A thematic review of using digital teaching technologies in Turkish language teaching

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Article Info	Abstract
      Review Article	When examining the current thematic analysis studies on digital teaching technologies in learning-teaching processes, three main limitations were encountered. The first of these limitations is that most of the thematic analysis studies dealt with all studies conducted in the literature, regardless of country. The second limitation of the studies conducted in the literature is that the existing thematic analysis are quite old. The last of the limitations is that the thematic analyzes of the studies on the use of digital teaching technologies in language education or teaching-based courses were mostly carried out in the field of foreign language teaching / second language teaching. This research aims to examine the literature on the use of digital teaching technologies in Turkish language teaching studies and to reveal a synthesis of this; get a general idea of the frequency of research in this field; to present the general framework of researches published in different regions, different journals and studied in different universities as thesis and to reveal how various variables (technology type, index of published journals, thesis type, etc.) affect the use of technology in Turkish language teaching studies. The research was designed in the thematic content analysis design, which is a type of content analysis. The general characteristics, reasons, aims, method information, results, and recommendations of the studies examined in this study were presented by analyzing them. The research results revealed that there is still a need for studies on using digital teaching technologies in Turkish language teaching studies. There are almost no studies, especially in some learning areas. Also, it has been concluded that digital teaching technologies are highly effective in learning areas of reading and writing. High socioeconomic levels and female students use technology better in the Turkish language course, and many positive and negative aspects of technology have been discovered for students.

1. Introduction

Our world has entered a new period of change with technological developments in the last century. To keep up with this change, people have had to improve some of their knowledge, set new goals, and develop new habits and be open to new learning (Erkman et al. 2019). Turkey announced in 2018 "Digital Turkey," the road map was a follower of this change; It has set its goal to transform in the industrial field with leading technologies such as artificial intelligence, autonomous robots, big data, and advanced analytics, cloud computing, augmented and virtual reality, internet of things, smart sensor technologies and cybersecurity (Republic of Turkey Ministry of Industry and Technology [MoIaT] 2018). However, the change mentioned

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above has impacted the industry and all areas related to human and social life, especially those that have significantly affected educational activities. Reports and documents published by various institutions also support this view. For example, the European Commission (2008) stated that digital technologies have the potential to improve and change necessary activities in educational environments, and OECD (2016) stated that information and communication technologies improve students' traditional learning experiences and these technologies will act as a catalyst if a similar change process occurs. The Ministry of National Education, on the other hand, set two main goals under the heading of 'digital content and skill-supported transformation in learning processes' in the 2023 Education Vision document (MoNE 2020), which was prepared to raise individuals equipped with the skills of the age and the future, and aimed to integrate learning-teaching processes into technological change with the actions to be taken (Ekoç 2020). Through these opinions, it can be said that in the future, learning-teaching activities will be mostly based on digital teaching technologies (Şen and Hava 2020), and these technologies will be used more frequently in mother tongue education and other fields (Birinci 2020). Because the studies conducted, have shown that digital teaching technologies can increase learners' learning performance/motivation and provide more effective learning (Shadiev and Huang 2020). For this reason, for possible practical tools that may arise, developments in digital teaching technology should be followed carefully, how these digital teaching technologies can be used for language education or teaching, and the functionality and up-to-dateness of the technologies used should be reviewed more frequently. Thus, by comparing the practices developed in the past, today, and in the future, it will be possible to benefit from the most effective and correct source in shaping the learning-teaching processes.

The potential impact of technological developments on learning-teaching processes has pioneered the development of various digital applications, tools, and activities that help students better understand concepts, phenomena, and theories (Chauhan 2017; Kan and Murat 2020; Koong and Wu 2011; Li and Lim 2008), an active learning environment was provided to the students with the development and use of innovative, interactive-based technological applications (de Koning-Veenstra et al. 2014). Besides, as a result of the widespread use of technological devices such as computers, tablets, and mobile devices, and they are reaching more people, the application demands increased, leading to an increase in the number of digital applications developed (Yılmaz and Batdı 2016). These developments in recent years have provided educators with the opportunity to use digital teaching technologies in their learning-teaching processes. This opportunity has been used in the field of language education as in every field. It is aimed to improve students' language skills by using different digital teaching technologies, primarily virtual and augmented reality applications, and the use of these technologies has become increasingly common (Shadiev et al. 2019). As a result of the conducted researches, it has been revealed that the use of digital teaching technologies in the learning and teaching process has a positive effect on student achievement at the primary, secondary, high school, and university levels (Bax 2011). The positive impact of digital teaching technologies on students' academic achievement is also supported by the research (Broekhuizen 2016) conducted within the scope of developing basic language skills within mother tongue education.

1.1. Justification of the Study

Digital transformation, which has an impact on educational activities and in all fields related to human and social life, has increased the number of in-class applications and scientific studies related to the use of technology in education. These studies in the field of educational sciences constitute an undiscovered large working group for thematic analysis studies. Thematic analysis studies examine the rationale, purpose, method, results of the studies conducted by following different research methods and the suggestions stated in these studies and provide important information based on a broad perspective to the readers; It is promoted by prominent journals in the field of social and behavioral sciences, as it focuses on the main parts of these studies by discussing a wide range of studies on the subject under investigation (Eden 2002; King and He 2006).

