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Content Analysis of Studies on Design Thinking in the Field of Education in Türkiye

Cennet Elmas, PhD Student, Corresponding Author
Hacettepe University, Türkiye
cennetelmas92@gmail.com
Orcid ID: 0000-0003-2111-670X

Gültekin Çakmakcı, Prof. Dr.
Hacettepe University, Türkiye
cakmakci@hacettepe.edu.tr
Orcid ID: 0000-0003-2003-2520

Article Type: Research Article
Received Date: 16.10.2024
Accepted Date: 23.03.2025
Published Date: 31.03.2025
Plagiarism: This article has been reviewed by at least two referees and scanned via a plagiarism software
Doi: 10.29329/tayjournal.2025.1080.04

Citation: Elmas, C., & Çakmakcı, G. (2025). Content analysis of studies on design thinking in the field of education in Türkiye. *Türk Akademik Yayınlar Dergisi (TAY Journal)*, 9(1), 97-114.

Abstract

In this study, in order to determine the trends of the studies on design thinking in Türkiye published between 2014 and 2024, a total of 34 studies, 18 graduate theses and 16 articles, published in our country by using Google Scholar and National Thesis Center, were examined by document analysis method, one of the qualitative research methods. Content analysis method was used to analyze the data obtained. The analyzed studies were examined within the framework of the basic sections that should be included in an article. As a result of the examinations, it was seen that the number of studies in this field has increased in the last 5 years. It was noticed that researchers mostly adopted the qualitative method and studies on young age groups were limited. In addition, it has been determined that the variables examined are also limited and there is a need to examine many variables in this field. It is recommended that researchers who are considering working in this field should work in young age groups and support their studies with quantitative methods.

Keywords: Design thinking, content analysis, document analysis.

Introduction

With the developments in science and technology, the interests, expectations and needs of societies have also changed (Prensky, 2001). At the same time, the policies, industries and education systems adopted by countries have also participated in this change (Akgündüz et al., 2015). The participation of education systems in this change points to the need to prepare individuals for a rapidly changing world during their education (Chell & Athayde, 2009). Because individuals need to be equipped with skills for the needs of the new century (Akgündüz et al., 2015; Kellner, 2000). These skills are called 21st century skills and defined by Partnership for 21st Century Learning [P21] as problem solving, creativity, critical thinking, innovation, collaboration and communication, technology literacy, information literacy and media literacy (P21, 2015).

There are various learning approaches to help individuals acquire these skills. One of these learning approaches is the design thinking approach. Expressed as a 21st century learning approach, design thinking is an individual-oriented and iterative process cycle for solving problems using visualization of ideas (Carroll, 2015; Chesson, 2017). In the design thinking approach, it is expressed as a process of putting forward a creative idea and specific steps that reveal an invention by developing a prototype within the scope of this idea (Melles et al., 2015). In fact, the design thinking approach is seen as a method that aims to create innovative solutions to problem situations by understanding problems (Von-Thienen et al., 2014).

In the education system, it is now a necessity to embrace design thinking in a broad perspective, to take design beyond architecture and engineering. When thinking about how to better teach mathematics and science, they can be integrated. For this, engineering and technology should also be introduced to understand the importance of design and design thinking. Design also contributes to developing diversity in the benefits that school education can offer our students. (Li et al., 2019). This approach also allows individuals to learn by experience and increase their conceptual learning (Canestraro, 2017; Cook & Bush, 2018; Kwek, 2011). It also helps students to be interested in the design process, generate ideas, and

their thoughts, rather than focusing only on easily available facts and procedures (Li et al., 2019).

