

## Current trends in education technologies research worldwide: Meta-analysis of studies between 2015-2020

**Ezgi Pelin Yildiz** <sup>a</sup>, Kafkas University, Kazim Karabekir Vocational School of Technical Sciences, Department of Computer Programming, Kars, Turkey, <https://orcid.org/0000-0002-9987-9857>

**Metin Cengel** <sup>b</sup>, Sakarya University of Applied Sciences, Hendek Vocational School, Department of Computer Programming, Sakarya, Turkey, <https://orcid.org/0000-0001-6049-5015>

**Ayse Alkan** <sup>c</sup>, Samsun Provincial Directorate of National Education, Samsun, Turkey, <https://orcid.org/0000-0002-9125-1408>

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### ABSTRACT

The interaction of education and technology affects the developments occurring in two areas and the development in education increases the speed of technological developments. Educational technology is the functionalization of the scientific knowledge produced in educational sciences and its application into practice. In this research, the content analysis of the studies conducted in Turkey and other countries in the last 5 years is presented in order to determine the current trends in Educational Technology Research Studies. Within the scope of the purposive sample, the studies published between 2015 and 2020 in the field of Educational Technology Research Studies and included in the databases and journals were examined and interpretations were made. Fifteen research criteria were determined within the context of content analysis. These criteria are as follows: index, country, university, department, year of publication, number of authors, research area, method, educational level, sample group, sample number, data collection method, number of bibliographies, analysis techniques and research trends. SPSS 24 program was used in the analysis of the data and the obtained data were presented in the related tables. The data were interpreted based on percentage and frequency. After making general explanations under the tables, the similarities and differences in the studies were analyzed in detail using a meta-analysis method. As a result, it was revealed that the most emphasized issue within the scope of the research area is the adequacy of using Educational Technologies.

**Keywords:** Educational technology research, current trends, meta-analysis.

\* ADDRESS FOR CORRESPONDENCE: Ezgi Pelin Yildiz, Kafkas University Kazim Karabekir Vocational School of Technical Sciences Department of Computer Programming, Kars, Turkey.  
Email Address: [yildizezqipelin@kafkas.edu.tr](mailto:yildizezqipelin@kafkas.edu.tr)

## **1. INTRODUCTION**

Considering that the present age is a technology age, the most important role in fulfilling the requirements of this age is undoubtedly based on the educational principles of the countries. When the educational visions of developed and developing countries are examined, it is seen that they benefit from the technology efficiently in educational activities. Based on the definition of Alkan (1997), educational technologies are used to transform the science activities produced within the scope of educational sciences into usable and make them to practice. Due to the increase in the use of technology in education, many countries have developed and implemented various programs in order to increase the use of education technology (Akpınar, 2003).

Depending on the development of information technologies, the technological equipment used in education continues to develop and renew. Many countries have established standards, performance and competence indicators for effective use of technology in education (Anil & Kececi, 2015). Many countries, including the United States, Australia, the UK, China, Ireland and Latin America, have begun using National Educational Technology Standards (NETS), the project of the International Society for Technology in Education (ISTE), in their education system (Stuve & Cassady, 2005).

It is important that the concept of technology is perceived correctly especially by young researchers. In this context, it is essential to understand how studies on educational technology research studies are conducted and what kind of results they produce. The most valid way for this is to examine in detail the current trends in educational technologies research (Simsek, et al., 2008). At the beginning of these research studies, the question of which are the studies included in databases and journal indexes within the scope of educational technologies comes first.

