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A Descriptive Content Analysis of Trainings with Flipped Classroom Model in Türkiye

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ABSTRACT

In recent years, with the epidemics in the world and the development of technology, education and training activities have ceased to be an action that takes place only at school. Remote education, which is completely independent of time and space, has started to be preferred over traditional education. The flipped classroom model, one of the blended model types, is one of the most widely used methods in recent years. In the light of this information, the aim of this study is to conduct a systematic review of the studies conducted on the flipped classroom model in Türkiye. In this context, it is aimed to evaluate the research trends, methods, fields, measurement tools, study groups and results obtained in the articles written on flipped classroom model in Turkey. In order to collect research data, articles published in the TR Index between 2015 and 2023 were scanned. The data obtained were analyzed by descriptive content analysis method. The results of the study revealed that the number of studies on flipped classroom has increased in recent years, quantitative research methods are mostly used in the studies and achievement tests are mostly used as data collection tools. The results also showed that the participants of the studies were mostly undergraduate students, and many articles were published in the field of education. It was also found that English was mostly used as the research language and in addition to these, academic achievement and perception level variables were used in the studies and the results of the studies showed that the flipped classroom model increased academic achievement and provided positive attitudes and opinions towards the course it was applied.

Key Words: *Flipped classroom, distance education, hybrid education*

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Türkiye'de Ters Yüz Sinif Modeli İle Yapilan Eğitimlerin Betimsel Içerik Analizi

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ÖZET

Son yıllarda dünyada yaşanan salgınlar ve teknolojinin gelişmesi ile eğitim öğretim faaliyetleri sadece okulda gerçekleşen bir eylem olmaktan çıkmıştır. Zaman ve mekandan tamamen bağımsız olarak uzaktan gerçekleştirilen eğitimler geleneksel eğitimler yerine tercih edilmeye başlanmıştır. Harmanlanmış model çeşitlerinden biri olan ters yüz sınıf modeli son yıllarda çokça kullanılan yöntemlerinden biridir. Bu bilgiler ışığında bu araştırmanın amacı Türkiye'de ters yüz sınıf modeline yönelik yapılmış çalışmaların sistematik bir incelemesini yapmaktır. Bu kapsamda, Türkiye'de ters yüz sınıf modeli üzerine yazılmış, makalelerdeki araştırma eğilimleri, araştırmalarda kullanılan yöntem, alan, ölçme araçları, çalışma grubu ve elde edilen sonuçlarının değerlendirilmesi amaçlanmıştır. Araştırma verilerini toplamak için TR Dizinde 2015-2023 yılları arasında yayınlanan makaleler taranmıştır. Elde edilen veriler betimsel içerik analiz yöntemi ile analiz edilmiştir. Araştırmadan ters yüz sınıf üzerine son yıllarda araştırma sayısının arttığı, araştırmalarda çoğunlukla nicel araştırma yöntemlerinin kullanıldığı ve veri toplama aracı olarak daha çok başarı testlerinin kullanıldığı sonuçları ortaya çıkmıştır. Ayrıca sonuçlar araştırmaların katılımcılarının daha çok lisans öğrencilerinden oluştuğunu ve eğitim alanında çok sayıda makalenin yayınlandığını göstermiştir. Araştırma dili olarak daha çok İngilizcenin kullanıldığı tespit edilmiştir. Bunlara ek olarak araştırmalarda en çok akademik başarı ve algı düzeyi değişkenlerinin kullanıldığı ve araştırma sonuçlarında ters yüz sınıf modelinin akademik başarıyı artırdığı ve uygulandığı derse yönelik olumlu tutum ve görüş sağladığı tespit edilmiştir..

Anahtar Kelimeler: *Ters yüz sınıf, uzaktan eğitim, hibrit eğitim*

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Introduction

Technological developments are radically changing the understanding of education and have created the necessity to use technology in the field of education as in other fields. The technological tools used enable successful results to be achieved in education. The convenience that technology provides to education has made technology indispensable for educators and students. Although technology has some negative effects in the education process, the positive effects that it has added to education make it possible to ignore these negative effects (Dinçer, 2017). To give an example of the positive effects of technology, with technology, students increase their creativity, help them better establish cause and effect, help them develop strategies, gain media literacy, and improve their research skills. It also allows them to develop their networks for personal learning and access to the world at large. Technology helps children learn by having fun, socialize, learn by understanding instead of memorization and adds diversity and richness to the educational environment (Şatıroğlu, 2015).

Not only the development of educational technologies but also the development of the internet has had a positive impact on educational transformation. While it was difficult to

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access information before, it has become very easy thanks to the internet. Thanks to the library and research resources offered by the Internet, the variety of information is constantly increasing and access to information is becoming easier. The distance education model is one of the best examples of these developments. Thanks to distance education, education has become possible outside the classroom. The ease of access to information and the emergence of various software for education have paved the way for students to learn the subject outside of school, at home. In addition, technology has helped teachers with one of the most common complaints of teachers: lack of time. One of the most important examples of this is the flipped classroom model proposed by Jonathan Bergman and Aaron Sams. Teaching methods such as the flipped classroom model developed by Jonathan Bergman and Aaron Sams have provided great help to both students and teachers in terms of time and space (Özler, 2020).

Distance education refers to an educational process in which students and teachers are not physically in the same place and learning activities are carried out in different ways (Seferoğlu, 2007). Distance education has the potential to offer different educational methods and reduce inequality in education. It also offers individuals the opportunity to easily access various resources and choose educational materials (Karaman, 2018).

Distance education has four basic components, namely;

1. Formal education organized by a formal institution.

2. Separation of teacher and student in terms of space and/or time.

3. The sharing of educational technologies such as the Internet and computers between teacher and student.

4. A controlled connection of instructional design rules and educational theories that regulate learning (Simonson, 2003).

While educational technology is a concept that includes technological imaging, blended learning is a learning model that combines traditional face-to-face education with educational technologies.