The importance of design-oriented thinking is increasing day by day (Verganti et al., 2021). In this context, it is thought that determining the trend of studies on design-oriented thinking and revealing the need will guide future research. In order to reveal the quality of these studies, it has become a need to examine and organize the studies at regular intervals to determine their trends and to question the quality and quantity of the studies conducted in this direction (Sözbilir et al., 2015). It is aimed that the systematic evaluation of the studies put forward by researchers on a framed subject by meeting this need with an inductive way of thinking will provide both a method and a direction to the researchers who will work on this subject. In addition, in today's world where time needs to be used effectively, there is a need to provide researchers with the opportunity to use their time more efficiently with such content analysis studies and to reduce the workload of researchers such as accessing and analyzing the literature (Çalık et al., 2008; Göktaş et al., 2012; Umdu Topsakal et al., 2012). It is possible to reach content analysis studies that provide these opportunities with different dimensions on design thinking (Akdemir, 2017; Çalış & Erenel, 2024; Çeviker Çınar, 2018). However, these studies are in the fields of management (Çalış & Erenel, 2024), business (Çeviker Çınar, 2018) and content analysis studies aimed at explaining the concept of design thinking. In the literature review, it was seen that content analysis studies were not within the scope of education and did not focus on tendency. However, in the field of education, for future research, evaluation of the practices and proposals for policies (Çalık, 2013; Suri & Clarke, 2009), educational research needs to be analyzed and its results synthesized and evaluated (Çalık & Sözbilir, 2014). For this reason, it has been understood that there is a need to determine the situation in the field of design thinking in education. When this need is met, it will provide perspective to researchers who will work on this subject. The importance of this study is that, unlike the studies in the literature, it focuses on the field of education and tries to determine the tendency of the studies. The aim of this study is to determine the tendency of the studies on design thinking. Thus, it is thought that determining the current tendency and revealing the need situation will guide future research. In this context, answers to the following problem situations were sought.

1. How is the spread of studies on design thinking according to years?
2. How is the spread of dependent variables in the studies on design thinking?
3. How is the spread of research methods used in the studies on design thinking?
4. How is the spread of data collection tools used in the studies on design thinking?
5. How is the spread of the sample of the studies on design thinking?

Method

In research, qualitative research method was employed. Document analysis technique was utilized. This technique, involves the examination of written materials that contain knowledge about the phenomena or events to be investigated. (Yıldırım & Şimşek, 2018). Content analysis was utilized to examine the collected data. This is a technique used to reveal

the existence of specific words or constructs in a dataset of texts. Researchers reveal the meaning of these words and concepts and the relationship between them. They then analyze them and make inferences about what is intended to be conveyed in the texts (Büyüköztürk et al., 2020). The researcher took a "document analysis" course during his postgraduate education. In the process of conducting this study, he worked meticulously with the knowledge he gained both in collecting and analyzing the data.

Research Sample

The study was created by adopting the criterion sampling method, which is a type of purposive sampling, due to the in-depth research within the scope of the study's purpose. In criterion sampling, observation units are formed from events, people, situations or objects with certain qualities (Büyüköztürk et al., 2020). This research, a total of 34 studies, including 18 postgraduate theses and 16 articles, conducted in the field of design thinking between 2014 and 2024 were examined.

Research Instruments and Processes

In this study, graduate theses and academic articles in the field of design thinking between 2014 and 2024 were examined. This study was limited to studies conducted in Türkiye. The studies were accessed from Google Scholar and National Thesis Center by using the keywords "design thinking". In the first stage, 52 graduate studies were reached. Irrelevant and identical studies were eliminated. Subsequently, this number was reduced to 34 by eliminating studies according to their non-compliance with the desired criteria. Finally, 18 graduate theses and 16 articles in the scope of "design thinking" were examined.

The researches reached within the framework of this study were analyzed according to the gauge presented in Table 1.

Table 1.

Inclusion and Exclusion Criteria

Inclusion in the study	Exclusion from the study
Publication between 2014-2024	Conference, proceedings and book chapters
Being published in Türkiye	Studies confused with engineering studies
Being in the field of design thinking	
Being published in the field of education	

Data Analysis

The data obtained from the studies examined by content analysis within the framework of the research were categorized and their frequencies were determined by systematic content analysis method. The results are presented as frequency and percentage tables. In the analysis of the data of the studies in this research, the research categorization form put forward by Sözbilir et al. (2012) was edited and benefited from. Data can be produced inductively and deductively depending on the research design. It is more possible to achieve high reliability with code lists created through deduction (Bengtsson, 2016). For this reason, the researcher managed the process through deduction by creating a coding list before starting the analysis process.

