than 100 in both levels of the theses was that they were experimental studies. The studies with sample sizes above 100 were descriptive studies based on one-time data collection. Therefore, the number of Turkish MALL-PGTs whose results can be statistically generalized does not meet the minimum requirements in terms of sample size.

6.4. Mobile Device used: Figure 8 depicts the types of mobile devices used in the reviewed Turkish MALL-PGTs produced during the period 2009-2022. The most widely used mobile devices were

smartphones (*n* = 23), followed by mobile phones (*n* = 18). The least used mobile device was a tablet PC (*n* = 7). In some studies, multiple pairs of mobile devices were used together. These were smartphone and tablet PC (*n* = 3), mobile phone and tablet PC (*n* = 2), and mobile phone and smartphone (*n* = 2), respectively. In addition, the most important finding was that the concept of a mobile device was not explicitly introduced in a total of 24 theses. This was much more than the total number per mobile device type.



	Mobile Phone	Smartphones	Smartphone & Mobile Phone	Tablet PC	Smartphone & Tablet PC	Mobile Phone & Tablet PC	Unspecified
Masters Theses	14	16	2	6	2	1	19
Doctoral Theses	4	7	0	1	1	1	5
Overall	18	23	2	7	3	2	24

Figure 8. *Mobile devices used in Turkish MALL-PGTs during the period 2009-2022*

In terms of the levels of Turkish MALL-PGTs, the trend of using mobile phones to design a MALL implementation increased steadily in master's theses between 2010 and 2021. Similarly, the inclusion of smartphones continued to increase between 2014 and 2020. In addition, tablet computers were used in foreign language teaching in each of the theses produced between 2015 and 2021. As shown in Table 8, no information was provided about the types of mobile devices used in MALL implementations in 19 master's theses over the last 6 years. Moreover, 11 of the 19 theses involved experimental studies using subjects.

As for the doctoral theses, the most common mobile device used in the thirteen-year period was the smartphone, followed by the mobile phone. Tablet computers were used in 1 doctoral thesis completed in 2018 (see Table 7). Similar to master's theses, the tendency to neglect the concept of mobile devices used in MALL implementations in doctoral theses continued to increase as of 2015.

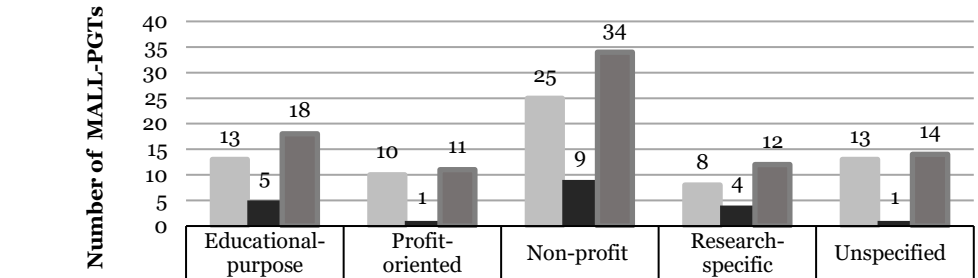
Table 7. *Trend in using mobile devices in Turkish MALL-PGTs by years*

	Device	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Sum
Master's Theses	Mobile phone	-	2	-	1	-	1	-	2	-	1	4	2	1	-	14
	Smartphones	-	-	-	-	-	1	2	3	6	-	2	2	-	-	16
	SP and MP	-	-	-	1	-	-	-	-	-	-	1	-	-	-	2
	Tablet PC	-	-	-	-	-	-	1	-	1	1	1	1	1	-	6
	SP and TPC	-	-	-	-	-	-	-	-	-	-	1	-	-	1	2
	MP and TPC	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1
	Unspecified	-	-	-	-	-	-	-	-	1	3	5	2	3	5	19
Doctoral Theses	Mobile phone	1	-	-	-	-	-	1	1	-	-	-	-	-	1	4
	Smartphones	-	-	-	1	-	1	-	-	2	2	1	-	-	-	7
	SP and MP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Tablet PC	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
	SP and TPC	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
	MP and TPC	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
	Unspecified	-	-	-	-	-	-	-	-	-	2	-	1	-	2	5
	Sum	**1**	**2**	**-**	**3**	**-**	**3**	**4**	**7**	**10**	**10**	**15**	**9**	**5**	**10**	**79**

Moreover, the results indicated that there was a conceptual complexity to the concepts of mobile phone and smartphone in Turkish MALL-PGTs. The concept of the mobile phone basically ended following the emergence of various functions such as internet access, sensitive cameras, and the option to download apps, thus evolving into the smartphone. Therefore, the concept of a mobile device in the MALL environments designed by SMS and MMS during the period 2009-2012 was the mobile phone. Moreover, ignoring the identification of the concept of mobile devices may call into question the

credibility of research results. This is because the types of mobile devices used may have different effects on learners.

6.5. Application Type: Figure 9 depicts the types of applications used or preferred in the reviewed Turkish MALL-PGTs during the period 2009-2022. The most widely preferred application was non-profit educational applications (*n* = 34). Next most widely preferred applications were educational-purpose applications (*n* = 18), followed by research-specific applications (*n* = 12). The least preferred application was profit-oriented applications (*n* = 11). However, general information about the applications in 14 of the 79 MALL-PGTs was not detected.



	Educational-purpose	Profit-oriented	Non-profit	Research-specific	Unspecified
Masters Theses	13	10	25	8	13
Doctoral Theses	5	1	9	4	1
Overall	18	11	34	12	14

Figure 9. *Application types in reviewed Turkish MALL-PGTs produced during the period 2009-2022*

In both levels of Turkish MALL-PGTs, multiple use of applications was observed. At the doctoral level, two different application types were used together in only one thesis produced in 2017. The trend of preferring non-profit applications increased as of 2015 in master's theses and 2017 in doctoral theses. Non-profit applications such as Quizizz and Kahoot! were used to teach vocabulary in the target language to learners at almost all grades and to explore learners' perceptions towards MALL implementations. Educational-purpose applications, the second of the most frequently preferred application types, were adapted intermittently to learners' pedagogical needs and learning goals in the thirteen-year interval as of the first doctoral thesis produced in 2009. Early examples of educational-purpose applications used SMS or MMS to send multimedia content to mobile phones over a cellular network. In the master's theses, an increasing trend of adapting social networking services such as WhatsApp, YouTube, and Facebook into MALL implementations was detected between 2014 and 2022. In addition, the trend of designing an application for the research was limited to three studies at the doctoral level conducted between 2016 and 2018.

Table 8. *Trend of application type in Turkish MALL-PGTs by years*

	Application	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Sum
Master	Educational-purpose	-	1	-	1	-	-	-	1	3	1	4	1	-	1	13
	Profit-oriented	-	1	-	-	-	-	1	1	-	1	1	4	1	-	10
	Non-profit	-	-	-	1	-	-	1	2	3	3	5	4	3	3	25
	Research-specific	-	-	-	1	-	1	1	1	-	1	2	-	-	1	8
	Unspecified	-	-	-	-	-	1	-	1	1	1	5	1	1	2	13
Doctoral	Educational purpose	1	-	-	1	-	-	1	-	-	-	-	1	-	1	5
	Profit-oriented	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
	Non-profit	-	-	-	-	-	1	-	-	1	3	1	1	-	2	9
	Research specific	-	-	-	-	-	-	-	1	1	2	-	-	-	-	4
	Unspecified	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
	Sum	**1**	**2**	**-**	**4**	**-**	**3**	**4**	**7**	**10**	**12**	**18**	**12**	**5**	**11**	**89**

The use of research-specific applications gained prominence increasingly in master's theses in the last eight years but was interrupted between 2020 and 2021. On the other hand, profit-oriented applications (e.g., Socrative, Duolingo, and Quizlet) were favored in at least one of the master's theses between 2015 and 2021, reaching the highest number in 2020. However, this application type appeared in only one doctoral thesis in 2017 (see Table 8). At both levels of Turkish MALL-PGTs, the reason for the pattern regarding the applications between 2020 and 2021 may be that the COVID-19 pandemic, which affected the whole world, temporarily suspended the education and training process and switched to emergency distance teaching practices.

As with the types of mobile devices, the application type was not specified in some master's theses produced between 2016 and 2022. This pattern was observed in one doctoral thesis in 2022. Therefore, the omission of specifying the application type may prevent the readers from gaining a better understanding of the question of what it means to learn a foreign language with mobile devices at unrestricted times and places.

6.6. Learning Context: Figure 10 depicts the learning contexts created through mobile devices and applications in the reviewed Turkish MALL-PGTs produced during the period 2009-2022. According to the results, MALL implementations in most MALL-PGT studies were carried out in traditional classroom settings (*n* = 24), followed by unrestricted locations (*n* = 21). In other MALL-PGTs, MALL was implemented in outdoor settings (*n* = 9), followed by on campus (*n* = 2), and then in museums only (*n* = 1). However, a total of 24 MALL-PGTs did not specify where the learning took place.

