A Systematic Analysis of Studies on Education Information Network

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Abstract

The goal of this study is to analyze articles about the "Educational Information Network (EIN)" published between 2016 and 2020 in Turkey. The study uses document analysis to examine 36 articles from 34 journals, using descriptive content analysis. The articles were analyzed based on the year of publication, subject matter, content, genre, data collection tools, and sample group. The results indicate that the number of articles about EIN has not increased over the years, with a focus on attitudes towards EIN and education through EIN. Additionally, the sample group consisted of both teachers and students, qualitative methods were preferred in published articles, and participants in the sample group had limited knowledge and awareness of EIN. It is believed that the findings of this study will provide insight into the overall understanding of EIN before and after the pandemic.

Keywords: Education Information Network, content analysis, document review

Introduction

With the advancement of artificial intelligence and smart technology systems, and the proliferation of the internet, especially in the 21st century, communication in all aspects of life has accelerated and obtaining information has become easier. As a result of increased competition, the cost of smart devices has decreased, making them accessible to all sections and ages of society. While underdeveloped countries may have difficulty accessing technological devices and the internet, developed countries have actively taken advantage of the communication opportunities offered by technology in all aspects of life. It is clear that as communication devices make information exchange easier, they are frequently used by both students and teachers, making it inevitable for them to be a part of education. It is accepted that education processes have become more productive through the effective use of communication devices (Tutar, 2015).

In Turkey, both in private and public educational institutions the technological devices and the internet have commonly been used in education for many years. The inclusion of technology in education has emerged the concept of educational technology. Çilenti (1998) described educational technology as being based on the data of behavioral sciences of communication and learning, and as a discipline to study ways of helping individuals achieve their educational goals by evaluating the results and skillfully utilizing both human and non-human resources.

To achieve the desired outcomes in education, it is necessary to use technological devices by determining methods that align with educational theories. Planning is essential for both face-to-face and online learning activities. According to Demirel et al. (2011), the inappropriate or negligent use of audio-visual

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aids in the education process can make it more difficult to achieve targeted outcomes. Although the integration of technology in education has a long history, the use of technological devices and portals has accelerated with the widespread availability of the internet in the early 2000s. As Tekin and Polat (2014) point out, the use of technology in education is widespread in almost all countries, appealing to a significant number of people.

In Turkey, there are many public and private industry enterprises that actively use technology in education. The most comprehensive enterprise is the FATIH Project, which was started and implemented by the Ministry of National Education (MNE). The project aims to adapt to current technological developments by conducting studies that will improve the quality, continuity, and target level of education processes at all levels of education (Ministry of National Education (MNE, 2022).

The FATIH project was first implemented in the second term of the 2011-2012 academic year. With this project, schools in pilot areas were provided with web access, interactive boards, and multi-purpose printers. Additionally, teachers and students were given smart tablets. However, making information easily accessible does not always mean accessing reliable sources. In education, achieving desired outcomes requires appropriate content and qualitative teaching materials. To address this need, the Educational Information Network (EIN) portal was created as part of the FATIH project. This portal allows for the improvement and addition of content.

The Ministry of National Education, with the assistance of EBA, aims to support the use of information technology in education by providing high-quality and educational content for both teachers and students to use in their learning process. The goal is to increase the level of knowledge and information technology literacy among users. The EIN portal includes sections such as news, e-content, e-zine, e-book, video, audio, visual, e-document, discussions, projects, content development aids, EIN file, EIN lesson, online education platform, EIN source, share and blog (MNE, 2022).

The use of the EIN portal has continued to grow, with an increasing number of users and usage rate every year since it was first implemented. It has played a particularly important role in the mandatory online education process due to the COVID-19 pandemic, which first appeared in Wuhan, China in 2019 and quickly spread worldwide. During this time, teachers and students were able to conduct their lessons and submit assignments through the portal, and exams were also administered through the portal. Thus, the EIN portal has become an aid that greatly facilitates the education process at all stages, including acquisition, retention, and assessment and evaluation.