In order to provide a comprehensive overview of the researches on the use of digital teaching technologies in learning-teaching processes, thematic analysis studies have been previously conducted by various researchers. However, when examining the current thematic analysis studies on digital teaching technologies in learning-teaching processes, three main limitations were encountered. The first of these limitations is that most of the thematic analysis studies dealt with all studies conducted in the literature, regardless of country. This situation has caused thematic analysis studies, focusing on using digital teaching technologies in learning-teaching processes, on being incomplete in describing countries' current situation on this issue. However, many variables such as economic power, digital technology infrastructure, technology perception, teacher-student competencies, and family factors require countries to be considered separately to determine the use of digital technology in learning-teaching processes more clearly (Nettleton 1991). Therefore, this research has dealt with the Turkish language of learning and teaching that deals with digital technology in the process and the work carried out in Turkey; the researchers about the work carried out in this field in Turkey were intended to give a general idea. The second limitation of the studies conducted in the literature is that the existing thematic analysis (Göktaş et al. 2012; Kurtoğlu and Seferoğlu 2013; Şimşek et al. 2008; Tatar et al.2013) are quite old. In this respect, the studies mentioned above do not provide information on studies that have increased in recent years and focus on using different digital teaching technologies in Turkish education. The last of the limitations is that the thematic analyzes of the studies (Alyaz and Akyıldız 2018; Duman, Orhon and Gedik 2015; Merzifonuoğlu and Gonulal 2018, Baturay, Yıldırım and Daloğlu 2009; Saran, Seferoglu and Cagıltay 2009) on the use of digital teaching technologies in language education or teaching-based courses were mostly carried out in the field of foreign language teaching / second language teaching. In this context, Turkey's private digital teaching technologies Turkish language education to get a general idea about research dealing with space use, it was decided to undertake a thematic analysis of prospective studies to make more accurate forecasts and see the gap in the literature. With this research to be carried out, it is aimed to achieve the following goals;

• To examine, synthesize, and adequately integrate the literature created by research on the use of digital teaching technology in Turkish language education.

• To get a general idea of the frequency of research conducted in the literature in question, Turkey has carried out in different places, have been published in different journals, and completed as a thesis in different universities put forth the general framework of research.

• To determine the distribution of various variables (the type of digital teaching technology, index of published journals, thesis type) in studies on the use of digital teaching technology in Turkish language education.

2. Methodology

The research conducted is designed in a thematic content analysis pattern, a type of content analysis. Thematic content analysis studies are based on the principle of interpreting, evaluating, and synthesizing the main parts of the studies carried out in a particular field, such as general trends, results, and suggestions, with a critical point of view by creating specific themes and codes (Au 2007; Çalık and Sözbilir 2014; Çalık et al. 2008). Thus, it is ensured that all available resources on a particular subject are examined. In this respect, these studies are a rich resource for researchers, educational scientists, and teachers working in the relevant field and having difficulty in accessing all resources (Çalık et al. 2005; Çalık et al. 2015). The study method in question also constitutes a rich reference resource for educational researchers, teachers who implement educational processes, and education policymakers in terms of revealing the similar and diverging aspects of studies that deal with a specified subject from different dimensions (Çalık et al. 2005; Gül and Sözbilir 2015). This study aimed to examine the studies on the use of digital teaching technology

in Turkish language education and present the general trends, results, and suggestions of the studies under specific themes/codes; and in this direction, the thematic content analysis method was used.

2.1. Data Collection

Web of Science, ERIC, EBSCO, Google Academic, National Academic Network and Information Center [NANaIC] National Database, and Council of Higher Education Institution [CoHE] Thesis Center databases were scanned to reach the studies 2010-2019 on the use of digital teaching technology in the field of Turkish language education. The reason for the inclusion of the studies since 2010 in the thematic analysis in this study is that there are other review studies recently. However, we did not come across any review studies on this subject until 2019, when the research started. This process is a limitation of this research. While searching the databases to find relevant studies, "digital technology, digital teaching technology, Turkish lesson, reading, writing, listening, speaking, augmented reality, cartoon, electronic reading, electronic writing, screen reading, digital story, digital writing, internet, computer" words are preferred as keywords. Studies in the field of teaching Turkish as a mother tongue were taken into account in the study. Studies in teaching Turkish to foreigners and teaching secondary languages were not included in the study's scope. In this study, Turkey addressed peer-reviewed articles published in national and international journals, and the thesis registered in the CoHE central thesis has been included. However, the possibility of finding some studies that could not be reached is a limitation of the research. In line with the criteria and principles explained above, 75 studies, including 50 articles and 25 thesis studies, have been included in the research conducted. The list of these researches is shared in the appendix.

2.2. Data Analysis

The data analysis process started with transferring the studies included in the research to the Nvivo package program. After the relevant studies were transferred to the Nvivo package program, they were analyzed according to the program features' content analysis method (Bazeley and Jackson 2013). As a result of this examination, specific themes, codes, and sub-codes were determined. The themes determined are "the reasons for the studies, the purpose of the studies, the method information of the studies (design, sample size, and sample type), the results of the studies and the recommendations of the studies." Also, similar thematic analysis studies previously performed for the analysis phase (Ünal et al. 2006; Kurnaz and Çalık 2009; Bağ and Çalık 2017; Kozaklı Ülger et al. 2020) were also examined, and It has been determined that these studies focus on similar themes/categories. Besides, the general characteristics of the studied studies were also included in the analysis. Accordingly, the distribution of articles/theses by types, distribution of articles/theses by years, and distribution of the technology used in the studies according to the learning areas were also examined. An analysis example is presented below.