When the literature is examined, some studies have been found according to certain research criteria. Simsek et al (2008) studied the master's thesis in the field of educational technology research in Turkey between 2000 and 2007 and have received 259 theses under scrutiny in this context. As a result, they found that the majority of the quantitative research was paradigmatic and that questionnaires, tests and scales were used as data collection tools. However, a striking result of the study is that the results of the study are found to be quite poor in terms of functionality and fertility. In his study, Costa (2007) examined master's theses completed in five universities in the field of educational technologies in Portugal and benefited from 226 thesis studies in this context. As a result; thesis subjects are shaped in the context of behavioural, cognitive and constructivist approach and thesis paradigms are based on quantitative, qualitative and mixed approaches. In addition to this, it has been determined that the main focus is on the use of ICT in education and training applications. In addition to this, it has been determined that the main focus is on the use of Information Communication Technology (ICT) in education and training applications. Alkrajji and Eidaaros (2016) conducted a meta-analysis study that reveals the current trends and problems in Saudi Higher Education and Educational Technology Research. In this context they have discussed 52 studies in detail types of technology, target groups, socio-technical research contexts, research theories, research paradigm and methodologies. According to the results obtained in the study, most of the studies examined are based on a case study methodology, however, the articles lack the theoretical framework. Gao et al. (2020) their article produces a comprehensive review by combining bibliometric analysis and content analysis. A total of 4463 journal articles and 3061 conference papers on OI were extracted from Web of Science (WOS). The results reveal that OI still confined itself to limited disciplines and innovation-centric journals but is beginning to put more effort into becoming a more open ecosystem by influencing other disciplines.

### **1.1. Aim of study**

The aim of this research is to reveal the current research trends in the studies conducted in the field of Educational Technology Research by making the classification of publications.

### **1.2. Important of study**

As a result of research carried out in the worldwide between the years of 2015 and 2020 "Educational Technology Research" studies in the field: index, publication year, country, university, department, number of authors, research area, method, education level, sample group, sample number, data collection method, number of bibliographies, analysis techniques and research trends under the headings were obtained. This study was required to reveal the gap in the field of Educational Technologies discipline and to direct young researchers in this context.

## **2. Method**

### **2.1. Research design**

This research is an example of a meta-analysis which is included in the content analysis studies. Meta analysis is a method that aims to reach common results by using statistical tools in order to synthesis the results of the research studies by combining the research studies that are being worked on together and also tries to reduce the limitations of individual studies (Buyukozturk, et al., 2018). When the advantages and disadvantages of content analysis are examined; advantages: it covers both quantitative and qualitative issues, it deals with communication directly through materials and thus is at the center of social interaction; disadvantages: content analysis requires digitization, while digitization may cause content to be overlooked, determining the categories in content analysis is at the discretion of the researcher and these are studies that require a lot of time (Boke, 2011).

In this study, meta-analyze method was used in order to analyze the studies conducted in the field of Educational Technology Research worldwide with qualitative methods to determine the tendency. Content analysis studies by Ozcinar (2009), Keser et. al. (2011), Uzunboylu, Eris and Ozcinar (2011), Uzunboylu and Cumhur (2015), Chiang et. al. (2015), and Toman (2019) lead this study for the selection of criteria.

### **2.2. Data collection**

First, by the researchers in Educational Technology, published in 2015 and 2020 years in the research area of Turkey that addressed the scanned databases and journals then analyzed these databases and journals published over the years, which identified that those were related to the topic throughout the world and have been made to interpret.

### **2.3. Analysis of data**

The data obtained in this study are presented in the respective tables. The purpose of such a path is that; the study is both to create visuality and an opportunity to have an idea about the research conducted at first glance. The data were interpreted based on percentage and frequency. After making general explanations in the form of tables, the similarities and differences seen in the studies were analyzed in detail using meta-analysis method.

## **3. Findings**

The findings presented based on the publication classification criteria determined in the research are given in the following tables and related comments.

Table 1. Distribution of studies in the field of educational technology research by the publication index

Countries	F	%
Turkey	50	49.5
USA	18	17.8
Russia	4	4.0
Germany	2	2.0
Australia	2	2.0
China	2	2.0
Indonesia	2	2.0
England	2	2.0
Ireland	2	2.0
TRNC	2	2.0

Table 1 illustrates that the studies conducted in the field of Educational Technology Research mostly belong to the "Eric" database (20 publications and 19.8%). The Education Resources Information Center (ERIC) database provides unlimited access to more than 1.2 million bibliographic records and articles in the field of education. In this context, a significant amount of full text is linked. The ERIC collection includes articles, books, conference texts, technical reports and other educational resources. In addition to the Eric database of the publications, their frequency is noteworthy in Science Direct, Higher Education Council Thesis Search, IEE Xplore, Web of Science and Scopus databases. Other than this, the presence of national and international journals accepting publications within the scope of Educational Technologies is another remarkable finding in the Table 1.