To ensure internal validity, an expert in the field who was not involved in this study was consulted for critical evaluation and feedback on the collected data and its analysis. In terms

of reliability, six randomly selected studies were independently analyzed by the researcher and an expert. When the analyses were examined, it was seen that five of the six analyses made by the two researchers were the same. This difference arises from the fact that some studies do not clearly state their methodological sections and rely on the interpretation of the analyst. Accordingly, the reliability value of the research was obtained from the reliability value formula proposed by Miles and Huberman (1994). Percentage of Agreement=Unanimity of Opinion/(Agreement+Disagreement) x 100. The researchers agreed on the appropriateness of the analyzes conducted in the study at a rate of (5/6).100= 83%. Reliability calculations above 80% are considered reliable for the research (Büyüköztürk et al., 2020). In this data analysis form, there are subheadings such as the type of study, year of publication, research strategy, sample for the research, data collection instruments, and data analysis methods. The findings of this work are limited to the results of the researches contained in the scope of the study according to certain gauge.

Ethical Permits of Research:

In this study, all the rules specified to be followed within the scope of Higher Education Institutions Scientific Research and Publication Ethics Directive" were complied with. None of the actions specified under the heading "Actions Contrary to Scientific Research and Publication Ethics", which is the second part of the directive, have been taken.

Ethics Committee Permission Information:

Since this study was a document review, ethics committee permission was not obtained.

Findings

The studies analyzed in this study were coded according to predetermined criteria and themes were formed. The findings of the themes are explained in order. First, the publication year information of the studies is shown in Table 2.

Table 2.

Percentages and Frequencies Regarding the Year of Publication of the Studies

Year of publication	*f*	*%*
2014	0	0
2015	0	0
2016	0	0
2017	2	5.8
2018	1	2.9
2019	5	14.7
2020	7	20.6
2021	4	11.8
2022	3	8.8
2023	7	20.6
Total	34	100

Looking at the frequency and percentage values of the studies found in Table 2, no studies were found in 2014, 2015 and 2016. The most studies were published in 2020 and 2023 (f=7), and the least study was published in 2018 (f=1). The knowledge of the publications examined in this study according to the dependent variables whose effect they examined in their research is shown in Table 3.

Table 3.

Percentages and Frequencies of the Studies According to Dependent Variables

Dependent variable	*f*	%
STEM education	3	12.5
TOD thinking skills	3	12.5
Process experiences	2	8.3
STEM understanding	1	4.2
Motivation	1	4.2
Teamwork	1	4.2
Functional thinking	1	4.2
Creativity skills	1	4.2
Academic success	1	4.2
Planning skills	1	4.2
Digital literacy	1	4.2
Intellectual experience	1	4.2
Conceptual change	1	4.2
Level of future thinking	1	4.2
Student activism	1	4.2
Cognitive flexibility	1	4.2
Scientific process skills	1	4.2
Self-esteem	1	4.2
Problem solving skills	1	4.2
Total	24	100

Table 3 shows that Science, Technology, Engineering and Mathematics [STEM] education (f=3), Design thinking skills [TOD] (f=3) and process experiences (f=2) variables were examined the most in the studies analyzed. Then, STEM understanding (f=1), motivation (f=1), teamwork (f=1), functional thinking (f=1), creativity skills (f=1), and academic achievement (f=1) were examined respectively. Table 4 shows the information of research methods used in the analyzed studies.

Table 4.