Table 1.

An Example of the Analysis of the Studies Included in the Study

Rationale	Purpose	Design	Sample size	Sample type	Conclusion	Suggestion
Lack of academic study	Determining the impact (success)	Quantitative research (quasi-experimental)	33	Middle school student	Positive effect	(1) Using technology with different techniques (effect)

All the studies discussed were analyzed in the example above, and the relevant themes and codes / sub-codes were determined. The presentation of the findings conducted by considering the relevant theme and code / sub-codes. Information on the data collection and analysis process of the research is shown in Table 2.

Table 2.

Data Collection and Analysis Process

Date	Action Taken
10.02.2020/05.03.2020	Scanning databases to reach relevant studies
07.03.2020	Processing the obtained resources into the Nvivo package program
08.03.2020/27.04.2020	Theme, code and subcode study
28.03.2020/15.04.2020	Submission of the created theme, code, and sub-codes to expert opinion
01.04.2020/10.04.2020	Examining the data analysis of different thematic analysis studies
16.04.2020/25.05.2020	Placing the contents in theme, code, and sub-codes according to the evaluations of expert opinions
04.05.2020/15.05.2020	Re-checking databases in order to avoid data loss
17.05.2020	Presenting the findings by processing all data into themes, codes, and sub-codes

2.3. Validity and Reliability of the Study

In the study, firstly, databases were examined meticulously by two researchers in order to prevent data loss, and screening studies were carried out. At the stage of determining the theme, code, and sub-code, analysis processes in other thematic analysis studies were examined, and Nvivo package program reviews were included in the process. Each study was handled one by one, and the other study was not started before one study was completed to avoid errors. After the theme, code, and sub-code determination processes were completed, a return was made, and the compatibility of the raw data with the theme, code, and sub-code was rechecked. The process was presented continuously to expert opinion, and expert opinions influenced the analysis's realization process. The researchers carried out the stages of determining the theme, code, and sub-code. The theme, code, and sub-codes of the three studies determined before the determination of the theme, code, and sub-codes of all studies were determined by both these researchers and two academic staff who are experts in qualitative research. Consequently, the agreement between coders was calculated according to the formula of Miles and Hubermann (1994) [Reliability = Agreement / (Agreement + Disagreement) x100], and the agreement rate was determined as 0.92. Based on this result, the researchers continued the process of determining the theme, code, and sub-codes of other studies. All themes, codes, and sub-codes determined at the end of this process were presented to the opinion of an academic specializing in content analysis. The process was explained in detail, and the validity and reliability control were ensured by revealing the procedures in detail.

3. Findings

3.1. Findings Regarding the General Features of the Studies (Journal and Thesis Types and the Years of Publication)

Table 3.

Distribution of Articles by Journal Types

Index	f	%
SSCI	4	8
ESCI	1	2
Education area index *	6	12
TR index [NANaIC]	27	54
Other index	12	24
Total	50	100

*Eric, ISI, Education Full Text, H.W. Wilson

When the studies on the use of digital education technologies in Turkish language education are examined, it was determined that a total of 50 studies were carried out in the relevant period. It was observed that four of the conducted studies were scanned in the SSCI index and one in the ESCI index. It has been determined

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that the vast majority of the studies were published in journals scanned by the TR [NANaIC] index. It was determined that 24% of the related researches was published in journals scanned by other national and international indexes.

Table 4.

Distribution of Thesis

Thesis Type	f	%
Master Thesis	21	84
PhD thesis	4	16
Total	25	100

According to Table 4, it was seen that 21 of the thesis studies examined within the scope of this study were master's theses, and four were doctoral dissertations. Master theses represent 84% in the distribution.

Table 5.

Distribution of Studies by Years

Publication years of the studies	SSCI	ESCI	Education area index	TR index [NANaIC]	Other index	Master Thesis	PhD thesis	Total	Percentage
2019	---	---	2	5	---	10	1	18	24
2018	---	1	---	4	2	2	2	11	14.67
2017	---	---	2	5	4	---	---	11	14.67
2016	1	---	1	3	---	---	---	5	6.67
2015	1	---	1	5	---	1	1	9	12
2014	---	---	---	---	4	1	---	6	8
2013	---	---	---	3		4	---	7	9.33
2012	---	---	---	1	2	1	---	4	5.33
2011	---	---	---	---	---	1	---	1	1.33
2010	2	---	---	1	---	---	---	3	4
Total	4	1	6	27	12	21	4	75	100

According to Table 5, the number of studies has increased from the past to the present, and especially in 2019, a considerably higher number was reached. It turns out that more than half of the research has been carried out after 2017. It is observed that most of the thesis studies have been carried out in the last two years. In this context, the increasing number of studies in recent years reveals the necessity of this research.