Table 2. Distribution of studies in educational technology research by the country

Publication index	F	%
Eric	20	19.8
Science Direct	14	13.9
HEC thesis screening	13	12.9
IEE Xplore	11	10.9
Web of Science	6	5.9
Scopus	5	5.0
E.T. Theory and Practice	4	4.0
Qualitative Research in Education	2	2.0
Elementary Education Online	2	2.0
Universal Journal of Educational Research	2	1.0

According to Table 2, when the distribution of the studies in the field of Educational Technologies according to the research countries is examined, the countries with the highest publication (with 50 publications and %49.5%), e.g. "Turkey" are put forward. Benefiting from while browsing the nationally YOK Thesis Screening and university journals have transformed these criteria in Turkey's favour. Turkey is followed by the United States in the second place. Another remarkable point in Table 2 is the assets

of developing countries such as Indonesia, Macedonia and the Philippines. Another result shows the inadequacy of a developed country the education such as Finland and Korea.

Table 3. Distribution of studies in educational technology research by the University

University	F	%
Eskisehir Anadolu University	5	5.0
Near East University	4	4.0
University of National Education	4	4.0
Gazi University	3	3.0
İnönü University	2	2.0
18 Mart University	2	2.0
Mersin University	2	2.0
Necmettin Erbakan University	2	2.0
Karadeniz Teknik University	2	2.0
Nevşehir University	2	2.0
Omer Halis Demir University	2	2.0
Florida Universtiy	2	2.0
Colorado College of Nursing	2	2.0
South Technology University	2	2.0
Utah State University	2	2.0
Central University	2	2.0
Orta Dogu Teknik University	2	2.0
Hacettepe University	2	2.0
Abant İzzet Baysal University	2	2.0
Adnan Menderes University	2	2.0

Table 3 illustrates that when the universities that belong to the studies published within the scope of Educational Technology Research are examined, the frequency of a university in Turkey "Eskisehir Anadolu University" is seen where it belongs. Anadolu University is followed by a university from the TRNC: "Near East University" and a university from the United States: "University of National Education". When the sub-rankings are examined, it is seen that the domestic and abroad universities vary. It has noted the lack of publication in technically advanced universities such as Middle East Technical University, Hacettepe University in Turkey.

Publication years	F	%
2015	22	21.8
2016	27	26.7
2017	21	20.8
2018	15	14.9
2019	14	13.9
2020	2	2.0

Table 4. Distribution of studies in the field of educational technology research by the department / institute

Table 4 shows that, it is found that the majority of the publications in the field of Educational Technology Research are made in the “Institute of Educational Sciences” as the institute and in the “Department of Computer Education and Instructional Technology” as the department. Another remarkable point in Table 4 is the diversity in departments and institutes

Department/Institute	F	%
Educational Science	45	45.0
Institute of Technology	17	17.0
Computer Education and Instructional Technology	13	13.0
Social Science Institute	4	4.0
Pedagogy	3	3.0
Foreign Languages	2	2.0
Classroom Teaching	2	2.0
Health Sciences	2	2.0
Institute of Science	2	2.0
Nursing	2	2.0
Management	2	2.0

Table 5. Distribution of studies in educational technology research by the publication years

According to Table 5, when the distribution of the studies conducted in the field of Educational Technology Research according to the publication years is examined, the frequency of “2016” is noteworthy with 27 publications and 26.7%. When the annual distribution is examined, it is found that there is a decrease in the publications in Educational Technology Research Studies in the literature.

- Distribution of Studies in the Field of Educational Technology Research by Author Number

According to the number of authors, the studies conducted in the field of Educational Technology Research Studies is examined and, it is found that the frequency is in “single-author studies”. One author is followed by two authors.

