Contextual, Formal and Correlational Examination of Article Titles Published in International Indexed Journals in the Field of Educational Sciences

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Abstract

Since appropriate title writing is an important variable in terms of publishing and citing an article, this research examines the titles of internationally indexed articles published in the field of educational sciences in terms of content and format. Document analysis was conducted by reviewing 800 articles and titles in the Web of Science database according to the criteria determined by the researchers based on the literature. Statistical analyses were made using the SPSS 27.0 program on the content and title compatibility data. The finding showed that the sentence structure of the articles differed according to the countries of origin of the journals in which they were published. In addition, it was found that the titles of the journals with high impact factor gave their methodological tendencies more clearly. It was found that the impact factor is linearly and medium related to reaching potential title standards and word count. Analysis by quartile factors of journals showed that potential content standards differed significantly in favor of Q1 journals. According to the results of the difference analysis for the journals, there is a statistically significant difference between the four journals in terms of title potential standards and a ranking as Review of Educational Research (Q1), Education and Science (Q4), Educational Researcher (Q1) and Pedagogy (Q4) has emerged according to the averages. Within the scope of the results obtained, some suggestions were made to guide researchers in creating titles for their scientific studies.

Introduction

Research articles are one of the most frequently used types of reports by academicians. Research articles are documents that introduce the results of research that has not been done before (Day, 1996), and these documents are presented to the scientific world through academic journals. It is extremely important to construct the macro and microstructure of the article report correctly and choose a title that reflects the article, its content, and its stylistic features. The title gives the first impression of a

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scientific article and is responsible for conveying to the reader what the entire article is about (Cianflone, 2012). Choosing a title that sheds light on the article's content will provide convenience to the researcher in terms of clarity during the publication process and in terms of providing access to the article for other researchers after the publication.

It could be stated that after the article is sent to the journal, the first significant impact on the publication of the article is thanks to the title chosen. Yang (2019) stated that titles are the first aspect of articles journal editors evaluate when screening submissions with target readers in mind is their titles. In this context, choosing a title that does not reflect the content of the submitted article and show the importance of the research sufficiently may lead to a negative evaluation by the editors.

Another reflection of the title selection is observed at the stage after the article is published. When scanning articles in databases, the first part that readers or other researchers notice is the title. The article's title directly influences the reader's decision-making process as to whether the article is worth reading or relevant to their Research (Li & Xu, 2019; Yitzhaki, 1994). In this context, to attract readers who can continue to read, cite and benefit from their research, the authors try to make their headlines more informative and attractive (Hyland & Zou, 2022). Based on their first impression of the title, the reader prefers or not to read the study (Wang & Bai, 2007). While conducting a literature review, the correct title structure should be established in order for the articles to reach the target audience, that is, the relevant researchers. In this framework, in order to write a suitable title for the article, it should be determined which elements should be included in the content of the title.

Day (1996) explains the title as the fewest strings of words that adequately describe the article's content and emphasizes that the title, which is the article's label, is not a sentence but is usually shorter and more straightforward than a sentence. He points out that the order of the words is very important in this. In a good title, key structures related to the subject should be included (Ortinau, 2011), the general and specific research should be balanced (Silvia, 2007) and abbreviations should be avoided (Galanis, 2013). Therefore, it should include the concepts that will provide information about the subject, especially the research subject. Ecarnot, Seronde, Chopard, Schiele, & Meneveau (2015) stated that in addition to specifying the main factors of the study in a title, there should be expressions that reflect the sample, method and importance of the research and that it is not appropriate to quote from subheadings. Khan (2023) stated that the title should consist of descriptive words of the study and added that information that may be important for the content of the study, such as the universe and sample, should be included in the title and this information should not be too long or too short. The statements that indicate the functioning and importance of the research can be considered the key to the selection of the title.

American Psychological Association (2020) guidelines advise authors to keep their titles in focus without abbreviations or words that do not serve any purpose and with no longer than 12 words. Gesuato (2008) emphasized that the maximum number of words used in titles is 15 words, and Bavdekar (2016) stated that some journals ask authors of articles to use 10-15 words in their titles. Hyland and Zou (2022) found that titles in social domains were more than 12 words, while less than 12 words in numeric fields were preferred. Beyond the title being descriptive and intense, it has been noted that there is no definite standard in terms of the number of words. They also found that the titles in the field of educational sciences are longer and more detailed than in other fields. In this context, our study has been planned by emphasizing the form and content elements of the titles in the field of educational sciences.