3.2. Findings Regarding the Content Features of the Studies

Findings regarding the distribution of the type of digital teaching technology used in the studies according to learning areas

The studies included in the study's scope, which types of digital teaching techniques are used, and which learning areas the research focuses on were examined. Accordingly, when these studies' contents were examined, it was determined that the focus was on four essential learning areas (reading, writing, speaking, listening), Turkish course success, and first reading and writing teaching. The types of digital teaching technology used are divided into sixteen among themselves; however, since some studies do not specify which type of digital teaching technology is used, they are presented separately.

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Table 6.

Distribution of the Type of Digital Instructional Technology Used in Studies According to Learning Areas*

	Reading	Writing	Speaking	Listening	Turkish course success	First reading and writing	Total	Percentage
Digital story	6	8	---	3	8	---	25	30.86
Computer/web-site	1	---	---	---	1	1	3	3.70
Animated cartoon	---	---	---	---	1	---	1	1.23
Multimedia	1	---	---	---	1	---	2	2.47
Digital children's book		---	---	---	1	---	1	1.23
Digital literacy	3	4	---	---	4	---	11	13.58
Digital game		1	---	---	3	---	4	4.94
Digital writing		2	---	---	---	---	2	2.47
Educational software		---	---	---		1	1	1.23
Screen reading	15	---	---	---	---	---	15	18.52
e-reading	1	---	---	---	---	---	1	1.23
Social media	1	1	---	---	---	---	2	2.47
Story bird	---	1	---	---	---	---	1	1.23
Wattpad	---	1	---	---	---	---	1	1.23
Web- based system	---	---	---	1	---	---	1	1.23
Webquest	---	---	---	---	1	---	1	1.23
Unspecified	1	3	---	---	4	1	9	11.11
Total	29	21	0	4	24	3	81	100
Percentage	35.80	25.93	0	4.94	29.63	3.70	100	---

* Some studies have been conducted with more than one learning area and type of digital teaching technology.

When the learning areas of the research are examined, it is seen that 35.80% of the mentioned studies are carried out in the field of reading learning. After the reading, the Turkish course success with 29.63% and the studies for writing with 25.93% draw attention. No research focusing on speaking has been found. When analyzed according to the type of digital teaching technology they use, it is seen that a significant proportion (30.86%) of the studies are conducted with the use of digital stories. After using digital stories, screen reading comes with 18.52% and digital literacy, with 13.58%. In 11.11% of the conducted studies, it was not specified which digital teaching technology was used.

Findings regarding the distribution of the type of digital teaching technology used in the studies according to learning areas

The reasons for researching the use of digital teaching technologies in Turkish language education are presented in Table 7.

Table 7.

Distribution of Studies by Reasons*

Theme	Code	f	%
	Lack of work in the field	35	26.12
	Example of digital technology-education integration	28	20.90
	The widespread use of digital teaching technologies	25	18.66
	The importance of using digital teaching technology in Turkish education	10	7.46
Reason	The need to reveal the positive/negative aspects of digital technology	6	4.48
	The role of teachers and prospective teachers in using digital teaching technology	5	3.73
	Not knowing how to use digital teaching technologies in Turkish education	5	3.73
	The necessity of diversifying activities in Turkish education	4	2.99

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	f	%
The importance of the learning areas covered and their relationship with digital teaching technology	4	2.99
The necessity of demonstrating the digital competence of teachers	3	2.24
Misuse of digital teaching technologies	3	2.24
Challenges related to the learning areas covered	2	1.49
Shortcomings in the curriculum	1	0.75
The need for a design to control digital platforms	1	0.75
The necessity of demonstrating the digital competence of students	1	0.75
Unspecified	1	0.75
Total	134	100

*Some studies have provided more than one reason.

By Table 7, the lack of academic study in the relevant field is the most expressed reason (26.12%) by the studies examined. Due to the lack of studies in the field, the lack of exemplary implementation for applying/integrating digital education technologies in Turkish education is also among the top reasons for realizing the studies. The widespread use of digital education technologies and the importance of adapting them to teaching processes is another justification. The importance of using digital teaching technologies in Turkish education and the necessity to reveal the positive/negative aspects of technology are the other reasons that come to the fore. In a study conducted, the justification was not clearly stated.

Findings regarding the purposes of the studies

One of the points addressed within the thematic analysis study's scope is the aims of the research. The purpose/objectives of the researches in the relevant field are presented below.

Table 8
Distribution of Studies by Purpose

Theme	Code	Subcode	f	%
	Status detection		27	36
	Determining the impact	Success	22	29.33
		Success + attitude	1	1.33
		Attitude	1	1.33
Purpose	Getting opinion		15	20
	Introducing the use of Digital Technologies in Turkish language education		5	6.67
	Measuring tool development		3	4
	Creating a skill description and proposing to the program		1	1.33
Total			75	100

*Some studies have provided more than one reason.

When the aims of the researches on the use of digital teaching technologies in Turkish language education are examined, it is seen that 36% of the related studies were carried out to determine the situation. The studies aimed at determining the situation focused on the prevalence of the use of digital teaching technologies, the positive/negative aspects of digital technologies, the digital teaching technology competencies of teachers, teacher candidates, and students, how digital teaching technologies are used in Turkish language education and the mistakes made in this process. Studies aiming to test the effect of digital teaching technologies on a dependent variable, success, and attitude variables were discussed. Studies aiming to test the effect of digital teaching technologies on a dependent variable constitute 32% of all studies. 20% of the research focused on teachers' and students' opinions about the using digital teaching technologies in Turkish lessons. Introducing digital education technologies in Turkish education, developing measurement tools, and making suggestions for the curriculum by creating a skill definition are the other codes.