Percentages and Frequencies of the Research Methods Used

Research methods	*f*	%
Qualitative research methods		
Case study	3	5.9
Literature review	3	5.9
Action research	2	8.8
Phenomenology	2	2.9
Empirical	1	8.8
Mixed research methods		
Sequential explanatory design	4	11.8
Nested pattern	3	8.8
Explanatory sequential pattern	2	5.9
Quantitative research methods		
Correlational	1	2.9
Weak experimental design	1	2.9
Screening research	1	2.9
Other	11	32.4
Total	34	100

Table 4 shows that qualitative (f=11), mixed (f=9) and quantitative (f=3) strategies were used in the studies. Among qualitative research strategies, case study (f=2) and literature review (f=2) were preferred the most, while empirical study (f=1) was preferred the least. Among mixed research methods, sequential explanatory design (f=4) was the most preferred method and explanatory sequential design (f=2) was the least preferred method. In

quantitative methods, correlational (f=1), weak experimental design (f=1) and survey research (f=1) methods were used. Information on the data collection instruments of the studies analyzed in this study is presented in Table 5.

Table 5.

Percentages and Frequencies of the Data Collection Tools Used

Data collection tools	*f*	%
Scale	12	25
Semi-structured interview form	9	18.8
Observation	5	10.4
Interview	5	10.4
Daily	4	8.3
Test	4	8.3
Rubrik	4	8.3
Word association	2	4.2
Videos	2	4.2
Mobile messages	1	2.1
Total	48	100

When Table 5 is analyzed, scales (f=12) and semi-structured interview forms (f=9), observations (f=5) and interviews (f=5) were used as data collection tools the most, while mobile messages (f=1) were used the least. The distribution of the sample of the studies analyzed in this study is recognized in Table 6.

Table 6.

Frequencies About to the Sample of the Studies

Sample	*f*	%
Middle school grade 7	8	23.5
Teacher	7	20.6
Teacher candidates	5	14.7
Middle school grade 6	4	11.8
Middle school 5th grade	2	5.9
University students	2	5.9
Pre-school	1	2.9
Primary school 4th grade	1	2.9
High school	1	2.9
Other	3	8.8
Total	34	100

When Table 6 is examined, it is observed that most of the participants were realized with middle school 7th grade students (f=37). The least number of studies were conducted with preschool (f=1), primary school (f=1) and high school (f=1) groups. In this study, the methods of data analysis employed in the workings are presented in Table 7.

Table 7.

Frequencies Related to Data Analysis Methods of the Studies

Data analysis methods	*f*	%
Qualitative analysis		
Content analysis	15	31.2
Descriptive analysis	5	10.6
Other	4	8.5
Quantitative analysis		
One-Way Anova	5	10.6
T-test	5	10.6
Wilcoxon	5	10.6
Mann Whitney U	3	6.4
Document analysis	3	6.4
Correlation	1	2.1
Manova	1	2.1
Total	47	100

When Table 7 is viewed, it is seen that qualitative data analysis techniques (f=24) were mostly used in the studies examined. Among the qualitative data analysis techniques, content analysis (f=15) was used the most. The quantitative data analysis techniques, one-way Anova (f=5), t-test (f=5) and Wilcoxon (f=5) were mostly used.

Discussion and Conclusion

In this study, a systematic content analysis was conducted in order to determine the trends of the studies based on design thinking in the area of education in Türkiye. The study is considered to be important in terms of guiding researchers who will conduct studies in the area of design thinking. For this purpose, 34 studies conducted in the area of design thinking in Türkiye between 2014 and 2024 were analyzed.

When the analyzed studies are examined, the majority of the researches were applied among 2019 and 2024. This indicates that the interest in design thinking has growned in Türkiye in the last 5 years. The increasing need for design thinking (Sürmelioğlu & Erdem, 2021) may be one of the reasons for this situation. In addition, in the 2023 Education Vision document published in 2018 by the Ministry of National Education [MoNE] in our country, it was focused on students' design, production, and interactive work, and it was stated that the establishment of design Skill Workshops will be given importance in this direction (MoNE, 2018). In addition, the MoNE curriculum published in 2024 also attaches importance to design thinking. Its use as a teaching technique is emphasized in many parts of the current program (MoNE, 2024). For this cause, it is thought that workings on design Thinking may have increased.