Related Studies

In light of this information, it is revealed that the content and format of the title are important structures that can positively or negatively affect the publication and post-publishing processes of the articles. Within this scope, there are many studies reached in the literature review on how the ideal title should be (Annesley, 2010; Bavdekar, 2016; Diers & Downs, 1994; Forray & Woodilla, 2005; Galanis, 2013; Gesuato, 2008; Gómez, García, Silveira, & Gómez, 1997; Gómez, Gómez, García, & Silveira, 1998;

Manten & Greenhalgh, 1977). Emphasising that the title is the component that completes the introduction, method, findings and conclusion of an article, tips and examples of the ideal title are given. Bavdekar (2016) stated that a good title for research would promote the article on its own and highlighted that to write the title, it is necessary to work comprehensively and concisely. While the studies in the literature aim to explain how the title should be, in the current study, the article titles of the journals scanned on the Web of Science in the field of educational sciences were examined, and a certain title standard was tried to be established.

Studies about titles in compilation style are quite common in the literature. These studies are generally in the form of studies comparing article titles in different disciplines. Buxton and Meadows (1977) examined the article titles of fifteen journals in English, French and German. They remarked that those published in chemistry and botany have the highest values in terms of the informative words they contain. In contrast, those published in physics, medicine, history, philosophy and psychology have lower values. Nord (1995) touched upon similar and different points by examining scientific research articles in English, German, French and Spanish from different publications based on language and culture. The titles of the articles in fields such as education (Dillon, 1981) and industry (Michelson, 1994) were examined in terms of their formal characteristics. In his study, Haggan (2004) pointed out that there is a differentiation in the types of titles (classical titles, compound titles, etc.) in research articles, especially in literature and linguistics. In a longitudinal study on titles in the field of biology, it has been found that titles are getting longer and more complex but more descriptive (Berkenkotter & Huckin, 1995). Méndez, Ángeles Alcaraz, and Salager-Meyer (2014), on the other hand, examined the change in the types of titles in the journals in the field of astrophysics over time and emphasized that classical and simple titles have been preferred more in recent years. Cheng, Kuo, and Kuo (2012) examined the syntactic structures and functions of 796 research paper titles in applied linguistics. He noted that most of the discipline-specific titles are compound and prepositional sentences. Xiang and Li (2020) examined the article titles published in linguistics and literature journals between 1989 and 2018 with a diachronic and comparative perspective in terms of form and content. He brought out the majority of compound and long titles in literary and linguistic journals. It has been observed that the length, descriptiveness and content of the titles vary according to the study's disciplines. It has been concluded that there is a tendency for more descriptive titles, especially in social fields and some fundamental sciences. Deniz and Karagöl (2016) determined that the titles of the theses they worked on in educational sciences did not have a definite standard because they were between three to twenty-seven words in terms of the number of words. Also, Kan (2017) examined the titles of articles published in Turkish education and literature fields in terms of syntactic structure. These studies, in which article and thesis titles were examined, differ from the research in terms of handling the stylistic elements of the title and syntactic analysis of the titles.

In other studies in which the title was scrutinized in terms of stylistic elements, it was observed that titles with colons, question titles and classical titles were handled in the studies conducted within the framework of the use of punctuation marks in the titles (Ball, 2009; Diao, 2021; Diers & Downs, 1994; Dillon, 1982; Gesuato, 2008; Gómez et al., 1997; Gómez et al., 1998; Hartley, 2005; Hartley, 2007; Hudson, 2016; Lewinson & Hartley, 2005). Regarding punctuation, Lewinson and Hartley (2005) presented reflections of title length, colon use and the number of authors on titles in different scientific fields. By examining 20 million scientific articles, Ball (2009) drew attention to the increase in the use of question marks in titles. Of the 600 articles he reviewed, Anthony (2001) focused on features such as the characteristics of titles, length, use of punctuation, word frequency, and preposition use. After sifting through the titles in the veterinary field, Cianflone (2012) revealed that the average length of the titles in this field was 14.06 and that classical and combined titles were used more. Hudson (2016) reported that long titles will give easier comprehensive search results because they contain more words; however, they will not be attractive because they take time to understand. Li and Xu (2019) examined the longitudinal change of 650 research articles in Pragmatic in terms of length, lexical density, structural structure and semantic content with quantitative and qualitative data. He found out that the tendency for the use of long and compound titles has increased over the past 40 years. Diao (2021) concluded that