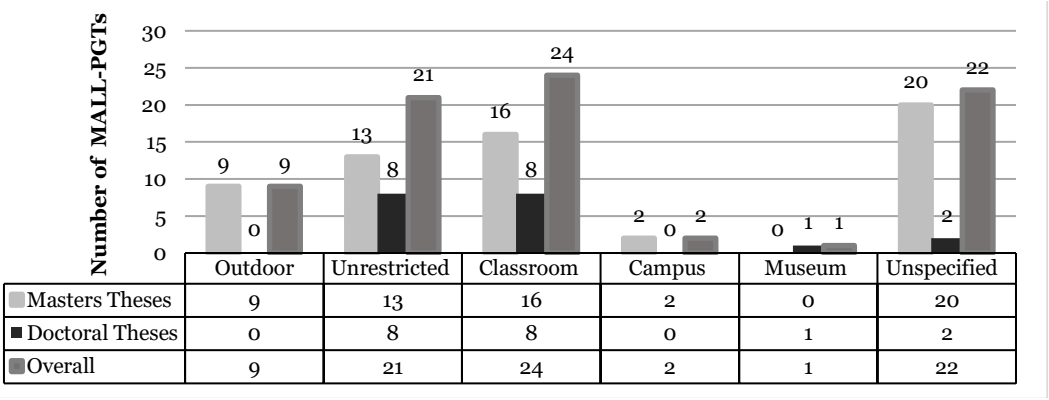


Figure 10. *Learning contexts created in Turkish MALL-PGTs during the period 2009-2022*

MALL was most frequently implemented in classrooms (*n* = 16), followed by unrestricted settings (*n* = 13). In doctoral theses, the frequency of doing learning activities in both learning contexts in the thirteen-year interval was equally distributed (*n* = 8). Furthermore, in the reviewed doctoral theses, there was no attempt to implement MALL in outdoor settings or on campus, whereas this was the case for the museum in the master's theses.

Table 9. *Trend of learning contexts created in Turkish MALL-PGTs by years*

	Context	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Sum
Master	Outside	-	1	-	-	-	-	-	-	2	-	2	1	2	1	9
	Unrestricted	-	1	-	-	-	-	-	3	3	2	1	1	1	1	13
	Classroom	-	-	-	2	-	-	3	-	1	-	6	3	1	-	16
	Campus	-	-	-	-	-	-	-	1	1	-	-	-	-	-	2
	Museum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Unspecified	-	-	-	-	-	2	-	1	1	3	5	3	1	4	20
Doctoral	Outside	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Unrestricted	1	-	-	-	-	-	1	1	1	2	-	1		1	8
	Classroom	-	-	-	1	-	1	-	-	1	2	1	-	-	2	8
	Campus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Museum	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
	Unspecified	-	-	-	-	-	-	-	-	-	1	-	-	-	1	2
	Sum	**1**	**2**	**-**	**3**	**-**	**3**	**4**	**7**	**10**	**10**	**15**	**9**	**5**	**10**	**79**

As shown in Table 9, in most master's theses, the trend of conducting MALL in the classroom continued to increase changeably between 2012 and 2021. Despite the fact that mobile devices make learning possible without time and space constraints, MALL implementations based on unrestricted settings showed a lower than expected trend between 2016 and 2022. The most striking finding was that the tendency not to specify what the MALL contexts were had steadily increased as of 2015. Notably, in six of the master's theses that included a specific treatment process using subjects, there was no information about the learning contexts in which MALL was applied. In reviewed doctoral theses, there was a high tendency to conduct MALL practices in the classroom and in unrestricted settings, but the trend was not steady. In addition, learning contexts were not specified in two doctoral studies.

It was observed that in the majority of Turkish MALL-PGTs, MALL contexts were not explicitly specified. This is a risky situation. Learners may experience target language learning differently in different learning contexts. Moreover, even in descriptive studies based on one-time data collection, the

lack of explicit specification of MALL environments may be unrealistic in expressing students' opinions about how and to what extent they experienced MALL.

6.7. Target Language: Figure 11 depicts the most common target languages addressed in the reviewed Turkish MALL-PGTs produced during the period 2009- 2022. The most common target language was English as a foreign language (EFL) (*n* = 68). Next common target languages were Turkish as a foreign language (TFL) (*n* = 5), followed by German as a foreign language (GFL) (*n* = 3). In addition, two MALL implementations were identified for Turkish as a first language (L1) at both levels of Turkish MALL-PGTs, whereas English for specific purposes (ESP) was the target language in only one master's thesis.

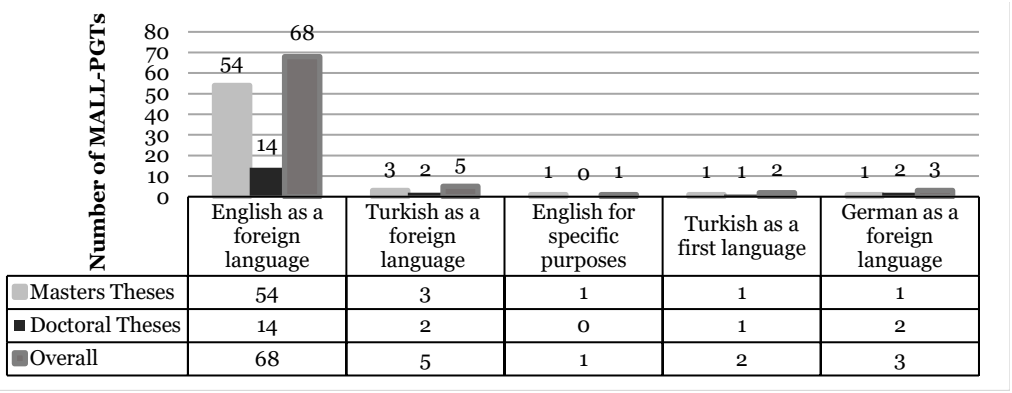


Figure 11. *The most common target languages addressed in Turkish MALL-PGTs during the period 2009-2022*

In terms of the levels of Turkish MALL-PGTs, EFL was the most common target language in master's theses (*n* = 52). Next most common target language was TFL (*n* = 3). For the other three target languages, the total number of MALL implementations amounted to 1. Compared to master's theses, GFL was addressed more at the doctoral level; however, no MALL implementations related to ESP were identified. Proportionally, EFL was the most frequently addressed target language in both levels of Turkish MALL-PGTs.

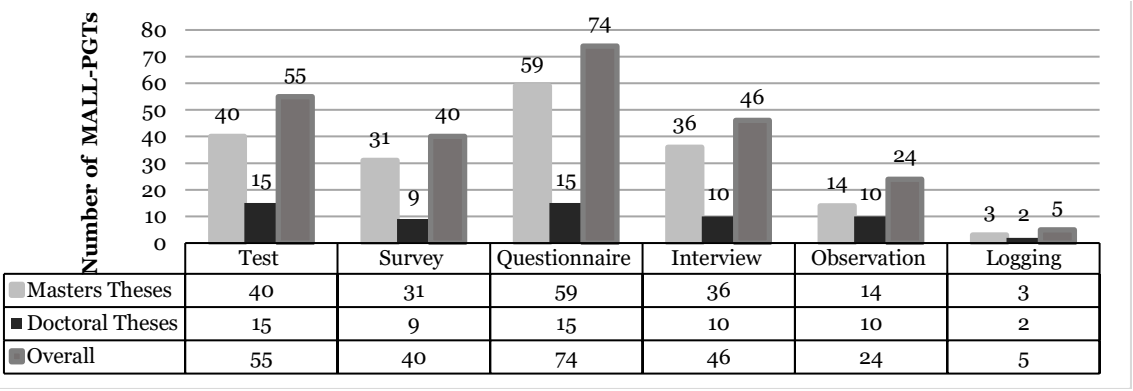
Table 10. *The trend of target languages addressed in Turkish MALL-PGTs by years*

	Language	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Sum
Master	EFL	-	2	-	2	-	2	3	4	8	5	13	6	4	5	54
	TFL	-	-	-	-	-	-	-	1	-	-	1	-	1	-	3
	ESP	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1
	L1 Turkish	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1
	GFL	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Doctoral	EFL	1			1		1	-	2	2	3	-	1	-	3	14
	TFL	-	-	-	-	-	-	1	-	-	-	1	-	-	-	2
	ESP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	L1 Turkish	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
	GFL	-	-	-	-	-	-	-	-	-	2	-	-	-	-	2
	Sum	**1**	**2**	**-**	**3**	**-**	**3**	**4**	**7**	**10**	**10**	**15**	**9**	**5**	**10**	**79**

As shown in Table 10, the earliest attempts to implement MALL within postgraduate studies involved EFL. In both levels of Turkish MALL-PGTs, this trend continued to increase in the thirteen-year interval. Only rather recently have MALL implementations been undertaken in the other target languages. TFL was studied by the researchers in a total of three master's theses between 2016 and 2021. Each master's thesis in ESP and L1 as the target language was completed in 2020. The first MALL master's thesis for GFL was produced in 2022 (*n* = 1). Moreover, a similar pattern regarding the relevant target languages was observed for those at the doctoral level. In each thesis produced during the period 2009-2022, EFL was the target language. Though very much the exception, researchers were interested in MALL implementations in GFL for the first time in 2018 (*n* = 2). However, GFL was the target language in no MALL doctoral theses completed in the last four years. In sum, the only EFL as the target language was the trend that showed a steady increase in Turkish MALL-PGTs.

6.8. Data Collection: Figure 12 depicts the most adopted data collection techniques in Turkish MALL-PGTs produced during the period 2009-2022. In each MALL-PGT, researchers made used of multiple data collection techniques. The most common adopted data collection were questionnaire

techniques (*n* = 74). Next most common adopted data collection were test techniques (*n* = 55), followed by interview techniques (*n* = 46), by survey techniques (*n* = 40), and then by observation techniques (*n* = 24). The least adopted data collection was logging technique (*n* = 5).