Blended learning

The concept of blended education has emerged in the last twenty years with the development of technology. With the development of technology and it's becoming an indispensable part of education, new trends have emerged. One of these, blended learning, has introduced a new understanding of education by combining technological opportunities with face-to-face education. This model involves using educational technologies to provide students with richer experiences (Bursa, 2019). Although there are many definitions for blended learning, it is generally defined as combining online education with traditional education methods (Colis and Moonen, 2001). Rasmussen (2003) defined blended learning as a distance education method that combines technology with traditional education and training. Clark and Meyer (2003) also defined blended learning as a combination of traditional education and distance education using educational technologies. Allan (2007), on the other hand, differs from other definitions and defines it as the use of educational technologies to support face-to-face education.

Blended learning has gained more importance in recent years due to pandemics and wars. Students have started to experience difficulties in reaching schools and for these reasons, blended learning has become an important tool for sustaining education. Unlike the traditional classroom model, education has not been interrupted in the blended learning model and sustainability in education has been ensured. In addition, blended learning provides great

benefits to both the teacher and the student in terms of time, which is a major problem in teaching. In addition, since the blended learning model offers a flexible education and training environment, flexible programs suitable for this teaching environment are more useful (McCarthy and Murphy, 2010). In addition to its positive performance, the blended learning model also includes some negative developments for students and teachers. Online learning is considered as an essential member of blended learning. However, the successful functioning of the online learning environment is a fundamental condition of blended learning. Providing an online learning environment is an area that requires knowledge, skills, and experience on the part of teachers. Designed online learning environments that are inadequate in this regard are incomplete in the current situation, so they should be created carefully (Sethy, 2008). However, blended learning may be more difficult for students who lack the ability to work individually compared to traditional classroom instruction. For the blended learning model to work flawlessly, students need to have a high level of technological literacy. It is also important for students to have intrinsic motivation (Pesen, 2014). The most widely used blended learning model is the flipped classroom model.

Figure 1

Varieties of blended models (Horn and Staker, 2017)

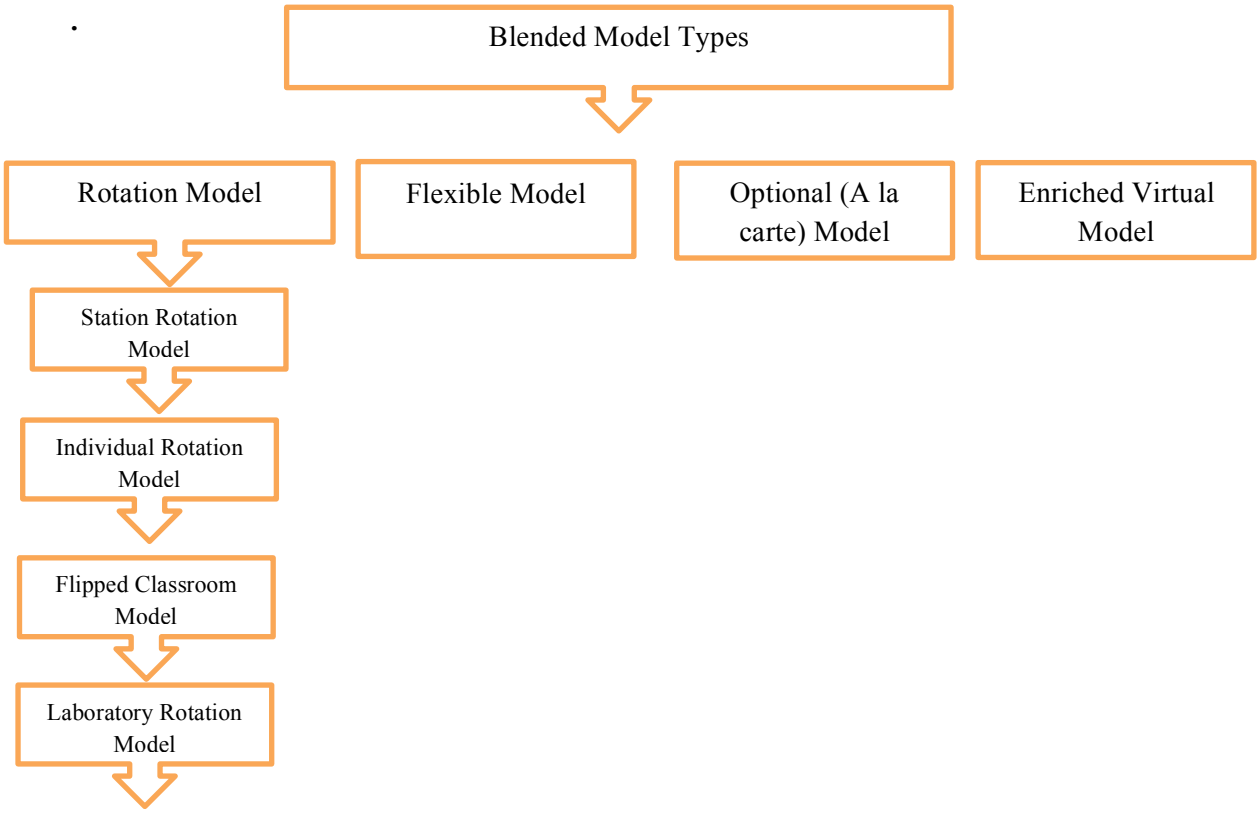


Figure 1 shows that the rotation model, one of the blended learning models, includes the flipped classroom model.