in the 690 research article titles in Library Science and Scientometrics journals, the use of colons in Library Science in particular and the number of words related to research methods in Scientometrics are extreme. Ufuk (2017) analyzed the use of punctuation marks in academic article titles written in the history field between 1937 and 2016 by dividing them into years and sub-periods. Based on the findings, he questioned whether the use of punctuation marks in academic articles is an individual attitude or a periodic tendency and revealed the similarities and differences between the periods. In line with the studies, it can be specified that different trends related to the titles emerged periodically and in terms of disciplines.

Kerans, Marshall, Murray, and Sabaté (2020) evaluated the titles of the studies published in the field of health in terms of reflecting the content of the articles. While examining the titles, it was checked whether the method, results, context, sample, geographical location and treatment method used in the study were included. Hyland and Zou (2022) conducted research to identify the key features, typical structural patterns, and content focuses of 5070 titles in leading journals of six disciplines in humanities and physical sciences. In this study, by trying to suggest a certain title pattern, they highlighted the disciplinary differences to be followed according to the different characteristics of the fields and the articles' own subjects.

Within the scope of relational studies on the title, Kuch (1978), Lewinson and Hartley (2005), and Yitzhaki (1994) examined the relationship between the number of authors of the scientific article and the number of words in the title of the article and concluded that there was a positive correlation between them. Another study showed that articles with question titles were downloaded more but cited less than others (Paiva, Lima, & Paiva 2012). It was found that articles with longer titles and colons were downloaded less than articles with shorter titles but were cited more (Buter & van Raan, 2011; Jacques & Sebire, 2010). Falahati Qadimi Fumani, Goltaji, and Parto (2015), on the other hand, did not find any correlation between the title length and number of citations. Paiva et al. (2012) identified that short titles presenting the results received more citations. In the study conducted by Nair and Gibbert (2016), it was established that the presence of non-alphanumeric characters, such as a colon, a question mark or a hyphen, has a detrimental effect on the number of citations received. Furthermore, it was determined that the length, contextual and linguistic characteristics of the title are unrelated to the number of citations (Mohebbi & Douzandegan, 2017; Nair & Gibbert, 2016; Rostami, Mohammadpoorasl, & Hajizadeh, 2014; Sagi & Yechiam, 2008). On the other hand, Jacques & Sebire (2010), Van Wesel, Wyatt, and ten Haaf (2014), and Thelwall (2017) determined in their studies that the length of the title and its structural features are related to the citation. Hallock and Bennett (2021) created a survey to evaluate the effectiveness of the titles of psychology articles in terms of different lengths; colon, abbreviation and classical usage; being result-oriented; and expressing the title as a question and worked with 99 undergraduate students. It was found that they preferred long titles and titles verbalized as questions. Different results have been obtained in studies on the relationship between the characteristics of the titles of the articles and their citation status. It can be noted that this situation arises from the differences in the selected sample, that is, in the journals and articles. However, it is noticed that there is no common literature trend in relational studies. Additionally, it can be stated that the question titles attract more attention but are not cited that much, and the current trend is on long and descriptive titles.

When a general evaluation of the related studies is made, it has been noticed that studies are done on writing the ideal title, examining the information that should be in the title, linguistic and syntactic analysis of the titles, punctuation marks used in the titles, scrutinizing the titles according to the number of authors, citation numbers and fields. It was also seen that the titles were evaluated in terms of format, but the titles of the articles published in the field of education were not sufficiently followed in terms of reflecting the content. Going through these two structures together will provide a more detailed title analysis. Selecting the titles examined in the study from the journals in the Q1 and Q4 categories published in the USA and Türkiye is another reflection of the originality of the research. By examining journals from the USA and Türkiye indexed in Web of Science, it is possible to asses title preferences according to the country of origin of the journals. Considering the Q-number categories of

the journals will enable the researchers to examine the title preferences according to the quality of the journal. Recognizing the differences in title writing styles across countries, quartiles, and journals and the components of effective title writing can be useful for academics in creating headlines for their work. Within this framework, the study to be carried out is an original research subject and will fill an important gap in the field. It is believed that the study can be a guide for researchers who work on the components of the ideal title.