	Test	Survey	Questionnaire	Interview	Observation	Logging
Masters Theses	40	31	59	36	14	3
Doctoral Theses	15	9	15	10	10	2
Overall	55	40	74	46	24	5

Figure 12. *The most adopted data collection techniques in Turkish MALL-PGTs during the period 2009-2022*

The trend of using data collection techniques in MALL implementations showed consistency at both levels of Turkish MALL-PGTs. This trend pattern indicated that researchers used different data sources to make their findings strong and sound. In addition, 59 of the 60 theses used questionnaires, and 40 of them applied tests. However, 15 of 19 doctoral theses were tested, and 15 of them were administered, indicating that test results were compared with those of questionnaires in each doctoral thesis. These findings presented the picture that Turkish doctoral studies designed experiments to achieve their research objectives, whereas master's studies adopted an exploratory design based on student responses to surveys and questionnaires.

6.9. Treatment Duration*:* Figure 13 depicts the total treatment duration for each MALL implementation conducted in Turkish MALL-PGTs between 2009 and 2022. In most MALL-PGTs reviewed, the treatments were most frequently finished within 4 weeks (*n* = 15) or six weeks (*n* = 14). These were followed by those completed within 8 weeks (*n* = 9), 5 weeks (*n* = 5), and 10 weeks (*n* = 4), respectively. There were two studies with more than one semester of treatment duration, two studies with up to 9 hours, and two studies with up to 2 hours. In addition, the treatment processes of three MALL implementations finished within 7 weeks, whereas those in another three studies lasted for one week. There was a MALL implementation lasting up to 3 weeks. However, the treatment of one MALL-PGT lasted for 2 hours.

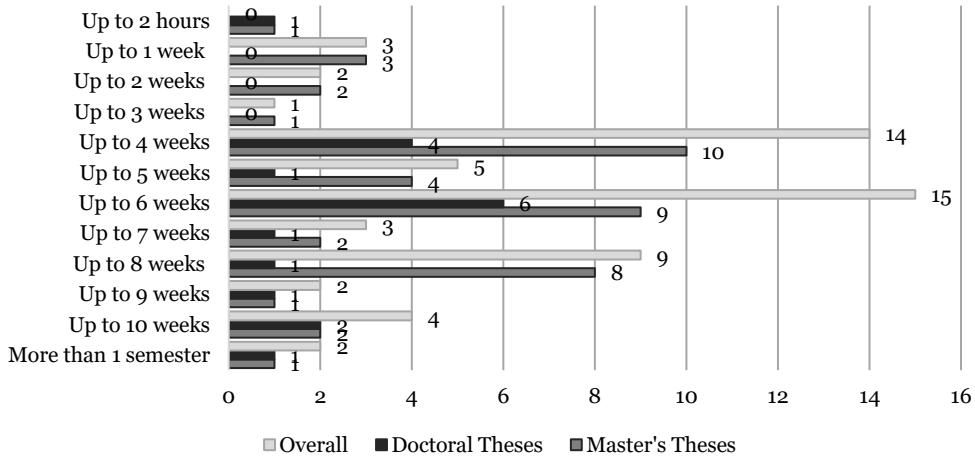


Figure 13. *Treatment Duration in Turkish MALL-PGTs during the period 2009-2022*

Out of a total of 79 Turkish MALL-PGTs, 64 focused on empirically designed MALL implementations. In total, 1 out of 19 doctoral theses and 15 out of 60 master's theses are quantitative studies without the use of subjects. In terms of levels of Turkish MALL-PGTs, the majority of doctoral theses were completed within 6 weeks, whereas master's theses were mostly limited to 4 weeks. However, the treatment durations in the three master's theses were not clearly specified. Consequently, the Turkish MALL-PGTs produced between 2009 and 2022 were composed of short-term treatment processes.

DISCUSSION

The main purpose of the present review study was to explore the general research trends of all MALL-PGTs produced in Türkiye from 2000, when the concept of mobile learning was first introduced to the literature, to the end of 2022. For this purpose, all MALL-PGTs were searched using all relevant terms on the database of the National Thesis Center of the Council of Higher Education (YÖK) and it was found that the first thesis was produced in 2009. Based on this finding, the review range of the MALL-PGTs was changed to the period 2009-2022. In this regard, a total of 79 MALL-PGTs (60 master's theses, 19 doctoral theses) that met the research conditions were identified.

Looking at the completion trend of MALL-PGTs in Türkiye by year, no steady increase was observed in the 2009-2014 period. In the following five-year interval, a steady increase in the number of MALL-PGTs was observed. In terms of the levels of MALL-PGTs, the highest number of master's theses was produced in 2019, while the number of doctoral theses reached an all-time high in 2018. However, there was a sudden drop in the number of theses produced in 2020. This can be explained by the fact that in 2020, for the first time in world history, a pandemic called COVID-19 threatened the entire human race. Because educational institutions were unexpectedly suspended and quarantine processes started worldwide. In other words, face-to-face (F2F) education, which continued uninterruptedly since the existence of humanity, temporarily ended for the first time. This conclusion was supported by previous studies which concluded that the factors originated from the pandemic such as family health, nosophobia, survival anxiety, emergency distance learning, interruption of social and physical contacts (Al Lily, Ismail, Abunasser & Alqahtani, 2020; Atmojo & Nugroho, 2020; Hazaea, Bin-Hady & Toujani, 2021; Özutku & Başboğaoğlu, 2022) forced foreign language instructors and learners to overcome to experience feelings of isolation, low motivation, burnout syndrome, depression, lack of self-discipline and high levels of stress (Bozkurt et al., 2020; Dhawan, 2020; Onyema, Eucheria, Obafemi, Sen, Atonye, Sharma, & Alsayed, 2020; Mohmmed, Khidhir, Nazeer & Vijayan, 2020; Shim & Lee, 2020; Sun, Lu, Xu, Sun & Pan, 2020; MacIntyre, Gregersen & Mercer, 2020; Taşçı, 2021) and led many researchers to postpone their projects and make radical changes in their research goals (Oskoz & Smith, 2020; Jin, Deifell & Angus, 2022). In sum, the present study suggests that the trend of MALL-PGT completion in Türkiye has continued to increase steadily over the last nine years.

However, the results revealed that there was no consensus on the concept of MALL in MALL-PGTs in Türkiye. In most doctoral theses reviewed, MALL was perceived as anytime, anywhere learning, whereas it was considered technology-based learning by many authors of master's theses. Since the number of master's theses constituted 76 percent of the total number of MALL-PGTs produced in the 2009-2022 period, it can be said that the technology-oriented perspective continues to dominate MALL practices in Türkiye. The findings of the present study were consistent with those of previous review studies (Kukulska-Hulme & Shield, 2008; Viberg & Grönlund, 2012; Duman et al., 2015; Chen et al., 2020), which indicated that the MALL concept was difficult to conceptualize pedagogically due to the tendency to design learning contents and environments based on the features of mobile devices. A possible explanation for this may be that educational institutions are the primary learning environments for foreign language learning, and MALL is perceived as a teaching approach in which conventional learning is facilitated by mobile technologies.

In terms of the trend toward adopting an instructional approach in MALL implementations, there was no consistency between both levels of Turkish MALL-PGTs. The most common learning approach adopted in master's theses was collaborative learning, whereas doctoral theses adopted anytime, anywhere learning approach. Interestingly, there was no study at the doctoral level that encouraged learners to learn a foreign language in MALL settings collaboratively. Considering that the number of master's theses constituted 76 percent of the sample size of the present study, the result revealed that the instructional approach in Turkish MALL-PGTs showed an increasing trend in favor of collaborative learning. The findings of the present study were in line with those of previous studies (Kukulska-Hulme & Shield, 2008; Herrington, Herrington & Mantei, 2009; Burston, 2015; Chen et al., 2020), which revealed the positive impact of mobile-supported collaborative learning. A possible explanation for this could be that the use of mobile devices allows language learning to take place without the constraints of time and place and that their portability, personalization, and social connectivity increase interaction among learners and encourage collaboration (Sung, Chang & Yang, 2015; Persson & Nouri, 2018; Hsu & Liu, 2021). Another important finding was that the instructional approach was not clearly specified in most

of the Turkish MALL-PGTs reviewed. Instructional approaches are important because a teacher needs to recognize learners and take preventive measures to meet their learning needs (Western Governors University, 2020). Moreover, learners may use different learning strategies in various learning contexts while learning a language (Çelikkaya & Balkaya, 2020). Therefore, it is not possible to design MALL environments without considering these possibilities, and the validity of the research results and their contribution to the ever-growing MALL literature cannot be considered. This pattern in Turkish MALL-PGTs presented the picture that MALL implementations were conducted far away from the anxiety of what design principles should be followed during the research process.

Moreover, the results revealed that an increasing number of Turkish MALL-PGTs tended to investigate the effects of MALL implementations on learners' affective domains (especially, perception and attitude) in the thirteen-year interval. The findings of the present study supported those of previous review studies on mobile learning (Wu et al., 2012; Krull & Duart, 2017). Today, the trend of designing so many new applications more than the variety of mobile devices continues to increase, and this encourages researchers and scholars to integrate them into their courses. In other words, instead of designing new applications, they tend to use existing ones. Most of the existing applications are those that are primarily not designed for educational purposes (e.g., WhatsApp, Twitter, Instagram, Facebook and YouTube). Therefore, provide limited opportunities for improving learners' language skills. The results regarding research foci of the Turkish MALL-PGTs supported this conclusion. Researchers most frequently focused on learners' perceptions of MALL implementations. The applications included complex designs for vocabulary teaching as well as providing rich content for teaching more vocabulary. Furthermore, this actually facilitated data collection with the questionnaires administered at the end of the process. This finding of the present study was supported by that of Shadiev et al. (2017) who concluded that investigating the affective domains of learners became the primary purpose in MALL studies. Another noteworthy finding was that the tendency to design a new mobile was decreasing steadily. Therefore, future research should focus more on mobile system designs (Krull & Duart, 2017). Although there is evidence in the literature that mobile applications have a positive impact on learners' language skills (Klímová, 2019; Kacetl & Klímová, 2019; Kazhan, Hamaniuk, Amelina, Tarasenko & Tolmachev, 2020) there is also evidence that learners do not perceive learning through mobile devices as real learning (Vogel, Kennedy & Kwok, 2009; Lai, Saab & Admiraal, 2022) and that learners are distracted from the learning process by the many social media applications (Pareja-Lora et al., 2013; Oz, 2014; Rosell-Aguilar, 2016; Ekoç, 2021). This pattern in Turkish MALL-PGTs was similar to that in general MALL studies.