Flipped Classroom Model

One of the blended learning models is the flipped classroom model, which is a subcategory of the rotation model. This model is also known as transformed classrooms or flipped classrooms, often referred to as "Flipped Classroom" in foreign literature. The flipped

classroom model (FCCM), as the name suggests, provides a transformed representation of the traditional learning process. In this model, course activities and learning that should be done at school are done at home via computer and internet, while homework and applications are done in the classroom. The reason for the different classroom models is the problem that in traditional classrooms students often play a passive role and learning is inadequate. With this model, students come to the classroom ready to reinforce the subject matter by acquiring theoretical knowledge at home and making practical applications in the classroom. According to the flipped classroom teaching model, learning is a passive process and from the perspective of this model, the teacher is often not needed for learning. However, activities and practices are an active process and the teacher's guidance is more needed (Talbert, 2012).

In the flipped classroom model, students learn the theoretical course material provided through videos and presentations at home. They also use educational technologies at home to develop their research and critical thinking skills. In this way, lessons are learned more efficiently and enjoyed more (Çavuş et al., 2011). Classroom environments, on the other hand, provide a way for them to put into practice the theoretical knowledge they acquire at home. Compared to the traditional classroom model, the flipped classroom model aims to support learning and to be with students when they need more feedback. For this reason, it has been revealed by researchers that the applications and course activities in the classroom are more permanent with the flipped classroom model (Talbert, 2012).

Figure 2

Comparison of Traditional Classroom Model and Flipped Classroom Model (Zownorega, 2013)

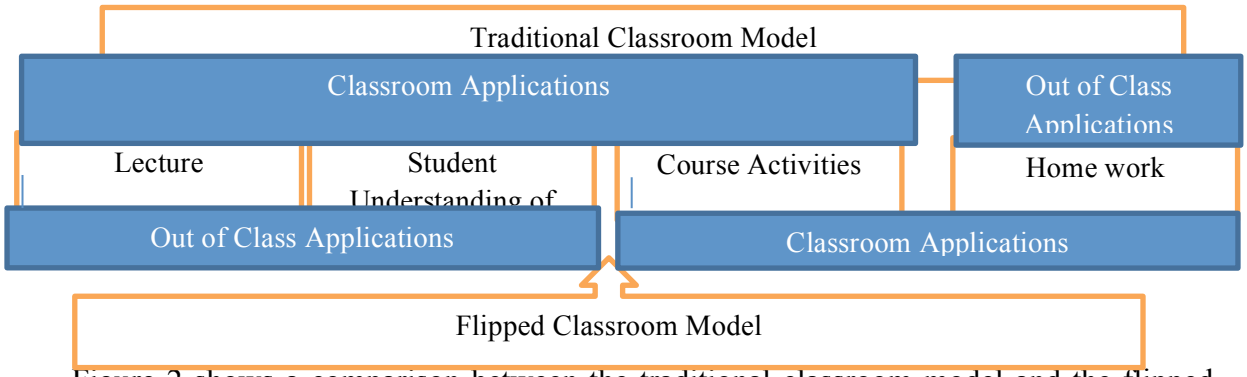


Figure 2 shows a comparison between the traditional classroom model and the flipped classroom model.

There are many reasons why the flipped classroom model is preferred (Roehl et al., 2013; Tucker, 2012; Stone, 2012; Hertz, 2012). These are as follows:

1. Students can have more active learning process in the classroom.

2. Students can work on higher level thinking and problem solving in the classroom as they learn the theoretical course materials at home.

3. Students have more control and personalization of their own learning.

4. The flipped classroom model allows for individualized learning experiences.

5. Students can access missed lessons again through technological training.

6. Thanks to technological tools, teachers can better respond to students' individual needs.

7. The flipped classroom model enables the distribution of collaboration.

8. It offers parents the possibility to follow the continuous learning process and to help more.

However, there are some negative aspects of the flipped classroom model (Gençer et al., 2014). Teachers need to have theoretical knowledge and experience to change videos and classroom practices, which requires time and effort. There are digital inefficiencies that may hinder the successful implementation of the model. Also, students may find it more difficult to learn the theoretical course material at home than in traditional classroom education. Teachers and students need to have technological competence and intrinsic motivation to implement the flipped classroom model effectively (Enfield, 2013). In conclusion, while the flipped classroom model represents an important change in education and offers many advantages, it is also evident that this model includes some challenges.

Considering the literature, it is observed that there are many national studies on the flipped classroom model (Özdemir, 2016; Yaman and Yüksel, 2017; Karaman, 2018; Erdoğan, 2018; Erdoğan and Akbaba, 2019; Göksu, 2018; Kaya, 2018; Tekin, 2018; Çevikbaş, 2018; Uzun, 2019, Topan, 2019, Yorgancı, 2020, Ökmen, 2020; Köse and Yüzüak, 2020; Özdemir, Şentürk, 2021; Özdemir et al., 2020; Gökdaş and Gürsoy, 2018; Yıldırım, 2021). However, the number of studies analyzing the studies on the flipped classroom model is limited. In his content analysis study, Demir and Aydın (2017) analyzed the studies on flipped classroom from various databases between 2011-2015. As a result of the study, it was determined that the flipped classroom model was mostly applied in the fields of mathematics and foreign language, academic achievement, student addition, student/teacher changes variables were frequently examined, and it was mostly applied to variables such as academic achievement, student exit, motivation, and self-efficacy perception. Özbay and Sarıca (2019) analyzed 64 articles published in the field of flipped classroom between 2014-2019 on Web of Sience and Google Scholar. As a result of the analysis, it was determined that the flipped classroom model was mostly applied to undergraduate students, quantitative research methods were mostly preferred, and academic achievement, student participation, student views, teacher views and motivation were frequently examined.

Considering the studies, it was determined that the studies were limited to certain years and the results of the studies in the field of flipped classroom were not given in a certain order. In addition, it was determined that the most cited studies and researchers were not specified. In this respect, this study differs from other studies and is a candidate to fill this gap in the literature. In this context, the aim of this study is to reveal the research trends of the studies written about the flipped classroom model in Turkey, the methods, fields, measurement tools, the most cited studies, the study group, and the results obtained. In this respect, determining the fields of the studies, the participants and the variables examined will be instructive for future research. Therefore, the results of this study are important in terms of understanding the trends of existing research on the flipped classroom model and revealing research gaps for researchers.