It was observed that the variables examined in the workings conducted in the field of design Thinking were mostly STEM education (Akyurt, 2023; Erden et al., 2023; Öztürk, 2020), TOD thinking skills (Altun, 2019; Sürmelioğlu, 2021; Yavuz, 2024) and process experiences (Aydemir, 2019; Girgin, 2020). In addition, STEM understanding (Koca, 2023), motivation (Atacan, 2020), functional thinking (Avcı, 2024), future thinking levels (Günsal, 2023), planning skills (Güven Demir & Gümüş, 2022). Considering that the literature has recently developed in this field, it is realized that workings can be carried out reveal the

connection between design thinking and many variables such as 21st century skills, misconceptions, self-efficacy and so on.

It was observed that the studies on design thinking mostly adopted the qualitative research method. In similar STEM education content analysis studies, it was revealed that researchers mostly adopted the quantitative research method (Çavaş et al., 2020; Ecevit et al., 2022; Herdem & Ünal, 2018). It is thought that the reason for this difference may be due to the nature of the design thinking field. In addition, reasons such as the need to work with the study group in a natural ecology and the need for deeply investigation require qualitative research methods to be preferred more (Sözbilir et al., 2015).

When the findings regarding the data collection instruments are analyzed, it is seen that the use of scales is mostly preferred as data collection instruments in the workings. The results of the content analysis conducted by Ecevit et al. (2022) in a similar field also support the preference of the researchers for scales. It is seen that the least preferred data collection instruments is mobile messages. This shows us that there is a need for diversity in studies on design thinking.

As for the results regarding the working groups are analyzed, it is seen that most of the studies were conducted with middle school 7th grade students. It is thought that working with this age level in educational institutions is preferred for reasons such as the class control is more comfortable due to the age of the students and they are a little more distant from the central exam anxiety such as LGS (high school transition examination) compared to the 8th grade level. It may be due to the fact that the features of the working group are certain and that the most appropriate sampling method is purposive sampling (Büyüköztürk et al., 2020) in order to select a sample in a non-random way. The least preferred working groups were pre-school and primary school groups. Since the application of design thinking in young age groups would require more attention and care, it can be thought that the researchers turned to other working groups. Conducting scientific studies and activities with preschool children is important for our country to take its place among competitive countries (Uyanık Balat & Günşen, 2017). It is important for children to acquire theoretical knowledge about basic sciences; physics, chemistry, biology and mathematics from early childhood and to be able to think in a design-oriented way in order to create new products using their knowledge in technology and engineering (Yalçın & Erden, 2021). For this reason, studies conducted with the preschool study group can be increased. When the data analysis findings are examined, it is seen that qualitative data analysis methods were mostly used in the studies examined. The cause of this is due to the fact that qualitative methods are mostly preferred in the preferred methods.

Recommendations

Considering these results, it is important to expand the number of studies on design thinking, which is an emerging field, in Türkiye. With the new curriculum (MoNE, 2024), it is required that the courses be organized in terms of design. For this reasons, it is thought that design thinking will be used more in lessons. Thanks to these studies, it is thought that the studies executed in the area of design thinking in Türkiye can be analyzed descriptively and

systematically and will guide researchers in terms of the applicability of design thinking. According to the findings attained from this research, the following recommendations can be offered to researchers: In studies conducted with students, studies can be conducted with early age groups. There is a need to work with many variables in future studies. Studies examining the effects on attitude, academic achievement, misconceptions, creativity and innovative thinking skills and entrepreneurship can be conducted. In new studies, it can be planned to use more in-depth qualitative research methods supported by quantitative ones.

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BIOGRAPHICAL NOTES

Contribution Rate of Researchers

Author 1: 50%

Author 2: 50%

Conflict Statement

The authors declare that there is no conflict of interest in the research.

Notice of Use of Artificial Intelligence

The authors did not utilise any artificial intelligence tools for the research, authorship and publication of this article.