Related to the most common research methods adopted in Turkish MALL-PGTs, the results showed an increasing trend in favor of mixed methods research in the thirteen-year interval. The findings of the present study were in line with previous review studies on MALL (Viberg & Grönlund, 2012; Duman et al., 2015; Shadiev et al., 2017) and general mobile learning (Cheung & Hew, 2009; Wu et al., 2012; Krull & Duart, 2017). The reason why mixed research methods were increasingly preferred may be because the researchers aimed to triangulate their findings through qualitative and quantitative data sources to provide strong evidence for them. In doing so, they tried to conduct experiments in natural learning contexts using mobile devices and applications in the language learning process, analyze quantitative data through exploratory design, and support it with data collection techniques such as tests, interviews, observations, questionnaires, and logging. This finding was also supported by Shadiev et al. (2017), who reported that most researchers only designed mixed exploratory research to explore learners' perceptions rather than experiments based on investigating the effects of the use of mobile devices or applications in authentic settings on learners' language proficiency.

Another noteworthy finding was that the learner profile in most Turkish MALL-PGTs is composed of preparatory class students at universities. This finding was supported by Shadiev et al. (2017), who argued that university students were selected for MALL implementations because they had their own mobile devices. Another reason that explains this finding may be that the relevant learner profile involves students who are only enrolled in language courses at universities during one academic year, and therefore, this allows researchers to conduct their research with a high participation rate. However, there were a few MALL-PGTs whose participants were composed of primary school students. A possible explanation for this may be that the relevant students rarely own smartphones or other mobile devices such as tablet PCs, and the purchase of mobile devices (tablet PCs) for research projects may be a

financial burden. In addition, the sample size of most Turkish MALL-PGTs reviewed was up to a maximum of 100 participants. The research with more than 100 participants was usually based on surveys that directly solicited students' responses. This finding of the present study aligned with Burston's (2014a) review results on the sample size of MALL projects conducted during the period 1994–2012. This means that Turkish MALL-PGTs were very weak because of the small sample size of studies using subjects. Burston (2014a) argued that the sample size should be greater than one hundred for learning outcome results to be objective and based on statistically valid analyses. In this regard, it cannot be said that most Turkish MALL-PGTs fully meet the requirements for statistical generalizability of research results.

In terms of mobile devices used, the results revealed an increasing trend in favor of mobile phones and smartphones in Turkish MALL-PGTs. This finding echoed those of previous MALL review studies (Shadiev et al., 2017; Chen et al., 2020). However, the concept of a mobile device was not consistent with the historical development of mobile phones. The reason for this conclusion is the lack of awareness of the differences between the technical features of smartphones and mobile phones. Previous studies on mobile learning (Nah, White, & Sussex, 2008; Li & Hegelheimer, 2013; Hayati, Jalilifar & Mashhadi, 2013; Lin & Yu, 2016) reported that mobile phones provide low-quality services to their users due to their limited features, such as low sound quality, a poor keypad, insufficient memory, and a small screen size. These characteristics can make it difficult to design listening activities to improve learners' listening skills. Moreover, the literature provides evidence for the difficulty of typing using the keypads of mobile phones, and this was cited by many researchers (Sung, Hou, Liu & Chang, 2010; Li & Hegelheimer, 2013) as the reason why there is a gap in the MALL literature regarding writing skills in the target language. On the other hand, smartphones offer the opportunity to perform many activities such as listening to music, watching videos, finding directions using GPS, taking (and editing) photos and videos, checking the electronic calendar, taking notes, reading books, and playing games (Kaysı & Aydın, 2014; Godwin-Jones, 2017). Smartphones offer users the opportunity to download many useful applications that allow them to access information anywhere and anytime (Tanır, 2023a). Therefore, in most MALL-PGTs, nothing is known about how devices are perceived in the language learning process or the predictive effect of devices on the development of language skills. Perhaps the most important finding of the present study was that there was an increasing tendency not to specify the mobile device used in MALL-PGTs in the last seven years. This is a reason that may invalidate the research results of existing MALL-PGTs. No matter how well designed an application is, the type of device used can positively or negatively affect the impact of the application on learning outcomes for the reasons mentioned above.

Regarding the application types used in Turkish MALL-PGTs, an increase in the tendency to use non-profit applications was observed in the thirteen-year interval. This finding was consistent with meta-analysis studies (Sung, Chang & Liu, 2016; Chen et al., 2020) reporting that applications developed for educational purposes are better adapted to learners' needs and pedagogical goals. One reason that explains this finding may be that non-profit applications eliminate the effort of researchers to design a new application or provide the opportunity to quickly adapt a ready-made one to their own research. Next most frequently used applications were educational-purpose applications. In the present study, educational-purpose applications referred to the use of programs that are not specifically designed for learning for educational purposes (e.g., WhatsApp, Instagram, Facebook, Twitter, and YouTube). This finding of the study supported previous studies (Callow & Zammit, 2012; Heriyanto, 2015; Kabooha, 2016; Kabooha & Elyas, 2018) reporting that YouTube, an online video sharing and social media platform, is one of the most frequently used multimedia tools recently to improve students' target language skills in formal and non-formal learning contexts, as it allows to combine the linguistic elements of the target language with auditory and visual images. However, most Turkish MALL-PGTs made use of non-profit and educational applications to improve students' vocabulary in the target language rather than four basic language skills. Therefore, there were very few studies, especially in the context of grammar, speaking, and reading skills. Most importantly, research on writing and listening skills was neglected. This meant that MALL implementations were conducted to teach vocabulary in Türkiye and basic language skills were neglected in the thirteen-year interval.

Most Turkish MALL-PGTs reviewed reported creating MALL environments in the traditional classroom and in unrestricted settings. Some others created MALL environments outdoors, and very few studies created MALL environments in museums. These findings of the study supported Shadiev et al.'s (2017) review results related to the learning contexts of the studies that focused on authentic mobile

learning. The reason why researchers created MALL environments in the classroom may be because they aimed to ensure the frequency of exposure to the target language and control the whole learning process easily. However, the results revealed that most MALL-PGTs did not specify the learning contexts in which MALL was implemented in the last 5 years. This number was well above the average number that each learning context specified had. Shadiev et al. (2017) suggested that educators and researchers need to pay attention to how and to what extent MALL environments are provided and that learning can be experienced in the classroom and outdoors in very different ways. Moreover, the reason why students cannot fully apply the knowledge they have learned in the target language to solve real-life problems may be directly related to learning contexts (Shadiev et al., 2017; Ahn & Lee, 2015; Hwang, Shih, Ma, Shadiev & Chen, 2016). Therefore, it cannot be said that the majority of Turkish MALL-PGTs provided valid and consistent outcomes regarding learning experiences in the settings created with mobile devices.

In most Turkish MALL-PGTs reviewed, English as a foreign language (EFL) was the target language most frequently addressed in MALL implementations. Next most common target languages were Turkish as a foreign language, followed by German as a foreign language. However, the number of MALL-PGTs addressing the relevant languages was limited, and the trend of teaching them in MALL environments in the thirteen-year interval was not steady. This finding of the study aligned with those of previous review studies (Burston 2014a; Sung et al. 2015; Shadiev et al., 2017; Chen et al. 2020) reporting that EFL was the most common target language in MALL studies. One reason that explains this finding may be that English is a lingua franca worldwide and is also the common language of communication on social media platforms (Tanır, 2023b). Therefore, mobile technologies can increase the frequency of learners' exposure to EFL and provide an authentic learning environment (Lin & Lan, 2015). To summarize, the trend of researching English as the target language in MALL-PGTs continues to increase in Türkiye as well as in the rest of the world.

In relation to data collection in Turkish MALL-PGTs, the results revealed that researchers gathered their data mostly by administering a questionnaire. This was followed by test administrations, interview sessions, surveys, and observations, respectively. This finding of the study was in line with those of previous studies (Shadiev et al., 2017; Shadiev, Liu & Hwang, 2020) that reviewed the studies on MALL in authentic settings. The reason why researchers most frequently collected their data with questionnaires may be because they aimed to identify the strategies that learners develop in the designed MALL environments, how often they use them, and how learners perceive the implementation of MALL throughout the target language instruction. Another explanation for this could be that this technique offers researchers a great advantage in terms of easy access to data and statistically reliable measurements. In addition, the tests (pre-test and post-test) were administered by the researchers before and after the intervention. This was because researchers aimed to prove the effectiveness of their interventions (Hsu, 2017; Shadiev et al., 2020). They also conducted interviews at the end of the intervention and sought students' views on the intervention process. In the present study, the difference between survey and test was clarified, and so they were treated as two separate data collection techniques. A questionnaire is a series of questions asked of an individual. However, survey techniques provide the opportunity to collect and analyze data from many individuals, including a comprehensive data collection process consisting of both a series of questions and open-ended questions.