The Purpose of the Study

The purpose of this research is to examine the format-content elements of the titles of international indexed articles published in the field of educational sciences and to analyze the structures of the titles. This framework examined the title's formal elements (word count, sentence structures, abbreviations, use of prepositions-conjunctions) and content features (the purpose of the research, the method, the universe and the sample). Besides, the level at which the title reflects the content of the article and the related variables (the impact factor, the number of words, Q number, journals) were analyzed. For this purpose, answers to the following research questions were sought:

1. What are the formal features of the article titles of the journals published in the field of educational sciences?

2. How is the content of the research included in the article titles of the journals published in the field of educational sciences?

3. How compatible are the articles published in educational science journals with potential title standards in the literature in terms of content?

4. Do the potential content standards of the titles differ significantly according to the quartile values of the journals?

5. Do the potential content standards of titles differ significantly according to the journals?

6. Is there a relationship between the impact factor, the number of words and the potential content standards of the examined titles?

Method

Title choice in scientific articles was examined within the scope of this study and the titles were evaluated within the framework of the criteria determined through the literature by carrying out a document analysis. The document analysis method used in the study is a systematic process applied to evaluate the material obtained from the printed and electronic media (Bowen, 2009). Glaser and Straus (1967) state that scientific documents can be considered as a resource that includes the thoughts of a researcher, and one way of creating such a document might be by interviewing the researcher. Looking deep into the title choices of researchers and examining the compatibility of the article contents with the title have an instructive purpose in revealing the researchers' tendency to form titles.

In the first stage of the study, the criteria for analyzing the titles were determined by reviewing the literature on titles. Then, 800 articles were selected from 4 journals reviewed in the Web of Science database and assessed according to the determined standards. Finally, the data obtained were digitized and compared according to the Q value category and journals, and the correlation between potential standards, impact factor, and word count was found.

The Scope of the Study

According to Bogdan and Biklen (2007), the main issue in document analysis is to find the document, to access it, or to decide which of the available range of documents to work on. In other words, determining the study's scope is of great importance in document analysis. In determining the scope, the extreme cases sampling method, one of the purposeful sampling types, was used. According to Patton (2014), purposive sampling methods provide in-depth information from a source that is thought to have a wealth of knowledge. Outlier sampling aims to select a sample from two extremes of

a phenomenon and is considered suitable for studies on how a phenomenon should be (Suri, 2011). In this context, the extreme cases used in selecting the articles are in the context of impact factor and quartile. Two high-impact factor journals were selected from Q1 and two low-impact factor journals from Q4, which accept publications from all areas of education in the USA and Türkiye. The Q number means 'one quarter', but researchers often associate it with the word quality (publication quality). The starting point for setting this criterion is the idea that high-profile journal articles may be more rigorous and of higher quality in the context of academic writing.

In the study, 200 current articles from each of the 4 journals scanned on the Web of Science until the end of 2023 were evaluated, and 800 articles were selected. Since the number of articles published each year varies according to the journals, the years covered also change according to the journals. Detailed information about the journals is given in Table 1.

Table 1. Information about the Journals

Country	Name of The Journal	Quartile	Impact Factor (2023)	Date Range	Total Number of Articles
USA	Review of Educational Research	Q1	5.772	2016-2023	200
USA	Educational Researcher	Q1	3.956	2019-2023	200
USA	Pedagogy	Q4	0.159	2018-2023	200
TURKİYE	Education and Science	Q4	0.237	2020-2023	200
Total					800

The journals in Table 1 were selected according to criteria that are objective and supported by the literature. In this context, we tried to support our objective argument by providing details about the journal selection process. The details of the journal selection process can be listed as follows:

1. In the extant literature, there are studies that take the USA and Türkiye as a sample in international articles that make cultural comparisons in terms of academic writing (Bayrak Karsli, Karabey, Cagiltay, & Goktas, 2018; Şimşek, Atila, Aydın, Reisoğlu, & Göktaş, 2022). A similar structure was designed for this study. In addition, it was observed that at least 100-120 articles, theses or documents were examined in these studies. Therefore, within the scope of this study, it was concluded that it would be sufficient to examine 200 studies per journal.