Methodology

In this study, 67 articles on the flipped classroom model were analyzed under certain headings. Document analysis method was used in this study. Document analysis refers to the collection and examination of various sources as the primary source of data (Sak et al., 2021). Document analysis studies play an important role in guiding future research efforts. In

addition, document analysis studies provide guidance in explaining and detailing the studies, determining study trends, identifying publication years and participants (Ültay et al., 2021). Descriptive content analysis method, one of the qualitative analysis methods, was used to analyze the data. In the descriptive content analysis method, the trends, and results of the studies on a specific subject are described in a descriptive and systematic manner (Göktaş et al., 2012). In this study, content analysis method was used to determine the dominant trends in the field of flipped classroom and to distinguish the research findings. Because with the content analysis method, it is possible to classify and compare the data and make conceptual conclusions based on this (Cohen et al., 2007).

Data collection

While researchers use descriptive content analysis method, they can use different databases for study selection. Since the aim of this study is to examine the studies on flipped classroom in Turkey, the articles on flipped classroom in the TR Index are included. Since it provides ease of access to the information produced in Turkey, and since it is an "index" accepted by the Council of Higher Education (YÖK) and the Interuniversity Council (ÜAK) for appointments and promotions, a search was conducted through TR Index. Studies were searched by typing "flipped classroom" and "flipped" in the search option. As a result of the search, 77 articles were found. However, articles not related to flipped classroom were not included in the analysis. Thus, 67 articles met the criteria for analysis. The full texts of these articles were downloaded and a second researcher who had previously conducted research in this field was consulted to examine the appropriateness of the downloaded articles. This researcher examined the appropriateness of the downloaded articles according to the criteria.

Coding And Analyzing the Data

The form prepared by the researcher according to the criteria of research year, research purpose, research result, research variable, research area, study group, number of citations, measurement tools used, and research method used was analyzed separately by two researchers. The 67 articles identified for analysis were coded by two researchers. Microsoft Excel program was used for data coding. The codes determined were added to the Excel file. Miles-Huberman reliability formula (Reliability = Agreement / (Agreement + Disagreement)) was calculated for coding reliability. As a result of the calculation, inter-coder reliability was calculated as 91%. The obtained result reveals that the study is reliable.

Ethical Permissions of the Study

In this study, all rules specified in the "Directive on Scientific Research and Publication Ethics of Higher Education Institutions" were followed. None of the actions specified under the second section of the Directive, "Actions Contrary to Scientific Research and Publication Ethics", were taken. Moreover, 67 articles on the flipped classroom model were analyzed under certain headings. Document analysis method was used in this study.

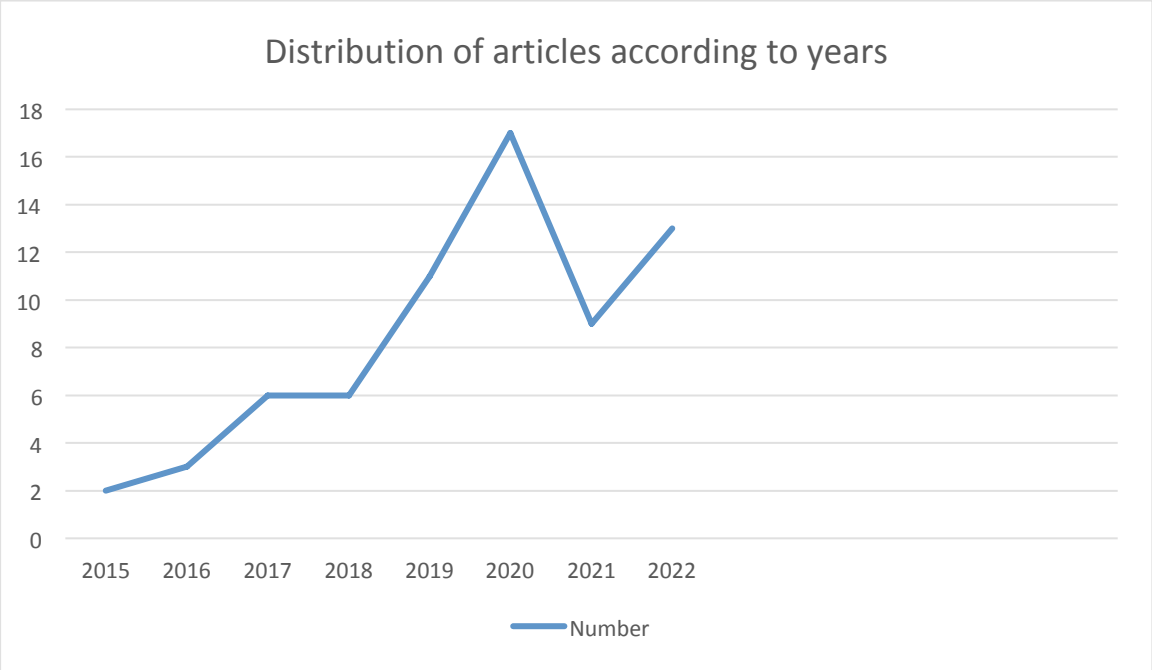
Results

In this section of the study, the research objectives and the results of the corresponding sub-problems are presented through figures and tables in the order of the research topics. The interpretations of the findings obtained from each table and figure are given under each figure and table. This approach provides a comprehensive and organized presentation of the research results, enabling a clear understanding of the findings of the study.

Distribution of articles by year of publication

The distribution of the analyzed articles according to the year of publication is given in Figure 3.