This study is important because it aims to analyze the articles on "Educational Information Network (EIN)" published between 2016 and 2020 in Turkey. By using document analysis and descriptive content analysis, the study examines the articles in terms of their year of publication, subject matter, content, genre, data collection tools, and sample group. The findings of this study will provide a comprehensive overview of the current state of research on EIN in Turkey and shed light on the attitudes, perceptions, and awareness of EIN among teachers and students. Additionally, the study will also identify any gaps in current research and provide insights on how to improve the effectiveness and efficiency of EIN in the education system. Furthermore, the study will be beneficial in terms of providing a foundation for future research on EIN in Turkey and potentially informing the development of educational policies and strategies.

When the literature is reviewed, it is seen that there are studies which examine the usefulness and benefit in different aspects of EIN (Bahceci & Efe, 2018; Erensayın & Güler, 2017; Karasu, 2018; Kurtdede et al, 2016; Kuyubaşıoğlu et al, 2019; Saklan & Ünal, 2018; Tanrıkulu, 2017). As Doğan and Koçak (2020) mention these studies were carried out before the pandemic when EIN was not used commonly. However, with the emerge of pandemic, when the importance of EIN has increased in educational activities researchers have become in need of doing new studies. In this study the purpose is to view the general situation of EIN before pandemic and to light the further studies and help to compare studies.

As a result of literature review, it is found out that there are 36 articles which focus on EIN from various aspects. Researchers regard inadequate number of studies on EIN which is a common use of a case which has an increasing day by day significance in technology use in education as an important issue. In this context, articles accessed in 5-year time have been examined in terms of variables like publishing year, the subject, the sample group, the method and data collection tools. Following questions are pursued in this study:

1. In what aspects are the results in the articles on EIN examined?

2. In what variance are there in terms of publishing year, the subject, the sample group, the method and data collection tools?

Method

In this study, document analysis is used to examine the studies on EIN between 2016-2020 in Turkey. Document analysis is a commonly used method to analyze written sources in a systematic way (Karasar, 2016). In order to identify the studies to be examined literature review is used. After the literature review, article selection criteria are identified by the researchers. In these criteria there are some headings like study should be an article, the study should be published in Turkey, the study should be on EIN and the study should be published between 2016 and 2021.

In line with the purpose of this study, descriptive content analysis is used to categorize the articles according to the selection criteria. As Büyüköztürk et al. (2009) argue, descriptive content analysis is a research tool that provides a general overview and brief information about the studies and criteria identified. After determining the criteria, researchers made decisions by comparing the studies and ensured the validity and reliability of the study. Themes were identified through coding based on the criteria. Finally, the findings were interpreted.

• In order to ensure the validity and reliability of the study, several steps were taken during the data collection and analysis process. Firstly, a thorough literature review was conducted to identify relevant studies on EIN in Turkey between 2016 and 2020. This helped to ensure that the selected studies were relevant and up-to-date.

• The selection criteria for the studies were clearly defined and applied consistently throughout the data collection process. This included criteria such as the study being published in Turkey, focusing on EIN, and being published between 2016 and 2020. By using these strict criteria, we were able to ensure that only relevant and high-quality studies were included in the analysis.

• To further ensure the validity and reliability of the study, the data was analyzed by multiple researchers. This helped to reduce the potential for bias and ensure that the findings were robust and reliable.

• Finally, in order to ensure the generalizability of the study, a sufficient sample size was selected for the analysis. This included a large number of studies from a range of different sources to ensure that the findings were representative of the current state of research on EIN in Turkey.

Findings

In this study, 36 articles from 34 journals were examined. Tables which include the variance in terms of publishing year, the subject, the sample group, the method and data collection tools of the the studies are analyzed.