Table 6. Distribution of studies in educational technology research area by the research area

Research area	F	%
Current Trends in E.T. Research	11	10.9
E.T. Usage Competencies	7	6.9
E.T. Standards	7	6.9
Teacher views on E.T.	6	7.9
Teacher candidates' views on E.T.	5	6.0
Use of E.T. in healthcare	4	4.0
Use of E.T. in Science and Technology	3	3.0
Use of E.T. in Foreign Language Education	3	3.0
E.T. in Higher Education	3	3.0
Future uses of E.T.	3	3.0
E.T. Use Anxiety	2	2.0
E.T. Use Barriers	2	2.0
Use of E.T. in Special Education	2	2.0
E.T. Attitudes of Classroom Teachers	2	2.0
E.T. in Mathematics Education	2	2.0
School administrators' ability to use E.T.	2	2.0
Attitudes of I.T. teachers towards E.T.	2	2.0
E.T. in the digital world	2	2.0

According to Table 6, when the distribution of the studies conducted in the field of research area is examined according to the research field, it is seen that it is a very diverse structure and it is found that the density in this diversity is "Current Trends in E.T. Research" with 11 publications and 10.9%. The rapid developments and changes in the information and communication technologies that are renewed day by day affect the Educational Technology Research directly and researchers tend to examine the new technologies, applications and theories put forward in this field. It is thought that this result can be explained in this context. Other rankings are followed by the same percentage of E.T. qualifications and E.T. standards. Within the scope of E.T. use competencies, research studies were conducted on different sample groups such as teachers, academicians, prospective teachers, students and public employees. As for E.T. standards, studies have been carried out for international standards ISTE and .NET standards. Table 6 shows that other research areas vary.

Table 7. Distribution of studies in the field of educational technology research by the methods

Methods	F	%
General screening	30	29.7
Report	15	14.9
Meta analysis	15	14.9

Case study	9	8.9
Qualitative research	7	6.9
Experimental research	6	5.9
Mixed method	5	5.0
Scale development	4	4.0
Research methodology	2	2.0
Phenomenology	2	2.0
Relational screening	2	2.0
Compilation	2	2.0

Table 7 illustrates that the distribution of the studies conducted in the field of Educational Technology Research Studies according to the methods is often the “general screening method”. In this context, it has been determined that the studies conducted in the related field are mostly on quantitative research studies. The diversity of other research methods is remarkable. Both qualitative and quantitative research methods are often preferred. General screening is a method used to make a general judgment about the universe (Cresswell, 2017).

- Distribution of Studies in Educational Technology Research Area by the Educational Levels

When the educational levels of the studies conducted in the field of Educational Technology Research Studies were examined, it was found that the density was “university”. Since 21 of the research studies were in the nature of papers, a total of 80 education levels were identified in the study. Universities are followed by primary schools in a percentage.

- Distribution of Studies in the Field of Educational Technology Research by the Sample Number

When the sample numbers of the studies conducted in the field of Educational Technology Research Studies are examined, it is found that the density is “200 and above. This result obtained from the study can be explained by conducting the related studies with the general screening model, which is one of the quantitative research methods. When the number of bibliographic studies conducted in the field of Educational Technology Research is examined, it is determined that the density is in the range of “26-50” numbers.

Table 8. Distribution of studies in the field of educational technology research according to the sample group

Sample group	F	%
University students	15	14.9
Teacher candidates	13	14.6
Article and thesis	8	7.2
Lecturers	7	7.1
Classroom teachers	6	6.9
Primary school branch teachers	6	6.9
High school branch teachers	4	4.2

Primary school students	4	4.2
Middle school students	3	3.4
Projects (TUBITAK, BAP, etc.)	3	3.4
School manager and administrators	3	3.4
Vocational high school students	2	2.6
Special education students	2	2.6
Public employees	2	2.6

Table 8 illustrates that it is seen that the sample groups of the studies on Educational Technology Research Studies vary. When the frequency and percentage are examined, it is found that the density is on the sample of “university students”. University students are followed by “teacher candidates”. The fact that the majority of the studies in the related field were conducted in the Faculties of Education and Educational Sciences supports this result. Projects, articles, theses, user data included in the meta-analysis studies in Table 8 are other remarkable situations.

- Distribution of Studies in Educational Technology Research Area by the Data Collection Tools

When the data collection tools of the studies conducted in the field of Educational Technology Research Studies are examined, it is found that the density is on the “survey and scale” measurement tools with the same percentage. In addition to these measurement tools, data collection tools used in both qualitative and quantitative research methods (observation, interview, document analysis, performance indicators, etc.) are another result of the study.