Figure 3. Distribution of Articles on Inverted Classroom According to Years of Publication

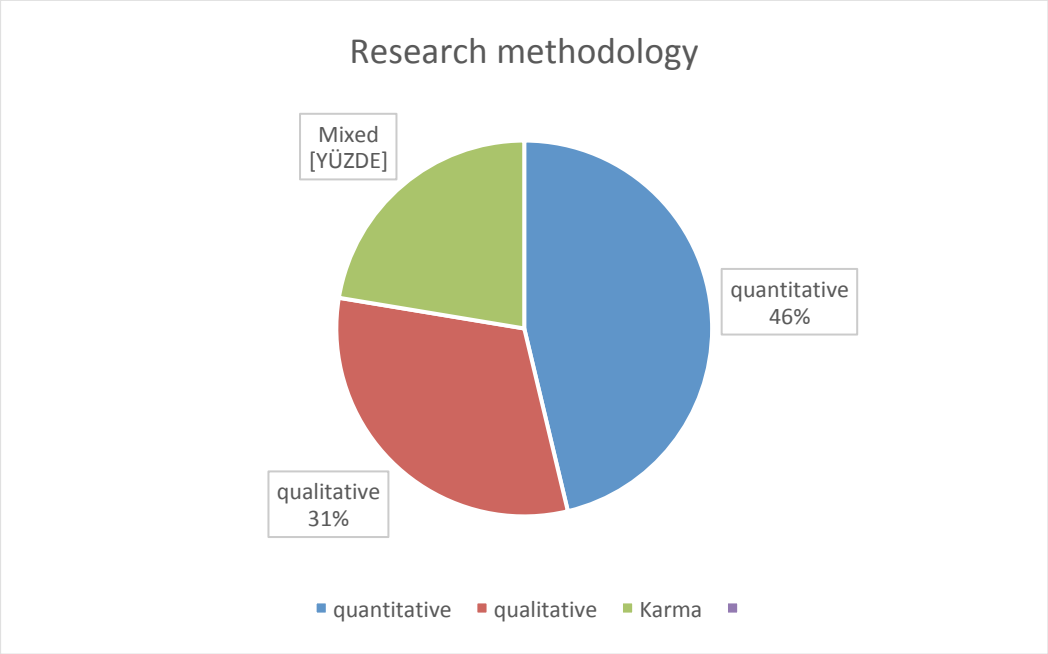


Considering figure 3, it is observed that the studies on the flipped classroom model have been included in the TR Index since 2015. It is seen in Figure 3 that the highest number of studies on the flipped classroom model was in 2020 and the lowest number of studies was in 2015.

Findings on the research methods used

Figure 4 shows the distribution of the analyzed articles according to research methods.

Figure 4.Research methods of studies on the flipped classroom model

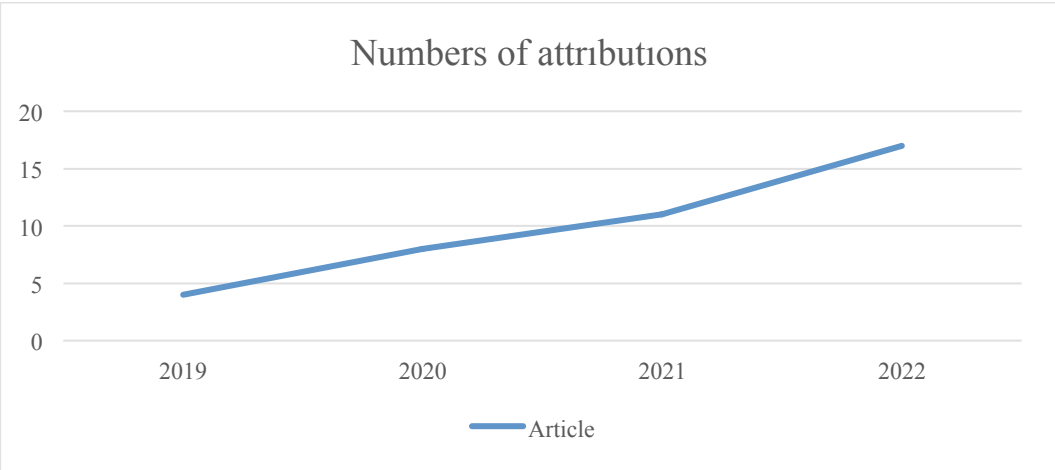


When Figure 4 is examined, it is seen that almost half of the studies (46%) in the TR Index about the flipped classroom model use quantitative research method. Quantitative research method is followed by qualitative research method (31%). The least used research method (31%) is mixed research method.

Findings on the number of citations of the studies in the last 4 years

Figure 5 shows the number of citations of publications about the flipped classroom model in Turkey in the last four years.

Figure 5. Number of citations of studies on the flipped classroom model in the last 4 years