Table 1

Variances of Examined Studies by Years			
Publishing Year	The Number of The Articles	%	
2016	5	13,88	
2017	9	25	
2018	6	16,66	
2019	11	30,55	
2020	5	13,88	
Total	36	100	

In table 1, when the publishing year of the studies is reviewed it is seen that the highest number of studies (11) is in 2019. The variance of the subjects of the studies is given in Table 2.

Table 1 shows the variances of the examined studies by years. It is clear that the highest number of studies (11) were published in 2019, making up 30.55% of the total. However, it is important to focus on the practical implications of these variables rather than simply presenting them in terms of percentages. For example, understanding that the majority of studies were published in 2019 may indicate a recent increase in interest or research on the subject. Additionally, it may also provide insight into the current state of knowledge and understanding of the topic. Overall, the data in Table 1 can serve as a useful starting point for further analysis and understanding of the trends and patterns within the field of study.

Table 2

The Subjects of The Studies	The Number of The Articles	%
The awareness level of EIN	2	5,55
The attitude level of EIN	15	41,66
Teaching via EIN	11	30,55
The usage level of EIN	7	19,44
The level of use of EIN	1	2,77
Total	36	100

The Variance of the Subjects of the Studies

In table 2, when the variance of the subjects of the studies is examined it is clear that the highest number of the subjects (15) is in the attitude level of EIN. According to Table 2, it is clear that the majority of the studies (41.66%) focus on the attitude level of EIN. This information is useful in understanding the overall perception of the Educational Information Network (EIN) among the target population. It can be inferred that a significant amount of research is being conducted to understand the attitudes towards EIN and how it is perceived by the users. This information can be used to improve and make necessary changes to the EIN system to ensure that it is well received and utilized by the users effectively. Additionally, the high number of studies on teaching via EIN (30.55%) and usage level of EIN (19.44%) also indicate that researchers are interested in understanding how EIN is being used in education and its effectiveness in the classroom. The variance of the subjects of the contents is given in Table 3.

Table 3

The Subjects of The Contents	The Number of The Articles	%
The Role of EIN In Education	2	5,55
The Frequency of EIN Usage	1	2,77
The Ideas About The Use of EIN	13	36,11
Teaching Mathematics	2	5,55
Teaching Imam Hatip Major Area Course	1	2,77
Teaching Turkish	2	5,55
Teaching History	1	2,77
Technical Structure of EIN	2	5,55
Studying EIN Teaching Materials	7	19,44

The Variance of the Subjects of the Contents Examined

Teaching Science	3	8,33
Flip Teaching	1	2,77
Teaching Geography	1	2,77
Total	36	100

In table 3, when the variance of the subjects of the contents is analyzed it is seen that the highest number (13) is in the ideas about the use of EIN. In Table 3, it is clear that the majority of the studies focus on the ideas about the use of EIN, with 13 articles, or 36.11% of the total studies. This indicates that a significant portion of the research in this field is dedicated to understanding how EIN is perceived and utilized. Additionally, it is notable that a substantial number of articles (7 or 19.44%) focus on studying EIN teaching materials. This suggests that there is a significant interest in understanding how EIN can be effectively integrated into educational materials and curriculum. The subjects of the contents also include technical structure of EIN, teaching Imam Hatip major area course, teaching history and teaching geography. These subjects may provide useful insights into the specific ways in which EIN is used in different educational contexts. Moreover, it is evident that the number of the subjects of the contents is (7) in studying EIN teaching materials, (2) in technical structure of EIN, (1) in teaching Imam Hatip major area course, teaching history and teaching geography The variance of the methods of the studies is given in Table 4.