Finally, the results revealed that most Turkish MALL-PGTs had a treatment duration of up to six weeks, followed by those that were completed within four weeks. This was one of the most important limitations of most Turkish MALL-PGTs reviewed. In particular, small sample sizes and short-term treatment durations have been recognized by many researchers (Burston, 2014a; Liu & Chen, 2015; Hsu, 2017; Shadiev et al., 2020) as the most important limitations of MALL studies. This was very common in Turkish MALL-PGTs, and some of them did not specify the treatment duration of their MALL implementations. Such omissions deprive the evaluation of the effectiveness of MALL, or rather, the statistical generalizability of research outputs (Burston, 2015; Shadiev et al., 2020). The pattern in most Turkish MALL-PGTs regarding treatment duration and sample size presented a pessimistic picture in terms of providing generalizable results.

CONCLUSION

The present study examined the general research trend in Türkiye in the context of higher education studies based on a systematic review of 79 MALL studies extracted from the post-graduate theses

completed during the period 2009-2022. The results revealed that most Turkish MALL-PGTs did not paint a positive picture in terms of instructional approach and overall design of MALL implementations. In this regard, this review study reached the following conclusions:

- The trend of producing a MALL-PGT in Türkiye continued to increase in the thirteen-year interval.
- In Türkiye, the trend of perceiving MALL as a technology-enhanced learning environment continued to increase. This meant that MALL was considered a complementary method to conventional learning.
- The research purpose of the majority of Turkish MALL-PGTs was to investigate the affective domains of learners, followed by evaluating the effectiveness of MALL environments. However, there was a decreasing tendency to design new mobile systems focused on solving problems in foreign language teaching.
- The general trend regarding the research focus of Turkish MALL-PGTs was mostly oriented towards exploring learners' general perceptions in MALL environments. Also, most studies focus on teaching vocabulary in the target language. However, research on developing the four basic language skills of learners, such as listening, reading, speaking, and writing, was mainly neglected in the thirteen-year interval.
- In most Turkish MALL-PGTs reviewed, the most common instructional approach adopted was collaborative learning. However, there was a growing tendency in most of the MALL-PGTs not to explicitly specify the instructional approaches adopted. This was an important limitation of Turkish MALL-PGTs. This is because the ambiguity of the learning experience in the designed MALL environments and the principles of instructional materials design led to gaps in the theoretical pedagogical underpinnings of their implementation. It also led to an ambiguous picture in terms of the theoretical and practical implications of the intended learning outcomes.
- In the thirteen-year interval, an increasing trend of adopting mixed research methods that enable researchers to make use of multiple data sources was observed in the majority of the MALL-PGTs.
- The tendency of MALL implementations in Türkiye to be conducted mostly with preparatory class students at the universities continued to increase. The reason for this was the rate of ownership of smartphones depending on the age range of the students and the fact that the students' sole occupation was learning the target language.
- In most Turkish MALL-PGTs, the sample size was smaller than 100 participants, and the treatment processes were completed within a maximum of 6 weeks. This was below the sample size and treatment duration required for statistically generalizable results.
- Smartphones and mobile phones were mostly used as mobile devices in Turkish MALL-PGTs. However, in the last five years, the term "mobile phone" was used to describe the concept of a mobile device. This indicated a lack of conceptual knowledge about mobile device technologies. Most importantly, an increasing trend of not specifying the concept of mobile devices in Turkish MALL-PGTs was determined. Therefore, the results of MALL implementations in Turkish MALL-PGTs lacked validity and generalizability.
- There was an increasing tendency to use non-profit applications such as Quizizz and Kahoot! most frequently in Turkish MALL-PGTs. This conclusion confirmed the increasing trend of teaching vocabulary in the target language. It also meant that there were no attempts to design new mobile applications within the scope of MALL studies.
- In some Turkish MALL-PGTs, there was a tendency to implement MALL mostly in the classroom or outdoors. However, most importantly, learning contexts were not specified in most studies, and this number was very high.
- In Türkiye, the tendency to teach English as a foreign language in MALL settings continued to increase. Implementations for other languages were very few and were conducted during specific periods.

In particular, the type of mobile devices used, the learning contexts designed, and the instructional approaches adopted in teaching the target language need to be clearly articulated. Although previous research has complained about the small sample size, reliable and generalizable information is inevitable if the most important requirements for the quality of MALL implementation designs are clearly stated.

Türkiye'de Mobil Destekli Dil Öğrenimi: 2009-2022 Döneminde Üretilen Lisansüstü Tezler Üzerine Sistematik Bir İnceleme Çalışması

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Özet

Bu çalışma, 2009-2022 döneminde Türkiye'de üretilen mobil destekli dil öğrenimi lisansüstü tezlerini (MALL-PGT) incelemiştir. Amaç, Türkiye'deki MALL-PGT'lerin genel araştırma eğilimi hakkında geniş bir bakış açısı sağlamaktır. Bu bağlamda, yetmiş dokuz MALL-PGT (60 yüksek lisans tezi, 19 doktora tezi) toplanmış ve yazar tarafından hazırlanan kodlama şemasına dayalı olarak analiz edilmiştir. Şema altı temel kategoriden oluşmaktadır: yayın yılı, MALL algısı, araştırma amacı, araştırma odağı, öğretim yaklaşımı ve araştırma tasarımı. Sonuçlar, Türkiye'de MALL-PGT'lerin üretilmesinde artan bir eğilimin on üç yıllık aralıkta istikrarlı bir şekilde devam ettiğini ve MALL'nin geleneksel öğrenmeyi tamamlayıcı bir yöntem olarak algılandığını ortaya koymuştur. Buna ek olarak, çoğu MALL-PGT öğrenenlerin duyuşsal alanlarını araştırmayı amaçlamış ve bu nedenle MALL ortamlarındaki öğrenenlerin genel algılarına odaklanmıştır. Ancak, çoğu MALL-PGT'de benimsenen öğretim yaklaşımı belirtilmemiştir. Benimsenen en yaygın araştırma yöntemi karma yöntem araştırmasıdır. MALL uygulamaları çoğunlukla üniversitelerin hazırlık sınıfı öğrencileriyle gerçekleştirilmiştir ve çoğu MALL-PGT'nin örneklem büyüklüğü 50 ila 100 arasında değişen katılımcı sayısına karşılık gelmektedir. En yaygın hedef dil de yabancı dil olarak İngilizce olmuştur. Bu çalışmanın belki de en önemli bulguları, kullanılan mobil cihaz türlerinin ve MALL tasarımlarına ilişkin öğrenme bağlamlarının belirtilmemesi yönündeki artan eğilimin son beş yılda istikrarlı bir şekilde devam etmiş olmasıdır. Genel olarak sonuçlar, çoğu Türk MALL-PGT'nin MALL tasarım ilkelerinden yoksun olduğunu ve bu nedenle araştırma sonuçlarının genellenebilirliği için asgari gereklilikleri karşılamadığını göstermiştir.

Anahtar kelimeler: *Literatür incelemesi, Mobil destekli dil öğrenimi, Lisansüstü tezler, Genel araştırma eğilimi*

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Genişletilmiş Özet

Problem: Herhangi bir toplumdaki bireylerin aynı zamanda başka toplumlara uyumlu yetişmesini sağlamak, eğitimin amaçları kapsamındadır. Eğitbilimin bu alanda bilgi üreten dalı yabancı dil eğitimidir (Toprakçı, 2016). Alanın kendine özgülüğü içeriğin öğrencilere kazandırılmasında farklı yöntem, teknik ve araç-gereçler kullanılmasını gerektirmektedir (Toprakçı, 2017). Bu temelde bilgisayar ve iletişim teknolojileri (İnternet, mobil cihazlar vb.) yabancı dil eğitimini etkilemiş ve özellikle mobil cihazların dil öğrenme sürecine entegre edilmesinin ne anlama geldiği sorusu, yirmi yılı aşkın bir süredir birçok araştırmacının dikkatini çeken bir konu olmuştur. Bu sorunun üstesinden gelmek için araştırmacılar, yoğun öğrenci-mobil cihaz etkileşiminin potansiyelinden yararlanarak bir dizi araştırma yürütmüştür. Ancak dil eğitiminde kullanılan mobil teknolojilerdeki öngörülemeyen gelişmeler, çok kısa sürede yenilerinin ortaya çıkmasına ya da mevcut cihazların özelliklerinin güncellenmesine yol açmıştır. Bu durum, "mobil cihaz türleri ve işlevselliklerindeki eğilimlerin yanı sıra öğrenen türleri ve mobil cihazların çeşitli disiplinlerde ve kurslarda kullanımının" düzenli olarak analiz edilmesini gerektirmektedir (Wu vd., 2012; akt. Krull & Duart, 2017, s.2). Bu nedenle, mobil cihazların etkinliği ve türleri, araştırma odağı, metodolojik yaklaşım ve MALL ile ilgili önceki çalışmaların sonuçlarının gözden geçirilmesi, gelecekte MALL ortamlarının yeniden tasarlanması açısından eğitimciler ve araştırmacılar için içgörü sağlayabilir (Frohberg vd., 2009; Krull & Duart, 2017).

İlk olarak Quinn (2000) tarafından mobil E-Öğrenme terimiyle ortaya atılan "mobil öğrenme" kavramı, günümüzde net bir pedagojik tanıma sahip değildir. Birçok araştırmacı mobil öğrenmeyi e-öğrenmenin bir uzantısı (örneğin, Quinn, 2000; Sepherd, 2001; Keegan, 2002; Pinkwart vd., 2003; Georgiev vd., 2006; Peters, 2007; Orr, 2010), teknoloji tabanlı öğrenme (Leung & Chan, 2003; Jacob &Issac, 2008; Cochrane, 2010;), işbirlikçi öğrenme (Klopfer & Squire, 2008; Sharples vd, 2010; Chan, 2011; Crompton, 2013), konumlandırılmış öğrenme (O'Malley vd., 2005; Chen & Hsu, 2008; Peng vd., 2009; Crescente & Lee, 2011; Al Mosawi & Wali, 2015) ve öğrenci merkezli öğrenme (Naismith, vd., 2004; Yi vd., 2009; Bassam Nassuora, 2013; Ciampa, 2014; Andujar, 2016) olarak tanımlamaktadır. Tüm bu girişimlerden yola çıkarak mobil cihazlar, mobil uygulama yazılımları ve işletim sistemlerindeki yenilik ve dönüşümlerin mobil öğrenme kavramının tanımlanmasını zorlaştırdığı varsayılabilir. Ancak araştırmacıların tamamen mobil cihazların taşınabilirliği ve esnekliğine dayanarak sloganlaştırdığı "her zaman ve her yerde" öğrenme söylemi hala popülerliğini korumaktadır.