Türkiye'deki Eğitim Alanında Tasarım Odaklı Düşünme Üzerine Yapılan Çalışmaların İçerik Analizi

Özet

Bu çalışmada Türkiye'de tasarım odaklı düşünme üzerine, 2014-2024 yılları arasında yayımlanan çalışmaların eğilimlerinin belirlenmesi amacıyla, Google Akademik ve Yükseköğretim Kurulu Ulusal Tez Merkezi [YÖKTEZ] platformlarından faydalanılarak yayımlanmış 18 lisansüstü tez ve 16 makale olmak üzere toplam 34 çalışma, nitel araştırma yöntemlerinden doküman incelemesi yöntemiyle incelenmiştir. Elde edilen verilerin analizinde içerik analizi yöntemi kullanılmıştır. İncelenen çalışmalar, bir makalede olması gereken temel bölümler çerçevesinde incelenmiştir. Yapılan incelemeler sonucunda, çalışmaların büyük çoğunluğu 2019-2024 yılları arasında yapılmıştır. Bu da son 5 yılda Türkiye'de tasarım odaklı düşünmeye ilginin arttığını göstermektedir Araştırmacıların çoğunlukla nitel yöntemi benimsediği ve küçük yaş gruplarında çalışmaların sınırlı olduğu fark edilmiştir. Bunun yanında incelenen değişkenlerin de sınırlı olduğu ve bu alanda pek çok değişkenin incelenmesine ihtiyaç olduğu tespit edilmiştir. Bu alanda çalışmayı düşünen araştırmacılara küçük yaş gruplarında çalışılması, nicel yöntemlerle çalışmalarını desteklemeleri önerilmektedir. Ayrıca, yeni yapılacak çalışmalarda pek çok değişkenle çalışılmasına ihtiyaç vardır. Tutum, akademik başarı, kavram yanılgıları, yaratıcılık ve yenilikçi düşünme becerileri ve girişimcilik üzerinde etkilerin incelendiği çalışmalar yapılabilir.

Anahtar Kelimeler: Tasarım odaklı düşünme, içerik analizi, doküman incelemesi.

Giriş

Bilim ve teknolojide yaşanan gelişmelerle birlikte toplumların ilgi alanları, beklentileri ve ihtiyaçları da değişmiştir (Prensky, 2001). Aynı zamanda ülkelerin benimsedikleri politika, endüstri ve eğitim sistemleri de bu değişimin içine katılmıştır (Akgündüz vd., 2015). Eğitim sistemlerinin de bu değişim içine katılması, bireylerin eğitimleri süresince hızlı bir değişim içerisinde olan dünyaya hazırlanma ihtiyacına işaret etmektedir (Chell & Athayde, 2009). Çünkü bireylerin yeni yüzyılın ihtiyaçlarına yönelik beceriler ile donatılması gerekmektedir (Akgündüz vd., 2015; Kellner, 2000). Bu beceriler 21. yüzyıl becerileri ifadesiyle adlandırılmış, Partnership for 21st Century Learning [P21] tarafından yaratıcılık, problem çözme, eleştirel düşünme, inovasyon, iş birliği ve iletişim, teknoloji okuryazarlığı, bilgi okuryazarlığı ve medya okuryazarlığı şeklinde tanımlanmıştır (P21, 2015).

Tasarım odaklı düşünmenin önemi gün geçtikçe artmaktadır (Verganti vd., 2021). Bu bağlamda tasarım odaklı düşünme üzerine yapılan çalışmaların eğiliminin belirlenerek ihtiyaç durumun ortaya konmasının ileriki araştırmalara yol göstereceği düşünülmektedir. Yapılan araştırmaların belirli aralıklarla incelenip düzenlenerek eğilimlerinin belirlenmesi ve bu doğrultuda araştırmaların niteliğine ve niceliğine ait bilgilerinin sorgulanması, bu çalışmaların kalitesini ortaya koymak adına ihtiyaç haline gelmiştir (Sözbilir vd., 2015). Tasarım odaklı düşünme alanında yapılan araştırmaları farklı boyutlarıyla sentezleyen içerik analizi çalışmalarına ulaşmak mümkündür (Akdemir, 2017; Çalış & Erenel, 2024; Çeviker Çınar,