Table 4

The Method of The Subjects	The Number of The Articles	%
Quantitative	12	33,33
Qualitative	20	55,55
Hybrid	4	11,11
Total	36	100

The Variance of The Methods of The Subjects Examined

In Table 4, when the data are analyzed it is apparent that of the studies on EIN the highest number (20) is in qualitative methods. In table 4, when the variance of the methods of the studies is analyzed it is clear that the highest number of studies (20) use qualitative methods, followed by quantitative methods (12) and hybrid methods (4). These findings indicate that a majority of the studies on EIN focus on understanding and interpreting the attitudes, beliefs and experiences of the participants, rather than measuring and quantifying their behavior or performance. The use of different methods and data collection tools in these studies can provide a comprehensive understanding of the various aspects of EIN and its impact on education. The variance of data collection tools of the studies examined is given in Table 5.

Table 5

The Variance of Data Collection Tools of The Studies Examined

The Data Collection Tools Used In The Studies	The Number of The Articles	%
Survey(Open-Ended/Likert)	7	19,44
Document Analysis	4	11,11
Attitude Scale	1	2,77
Semi-Structured Interview Form	8	22,22
Semi-Structured Interview	6	16,66
Assessment Inventory	1	2,77
Achievement Test	4	11,11
Keyword Search	1	2,77
Interview Form And Survey	2	5,55
Semi-Structured Interview And Survey	2	5,55
Total	36	100

In Table 5, when the variance of the data collection tools is examined it is obvious that the most used data collections are "semi-structured interview forms", "surveys" and "semi-structured interviews". In summary, Table 5 shows that the most commonly used data collection tools in the studies on EIN are semi-structured interview forms, surveys and semi-structured interviews. This suggests that the research in this field primarily relies on gathering qualitative data through in-depth interviews and surveys to understand the attitudes and perceptions of individuals towards EIN. Additionally, it also shows that the researchers have used a diverse range of data collection tools including assessment inventory, achievement test, keyword search, interview form and survey and semi-structured interview and survey. This indicates that the studies on EIN have used a variety of methods to gather information about the subject. The variance of the sample groups is given in Table 6.

Table 6

The Sample Group	The Number of The Articles	%
Teachers	13	36,11
Candidate Teachers	1	2,77
Teachers And Students	4	11,11

The Sample Groups of The Studies Examined

Secondary School Students	10	27,77
High School Students	2	5,55
Secondary And High School Students	1	2,77
EIN Documents	5	13,88
Total	36	100

In Table 6, when the data are studied it is seen that the most chosen sample group is teachers. When student sample groups are viewed it is clear that the most chosen student sample group is secondary school students. In summary, Table 6 shows that the majority of the studies examined in this research used teachers as their sample group (36.11%). Additionally, it is also evident that the second most commonly used sample group is secondary school students (27.77%). While other sample groups such as candidate teachers, high school students, and EIN documents are used in a smaller number of studies. This information can be used to understand the focus and perspective of the studies on EIN and how the sample group may have influenced the findings and conclusions of the research.

Discussion

When the findings are studied it is found out that the number of the studies on EIN does not increase steadily. The number of the published articles is (5) in 2016, it increased to (11) in 2019 and it again decreased to (5) in 2020. When it is considered that interests and needs lead the subjects of the studies, it is thought that the number of the studies on an education portal whose active users increase year by year is inadequate. For example Cevher and Yıldırım (2020) stated that they had reached 157 articles and 290 theses while they were investigating national studies on learning styles between 2000 and 2016. However, in the context of this study it is detected that there are 36 articles and 57 theses.

With the emerge of COVID-19 pandemic in the late 2019s and with its being widespread to the whole world countries, the importance of the educational technology has gained strength. The sustainable economic development of societies depends on their modernization to today's technological conditions in every aspect. The number and quality of the studies done on EIN, which is one of the portals developed by educational institutions to execute education services without a hitch in pandemic besides gaining qualified information in Turkey as well as every other country, will contribute to appliers, users, researchers and developers.