Table 9. Distribution of studies in educational technology research area by the analysis techniques

Analysis techniques	F	%
t test	19	18.4
Content analysis	17	16.4
Descriptive analysis	12	11.4
Analysis of variance	11	10.4
Systematic analysis	6	5.4
Chi-Square test	5	4.4
Exploratory factor analysis, Confirmatory factor analysis	4	3.4
Tukey-HSD test	3	3.4
Order mean, frequency, percentage	3	3.4
Mann-Whitney U test	3	3.4
Kruskal Wallis test	3	3.4
Multivariate analysis of variance test	2	2.4
Correlation analysis	2	2.4
Regression analysis	2	2.4

Technologies according to the analysis techniques are examined, it is found that the density is above the test “t test”. The relevant test is used to test whether there is a statistically significant difference between the numerical (continuous) variables (or groups), or to determine whether the observed average value is different from the assumed or predicted (or previous research) value (Cresswell, 2017). The frequency of using the t test can be explained by the preference of quantitative research methods rather than research methods.

Table 10 provides that when the distribution of studies in the field of Educational Technologies according to research trends is examined, it is found that the intensity is on “Current Trends in E.T. Research Subjects”. Another remarkable point in Table 10 is the diversity of trends in the field of Educational Technology Research.

Table 10. Distribution of studies in educational technology research area by the research trends

Research trends	F	%
Current Trends in E.T. Research	13	13.1
E.T. and teacher views	8	8.0
E.T. and students views	7	7.0
E.T.-ISTE, NCER, NCSEER and NETS standards	7	7.0
Technology attitudes towards E.T.	7	5.0
E.T. vision and usage skills	5	4.0
Use of E.T. in health sciences	4	4.0
E.T. applications in distance education	3	3.0
Effective use of E.T.	3	3.0
E.T. and barrier	3	3.0
E.T. and sustainability	3	3.0
E.T. perspective and paradigms	3	3.0
Academic perception of E.T.	2	2.0
E.T. and learning outcomes	2	2.0
Foreign language teaching with E.T.	2	2.0

### The reliability of the research

Two expert opinions have been used to determine the reliability of the data. Studies were coded into moderator variables that fell into two categories; substantive and methodological. There were eight substantive variables; index, year of publication, number of authors, country of research, area of research, purpose of research, education grade, bibliography number, and six methodological variables; method, sample group, sample number, data collection method, analysis techniques. The inter-coding consistency has been found to be sufficiently robust with a value of .84; and revised with a Kappa parameter. The Kappa value was found to be .84 in this study. According to Cohen (1988), this value is almost perfect, as it lies between .84 and 1.

### 4. Conclusion, Discussion and Suggestions

In this research, the content analysis of the studies conducted in Turkey and abroad in the last 5 years in order to determine the current trends in Educational Technology Research Studies are presented. Within the scope of the purposive sample, the studies published during 2015-2020 in the field of

Educational Technology Research Studies and included in databases and journals were examined and interpretations were made. In this context, 101 publications were evaluated in terms of content and method dimensions. 15 research criteria were determined within the context of content analysis. These criteria are; index, year of publication, country, university, department, number of authors, research area, method, educational level, sample group, sample number, data collection method, number of bibliographies, analysis techniques and research trends. When the relevant criteria are examined, the results are as follows:

When the distribution of the studies conducted in the field of Educational Technology Research Studies according to the indexes is examined, it is found that the frequency belongs to The ERIC database. This result is related to the fact that the study field belong to the Institutes of Educational Sciences. When the literature is examined, Keser and Ozcan (2011) examined the publications presented at the Educational Sciences conferences around the world and found that most of the articles presented were in the Science Direct database. Fidan and Tuncel (2018) studied studies in the field of augmented reality in education researches between 2012-2017, in this context, they revealed that the most study was on a journal scanned in the SSCI database.