Son yıllarda, muazzam MALL literatürünü keşfetmek ve daha fazla araştırma için öneriler sunmak için birçok derleme çalışması yayınlanmıştır. Chen vd. (2020), MALL üzerine ilk derleme çalışmasının Kukulska-Hulme ve Shield (2008) tarafından yapıldığını bildirmiştir. İlgili derleme çalışması, 2002-2007 yılları arasındaki yayınların mobil cihazlara ve bunların ders içeriği tasarlamada kullanımına odaklandığını ve MALL uygulamalarında öğretmen merkezli bir öğrenme yaklaşımının benimsendiğini ortaya koymuştur. Bir başka derleme çalışmasında, Viberg ve Grönlund (2012) 2007-2012 yılları arasındaki MALL yayınlarını araştırma odağı, metodoloji, dil yeterliliği, öğrenme teorisi ve modelleri açısından sistematik olarak analiz etmiştir. Birçok araştırmacının mobil öğrenme için yeni bir teori geliştirme eğiliminde olduğunu bildirmişlerdir. Ancak bu teoriler, bilişsel psikolojiye dayalı mevcut öğrenme teorilerinin uzantılarıdır. İncelenen çalışmaların çoğu, ikinci dil ediniminde mobil cihaz kullanımının öğrenenlerin tutumları ve algıları üzerinde ne ölçüde etkisi olduğu sorusunu yanıtlamaya çalışmıştır. Bu nedenle, öğrenenlerin temel dil becerilerini geliştirmek için uzun vadeli bir tedavi sürecini içeren büyük örneklem büyüklüklerine sahip ampirik çalışmaların eksikliği söz konusuydu. Sınırlı sayıdaki ampirik çalışmalarda en dikkat çekici konu, MALL'ın kelime bilgisi, konuşma ve dinleme becerilerinin gelişimi üzerindeki etkisinin araştırılmasıydı. Yazma, okuma, dilbilgisi gibi becerilere odaklanan çalışmaların sayısı ise çok azdı.

Öte yandan bir lisansüstü tez tamamlamak, bireyin akademik bir kimliğe sahip olabilmesi için birincil gereklilik olmasının yanı sıra araştırma yeteneği ve akademik yeterliliğin kanıtlanması açısından da en önemli belirleyicilerden biridir (Hart, 2004). Dolayısıyla lisansüstü araştırma programları, yükseköğretimin küresel anlamda gelişmesi için iyi araştırmacıların yetiştirilmesinde kilit bir rol oynamaktadır. Bu durum, ülkelerin bilimsel gelişmişlik düzeyine paralel olarak toplumsal beklenti ve zihniyetin disipline yansımasının da bir sonucudur. Bu bağlamda, lisansüstü MALL çalışmalarının kapsamının incelenmesi önem arz etmekte ve literatürün donatılmasına ihtiyaç duyulmaktadır. Yazarın bildiği kadarıyla, belirli bir ülke bağlamında MALL tezlerine odaklanan derleme çalışmaları ne Türkiye'de ne de başka bir yerde çok fazla ilgi görmemiştir. Yukarıda da belirtildiği üzere, mevcut çalışmalar belirli

veri tabanlarında taranan makale, bildiri ve PGT'lerin kesitsel bir incelemesini içermektedir. Bu derleme çalışması, Türkiye'de üretilen MALL-PGT'leri inceleyerek bu araştırma boşluğunu doldurmayı amaçlamıştır. Başlangıç noktası olarak mobil öğrenme kavramının ilk kez Clark Quinn (2000) tarafından mobil e-Öğrenme olarak literatüre kazandırıldığı 2000 yılı seçilmiştir. Tezlerin taranmasına ilişkin ilk sonuçlar, Türkiye'de ilk MALL-PGT'nin 2009 yılında yazıldığını ortaya koymuştur ve bu nedenle 2009-2022 yılları arasında üretilen PGT'lerin incelenmesine karar verilmiştir.

Yöntem: MALL-PGT'ler, Türkiye'de üretilen tüm PGT'lerin açık erişim olarak yayınlandığı Ulusal Yükseköğretim Kurulu'nun (YÖK) merkezi veri tabanında aranmıştır. İlgili literatüre ulaşmak için, 2000-2022 yılları arasında üretilen PGT'ler "mobil, mobil öğrenme, m-öğrenme, mobil destekli dil öğrenimi, MALL, yabancı dil, dil, eğitim teknolojisi ve multimedya" gibi terimler kullanılarak elektronik ve manuel olarak taranmıştır. Yazar için avantajlı olacağı düşüncesiyle tüm terimler Türkçe olarak aranmıştır. Bunun nedeni, hangi dilde yazılmış olursa olsun PGT'lerin Türkçe başlık ve özet içermesi zorunluluğudur. Bu şekilde, arama terimleriyle eşleşen ilk PGT'lere ilişkin referans kontrol listesi hazırlanmıştır. İlgili herhangi bir PGT'nin gözden kaçma ihtimali göz önünde bulundurularak ikinci bir elektronik arama turu gerçekleştirilmiştir. Arama sonuçları, Türkiye'deki ilk MALL-PGT'nin 2009 yılında üretildiğini ortaya koymuş ve toplam 88 tez elde edilmiştir. Dahil etme/çıkarma kriterlerine bağlı olarak, literatür incelemesi ve yazarın bilmediği dilde yazılmış olan toplam dokuz tez (örneğin; Arapça) araştırma kapsamı dışında bırakılmıştır. Nihayetinde, mevcut çalışmanın amaç ve kapsamına uygun olarak 2009-2022 döneminde tamamlanmış toplam 79 MALL-PGT (60 yüksek lisans ve 19 doktora tezi) tespit edilmiştir.

Sonuçlar: Araştırma sonuçları, Türkiye'de MALL-PGT üretme eğiliminin on üç yıllık dönemde artmaya devam ettiğini göstermiştir. Çoğu MALL-PGT'de MALL, teknoloji destekli öğrenme olarak algılamaktaydı. Bu, mobil destekli dil öğrenimi'nin geleneksel öğrenmeyi tamamlayıcı bir yöntem olarak görüldüğü anlamına geliyordu. Türkiye'deki çoğu MALL-PGT, öğrenenlerin duyuşsal alanlarını incelemeyi ve ardından MALL ortamlarının etkililiğini değerlendirmeyi amaçlıyordu. Ancak, yabancı dil öğretimindeki sorunları çözmeye odaklanan yeni mobil sistemler tasarlamaya amaçlayan araştırmaların sayısında ciddi düşüş vardı. Diğer yandan, Türkiye'deki MALL-PGT'lerin araştırma odağına ilişkin genel eğilim ise, araştırma amaçlarıyla uyumluydu ve çoğunlukla öğrenenlerin MALL ortamlarındaki genel algılarını keşfetmeye yönelikti. Dil becerilerini geliştirmeye yönelik eğilimler dikkate alındığında ise, çoğu çalışma hedef dilde kelime öğretimine odaklanmaktaydı. Dil öğrenenlerin dinleme, okuma, konuşma ve yazma gibi dört temel dil becerisini geliştirmeye yönelik araştırmalar ise, on üç yıllık dönemde çoğunlukla ihmal edilmişti.

Türk MALL-PGT'lerinde benimsenen en yaygın öğretim yaklaşımına ilişkin sonuçlar, MALL uygulamalarının işbirlikçi öğrenme çerçevesinde tasarlandığını ortaya koydu. Ancak, çoğu MALL-PGT'de benimsenen öğretim yaklaşımlarının açıkça belirtilmemesi yönünde artan bir eğilim söz konusuydu. Bu, Türkiye'deki MALL-PGT'lerin önemli bir sınırlamasıdır. Çünkü, tasarlanan MALL ortamlarında deneyimlenen öğrenmenin ve öğretim materyallerinin tasarım ilkelerindeki belirsizliklikler, araştırmaların arka planındaki pedagojik yaklaşımlara ilişkin boşluklar oluşturmaktaydı. Dolayısıyla, amaçlanan öğrenme çıktılarının teorik ve pratik sonuçları ilgili alanyazında MALL adına belirsiz bir tablo çizmektedir.

Araştırma tasarımlarına ilişkin olarak sonuçlar, benimsenen araştırma yöntemleri, öğrenen profili, örneklem büyüklüğü, kullanılan mobil cihazlar, uygulama türleri, hedef dil, veri toplama ve tedavi (müdahale) süresi alt kategorileri altında incelenmiştir. On üç yıllık dönemde, MALL-PGT'lerin çoğunda araştırmacıların birden fazla veri kaynağından yararlanmasını sağlayan karma araştırma yöntemini benimseme eğiliminin arttığı gözlemlenmiştir. Çoğu çalışmada öğrenen profilini üniversitelerin hazırlık sınıfında okuyan öğrenciler oluşturmaktaydı. Bunun nedeni, öğrencilerin yaş aralığına bağlı olarak akıllı telefon sahibi olma oranı ve öğrencilerin tek meşguliyetlerinin hedef dili öğrenmek olmasıyla ilişkili olabilir. Bununla birlikte, Türkiye'deki MALL-PGT'lerin çoğunda örneklem büyüklüğü 100 katılımcıdan küçüktü ve tedavi süreleri en fazla 6 hafta içinde tamamlandı. Bu, istatistiksel olarak genellenebilir sonuçlar için gereken örneklem büyüklüğünün ve uygulama süresinin altındaydı.