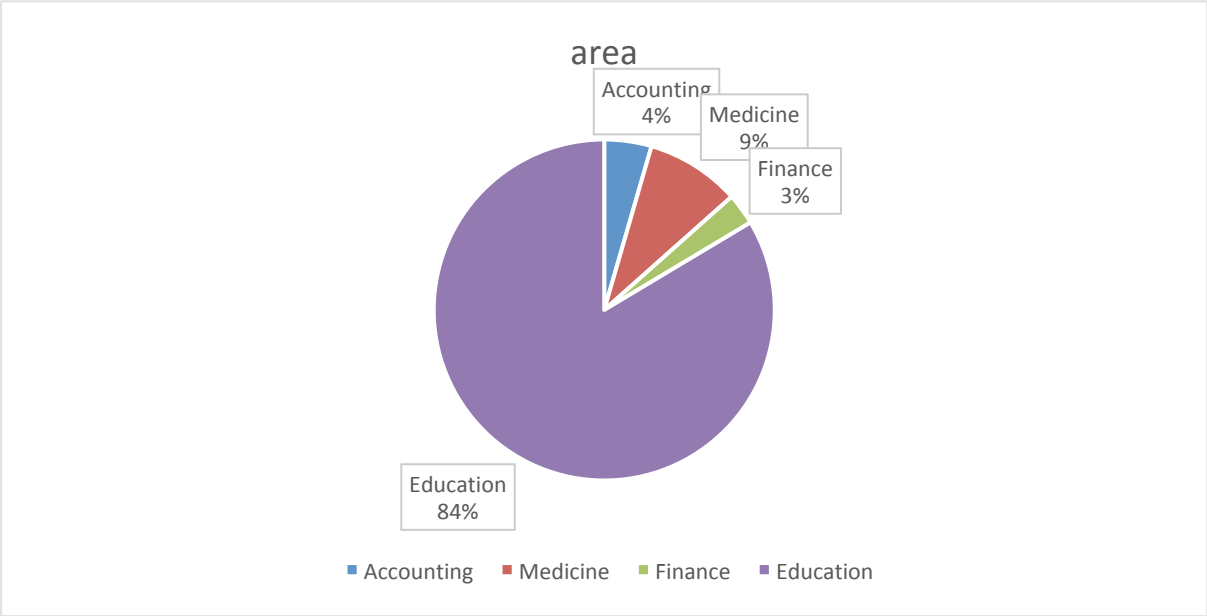


It is seen that the number of citations of the articles on the flipped class model in the TR Index in the last four years continues to increase. The highest number of citations was in 2022 with 17 citations, while the lowest number of citations was in 2019 with 4 citations.

Findings for the study area

Figure 6 shows the study areas of the studies on the flipped classroom model in Turkey

Figure 6. Areas of research on the flipped classroom model in Turkey



When the fields of study on the flipped classroom model in Figure 6 are analyzed, it is observed that the majority of the studies (84%) are in the field of education. Education is followed by medicine with 9%, accounting with 4% and finance with 3%.

Findings on publication language

Figure 7 shows the publication language of the studies on the flipped classroom model in Turkey.

Figure 7. Publication languages of studies on flipped classroom model in Turkey

When the studies on the flipped classroom model in the TR Index are examined, it is seen that most of the studies (88%) are written in English.

Findings for the journals with the highest number of publications

Table 1 shows the journals that most frequently include research based on the flipped classroom model.

Table 1. Journals with the highest number of flipped classroom studies in TR Index

Journal Names	f	%
IOJET (International Online Journal of Education and Teaching)	7	10
Bartın University Journal of Faculty of Education	6	8
Hacettepe University Journal of Faculty of Education	4	6
Journal of Language and Linguistic Studies	4	6
Çukurova University Journal of Faculty of Education	3	4
Celal Bayar University Journal of Social Sciences	2	3
Journal of Accounting Science World	2	3
Turkish Studies (Electronic)	2	3
Turkish Journal of Biochemistry (2)	2	3
Seven: Art, Design and Science journal	2	3
Total	**56**	**49**

When the journals in the TR Index are examined, it is seen that the journal IOJET (International Online Journal of Education and Teaching) has the highest number of articles on the flipped classroom model with 7 articles. IOJET is followed by Bartın University Faculty of Education Journal with 6 articles, Hacettepe University Faculty of Education Journal and Journal of Language and Linguistic Studies Journal with 4 articles each, and Çukurova University Faculty of Education Journal with 3 articles.

Findings on the variables used in the studies

Table 2 shows the distribution of the analyzed articles according to the variables.

Table 2. Distribution of articles on flipped classroom according to variables

Variables	f	%
Academic success	10	25
Perception level	4	10
Satisfaction	3	7
Attitude	3	7
View angle	3	7
Foreign language	3	7
Higher order thinking	2	5
Learning method	2	5
Self-efficacy	2	5
Individual learning	2	5
Gender	2	**5**

TYSM history and change	1	3
Student performance	1	3
Motivation	1	3
Competence	1	3
Total	40	100

When the articles in the TR Index were examined, it was determined that the most (10) studies were conducted on the effect of the flipped classroom model on the academic achievement variable. The academic achievement variable is followed by perception level with 4 articles and foreign language, attitude, viewpoint and satisfaction variables with 3 articles each.

Findings on the measurement tools used

Table 3 shows the distribution of the analyzed articles according to the measurement tools used.

Table 3. Distribution of articles on flipped classroom model according to the measurement tools used.

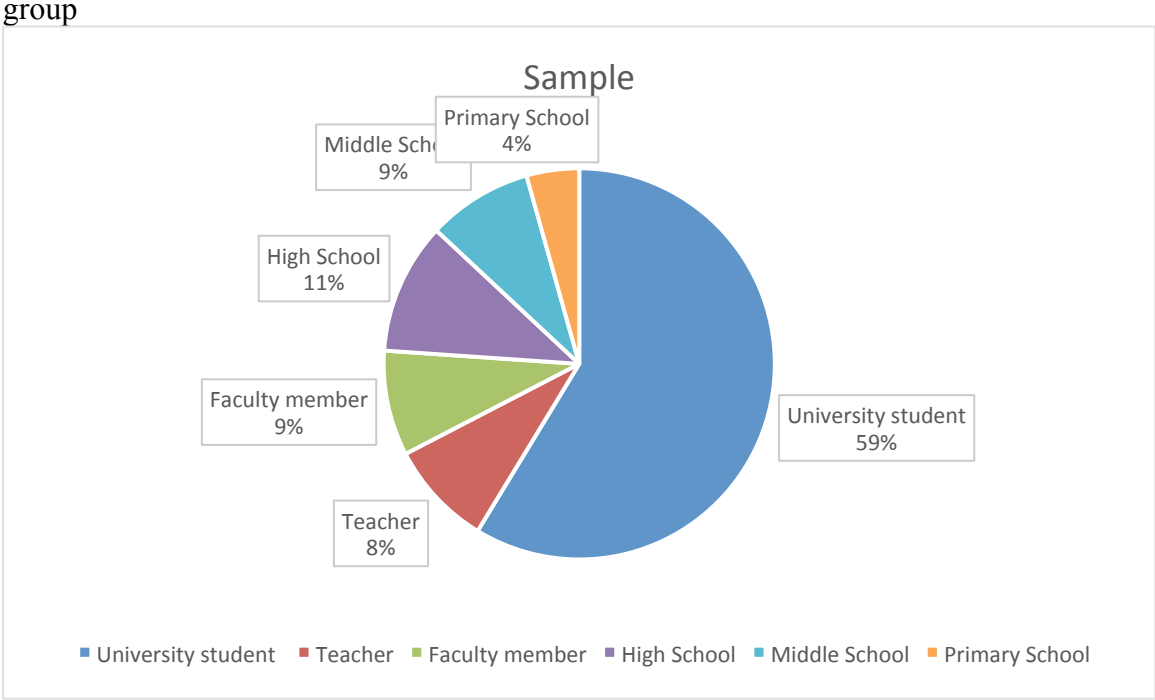
Measurement tools used	f	%
Achievement test	19	26
Document analysis	11	15
Survey	10	14
Scale	10	14
Interview	10	14
Open-ended questions	4	5
Observation	3	4
Student diary	2	3
Form	2	3
Total	71	100