2. The reason for selecting journals originating from the USA in the context of the study is that the number of journals with a high impact factor in the field of education in the USA is higher than in other countries. On the other hand, the reason for including a Turkish journal in the study can also be stated as the authors being more familiar with this culture.

3. The only journal indexed in WOS in the field of education in Türkiye is the journal Eğitim ve Bilim. Therefore, Eğitim ve Bilim is the only Türkiye origin journal included in the study.

4. The journals were selected from Q1 and Q4 indexed journals, originating from the USA, with the highest impact factor and accepting articles from all fields of education. Review of Educational Research and Educational Researcher are the two journals with the highest impact factor published in the USA. On the other hand, Pedagogy, a SSCI-indexed journal from the USA, is classified in the Q4 category.

5. The reason for selecting journals from the Q1 and Q4 indexes is to compare the title writing styles of articles published in journals with high and low impact factors using outlier sampling logic. Therefore, Q2 and Q3 journals were not included.

6. Information such as the journals' index, origin, impact factor, and quartile was obtained from Clarivate (https://clarivate.com/) and Scimagojr (https://www.scimagojr.com/) websites.

Data Collection Tools

The data collection tool used in the study is the title assessment form. The form is composed of two parts. In the formal evaluation part, the sentence structure (column, classical, question title), the use of abbreviations and prepositional conjunctions and the number of words were covered. In the contextual evaluation part, whether the study reflects the purpose, method and universe/sample was checked. In addition, the imprint information such as, the journal impact factor of the titles worked on, are also included in the form. A column including continuous data was added to the form for the statistical stage of the research. For the title-content compatibility, the assessment was made on a scale of 1-3. In the evaluation, 1 corresponds to the absence of an element, 2 stands for relative presentation of the element in the title and 3 is the presentation of the element in the title in detail. Based on this evaluation, the titles that comply and do not comply with the predetermined potential in terms of content were determined. The form is given in the appendix; while creating the data collection tool, measures were taken for internal validity. Two different experts were consulted after the form was created to minimize the errors caused by the data collection tools.

Data Analysis

Document analysis is carried out with the stages of review (superficial review), reading (comprehensive review) and interpretation (Bowen, 2009). In the steps followed within the framework of the research, the documents, namely the articles, were accessed first. Secondly, the format and content features of the articles were examined and their reflections on the title were analysed. These reflections were evaluated according to the potential standards determined for the topic and the data were quantified in this way. Validity and reliability measures were applied while the data were being resolved and analyzed. Internal validity, in other words, the concept of credibility, is related to the extent to which the findings are consistent with external reality (Merriam, 2009). In order to obtain a result with higher internal validity or credibility, two researchers evaluated the article titles, and the other two researchers checked whether these evaluations were made in accordance with the criteria and objectively or not. Some methods combine qualitative and quantitative analysis in different types of document analysis (Silverman, 2015). It should be stated that in the last stage of the analysis part of this study, the analyses used by quantitative research methods were utilized. Based on the presentation of the method, purpose, and sampling in the title, a data set with a 2-point scale (conforming to the potentials and below the potentials) without a high sensitivity range was created from the data obtained through document review. This data is created since the potential content elements consist of many factors and it is possible to make statistics over a numerical value in which all the data are brought together and evaluated in the content.

The Point Biserial Correlation was used to examine the relationship between potential content standard, impact factor and word count. Based on the assumptions of correlation analysis [normality, extreme values and homogeneity] and the fact that the variables consist of continuous and discontinuous data (Pallant, 2020), point-biserial correlation analysis was preferred. The values obtained after the correlation analysis were evaluated according to Cohen's (2013) guideline values as weak, moderate and highly correlated [r= .10-.29 (weak), r=.30-.49 (moderate), r=. 50-.1.0 (high)].