2018). Fakat bu çalışmalar yönetim alanında (Çalış & Erenel, 2024), işletme alanında (Çeviker Çınar, 2018) ve tasarım odaklı düşünme kavramını açıklamaya yönelik içerik analizi çalışmalarıdır. Alan yazın taramasındaki içerik analizi çalışmalarının eğitim alanında olmadığı ve eğilime odaklanmadığı görülmüştür. Bu çalışmanın önemi ise alan yazındaki çalışmalardan farklı olarak eğitim alanına odaklanması, çalışmaların eğilimini belirlemeye çalışmasıdır. Bu çalışmada tasarım odaklı düşünme üzerine yapılan çalışmaların eğiliminin belirlenmesi amaçlanmaktadır. Böylece mevcut eğilim belirlenerek ihtiyaç durumunun ortaya konmasının ileriki araştırmalara yol göstereceği düşünülmektedir. Bu kapsamda aşağıdaki problem durumlarına cevap aranmıştır.

1. Tasarım odaklı düşünme üzerine yapılan çalışmaların yıllara göre dağılımı nasıldır?

2. Tasarım odaklı düşünme üzerine yapılan çalışmalardaki bağımlı değişkenlerin dağılımı nasıldır?

3. Tasarım odaklı düşünme üzerine yapılan çalışmalarda kullanılan araştırma yöntemlerinin dağılımı nasıldır?

4. Tasarım odaklı düşünme üzerine yapılan çalışmalarda kullanılan veri toplama araçlarına ilişkin dağılım nasıldır?

5. Tasarım odaklı düşünme üzerine yapılan çalışmaların örneklemine ilişkin dağılım nasıldır?

6. Tasarım odaklı düşünme üzerine yapılan çalışmalarda kullanılan veri analiz yöntemlerinin dağılımı nasıldır?

Yöntem

Bu çalışmada nitel araştırma yöntemlerinden doküman incelemesi yönteminden yararlanılmıştır. Bu çalışmada 2014-2024 yılları arasında tasarım odaklı düşünme alanında yapılmış lisansüstü tezler ve akademik makaleler incelenmiştir. Çalışmalara, "tasarım odaklı düşünme" ve "design thinking" anahtar kelimeleri kullanılarak Google Akademik ve Yüksek Öğretim Kurulu Ulusal Tez Merkezi'nden ulaşılmıştır. İlk etapta 52 lisansüstü çalışmaya ulaşılmıştır. İlgisiz ve aynı olan çalışmalar elenmiştir. Devamında, istenen kriterlere uygun olmama durumlarına göre çalışmalar elenerek bu sayı 34'e indirilmiştir. Nihayetinde, STEM (Fen, teknoloji, mühendislik ve matematik) alanında yapılmış 18 lisansüstü tez ve 16 makale incelenmiştir.

Araştırmanın Etik İzinleri:

Bu çalışmada "Yükseköğretim Kurumları Bilimsel Araştırma ve Yayın Etiği Yönergesi" kapsamında uyulması gerektiği belirtilen tüm kurallara uyulmuştur. Yönergenin ikinci bölümü olan "Bilimsel Araştırma ve Yayın Etiğine Aykırı Eylemler" başlığı altında belirtilen eylemlerin hiçbiri gerçekleştirilmemiştir.

Etik Kurul İzin Bilgileri:

Bu çalışma bir doküman incelemesi olduğundan etik kurul izni alınmamıştır.

Bulgular

Bu çalışmada incelenen araştırmalar, önceden belirlenmiş ölçütlere göre kodlanmış ve temalar oluşturulmuştur. Temalara ait bulgular sırayla açıklanmıştır. İlk olarak, araştırmaların yayım yılı bilgileri Tablo 1'de gösterilmiştir.

Tablo 1.

