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CONTENT ANALYSIS OF THE ARTICLES PUBLISHED IN EDUCATIONAL TECHNOLOGY

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Abstract

This research paper intends to examine 335 articles that were reached within the year 2015 to May 2021. Taking into consideration that 2021 has not yet come to an end, it was necessary to be included in the research analysis and seen as a year for the sake of current information. Subsequently, this research study will be centralizing only on open access research articles which consists of 89 articles that will be used for the data analysis. The perusal of the research was based on the year they were published, the subject area of the research, the document types of the research, the source titles of the research, countries/regions, languages, data collection method, number of keywords and also indexes. The keywords that will be used for this research are; learning, school, educational technology and content analysis. The content analysis method was used in this research study. Moreover, it was observed that; most articles were published in the year 2019, consist of 23 articles, while there are 89 research articles in education educational research which has the highest number in the article type category. The quantitative research method was commonly used compared to the other research study methods.

Keywords: Learning, school, educational technology, content analysis

Introduction

The precision of educational technology has transformed tremendously (Richey, Silber, & Ely 2008) aligned with transformations in socio-economic construction (Aesaert, Vanderlinde, Tondeur, & van Braak 2013). There are numbers of stages of educational technology that have been pinpointed, stage of instructional pattern, stage of message pattern, (Guo, Zhang, & Guo 2016; Kara Aydemir, & Can 2019) stage of simulation and *stage* of research of educational technology. (Winn 2002). Looking at the focus on learning atmosphere, earlier study focused on three major phases within the context of educational technology, (Hsu, Hung, & Ching 2013) which are; technology advancement, acceptance of new technologies and the learning atmosphere. (Ross & Lowther 2009; Ross, Morrison, & Lowther 2010) It is stated that technology can be seen as an instructor, teaching assistance and a learning instrument. (Weller 2018) The synergetic nature of educational technology needs weighing scholarly expatriate. There are several efforts to recognize the research that has been made in educational technology. (Elly 1992; Spector 2013; Ringstaff & Kelly 2002; Weller 2018) it has been asserted that there has been a transfer from the indubitable direction of certain technologies to a more critical comprehension (Weller 2020), other factions have asserted the computer-based and also the virtual technologies and the unification into the educational sector has created great enthusiasm (Albirini 2007; Alper & Gulbahar 2009 & Oliver 2013). Theoretical advancement of educational technology was largely unrecognized.

Furthermore, it could be asserted that there is the absence of an educational theory of technology, this is not the same as the theory of educational technology that has several numbers (De Castell, Bryson and Jenson 2002). The distinction between both is however theories of educational technology permits both good and dangerous, a combination of education and technology. But the educational theory of technology in disparity looks into technology from the view of educational values, purposes with direction to what can be observed from the study of educational technology as a social-based antique.

The synopsis of the theory of educational technology can be metaphorically be translated as (Mishra et al. 2009) the music remains the same but the tempo keeps on changing over time. Many have stated that in the field of educational technology, the section is terrible at learning the lessons from the past. The outlook of the future is that mistakes from the past might be repeated. (Rush by 2013), with the new technologies, the past will eventually repeat itself. The worst thing is not the lack of ability to learn from the past but the fact that we do not know the lesson to be learnt in the first place. There is a tendency to disregard things from the past due to our enthusiasm to get on with the present.

Winn (2002), virtual technologies and computers have infiltrated our daily lives which have had an impact to the extent the web and technologies are seen as a global cerebrum that dispenses cognition to all networks. (Alper and Gulbahar 2009 & Masood 2004) Furthermore, technologies are the impulse of the digital age. effect of virtual technology is more advanced than before in which the research in this field has transformed immensely. (Kinshuk et al. 2013) Dramatic advancement of technologies in education since the earlier century and for personal use in the early eighties' century and the arrival of the computers in mainstream education in the nineties century and educational technology has now become equivalent with the computer-based mode of learning and virtual education.

Objectives and Significance of Research

The study aims to analyze the articles published within the year 2010 to May 2021 on educational technology and to pave the way for future related study or research. The purpose of the research is to give more enlightenment on the subject 'educational technology' and to contribute to knowledge. The research will also aid future researchers who will work on related research study.

Methodology

Content analysis is a method of evaluating text-based, journals, articles, interview transcripts, advert and scripts. Content analysis can be quantitative, qualitative or both. Quantitative researchers can simply search for certain words, phrases or ideas in the data and add them up, qualitative researchers can seek to extract meaning through a search for subject matter in the data that is given. (Egmir, Erdem, and Kocyigit 2017).