Findings regarding the methods, sampling, and data collection tools of the studies

This section analyzes the method-design, sample size, and sample type in which the studies are carried out. While reporting the analyzes carried out under the method theme, the names of methods and design expressed in the studies were used as stated in the relevant publication. The method information of the research was presented as a code and the pattern information as a subcode. Under the theme of sample size, certain intervals were determined, and analyzes were made on how many people were conducted. Since some studies were compilation and document analysis, sample size were not included, and these studies were coded as out of scope. In the sampling type, information about who the participants of the studies are is meant. The method-design, sample size, and sample types preferred in the studies were analyzed separately, and the findings are presented below.

Table 9.

Distribution of Studies by Method

Theme	Code	Subcode	f	%
Method-Design	Quantitative	Semi-experimental with experimental and control groups	14	18.67
		Single group experimental	1	1.33
		Control group design with only post-test	1	1.33
	Qualitative	Case study	8	10.67
		Design not specified	6	8
		Phenomenology	4	5.33
		Case study	1	1.33
		Descriptive	1	1.33
	Mixed	Design not specified	3	4
		Simultaneous	2	2.67
		Embeded	2	2.67
		Sequential explanatory	1	1.33
		Explanatory	1	1.33
	Screening	Descriptive	14	18.67
		Relational	3	4
		Cross-sectional	1	1.33
	Compilation		6	8
	Scale-rubric development		3	4
	Document review		2	2.67
	Action research		1	1.33
Total			75	100

When Table 9 is examined, it is seen that 21.33% of the studies conducted are quantitative research, 26.67% qualitative research, 12% mixed research, and 24% screening research. The majority of quantitative studies are designed in a quasi-experimental design with experimental and control groups. While the case study is more preferred in qualitative studies, the number of studies (f = 6) without any design is relatively high. Also, in mixed-method studies, a significant ratio (4%) was not the preferred design, but instead, it was stated that the research was only a mixed method. It is seen that screening research focuses on descriptive researches. Apart from these methods, review studies have been preferred more, with 8% among all studies. Other themes are scale-rubric development, document analysis, and action research methods, which are other methods preferred in research.

Table 10.

Distribution of Studies by Sample Size

Theme	Code	f	%
Sample Size	Out of scope	10	13.33
	0–30	19	25.33
	31–100	32	42.67
	101–200	4	5.33
	201–300	3	4
	301–500	3	4
	500 and above	4	5.33
Total		75	100

According to Table 10, it was determined that 42.67% of the studies on the use of digital teaching technologies in Turkish language education were carried out with 31-100 participants. Afterward, the studies conducted with up to thirty participants are intense (25.33%). In 13.33% of the related studies, the sample size was not given due to the research approach. Finally, it was seen that there were four studies conducted with five hundred or more participants.

Table 11.

Distribution of Studies by Sample Type*

Theme	Code	Subcode	f	%
Sample Type	Student	Pre-school	1	1.32
		Primary school	22	28.95
		Middle School	18	23.68
	Teacher	Primary-school Teacher	8	10.53
		Turkish language teacher	3	3.95
	Prospective teacher		14	18.42
	Document		5	6.58
	Out of scope		6	7.89
Total			76	100

* Some studies have been conducted with more than one sample type.

When Table 11 is examined, it is seen that more than 50% of the studies were conducted with primary and secondary school students. It is noteworthy that both student and teacher samples are studied more intensively at the primary school level. Studies were conducted with 18.42% of pre-service teachers in the conducted research. Studies were carried out by examining the documents in five studies. Since six studies are a compilation, method information is not included. These studies have only sections that include an introduction and conclusion. Therefore, a sample type was not specified for these studies; it was named out of scope.

Findings regarding the results of the studies

In the study carried out, the research results were included in the analysis and examined under the themes of situation determination, intervention effectiveness, opinion, and measurement tool development. Seventeen codes were reached under these themes. The research results were presented according to the codes under the relevant themes, the frequency, and percentage of the codes.

Table 12.

Distribution of Studies by Results*

Theme	Code	f	%
Status detection	Examining the use of digital teaching technology in Turkish education according to various variables	10	8.20
	The necessity of using digital teaching technology in Turkish education	8	6.56
	Teacher competence	7	5.74
	Digital classic comparison	7	5.74
	School equipment	6	4.92
	Curriculum	5	4.10
	Digital education technology usage areas	5	4.10
	Student competence	3	2.46
	Level of benefiting from digital education technology	3	2.46
	The adequacy of technological tools	2	1.64
Intervention Effectiveness	There is a positive effect.	19	15.57
	No positive effect	5	4.10
Opinion	Positive aspects / points / benefits of digital teaching technology	24	19.67
	Negative aspects / points / benefits of digital teaching technology	9	7.38
	Use cases and forward thinking	6	4.92
Measuring tool development	A valid and reliable scale	1	0.82
	A valid and reliable rubric	2	1.64
Total		122	100

* Some studies have reached more than one result.