Kullanılan mobil cihaz türüne bağlı olarak sonuçlar, akıllı telefonların ve cep telefonların MALL uygulamalarında sıklıkla kullanılması yönünde bir eğilim olduğunu ortaya çıkardı. Ancak son beş yılda mobil cihaz kavramı olarak akıllı telefon yerine "cep telefonu" teriminin sıklıkla kullanıldığı tespit edilmiştir. Bu, mobil cihaz teknolojileri hakkında kavramsal bilgi eksikliğine işaret ediyordu. Kullanılan mobil cihazlar ile ilgili olarak en önemli sonuç ise, çok fazla sayıda araştırmada hangi mobil cihaz türünün kullanıldığına ilişkin bilgi verilmemesiydi. Bu eksiklik, araştırma sonuçlarını etkilemesi muhtemel en

önemli etkenlerden birisidir. Çünkü, kullanılan cihazların türü, öğrenenlerin tasarlanan MALL öğrenme ortamlarındaki katılımı, memnuniyeti ve öğrenme performansı üzerindeki en önemli etkiye sahip faktördür.

Araştırma sonuçları, Türkiye'deki MALL-PGT'lerde en sık Quizizz ve Kahoot! gibi kar amacı gütmeyen uygulamaları kullanma eğiliminin arttığını gösterdi. Bu sonuç, hedef dilde kelime öğretimine yönelik artan eğilimi doğrulamaktadır ve MALL çalışmaları kapsamında yeni mobil uygulamalar tasarlamaya yönelik herhangi bir girişimde bulunulmadığı anlamına da gelmektedir. Diğer yandan, bazı Türk MALL-PGT'lerde, MALL'ı çoğunlukla sınıfta veya sınıf dışında uygulama eğilimi vardı. Ancak, en önemlisi, çoğu çalışmada öğrenme bağlamları belirtilmemiştir ve bu sayı çok yüksektir. Araştırma verilerini toplamada anket tekniğinden sıklıkla yararlanıldığı tespit edilmiştir. Son olarak, Türkiye'de, İngilizceyi MALL ortamlarında yabancı dil olarak öğretme eğilimi artarak devam etmiştir. Diğer dillere yönelik uygulamalar çok azdır ve belirli dönemlerde gerçekleştirilmiştir.

Öneriler; Yukarıda belirtilen sonuçlar, Türkiye'deki MALL-PGT'lerin araştırma tasarımları açısından çok zayıf olduğunu ortaya koymuştur. Özellikle, kullanılan mobil cihazların türü, tasarlanan öğrenme bağlamları ve hedef dilin öğretilmesinde benimsenen öğretim yaklaşımlarının açıkça ifade edilmesi gerekmektedir. Her ne kadar önceki araştırmalar örneklemin küçüklüğünden şikâyet etse de MALL uygulama tasarımlarının kalitesi için en önemli gereklilikler açıkça belirtilirse güvenilir ve genellenebilir bilgi kaçınılmazdır. Çünkü, öğrenenlerin farklı mobil teknolojiler ile farklı öğrenme bağlamlarında hedef dili deneyimleme olasılıkları araştırma çıktılarının farklılık göstermesiyle sonuçlanabilir.

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APPENDICES

Appendix 1: *General information on the MALL-PGTs produced during the period 2009-2022*

No	Name of University	Type	Language of Publication	Level		Total
				Master's	Doctoral	
1	Amasya University	State	TUR	1		1
2	Anadolu University	State	TR/GER/ENG	1	3	4
3	Atatürk University	State	ENG		1	1
4	Bahçeşehir University	Foundation	ENG	10		10
5	Balıkesir University	State	ENG	1		1
6	Başkent University	Foundation	ENG	1		1
7	Boğaziçi University	State	ENG		1	1
8	Bolu Abant İzzet Baysal University	State	ENG	2		2
9	Bursa Uludağ University	State	TUR	2		2
10	Çağ University	Foundation	ENG	2		2
11	Çanakkale 18 Mart University	State	TUR		1	1
12	Dicle University	State	TUR	1		1
13	Düzce University	State	TUR	1		1
14	Ege University	State	TUR	1		1
15	Eskişehir Osmangazi University	State	TUR	1		1
16	Erciyes University	State	TUR	1		1
17	Fırat University	State	TUR	2		2
18	Gazi University	State	TUR	1	2	3
19	Hacettepe University	State	TUR	1		1
20	Ihsan Doğramacı Bilkent University	Foundation	ENG	1	1	2
21	İnönü University	State	TUR	1	1	2
22	İstanbul Aydın University	Foundation	ENG	2		2
23	İstanbul Sabahattin Zaim University	Foundation	ENG	2		2
24	Istanbul University	State	TUR/ENG	1	1	2
25	Istanbul University-Cerrahpaşa	State	ENG	1		1
26	Karabük University	State	ENG	1		1
27	Kocaeli University	State	ENG	1		1
28	Marmara University	State	GER	1		1
29	Mersin University	State	TUR	1	1	2
30	Middle East Technical University	State	ENG	6	5	11
31	Muğla Sıtkı Koçman University	State	ENG	1		1
32	Necmettin Erbakan University	State	ENG	1		1
33	Selçuk University	State	ENG	1		1
34	Süleyman Demirel University	State	TUR	1		1
35	Trakya University	State	GER		1	1
36	Yeditepe University	Foundation	ENG	4	1	5
37	Yıldız Teknik University	State	TUR	2		2
38	Ufuk University	Foundation	ENG	2		2
39	Zonguldak Bülent Ecevit University	State	TUR	1		1
	Sum			60	19	79

**TUR* = Turkish, *ENG* = English, *GER* = German

Appendix 2: *List of doctoral theses reviewed*

No	Author	Title of Thesis	University	Department
1	Başoğlu, E. B. (2022)	A mobile teacher professional development course on digital game-enhanced language learning	Middle East Technical	Curriculum and Instruction
2	Türk, E. (2022)	The effect of mobile technology-supported functional grammar applications on academic achievement and reading comprehension skills and student opinions about the process	Inönü	Turkish and Social Education
3	Uygun, D. (2022)	The effects of current mobile applications used in foreign language teaching on 4th grade students' success in English class	Anadolu	Distance Education
4	Varlı, O. (2022)	Learners' reflections on experiencing augmented reality in the English classroom at tertiary level	Istanbul	English Language Teaching
5	Zeybek, G. (2020)	Multimodal mobile-assisted language learning classroom applications: A study in pre-service teacher education	Anadolu	English Language Teaching
6	Berk, R. R. (2019)	The effect of podcasts on listening comprehension and listening anxiety in teaching Turkish as a foreign language	Gazi	Turkish And Social Sciences Education
7	Göçerler, H. (2018)	Die Effektivität der Smartphone-Applikationen auf die Wortschatzverfestigung und - Erweiterung im Fremdsprachenunterricht	Trakya	German Language and Literature
8	Gürkan, S. (2018)	The effects of hypermedia annotation types and learning styles on mobile assisted vocabulary learning, recall and retention	Yeditepe	English Language Teaching
9	Okumuş Dağdeler, K. (2018)	The role of mobile-assisted language learning (MALL) in vocabulary knowledge, learner autonomy and motivation of prospective English language teachers	Atatürk	English Language Teaching
10	Tanır, A. (2018)	The potential impact of mobile learning on learning achievement within the scope of the vocabulary development in teaching German as a foreign language (The example of Anadolu University)	Anadolu	German Language Teaching
11	Zengin, Ö. (2018)	The effects of an online course designed on mobile technologies on the use of ICT skills, attitudes, and self-efficacy of EFL instructors	Middle East Technical	Curriculum and Instruction
12	Bakay, Ş. (2017)	Investigating the effectiveness of a mobile device supported learning environment on English preparatory school students' vocabulary acquisition	Middle East Technical	CE & IT
13	Özer, Ö. (2017)	The effect of mobile-assisted language learning environment on EFL students' academic achievement, acceptance of mobile learning devices and cognitive load	Mersin	Curriculum and Instruction
14	Mohammed, M. (2016)	Factors related to reported student tablet PC use by EFL high school teachers	Bilkent	English Language Teaching
15	Uz Bilgin, Ç. (2016)	Facilitating English as a foreign language learners' vocabulary learning, task completion and contextual vocabulary exploration processes in a mobile supported situated learning environment	Middle East Technical	CE & IT
16	Gülcü, İ. (2015)	Mobile- assisted Turkish vocabulary teaching as foreign language	Çanakkale Onsekiz Mart	Turkish Language Teaching
17	Çakmak, F. (2014)	Exploring the role of multimedia glosses and strategy use in second language listening comprehension and incidental vocabulary learning in a mobile environment	Boğaziçi	English Language Teaching
18	Ağca, R. K. (2012)	The effect of mobile hypermedia supported printed materials in foreign language learning on vocabulary learning and motivation	Gazi	Education Technology
19	Saran, M. (2009)	Exploring the use of mobile phones for supporting English language learners' vocabulary acquisition	Middle East Technical	CE & IT