It was examined whether the number of Q, which is a categorical variable, differed significantly according to journals with high content standards. Since the normal distribution could not be achieved according to the Q value and the sensitive range of the data set was low, it was considered appropriate to use the Mann-Whitney U test. The Mann-Whitney U test is used to test the differences between two independent groups on a continuous variable. (Pallant, 2020). With this test, it was scrutinized whether there was a difference between the content standard values of the titles in the Q1 and Q4 categories.

Finally, the question of whether there is a difference according to the potential standards of the titles of the journals was analyzed with the Kruskal Wallis H Test. This non-parametric test is used to evaluate the hypothesis when more than two independent groups come from different populations (Field, 2024). In this context, the Kruskal Wallis H Test was used to evaluate the difference between the level of meeting the potential standards of the 4 journals. Dunn's test was applied to determine whether there was a significant difference between which journals.

Results

In this part of the article, the findings obtained using the title assessment form (TAF) are given below, considering the research questions. The data are presented in tables.

1. What are the formal features of the article titles of the journals published in the field of educational sciences?

While working on the titles, format and content features are considered. Elements expressed as formal features were studied in terms of sentence structures of titles, number of words, use of abbreviations, and use of prepositions-conjunctions. These measures indicated trends based on journals. The related data are given in Table 2.

Table 2. Frequency Analysis of the Formal Assessment of the Titles

		Review of Educational Research (n=200)	Educational Researcher (n=200)	Pedagogy (n=200)	Education and Science (n=200)	Sum of Journal Frequencies (N=800)
Sentence	Colon Title	153	103	141	73	470
Structure	Question Title	13	23	7	2	45
	Classical Title	34	74	52	125	285
Abbreviations	Used	7	42	10	13	72
	Not Used	193	158	190	187	728
Prepositions/	Used	158	150	163	197	552
Conjunctions	Not Used	42	50	37	3	248

Descriptive information about the assessment of the formal features of the titles is given in Table 2. It has been observed that the journals examined in the study showed differences in the sentence structures of their titles concerning the values shown in the table. While the Turkish journal Eğitim ve Bilim was more likely to use classical titles, it was observed that US-based journals were more likely to use colon titles. It is seen that the Education and Science journal has a higher frequency in the use of prepositional conjunctions, while there is no definite trend or standardization based on journals. Generally, it has been observed that the use of abbreviations is low. The fact that the use of abbreviations does not take place at the title level can be considered a positive situation in terms of title evaluation.

The results obtained on the word count of the titles are given in Table 3. The characteristics of the words used were discussed by working on the titles of the articles based on the journal.

Table 3. The Number of Words Regarding the Formal Assessment of Titles (N=800)

	Review of Educational Research (n=200)	Educational Researcher (n=200)	Pedagogy (n=200)	Education and Science (n=200)
The number of most repeated words	11	8	9	13
Average number of words	13.7	11.8	10.7	14.3
Minimum number of words	5	4	1	6
Highest number of words	27	34	24	27
Titles with 15 words and below	143	163	178	132
Titles with above 15 words	57	37	22	68

Table 3 shows that titles 8, 9, 11 and 13 are the titles the researchers prefer. When the average number of words in the titles is considered, it is seen that the journals originating from Türkiye have higher averages. The shortest title belongs to Pedagoji with 1 word and the longest title belongs to Educational Researcher with 34 words. It is seen that the 15-word limit is exceeded in the titles of the journals. Especially in the journal Education and Science, the number of titles exceeding 15 words is

considerable. In general, different values for word count were observed in each journal. In this context, it can be stated that there is no standardization in title length.

2. How is the content of the research included in the article titles of the journals published in the field of educational sciences?

Descriptive information about the content assessment of the titles is given in Table 4. The assessment was made according to the purpose, method and universe sample of the research.