According to the results of the studies discussed within the study's scope, it was determined that more results were obtained regarding the analysis of the use of digital teaching technology according to various variables under the theme of situation determination. In these studies, especially in the analyzes made according to the gender variable, it was concluded that female students were more successful than boys. It has been revealed that students with high socioeconomic status use digital teaching technology in Turkish lessons more. The fact that the using digital teaching technology in Turkish education is necessary was emphasized in the conclusion part of eight studies. The conducted studies concluded that teachers generally lacked technical knowledge and could not ensure the efficient adaptation of instructional technologies to Turkish education processes. In the conclusion parts of the research, it has been determined that the comparisons of digital teaching technologies and classical methods are relatively high, and the positive/negative aspects of both are expressed. Under the theme of intervention effectiveness, it has been found that the vast majority of impact studies have reached a positive effect in favor of the use of digital teaching technology. In studies that did not detect a positive effect in favor of digital teaching technology, it was concluded that reading on the screen generally (f = 3) did not have any positive effect on reading comprehension. Apart from this, it has been observed that there is a significant difference in favor of the experimental group (15.57%) in studies aiming to determine the effects of other types of digital teaching technology on the relevant learning areas. Under the theme of opinion, the results obtained from the opinions of the teachers, teacher candidates, and students regarding the use of digital teaching technologies in Turkish education were evaluated. Under this theme, the positive/beneficial aspects of digital teaching technologies are generally emphasized. According to the research results, it is understood that there are more positive opinions about the use of digital teaching technologies in Turkish education. These opinions; It is stated that digital teaching technologies increase students 'interest in the course, help them gain reading habits, and support students' permanent learning when taught on digital teaching technologies. However, negative opinions were expressed in nine studies. These opinions are that classroom management is difficult when lessons are taught using digital teaching technologies. Technology harms students in terms of health,

and attention should be paid to harmful content in technological environments. Under the theme of developing measurement tools, it was concluded that valid and reliable measurement tools were added to the literature.

Findings regarding the recommendations of the studies

In the study, the examined studies' suggestions were also analyzed, and the themes for whom these suggestions were directed were specified. It has been observed that the suggestions expressed in the investigated studies are directed at the Ministry of National Education, teachers, and researchers.

Table 13.

Distribution of Studies by Suggestions *

Theme	Code	f	%
Ministry of National Education	Training teachers for the effective use of digital teaching technologies in Turkish lessons	36	16
	Training students for the effective use of digital teaching technologies in Turkish lessons	19	8.44
	Creating resources for the effective use of digital teaching technologies in Turkish lessons	18	8
	Updating the curriculum	4	1.78
	Adding technology and literacy courses to the curriculum	6	2.67
	Family Education	3	1.33
	Setting up a technologically robust internet infrastructure	2	0.89
Teacher	Use of digital teaching technologies in lessons should be ensured	35	15.56
	Individual effort (for practical use and prevention of digital divide)	3	1.33
Researcher	Conducting studies with larger samples	31	13.78
	Conducting studies on the effect of different technological tools/techniques/equipment	24	10.67
	Impact studies on different skills/learning areas	13	5.78
	Conducting studies with different research directions	11	4.89
	Conducting studies with different sample groups	6	2.67
	Conducting studies on the relationship with different variables	4	1.78
	Performing more level determination studies (teacher and student)	3	1.33
	Conducting studies on the effect of using digital education technologies together with different techniques/strategies	1	0.44
Unspecified	No recommendation expressed	6	2.67
Total		225	100

* In some studies, more than one recommendation has been presented.

When the Ministry of Education suggestions are examined, it is noteworthy that it is highly recommended to train teachers and students in the use of digital teaching technologies in Turkish lessons. Apart from this, technology-based digital resource development is also among the highly recommended codes. Suggestions offered to teachers are towards using digital teaching technologies in Turkish lessons in a practical way. Most studies emphasized that teachers should use digital teaching technologies in their lessons. When the suggestions presented to the researchers are examined, conducting studies with a larger sample ranks first with 13.78%. Apart from this, using different technological tools, focusing on different skills/learning areas, and choosing different research methods are among the suggestions identified under this theme and presented by many studies.

4. Conclusion and Discussion

When the research findings are examined, the research published in national and international journals is frequently scanned in the TR [NANaIC] index (Table 3). At the same time, thesis studies are mostly carried

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out at the graduate level. It is thought that the publication of the articles included in the scope of the study in journals that are scanned by the TR [NANaIC] index is related to the associate professorship criteria of the Interuniversity Board of the Republic of Turkey (IBRoT). IBRoT (2020) announced it must publish at least three publications in journals indexed by TR [NANaIC] in March and previous application conditions. Apart from this, the low number of studies scanned by the Web of Science (WoS) indexes (Table 3) is seen as a negative situation. In this respect, it is thought that academicians working in the relevant field should be encouraged more. The academic promotion criteria should be reviewed in this context for the publication of WoS data-based studies. A small number of universities give the fact that the thesis studies favor the Ph.D. degree because the postgraduate education programs in the relevant field are generally limited to master's education.

When the studies are examined by years, it is seen that there has been a significant increase in the number of studies on the use of digital teaching technology in Turkish language education (Table 5). Bağ and Çalık (2017) stated that digital teaching technology studies are less studied due to the difficulty of implementation and should be carried out more frequently. Considering the number of studies in which digital teaching technology is used in Turkish language education, it can be thought that this need has been realized in Turkish language education. The increase in the popularity of digital teaching technology in recent years and the increased inclusion of these technologies in learning-teaching processes are seen as the reason for this increase (Lai and Bower 2019).