When the distribution of the studies conducted in the field of Educational Technology Research according to the publication years is examined, it is found that the frequency belongs to "2016". In this context that draws attention; the decrease in the number of studies conducted in the related field in recent years. Keser and Ozcan (2011) also found a decrease in the number of articles in their studies after 2010. Similarly, Tosuntas, Emirtekin and Sural (2019) found that the number of graduate theses in general has declined in recent years. According to Akca-Ustundag (2013), the reason for this decrease was that the teaching staff of CEIT departments could not reach the desired level. In addition, most of the Computer Education and Instructional Technology departments have closed for the last 2 years because many students do not prefer, and many have come to the brink of closure. Uzunboylu and Gundogdu (2018), they have researched a content analysis study on pre-school education and instructional technologies and in this context, they determined the year in which the most publications were presented as 2010.

When the frequency distribution by country of Educational Technology of the studies examined in the study area "Turkey" it has been identified as belonging to. The consideration of scientific journals and databases in the field of Research in Educational Technology operating in Turkey is an effect in favour of this conclusion. In the context of the countries to which the studies belong Turkey is followed by the USA. Another detail that draws attention in this context is that developing countries (Indonesia, Malaysia and Philippines) find their place in the ranking. In a similar result, Keser and Ozcan (2011), concluded that Educational Sciences belongs to 20 different countries of the papers presented in the conference, and found that the density is in Turkey. Uzunboylu and Karagozlu (2017), made a content analysis on flipped classroom and there is a remarkable difference between the number of studies that took place in the USA compared with all other countries.

When the distribution of the studies conducted in the field of Educational Technology Research according to the universities was examined, it was found that the frequency belongs to "Eskisehir Anadolu University ". When evaluated in abroad, Anadolu University was followed by "TRNC (Turkish Republic of Northern Cyprus) Near East University" and "USA University of National Education" with the same number of publications. As a similar result, Simsek et al., (2008) found that the majority of the studies in the related field belong to Anadolu University.

When the distribution of studies carried out in the field of Educational Technology Research Studies according to institutes / departments is examined, it is determined that the frequency belongs to "Institute of Educational Sciences" and more specifically to "Computer and Instructional Technologies". When the literature is examined, Tosuntas, Emirtekin and Sural (2019) showed that the frequency of studies in the related field belongs to the Institute of Science.

When the distribution of the studies conducted in the field of Educational Technology Research Studies according to the number of authors is examined, it is found that the frequency is over “single author”. Keser and Ozcan (2011) found that the related studies were mostly “two authors”.

When the distribution of the studies conducted in the field of Educational Technology Research according to the research fields is examined, it is revealed that the frequency is on “Current Trends in Educational Technology Research”. Another point that attracted attention in this context was the use of Educational Technologies in different disciplinary fields and the diversity of research fields. When reviewing the literature, Keser and Ozcan (2011) found that the subject that is frequently studied in the related field is “Determination of Student Behaviours in the Scope of Educational Technologies”. On the other hand, Simsek et al., (2008), drew attention to the intensity of the research field “Using Educational Technologies in Different Teaching Approaches”.

When the distribution of the studies conducted in the field of Educational Technology Researches according to the research methods is examined, it is found that the frequency is on the “general screening model” which is preferred in quantitative research methods. When the literature is examined, it is revealed that the majority of the studies conducted in the related field are the general screening model in the same way (Keser and Ozcan, 2011; Tosuntas, Emirtekin and Sural, 2019).

When the distribution of the studies conducted in the field of Educational Technology Research according to educational levels is examined, it has been determined that the frequency is on “university”. When the literature is examined, it is revealed that the educational levels of the studies in the related field are generally universities (Simsek, et al., 2008; Keser and Ozcan, 2011; Tosuntas, Emirtekin and Sural, 2019).

When the distribution of studies conducted in the field of Educational Technology Research according to sample groups was examined, it was revealed that the frequency was “university students”. In the study, pre-service teachers followed university students as a percentage. Tosuntas, et al. (2019) have reached similar results in their research. When the literature is examined, it is seen that pre-service teachers are the most chosen sample group and this trend has not changed in the last years (Akca-Ustundag, 2013; Alper & Gulbahar, 2009; Goktas et al., 2012; Simsek et al., 2009).