Çalışmaların Yayım Yılana İlişkin Yüzde ve Frekanslar

Yayım yılı	*f*	%
2014	0	0
2015	0	0
2016	0	0
2017	2	5.8
2018	1	2.9
2019	5	14.7
2020	7	20.6
2021	4	11.8
2022	3	8.8
2023	7	20.6
2024	5	14.7
Toplam	34	100

Tablo 1'de ulaşılan çalışmaların frekans ve yüzde değerlerine bakıldığında 2014, 2015 ve 2016 yıllarında hiç çalışmaya rastlanamamıştır. En fazla 2020 ve 2023 yıllarında (f=7), en az çalışma ise 2018 yılında (f=1) yayımlanmıştır. Bu çalışmada incelenen yayınların araştırmalarında etkisini inceledikleri bağımlı değişkenlere göre dağılımı Tablo 2'de gösterilmiştir.

Tablo 2.

Çalışmaların Bağımlı Değişkenlere Göre Yüzde ve Frekansları

Bağımlı değişken	*f*	%
STEM eğitimi	3	12.5
TOD düşünme becerisi	3	12.5
Süreç deneyimleri	2	8.3
STEM anlayışı	1	4.2
Motivasyon	1	4.2
Ekip çalışması	1	4.2
Fonksiyonel düşünme	1	4.2
Yaratıcılık becerisi	1	4.2
Akademik başarı	1	4.2
Planlama becerisi	1	4.2
Dijital okuryazarlık	1	4.2
Entelektüel deneyim	1	4.2
Kavramsal değişim	1	4.2
Gelecek düşüncesi düzeyi	1	4.2
Öğrenci eylemliliği	1	4.2
Bilişsel esneklik	1	4.2
Bilimsel süreç becerileri	1	4.2
Benlik saygısı	1	4.2
Problem çözme becerileri	1	4.2
Toplam	24	100

Tablo 2'de, incelenen çalışmalarda en çok STEM eğitimi (f=3), Tasarım odaklı düşünme becerisi [TOD] (f=3) ve süreç deneyimleri (f=2) değişkenlerinin incelendiği görülmüştür. Daha sonra sırasıyla STEM anlayışı (f=1), motivasyon (f=1), ekip çalışması (f=1), fonksiyonel düşünme (f=1), yaratıcılık becerisi (f=1), akademik başarı (f=1) gibi konular ele alınmıştır.

Tartışma ve Sonuç

İncelenen çalışmalara bakıldığında, çalışmaların büyük çoğunluğu 2019-2024 yılları arasında yapılmıştır. Bu da son 5 yılda Türkiye'de tasarım odaklı düşünmeye ilginin arttığını göstermektedir. Tasarım odaklı düşünmeye olan ihtiyacın artması (Sürmelioğlu ve Erdem, 2021) bu durumun nedenlerinden biri olabilir. Ayrıca, ülkemizde Millî Eğitim Bakanlığı [MEB] tarafından 2018 yılında yayımlanan 2023 Eğitim Vizyonu belgesinde öğrencilerin tasarlamasına, üretim yapmasına, etkileşimli çalışmalarına odaklanılmış ve bu doğrultuda Tasarım Beceri Atölyelerinin kurulmasına önem verileceği ifade edilmiştir (MEB, 2018). Bu sebeple de tasarım odaklı düşünme üzerine yapılan çalışmaların artmış olabileceği düşünülmektedir.

Tasarım odaklı düşünme ile ilgili incelenen çalışmaların çoğunlukla nitel araştırma yöntemini benimsedikleri görülmüştür. Bu farklılığın sebebinin tasarım odaklı düşünme alanının doğasından kaynaklanabileceği düşünülmektedir. Ayrıca çalışma grubuyla doğal ortamda çalışma gereksinimi, araştırmanın derinlemesine yapılma ihtiyacı gibi sebepler nitel araştırma yöntemlerinin daha fazla tercih edilmesini gerektirmektedir (Sözbilir vd., 2015).

Öneriler

Bu çalışmadan elde edilen sonuçlara göre araştırmacılara şu öneriler sunulabilir: Öğrencilerle yapılan çalışmalarda erken yaş grupları ile çalışmalar yürütülebilir. Yeni yapılacak çalışmalarda pek çok değişkenle çalışılmasına ihtiyaç vardır. Yapılacak yeni çalışmalarda daha derinlemesine nitel araştırma yöntemlerinin nicellerle desteklenerek kullanılması planlanabilir.