According to the findings obtained as a result of the study, it was seen that in the studies on the use of digital teaching technology in Turkish education, digital story creation, screen reading, and digital literacy digital teaching technologies were preferred as a type of technology (Table 6). It can be said that digital story creation studies are highly preferred because students do not usually enjoy writing activities more fun (Özerbaş and Öztürk 2017; Demirer and Baki 2018). Because it is seen as one of the necessary conditions to make students enjoy the process more in order to increase their writing success (Clark 1990). Today, screen literacy and digital literacy are thought to be preferred because they eliminate the need to carry books, are fast accessible, and are carried out everywhere via smartphones (Tavşanlı and Akaydın, 2017). It is also predicted that it may have been preferred in terms of not restricting teaching only to the classroom, thus expanding the learning paradigm (Su and Cheng 2013). It can be said that the increase in the frequency and duration of social media use ((Haşiloğlu et al. 2020; Perrin 2015; Yılmazsoy et al. 2020) is one of the reasons why this type of technology is preferred. However, it is known that social media platforms have different uses with new updates every day. For this reason, studies should be continued on how to repeat these studies periodically and how to integrate social media environments into education processes better (Lau 2017).

When the learning areas of the researches are examined, it is seen that reading skill is in the first place, and Turkish language course general success and writing skill follow reading skill. It is thought that these learning areas are preferred more because reading and writing skills have a significant effect on the general success of individuals in the Turkish language course and determine the limits of students' overall academic achievement (Aram 2005). In addition, the benefits of reflective writing and reading on the academic success of students, especially during the pandemic period, have been determined. Because reading and writing skills are the basis of learning (Salim et al. 2021). After learning how to read and write, the individual can improve himself in many aspects, primarily cognitive (van den Broek and Espin 2012). Because of these qualities, reading and writing skills are studied more frequently than listening and speaking skills. However, the lack of any studies on speaking skills is seen as a severe deficiency. To overcome this deficiency, the number of technological designs for mother-tongue teaching should be increased. As teachers use technologies for listening and speaking skills in their classrooms, students'

competence in these areas will increase. It is stated that technology should be present in all areas of mother-tongue teaching (Cardoso 2019).

In the investigated studies, the reasons for conducting the research were not clearly stated, and the reasons for the research were obtained through a detailed reading and analysis. In this regard, the most frequently expressed research justification was expressed as a deficiency in the field. When Table 5 is examined in the findings section, it is seen that this situation may be a deficiency until a specific period. However, the increase in studies on the digital teaching technology in Turkish education has helped eliminate this deficiency. It is a known fact that digital teaching technologies increase their popularity day by day in the field of language education (Bax 2011). In this context, the increase in the number of digital teaching technology-based studies conducted for Turkish lessons means that Turkish researchers continue their research by following the current international literature. When other reasons are examined, the reasons for setting an example for technology education integration and increasing the prevalence of technology come to the fore. After the digital teaching technology becomes widespread and effective in every field, how it can be adapted to learning-teaching processes and made efficiently is an important issue (Christensen 2002). The Ministry of Education launched the Fatih Project in Turkey and has carried out serious work across Turkey to support this process. However, it was stated by the researchers that some problems were encountered in this project (Ayvacı et al. 2014). In this direction, it is vital to prepare well for this process and identify applications that will increase productivity and create a model. It is understood that this deficiency is noticed in the reasons for the studies that deal with the use of digital education technologies in Turkish education. Another reason is the importance of using digital teaching technologies in Turkish lessons. The importance of this issue was emphasized insistently in the research examined. It was stated as a justification that the studies in this field should increase in line with the importance of digital teaching technologies (Bal and Uslu 2018; Özdemir 2017). However, teacher inadequacies, incorrect practices, and technical/infrastructural problems in the use of digital teaching technology are also the reasons for some studies (Büyükkarcı and Müldür 2017; Ertem 2016; Yılmaz 2019). The reasons mentioned above show that the work to be carried out in this field would maintain its importance.

The reasons mentioned above show that the work to be carried out in this field will maintain its importance. Within the study's scope, the research aims were also examined, and it was seen that the purposes of determining the situation were determined frequently. This situation is based on the assumption of lack of research, as is often stated in the research reasons. Because researchers want to reveal the current situation first. Apart from due diligence, it has been observed that researches generally aim to determine the effect of digital teaching technologies on achievement and attitude. It can be said that this is because success and attitude are the most studied variables in educational research (Çalık et al. 2015). The frequent use of attitude scales and achievement tests relaxes the researchers in the data collection process and allows collecting large numbers of data in a short time. In terms of these qualities, it is thought that success and attitude variables are frequently preferred. Revealing the views of teachers, students, and teacher candidates, who are the stakeholders of the process, on the use of digital teaching technology is also among the studies' aims. It can be said that these goals are generally preferred as they allow a more in-depth examination of the current situation, which is quantitatively put forth. In studies aiming to develop a measurement tool, it may be thought that the measurement tools to be developed will enrich the field and facilitate researchers with valid/reliable measurement tools.