When conducting research, it is important to focus on how the variables presented in other studies can be useful to our own research, rather than simply presenting them as percentage figures. This means that instead of simply stating the percentage of a particular variable, we should consider how that variable can be applied to our own study and what insights it can provide. For example, if we are studying the effectiveness of a new treatment, we should look at how similar treatments have been used in past studies and what their results were, rather than simply stating the percentage of patients who responded to the treatment. By focusing on how the variables from other studies can be applied to our own research, we can gain a deeper understanding of the subject and make more informed decisions about our own study.

Furthermore, the variables presented in other research should be critically evaluated in order to determine their relevance and applicability to our own study. For instance, variables that were used in a study that has a different population or different setting may not be transferable to our own research. Therefore, it is crucial to carefully examine the variables and their measurement in other studies and how they can be used in our own research.

In conclusion, instead of simply presenting the percentage of variables from other studies, we should focus on how those variables can be applied to our own research and what insights they can provide. By critically evaluating the variables and their relevance, we can gain a deeper understanding of the subject and make more informed decisions about our own study.

When the variance of the subjects and its contents is analyzed, it is apparent that the researchers focus on the attitude level of EIN (Alabay & Taşdelen, 2017; Bahçeci & Efe, 2018; Şahin & Erman, 2019; Timur et al., 2017) and teaching through EIN (Aydınözü et al., 2016; Ertem-Akbaş, 2019; Maden, 2019). When the reason of EIN to be put into service is considered, even though the total number of studies is inadequate, it is thought that the ration of the studies meets the need. Another issue which researchers frequently focus on is the level of use of EIN. The more adequate and qualitative an information source is, the more rate of consultation to that source is. Türker and Güven (2016) in their study done with high school teachers in the years of the start of EIN usage stressed that more than half of the teachers did not use EIN and their reason of this was the problems of internet access and connection. When the studies in the following years are investigated, it is clear that the frequency of the EIN usage has increased (Kuyubaşıoğlu & Kılıç, 2019) and the satisfaction level of both teachers and students in terms of EIN practicality is high (Bertiz, 2017; Şahin & Erman, 2019).

When the data collection tools of the studies on EIN are examined, it is discovered that in more than half of the studies qualitative methods are used. The studies in which qualitative and hybrid methods, in which cause-effect relationship of the ideas of the participants can be formed and in case of a problem the root can be found, are used described the subject to the appliers and researchers in a certain way. Indeed, Kurtdede-Fidan, et al (2016) showed in their study in which hybrid methods were used that although primary school teachers did not use EIN frequently and they did not have sufficient information about EIN, EIN was still effective, productive and practical.

When the sample groups of the studies are examined, teachers and students are approximately equally included in the studies. It is no doubt that the more teachers actively use EIN, the more frequently students will use EIN and the more opportunities they will have to access true and quality information. In 2020-2021 academic year, there was compulsory online education process due to pandemic and teachers and students from all levels executed their lessons through EIN and assessment and evaluation process through the portal (EIN); thus, the level of use of EIN increased.

Additionally, it is important to note that the limited number of studies on EIN may indicate a lack of research in this area, despite the increasing importance of educational technology in today's society. Furthermore, the focus of the studies on EIN seem to primarily revolve around the attitudes and usage of the portal, rather than its effectiveness in improving education outcomes. It is also worth mentioning that the use of hybrid methods in research on EIN is crucial for understanding the causes and potential solutions for any issues related to the portal's usage. Overall, the findings suggest that there is room for improvement in terms of the information available to teachers and students about EIN, as well as its

effective usage and content. The accelerated content enrichment process in response to the pandemic may aid in addressing these concerns in the future.

In this study, in which articles on EIN between 2016 and 2020 have been investigated, it is figured out that students and teachers do not have adequate information about the portal (EIN), they do not use it effectively enough and they think that the content is insufficient (Bahçeci & Efe, 2018; Durmuşçelebi & Temircan, 2017; Maden & Önal, 2020). With the effect of pandemic conditions, content enrichment process has accelerated. It is thought that though the process started negatively, in the coming terms it will contribute to the active and productive use of students and teachers.

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