Research Model

Neuendorf and Kumar (2015) stated that content analysis is equally valuable and valid in emphasizing a text and also identifying its scope. Fundamentally, in the context of the research, 89 articles related to "Learning", "School", "Educational Technology", Content

analysis which has been made accessible in the web database have been analysed and these studies have been evaluated through the use of content analysis.

Data Collection and Analysis

According to (Loeb et al. 2017), the researcher's profession and proficiency are to use proper analytical, transmission, and data visualization process to translate raw data into reported discoveries in a format that is useful for each intended viewer. The data collection tool of this research was a table that requested for; journals in which the articles were published, the year of publication, the language in which they were published, the country in which the research was carried out, the number of keywords and authors of the articles, research type, lastly, data analysis method. The abstract of the articles obtained in the database between the year 2015 to May 2021 was analyzed according to the keywords. Furthermore, the full text of the various articles selected was reached and scrutinized in line with the subject. The articles were able to provide the necessary information needed by the table of request while some full text could not be reached due to certain reasons such as text in other languages other than the English Language that could not be translated into the English language. The data were analyzed through the use of the content analysis method.

Study Group

In this study, 335 articles were made available on the web database between the year 2015 and 2021 have been searched for "Learning", "School", "Educational Technology", Content analysis while 89 articles were accessible and have been selected through sampling method.

Findings

Table 1 illustrated that 95,6%, 2.2% and two of 1.1% of the articles were written in Education Educational Research, Computer Science and Communication respectively.

Table 1.

Dissemination of the articles in the research by number of research areas.

Research Areas	Number (n)	Percentage (%)
Education Educational Research	89	95,6
Computer Science	2	2,2
Chemistry	1	1,1
Communication	1	1,1
Total	93	100

89 studies published between 2015 and 2021 were reached consequent to the screening of the keywords of "learning", "school", "educational technology" and "content analysis" in this database and the distribution of these studies are given in Table 2. The examination of Table 1 reveals that 6.7%, 14.6%, 25.8%, 20.2%, 15.7%, 12.3% and 4.4% of the articles were

published within 2015 and 2017 respectively. Judging by the results, it can be said that the number of relevant studies started to increase in 2017 and the number of published studies peaked in 2019.

Table 2.

Dissemination of the articles that is included in research by the year that they were published.

Publication of Years	Numbers	Percentage (%)
2021	6	6.7
2020	13	14.6
2019	23	25.8
2018	18	20.3
2017	14	15.7
2016	11	12.4
2015	4	4.5
Total	89	10

Table 3 demonstrated that there are just one document types in this research study that is Early Access which contains 100% of the research study.

Table 3.

Dissemination of the articles by number of document types they were published.

Document Types	Numbers	Percentage (%)
Article	89	100
Total	89	100

Table 4 demonstrated that 41.573%, 24.719%, 22.472%, 6.742%, 2.247% and three of 1.124% of the articles were written in English, Spanish, Russian, Turkish, Chinese, French and Ukrainian respectively.

Table 4.

Dissemination of articles by number of languages.

Languages	Numbers (n)	Percentage (%)
English	37	41.7
Spanish	22	24,7
Russian	20	22.5
Portuguese	6	6.7
Turkish	2	2.2
Chinese	1	1.1

French	1	1.1
Total	89	100

According to Table 5, it was illustrated that in 46,06%, 38,20%, 13,48% and 1,12% of the articles 30 and less, between 31 and 50, between 51 and 100 and 101 and more references were used respectively.

Table 5.

Dissemination of the articles included in research by the number of references used.

Number of references	Number (n)	Percentage (%)
30 and less	41	46,06
Between 31-50	34	38,20
Between 51-100	12	13,48
101 and more	1	1,12
Not indicated	1	1,12
Total	89	100

Table 6. demonstrated that, in 8,98%, 66,29%, 20,22%, 3,37% and 1,12% are percentages of articles in study 3 and less, between 4-5, between 6-10 and 10 and more keywords were used respectively.

Table 6.

Dissemination of articles included in research by number of keywords used.

Number of keywords	Number (n)	Percentage (%)
3 and less	8	8,98
Between 4-5	59	66,29
Between 6-10	18	20,22
10 and more	3	3,37
Not indicated	1	1,12
Total	89	100

According to Table 7, it was found out that the mixed (qualitative-quantitative) methods, qualitative and quantitative were used respectively in, 16,85%, 35,95% and 47,19% of the articles included in the research. When an overall assessment of the results is made, it can be said that the quantitative method was the most widely used method, that the number of articles where the qualitative method was used was also high and the mixed method was the least preferred.

Table 7.

Dissemination of articles by the number of research types .