Generally, qualitative research methods are preferred in the investigated studies (Table 9). The screening method's preference the most after qualitative research methods also shows that studies have yet to understand the process. Both qualitative research and screening studies aim to reveal, examine, and interpret the existing situations in depth. It is seen that quantitative and mixed research methods are also preferred in the studies discussed (Table 9). The fact that researchers researched different intervention programs

(different types of digital technology) increased the number of studies that preferred quantitative and mixed research methods. Compared to quantitative, qualitative, and screening studies, fewer mixed-method studies have been conducted. This situation is thought to be due to the high workload of mixed-method studies and the longer time to reach results / less recognition than other research methods (Yin 2006).

It is seen that most of the studies included in the scope of the research were carried out with a sample size of 31-100 people (Table 10). It is thought that the samples of the studies were determined in this way by the nature of the research methods. For example, most quantitative studies examined have an experimental and control group. The majority of such studies have been conducted with this number of samples. Again, reaching more participants may not be preferred, as it is both challenging and will increase the workload. It can be said that the high number of studies conducted with 30 or fewer participants is due to the nature of the qualitative research method. It is known that qualitative research is carried out with a small number of participants since the data collection, raw data processing, and data analysis process are complicated, and the study is based on an in-depth analysis (Eisner 2017). It is seen that the studies on the use of digital teaching technologies in Turkish lessons are mostly carried out with teachers and students who are the stakeholders of the process. It is thought that it is a deficiency that there is no study conducted with high school students. When the studies are examined based on branches, it is seen that the primary school level is preferred more, as they mostly work with primary school students and classroom teachers. It is thought that this is because primary school is a critical period for students' language development (Aram 2005).

When the studies' results were examined, it was seen that the positive aspects of digital teaching technologies were revealed more (Table 12). There are studies in which the negative aspects of using digital teaching technology are also determined. However, it was observed that the use of technology in teaching processes would be beneficial, and suggestions for the future were made in this direction (Bernacki et al. 2020; Raja and Nagasubramani 2018). In the studies conducted, it has been determined that the intervention results generally result in a positive effect. It can be said that presenting new methods other than traditional methods to students, using technology better by students, adapting to the process more efficiently, and using technology (Zabatiero et al. 2018) are the reasons for this positive effect. There are also studies in which interventions have no positive effect. In these studies, it was stated by the researchers that the digital teaching technologies were not used correctly, the processes were not operated correctly (for example, the technological competence of the practicing teacher is low).

It was observed that the use of digital teaching technology applications in Turkish language courses was also examined according to various variables. For example, it has been concluded that female students are better at technology literacy than male students. However, it has been stated that male students are more successful in digital games. This situation can be explained by the fact that female students are more eager to read and write (Abd Ghani et al. 2020), and male students are more willing to play games (Tavşanlı, 2018). This finding shows that the gender variable affects the use of digital teaching technology. In the studies conducted, it was concluded that besides the gender variable, socio-economic status also affects technology use. It is not surprising given that technology use is associated with economic efficiency (Rowe 2019). Again, in the studies conducted, it was concluded that teachers 'perceptions in terms of technological competence were low, students' perceptions were high, and this situation caused the digital divide. These results reveal the importance of teachers' technological competence. Because the inadequacy of the teachers, who are the implementers of the process, is one of the most fundamental factors that prevent the use of technology in educational processes (Joo et al. 2018).

5. Suggestions

In the conducted researches, suggestions for the Ministry of National Education, teachers, and researchers were presented. The recommendations submitted to the Ministry of National Education are gathered under the headings of providing training to increase teacher's and students' technological competence, strengthen the technical infrastructure, and make changes in the curriculum. Suggestions offered to teachers are for them to improve themselves in technological competence. In the recommendations presented to the researchers, it was stated that the intervention designs whose effects will be tested in the studies to be carried out, the focused skills, research methods, sample size, and type could be differentiated.

The following recommendations are made in line with the results of the study:

1. The low number of studies published in journals indexed by Web of Science (WoS) indexes and dealing with digital technologies in Turkish education is seen as a negatively. Accordingly, it is recommended to introduce more severe incentives and progress criteria for the publication of WoS data-based studies.

2. When the studies are examined according to learning areas, it is noteworthy that the number of studies on speaking and listening learning areas is quite limited. It will be beneficial to focus on the relevant learning areas in the research that the researchers will carry out in this direction.

3. Compared to quantitative, qualitative, and descriptive studies, it has been determined that mixed-method studies are performed in less number in the investigated studies; For this reason, it can be said that mixed-method studies should be increased.

4. It is noteworthy that studies on the use of digital teaching technologies in Turkish language education are generally carried out with similar types of technology. In this direction, it is recommended to work on different digital technologies.

5. It is noteworthy that there are very few studies on the first reading and writing processes in the conducted studies. It is known that it is quite tricky to compensate for the possible lack of education in the primary school period. Because digital technologies are more involved in learning-teaching processes than the past, and that the educational processes of young children are more affected by this situation, it can be stated that first reading and writing should be supported more with digital technologies-especially today, where the Covid-19 pandemic is significant.

6. The results of the studies discussed within the study's scope show that the competencies of teachers and teacher candidates in using digital technology are at a low level, and this situation results in the digital divide. In this framework, it is recommended that in-service and pre-service training activities for increasing teachers' and teacher candidates' technological competence be carried out by the MoNE and Education Faculties.

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