When the measurement tools used in the studies on the flipped classroom model are examined in Table 3, it is seen that the most used measurement tool (19) is the achievement test. Achievement test is followed by document analysis with 11 articles, questionnaire, scale and interview with 10 articles each.

Findings about the sample group

Figure 8 shows the distribution of the analyzed articles according to the sample group.

Figure 8. Distribution of articles on multicultural education according to the sample group



When the articles on flipped classroom in the TR Index are examined, it is seen that more than half of the studies (59%) prefer university students as the sample group. University students are followed by high school students with 11%, middle school students and faculty members with 9% each.

Results obtained from the studies

Many results have been obtained from studies on the flipped classroom model. Examples of the positive results obtained through the variables examined in the current study and the studies from which these results were obtained are given in Table 4.

Table 4. Results obtained from the studies in the TR Index

Results			Study examples
Increased academic achievement	1	2	(Yılmaz and ark., 2022), (Şen, 2022), (Bolatlı and Korucu, 2020), (Yorghancı, 2020), (Gürlüyer and Elkılıç, 2020), (Say and Yıldırım, 2020), (Yıldız, 2020)
Positive attitude		2	(Ardınsyah at al., 2022), (İpek and Üstüntaş, 2021), (Tekin and Sarıkaya, 2020), (Özkurkudis and Bümen, 2019), (Özdoğru, 2018)
Increase in class participation			(Ilgaz, 2022)
Positive opinion		0	(Ağırman and Eroğlu, 2022), (Çelik and Yumuşak, 2022), (Delebağ and Yıldırım, 2020), (Sırakaya, 2020)
Increased knowledge opinion			(Yılmaz and Şimşek, 2022), (Özdemir, Açık, 2019)
Increased frequency of TYSM use			(Çakıcı and Ayten, 2022)
Ease of access to the			(Solak and Faydalı, 2022), (Sezer at al., 2018)

material	
Efficient learning	(Wade at al., 2022), (Kırmızı and Kömeç, 2019), (Akbulut, 2016)
Increased level of perception	(Tatlı and Koca, 2022), (Aşıksoy and Sorakın,2018), (Boyraz and Ocak, 2017)
Self-efficacy	(Varol and Kavanot, 2022)
Increased competence	(Koçyiğit and Küçük, 2021), (Özüdoğru, 2020)
Increased classroom engagement	(Ayçiçek and Yanpar Yelken, 2021) (Tatlı and Koca, 2022),
Permanence of teaching	(Bhat at al., 2021)
Increased motivation	(Teke at al., 2021), (Çelik and Kumsal, 2021), (Gündüz and Akkoyunlu, 2020), (Yıldız, 2020)
A sense of responsibility	(Arabacıoğlu at al., 2020)
Lessons are fun	(Arabacıoğlu at al., 2020)
Gender equality	(Gürlüyer and Erkılıç, 2020) (Ekmekçi, 2019), (Karaaslan and Çelebi, 2017)
Applicability of TYSM in many branches	(Ekmekçi, 2019), (Karaaslan and Çelebi, 2017)
Saving time	(Serçemeli at al., 2018)
Total	
0 00	

When the results of the studies on the flipped classroom model in the TR Index were examined, it was concluded that the academic achievement of the students increased when the flipped classroom model was applied as a result of the most studies (Yılmaz et al., 2022; Şen, 2022; Bolatlı and Korucu, 2020; Yorghancı, 2020; Gürlüyer and Elkılıç, 2020; Say and Yıldırım, 2020; Yıldız, 2020). In studies conducted with the flipped classroom model, it was determined that there was an increase in positive attitude towards the course (Ardınnsyon et al., 2022; İpek and Üstüntaş, 2021; Tekin and Sarıkaya, 2020; Özkurkudis and Bümen, 2019; Özdoğru, 2018). The sample groups whose opinions about the flipped classroom model were asked generally reported positive opinions about the flipped classroom model (Ağırman and Eroğlu, 2022; Çelik and Yumuşak, 2022; Delebağ and Yıldırım, 2020; Sırakaya, 2020). In the studies conducted, it was determined that the flipped classroom model contributed positively to the increase in motivation (Teke et al., 2021; Çelik and Kumsal, 2021; Gündüz and Akkoyunlu, 2020; Yıldız, 2020). In addition, studies have revealed that the flipped classroom model provides efficient learning (Wade et al., 2022; Kırmızı and Kömeç, 2019; Akbulut, 2016), increases the level of perception (Tatlı and Koca, 2022; Aşıksoy and Sorakın, 2018; Boyraz, Ocak, 2017) and provides ease of access to course materials (Solak and Faydalı, 2022; Sezer et al., 2018). It has been found in studies that it increases students' competence (Ayçiçek and Yanpar Yelken, 2021), knowledge view (Yılmaz and Şimşek, 2022; Özdemir

and Açık, 2019) and also contributes to gender equality (Ekmekçi, 2019; Karaaslan, Çelebi, 2017).