Research Method	Number (n)	Percentage (%)
Mixed Method (Qualitative - Quantitative)	15	16,85
Quantitative	32	35,95
Qualitative	42	47,19
Total	89	100

When the results related to the distribution by the number of samples of the articles included in the research and provided in Table 12 were analysed, it was found out that 21,34%, 5,61%, 7,86%, 21,34%, 13,48% and 30,33% of the articles had 30 and less, between 31 and 50, between 51 and 100, between 101 and 300 and 301 and more samples respectively.

Table 8.

Distribution of the articles by the number of samples.

Number of samples	Number (n)	Percentage (%)
30 and less	19	21,34
Between 31-50	5	5,61
Between 51-100	7	7,86
Between 101-300	19	21,34
301 and more	12	13,48
Not indicated/No sample	27	30,33
Total	89	100

According to Table 9, it was illustrated that the survey form was used as the data collection tool in 25,84% of the articles. It was followed by the Survey Method and Interview Through Semi-Structured Form having a percentage of 57,30% and Literature Review/Document Analysis having a percentage of 16,85% respectively.

Table 9.

Dissemination of articles by the number of data collection.

Data Collection	Numbers (n)	Percentage (%)
Survey Method	23	25,84
Survey Method and Interview Through Semi-Structured Form	51	57,30
Literature Review/Document Analysis	15	16,85

Total	89	100

It was found out that frequency analysis/descriptive statistics, descriptive analysis, content analysis, regression analysis, compilation, parametric hypothesis tests and factor analysis was employed in 29,21%, 14,60%, 11,23%, 7,86%, 6,74%, 6,74%, 4,49%, 3,37%, with four 2,24%, and six 1,12%, of the articles respectively.

Table 10.

Dissemination of articles by method analysis.

Method of Analysis	Number (n)	Percentage (%)
Not Indicated	13	14,60
Frequency Analysis/Descriptive Statistics	6	6,74
Descriptive Analysis	7	7,86
Content Analysis	26	29,21
Regression Analysis	2	2,24
Compilation	1	1,12
Factor Analysis	0	0
Parametric hypothesis tests - Factor Analysis	0	0
Parametric hypothesis tests	1	1,12
Parametric hypothesis tests –Regression Analysis	2	2,24
Non-parametric hypothesis tests	1	1,12
Discourse Analysis	3	3,37
Descriptive Statistics	4	4,49
Narrative Analysis	2	2,24
Document Analysis –Thematic Analysis	6	6,74
Descriptive Analysis - Correlation Analysis	1	1,12
Sequence Analysis	1	1,12
Ethnography	0	0
Forum	0	0
Narrative Research- ANOVA	0	0
Parametric hypothesis tests –Correlation Analysis	0	1,23
Rhetoric Analysis–Comparative Analysis- Discourse Analysis	0	1,23
Constant Comparative and thematic analysis methods	10	11,23
Thematic Analysis	2	2,24
Translational research study	1	1,12
Total	89	100

Discussion and Conclusion

The nexus of the discussion and conclusion of the research study is explicated using the keywords “Learning”, “School”, Educational Technology and Content analysis in scrutinizing the data, it was realized that education educational research has the highest percentage in the categories of the numbers of a research area that the study was published in which is 95.6%. It can be seen in the analysis that it was only articles that were used in the

document types. The data analysis showed that the English language has the highest number among the languages used in the research with 41.57% while the Spanish language is seen as the second most used language in the research and Chinese, French and Ukrainian have the least percentage that is 1.12% in the research. The analysis demonstrated that Spain is the country with the highest number of research with the percentage of 24.71% that is being used while Russia can be seen as the second country with 22.27% and Turkey was seen as the third country with the percentage of 8.98% in the research.

The data analysis elucidated that 30 and less has the highest percentage of references used which contains 46.06% of the study while 31-50 has the second-highest percentage with 38.20%. Looking at the numbers of keywords used, it was shown that between 4-5 has the highest number with 66.29%. Between 6-10 has the second-highest percentage of 20.22%. While analyzing the numbers of research method that is being used for the research study, it is shown that qualitative research method has the highest percentage that is 47.19%. The quantitative research method has 35.95% on the other hand, the mixed research method has 16.85%. Checking the analysis, it is shown that both 30 and less and 101-300 shared the same highest percentage of numbers of samples were used by 21.34% while between 31-50 has the least percentage that is 5.61% of the research.

According to the data collection method in the data analysis, it was illustrated that the survey method & interview through semi-structured form has the highest percentage by 57.30%, while the survey method has 25.84% and lastly, literature review/document analysis has the least percentage by 5.61%. The content analysis has the highest percentage by 26.29% regarding the data analysis method used in the research while constant comparative and thematic analysis methods have the second-highest percentage with 11.23%. From the information presented above, we can conclude by affirming that the research was successfully conducted with the raison d'etre of the term content analysis and the purpose of the research study.

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