**CE & IT* = Computer Education and Instructional Technology

Appendix 3: *List of master's theses reviewed*

No	Author	Title of Thesis	University	Department
1	Aybulut, R. (2022)	Mobiles Lernen im Deutsch als Fremdsprache Unterricht: Analyse von Apps und Anwendungspotenziale	Marmara	German Language Teaching
2	Çelik, G. (2022)	Learners' attitudes towards using apps in English language learning	Istanbul Aydın	English Language and Literature
3	Ergin, D. (2022)	A suggested mobile vocabulary instruction application: Wordbook	Selçuk	English Language and Literature
4	Kıymaz, M. (2022)	Cultivating L2 oral fluency: The learner uptake in video feedback	Bolu Abant İzzet Baysal	English Language Teaching
5	Koç, G. (2022)	The impact of the gamification tool Kahoot! on secondary school students' grammar proficiency	Başkent	English Language Teaching
6	Özhan, S. (2022)	Learners' perceptions toward using social media and technological applications in EFL learning in Turkey	Karabük	English Linguistics and Literature
7	Aslan, A. (2021)	The effects of students' attitudes towards digital technology on English vocabulary learning via mobile devices	Yeditepe	Information Technologies
8	Aydın, M. (2021)	Implementation of SAMR model in ELT: An analysis of students' attitudes, perceptions, acceptance of technology and achievement in the process	Ufuk	English Language Teaching
9	Mohamed Abdelmoneı m Hussein, H. (2021)	Learning Turkish as a foreign language with educational digital games: Analyzing digital Turkish learning games and determining the usability and the views of student's benefits from educational digital games	Bursa Uludağ	Turkish and Social Sciences
10	Söğüt, Ş. (2021)	The effects of mobile-assisted language learning (MALL) on Turkish EFL students' vocabulary learning	Istanbul Sabahattin Zaim	English Language Teaching
11	Zırhlı, P. (2021)	The impact of the collaborative use of a mobile learning application on the vocabulary achievement, retention and autonomy levels of ESP learners	Bahçeşehir	English Language Teaching
12	Atay, E. (2020)	The efficiency of mobile assisted language learning (MALL) in vocabulary learning	Istanbul Sabahattin Zaim	English Language Teaching
13	Davudova, E. (2020)	Investigation of mobile application uses in primary school second grade students in foreign language learning	Fırat	CE & IT
14	Harbelioğlu, U. (2020)	University students' perceptions of mobile assisted language learning	Çağ	English Language Teaching
15	Kanat Küçüktezcan , I. İ. (2020)	The effect of mobile assisted language learning (MALL) related to attitudes of Turkish EFL students	Bahçeşehir	English Language Teaching
16	Kuşuçuran, B. N. (2020)	An experimental study on teaching digital game-based English words	Erciyes	Curriculum and Instruction
17	Öngören, Ö. (2020)	Exploring the wear out effect of vocabulary development in a collaborative gamified English classroom	Bahçeşehir	Educational Technology
18	Soylu, S. (2020)	The effects of using concept cartoon in teaching idiom on the students' academic success and attitudes (Example of Toondoo practice)	Düzce	Turkish Language Teaching
19	Tilgel, H. (2020)	An examination of usability status of a mobile e-book developed for foreign language education through user experience	Hacettepe	CE & IT
20	Aygül, F. (2019)	Effects of the mobile application, Kelime diyarı, on learning English vocabulary	Amasya	CE & IT
21	Aygül, S. Ö. (2019)	Pre-service EFL teachers' current practices and perceptions of mobile assisted language learning	Middle East Technical	English Language Teaching
22	Bahadır, D.	Using web 3.0 technologies for teaching English to the primary level students: A study on augmented reality	Istanbul University-Cerrahpaşa	English Language Teaching
23	Büyükmeşe, A. (2019)	The user interface design of mobile assisted language learning-based applications	Yeditepe	Visual Communication Design
24	Çevikbaş, G. (2019)	The impact of Quizizz on the vocabulary development and motivation of Turkish EFL learners	Bahçeşehir	English Language Teaching
25	Çinar, İ. (2019)	The effects of Quizlet online vocabulary application on secondary school students' vocabulary learning and attitudes towards English	Eskişehir Osmangazi	Educational Sciences
26	Demirkesen, B. (2019)	The effects of a mobile phone application on Turkish EFL students' grammar learning	Necmettin Erbakan	English Language Teaching
27	Güven, R. (2019)	Attitudes of ELT students and in-service teachers towards using mobile assisted language learning	Kocaeli	English Language Teaching
28	Koçer Aydın, P. (2019)	Students' tendencies towards learning vocabulary through mobile computer supported collaborative learning (MCSCL) - A scale development study	Bahçeşehir	Educational Technology
29	Öztürk, T. (2019)	Investigating a connectivist mobile learning process for improving English oral skills in high school	Anadolu	Curriculum and Instruction
30	Pozharina,	The effects of using mobile augmented reality integrated materials on	Istanbul	English Language

	G. (2019)	students' motivation and attitude level in EFL academic writing classes	Aydın	and Literature
31	Tandoğan, B. (2019)	Investigating the effectiveness of arcs based instructional materials enhanced with augmented reality on ESP vocabulary achievement and motivation	Middle East Technical	CE & IT
32	Uçar, T. (2019)	Classification and evaluation of mobile applications for learning Turkish as a foreign language and students' opinions regarding their benefits	Uludağ	Turkish Language Teaching
33	Yakar, Ü. (2019)	The effect of seamless learning approach on learner achievement and attitudes in teaching EFL	Inönü	Curriculum and Instruction
34	Anlamış, Z. (2018)	Investigating effect of video presentation via mobile phone on high school students' vocabulary learning and material motivation	Mersin	Curriculum and Instruction
35	Bostan, D. (2018)	The role of English language teachers' TPACK regarding high school students' acceptance of mobile learning tools	Muğla Sıtkı Koçman	English Language Teaching
36	Çelik, Ö. (2018)	The effect of using mobile applications on literal and contextual vocabulary instruction	Balıkesir	English Language Teaching
37	Gökben, C. (2018)	The effects of text annotation on second language reading comprehension in the context of mobile environment	Middle East Technical	CE & IT
38	Kayahan Uras, S. (2018)	Effects of DYNED mobile software's on high school students' academic achievement of English lessons	Ege	CE & IT
39	Demirer, F. (2017)	English instructors' attitudes toward mobile assisted language learning: A descriptive study	Çağ	English Language Teaching
40	Doğan, G. (2017)	The effects of tablets on students' English vocabulary learning	Ufuk	English Language Teaching
41	Ersoy Özer, Y. (2017)	Mobile- assisted vocabulary learning and its effect on vocabulary recall	Yeditepe	English Language Teaching
42	Gümüş, H. (2017)	The impact of learning environment based on blended instructional design on secondary school students' learning achievement and retention of English idioms through concept cartoons	Yıldız Technical	CE & IT
43	Körlü, H. (2017)	The impact of Quizlet on performance and autonomy in vocabulary learning of Turkish EFL learners	Bahçeşehir	English Language Teaching
44	Köse, T. (2017)	Investigating the use of a mobile flashcard application Rememba on the vocabulary development and motivation of Turkish EFL learners	Bahçeşehir	English Language Teaching
45	Noyan, E. (2017)	WhatsApp: A mobile instant messaging tool to enhance students' writing performance through dialogue journaling	Yeditepe	English Language Teaching
46	Özcan, M. S. (2017)	Usage of mobile applications in language teaching: A research on teaching collocations	Yıldız Technical	CE & IT
47	Avcı, H. (2016)	A case study on mobile-blended collaborative learning in an English as a foreign language (EFL) context	Bahçeşehir	CE & IT
48	Doğan, Ö. (2016)	The effectiveness of augmented reality supported materials on vocabulary learning and retention	Abant İzzet Baysal	English Language Teaching
49	Hamad, S. (2016)	The effect of mobile application voice of America, special English (VOA, SE)) for extensive reading to improve students' reading comprehension and vocabulary knowledge	Bahçeşehir	English Language Teaching
50	Tosun, E. (2016)	Investigating the effects of location based augmented reality game design for learners of Turkish as a foreign language	Süleyman Demirel	Education Technology
51	Tutal, C. (2016)	The perspectives of English as a foreign language (EFL) instructor on the use of mobile applications as educational tools	Bahçeşehir	English Language Teaching
52	Akkuzu, M. (2015)	A game-based application on English vocabulary acquisition: A case study in the EFL context	Middle East Technical	Information Systems
53	Çelik, S. (2015)	Investigating the effect of student response system supported think-pair-share pedagogy on preparatory school EFL students' vocabulary achievement	Middle East Technical	Educational Sciences
54	Zengin Ünal, Ö. (2015)	Investigating the use of mobile-based vocabulary notebooks on students' vocabulary achievement in English language learning	Middle East Technical	Curriculum Development and Instruction
55	Hayta, F. (2014)	An examination of language learning strategies with reference to computer and mobile phone technology	Dicle	English Language Teaching
56	Yüksel, A. S. (2014)	Personalized mobile English learning with self-regulation assistance	İstanbul	Computer Engineering
57	Çelik, A. (2012)	The effect of QR code assisted mobile learning environment on productive vocabulary learning in foreign language studies and student reviews: The example of mobile dictionary	Gazi	CE & IT
58	Yıldırım, N. (2012)	Mobile learning in foreign language education with educational games	Fırat	CE & IT
59	Başoğlu, E. B. (2010)	A comparison of undergraduate students' English vocabulary learning: Using mobile phones and flash cards	Zonguldak Karaelmas	Curriculum Development and Instruction
60	Korkmaz, H. (2010)	The effectiveness of mobile assisted language learning as a supplementary material for English language teaching coursebooks	Bilkent	English Language Teaching