Discussion and Conclusion

In this study, it was aimed to make a descriptive analysis of the articles that emerged as a result of a detailed search with the keywords "flipped classroom" and "flipped" in the TR Index database, to reveal their trends and to profile their development. In this context, descriptive indicators of the articles in the TR Index database were examined according to the years, type, language of publication, journals in which they were published, field of research, number of citations, research methods, variables used, measurement tools and results obtained.

As a result of the research, it was determined that the first study was conducted in 2015 as a result of searching the TR Index with the keywords flipped classroom and flipped. For this reason, the research was conducted to cover the years 2015-2022. The year 2023 was excluded from the research because it has not yet been completed. As a result of the research, it was determined that research in the field of flipped classroom has increased rapidly since 2015. It was determined that the most research in the field of flipped classroom was conducted in 2020. In 2020, the pandemic experienced all over the world can be shown as the biggest reason for the increase in the number of studies. Along with the whole world, education was suspended in Turkey and distance education was introduced. In this process, the importance of distance education was revealed and this field was seen as an attractive field of study for researchers. Since the flipped classroom model is one of the blended learning types, the number of studies conducted in 2020 reached the highest level.

When the studies were analyzed, quantitative research methods were preferred as the research method in almost half of the articles. Qualitative research and mixed research methods were used in the remaining half of the studies. This situation reveals that the effectiveness of the flipped classroom model is generally tried to be determined with quantitative methods. In addition, the most commonly used measurement tool is the achievement test. The achievement test is followed by questionnaires, scales and interviews. In their study, Aydın and Demirer (2016) found that the studies on the flipped classroom model were mostly carried out in the fields of mathematics, foreign language courses as well as engineering and medicine. The finding obtained supports the finding that the most used research method in our study is quantitative research method. In addition, the fact that the most used measurement tool in the study was the achievement test is in line with the findings of Aydın and Demirer (2016). In short, the flipped classroom model is the replacement of homework and classroom teaching (Verleger and Bishop, 2013). One of the most important ways to ensure retention in teaching in numerical courses is to do plenty of activities in the lessons (Berkant and Tüzer, 2017). In the flipped classroom model, since the theoretical part of the lesson takes place at home, there is plenty of time left for activities in the classroom. In this case, the flipped classroom model has been used more in numerical courses and the use of quantitative research methods that measure success as a research method is supported by the literature.

In the study, it was determined that the academic achievement variable was used the most in the articles in the TR Index. Academic achievement variable is followed by perception level, satisfaction, attitude, point of view, foreign language variables. In addition, when the results of the analyzed articles were examined, it was determined that academic achievement increased as a result of the reverse classroom application. The results of increased academic achievement are followed by positive attitudes towards the flipped classroom model, positive opinions and increased motivation in the lessons thanks to the

flipped classroom model. Bösner (2015) showed the flipped classroom model as a process that allows for interactive and practice-oriented learning. Since the flipped classroom model combines the positive aspects of individual learning (Bishop and Verleger, 2013) and active learning (Bergmann and Sams, 2012), the increase in academic achievement in studies using the flipped classroom model is supported by the literature. However, most of the results obtained from the studies examined (development of responsibility awareness, self-efficacy, increase in class participation, positive attitude, productive learning) may be among the factors affecting academic achievement in students.

When the articles written about the flipped classroom model in the TR Index were examined, it was found that more than half of the sample group in which the model was applied consisted of university students. This may be due to the fact that university students access technology more easily than other students and use technology more competently than other students. Because in the flipped classroom model, while activities are emphasized during the lesson, it is necessary to utilize technology outside the lesson (Strayer, 2007). This situation reveals the reasons why the researchers chose undergraduate students with high technology literacy (Bayrakçı and Narmanlıoğlu, 2021). Studies with secondary, primary and high school sample groups mainly focused on the effect of the flipped classroom model on academic achievement (Şahin, 2020; Çakır et al., 2016; Söğüt et al., 2020; Akdeniz, 2019), while other research groups generally aimed to determine opinions and attitudes towards the flipped classroom model (Göğebakan, 2016; Nayci, 2016; Çelik, 2019).

When the fields of study of the articles are examined, it is seen that the majority of the articles are in the field of educational research. The field of educational research is followed by medicine, accounting, and finance. In short, the fact that the studies on the flipped classroom model, which is expressed as the replacement of homework and classroom teaching (Verleger and Bishop, 2013), find a place in the field of education is supported by the literature. In addition, when the studies in the TR Index were examined, it was determined that the language of most of the studies (88%) was English. The flipped classroom was initiated by two high school chemistry teachers in the United States in 2007 (Kara, 2021). Later, especially with the effect of the pandemic, it has become a popular field all over the world (Şahin, 2020). Due to this situation, the fact that the language of the studies is English, which is a universal language, is in parallel with the studies.

The most important limitation of this study is that the study is limited to the keywords flipped classroom and flipped. Descriptive analysis studies to be conducted by including other studies in the scope of the research in which the flipped classroom model is addressed as an application area can provide more in-depth findings. In addition, the inclusion of only the articles accessed from the TR Index in the scope of the research may have caused some other articles written on this subject to be excluded. In future studies, more comprehensive studies can be conducted by including different databases. On the other hand, the development in this field can be followed by comparing the data obtained in this study with the studies on the flipped classroom model in the following years. Conducting descriptive analysis studies in the field of flipped classroom model for theses in the future may help to learn the types of studies cited by academicians in theses and to determine whether the references to articles in theses are concentrated in certain journals. In addition, when the samples of the researched studies are considered, it is seen that they generally consist of undergraduate students. Students at other levels, academics and teachers have found a place for themselves, albeit to a lesser extent. However, there are no studies on school administrators and parents, who are other stakeholders of education. In future studies, parents and administrators can be

determined as a sample and their contributions to the flipped classroom model can be investigated.

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