When the distribution of the studies conducted in the field of Educational Technology Research Studies according to the sample number was examined, the frequency was found to be between “200 and above”. This result can be explained by the fact that the studies in the related field are mostly handled with “quantitative research methods”. When the literature was analysis, it was found that Yildiz (2019) reached a similar result. Tosuntas et al. (2019) found that the frequency was between 1 and 99. According to Goktas et al. (2012), researchers have limited time and resources, aim to access data easily, have limited statistics and method information the difficulty of ethical and research permission processes due to the number of samples does not exceed 1000.

When the distribution of the studies conducted in the field of Educational Technology Research Studies according to data collection tools is examined, it is found that the frequency belongs to “questionnaire and scale” with the same percentage. Considering that most of the studies are quantitative researches studies, it is expected that quantitative data collection tools have been used. When the literature was examined, it was observed that the researchers reached similar results (Keser & Ozcan, 2011; Michalca & Miclea 2007; Simsek, et al., 2008; Tosuntas, et al., 2019).

When the distribution of the studies conducted in the field of Educational Technology Research Studies according to the number of references is found, the frequency is found to be between “26 and 50”.

When the distribution of the studies conducted in the field of Educational Technology Research Studies according to the analysis techniques is examined, it is revealed that the density is in the “t test” which is frequently used in the analysis of the data showing normal distribution. The relevant test is

followed by “content analysis” and “descriptive analysis” an used in qualitative research methods. In addition to these tests, non-parametric tests such as; Mann-Whitney U, Kruskal Wallis, Chi square and exploratory factor analysis, confirmatory factor analysis, metaphor and in-depth analysis are attracted attention. When the literature is examined, these results are similar to the previous studies. (Goktas et al., 2012; Sonmez, 2005; Simsek et al., 2009, Star, 2019).

When the distribution of the studies conducted in the field of Educational Technology Research Studies according to the research trends is examined, it is revealed that the density is Current Trends in Educational Technologies similar to the research field in the study criteria. This result can be correlated with the researchers' desire to identify the deficiencies existing in the related field and to make new scientific studies for these deficiencies. On the other hand, Yildiz (2019) found that research trends are more directed towards “Technology Integration in Educational Technologies”.

New technologies in education only include new (contemporary) technologies. The difference between old technology and new technology of education can be said as followed. If a technological tool has been used in education for many years, has been used with satisfaction and if it is deficient in answering new demands, then it is an old technology (Uzunboylu, 2019; Yılmaz et., al. 2017). As new technologies develop, the content of such studies will also improve.

As a result, the following suggestions can be listed in the light of the findings obtained from the research:

- In future studies, the development and change of educational technology research studies in the world can be discussed in a broader way by examining more sample groups including wider time periods and non-indexed ones.
- Studies can be carried out in the areas of systematic change and management in order to provide different perspectives on the field.
- More attention can be paid to the sample cluster area, so that the selected cluster can be chosen impartially and randomly.
- By increasing the number of sample groups, more accurate values can be obtained.

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### **Authors Information**

**Dr. Ezgi Pelin YILDIZ\***, Kafkas University Kazım Karabekir Vocational School of Technical Sciences Department of Computer Programming. E-mail: [yildizezgi@kafkas.edu.tr](mailto:yildizezgi@kafkas.edu.tr) ORCID Number: 0000-0002-9987-9857.

She works as the Head of Department of Computer Technologies in Kafkas University/Turkey. She completed to PHD. Programme in Computer and Instructional Technology Education in Near East University/Cyprus.

**Dr. Metin CENGEL\*\***, Sakarya University of Applied Sciences Hendek Vocational School Department of Computer Programming. E-mail: [cengel@sakarya.edu.tr](mailto:cengel@sakarya.edu.tr) ORCID Number: 0000-0001-6049-5015.

He works as the Head of Department of Computer Technologies in Sakarya University/Turkey. He completed to PHD. Programme in Computer Engineering in Istanbul University/Turkey.

**Dr. Ayşe ALKAN\***, Samsun Provincial Directorate of National Education. E-mail: [ayshe\\_alkan@hotmail.com](mailto:ayshe_alkan@hotmail.com), ORCID Number: 0000-0002-9125-1408.

She works at Provincial Directorate of National Education as Computer Teacher. She completed to PHD. Programme in Computer and Instructional Technology Education in Sakarya University/Turkey.