Table 4. Frequency Analysis of the Contextual Assessment of the Titles

		Review of Educational Research (n=200)	Educational Researcher (n=200)	Pedagogy (n=200)	Education and Science (n=200)	Sum of Journal Frequencies (N=800)
The Purpose of the Study	Not Included	0	41	125	0	166
	Included	200	159	75	200	634
Method	Not Included	24	109	166	47	346
	Implied by the Words in the Title	0	77	32	150	259
	Specified on a Word by Word Basis	176	14	2	3	195
The Sampling\ Universe\ Materials of the Study	Not Included	19	68	165	59	311
	Took Place Relatively in the Title	120	37	25	64	246
	Took Place Fully in the Title	61	95	10	77	243

When Table 4 is examined, it is seen that the purpose is clearly stated in 614 titles, that is, in most of the titles, but the purpose is not included in 166 titles. It is seen that the purpose is reflected in all titles of the articles in Review of Educational Research and Education and Science journals. On the other hand, most titles in Pedagogy (125) did not reflect the purpose of the study. A similar picture emerges in terms of reflecting the method in the title. In most of the articles in the Review of Educational Research, it was seen that the method was included in the title on a word basis. "Deeper than Wordplay: A Systematic Review of Critical Quantitative Approaches in Education Research" can be presented as an example of titles in Review of Educational Research. In most of the titles of Education and Science (150), titles reflecting the method were used with words such as "relationship" and "effect". Most of the titles in Educational Researcher (109) and Pedagogy (166) did not use titles reflecting the method.

It was determined that Review of Educational Research was the most successful journal in terms of including the study materials or the sample of the research in the title. Similar to the other results, it was observed that Pedagogy journal mostly (165) did not include the sample/study material. One of the specific results in the sample section is Educational Researcher's "Moving Through the Pipeline: Ethnic and Linguistic Disparities in Special Education from Birth Through Age Five", the journal Educational Researcher mostly prefers titles that directly address the characteristics of the sample.

3. How compatible are the articles published in educational science journals with potential title standards in the literature in terms of content?

The title's level of reflecting the content of the article was grounded on the purpose, method and sample sections. The use of expressions related to the purpose, method, or sample in the title was assessed with a 3-point scale. For example, if there is no expression related to the sample, only 1 point is assigned, and if there is a general expression such as students, 2 points are assigned. Finally, to-the-point expressions such as primary school 1st-grade students are assigned 3 points. In this context, the assessment of the titles above and below the potential level is presented in Table 5.

Table 5. General Assessment of Content Compatibility of All the Titles Examined in the Study

	Education and Science	Pedagogy	Educational Researcher	Review of Educational Research
Conforming to Potential Standards	113	16	76	162
Non-Conform to Potential Standards	87	184	124	38

The Research Subject is Included (1) Not Included (2)

The Research Method was not Specified at All (1) Implied in the Title (2) Specified on a Word by Word Basis (3)

The Research Universe and Sample were not Specified at All (1) Implied in the Title (2) Specified on a Word by Word Basis (3)

Total 5< Below the Potential Standards

Total 5> Above the Potential Standards

The potential standard set while preparing the table is that the total points got out of three content elements should not be below 2. In other words, considering 5 points as the limit for the total score received by a title, the titles above 5 points were assumed to be above the potential standards, and the titles with 5 points and below were assumed to be below the potential standards. However, in the distribution of points for the titles assumed to be above the potential standards, it was stipulated that 1 point should not be taken from the purpose, method, or sample of the research. It is because the absence of all 3 elements of the content is digitized with 1. In this case, 2 and above points for each potential standard related to the content and 5 or above for the total indicate that the title was above the potential standards set. It was expected to present the research purpose in the title and present the method directly on a word-by-word basis in the title or by using relation, regression, survey (quantitative); living, experience (qualitative) or both styles (mixed). On the other hand, the sample was requested to be presented in a general framework or in a more to-the-point way.

In this context, it was observed that the article titles of the Review of Educational Research, which has the highest impact factor in evaluating the titles, better reflected the potential title standards. The findings indicate that the Review of Educational Research is the most successful journal in terms of reflecting the content, followed by Education and Science, Educational Researcher and Pedagogy. When the quartile categories of these journals were evaluated, it was found that the journal Education and Science in Q4 was more successful than Educational Researcher in reflecting the title content. It was not possible to speak of a definite trend according to the journals' published quartile. In this context, statistical analyses of potential title standards of the journals were conducted by journal and quartile category.

4. Do the potential content standards of the titles differ significantly according to the quartile values of the journals?

Difference analysis was used while surveying the potential content standards of the title according to the Q values. Before the analysis stage, the potential title standard variable was subjected to normality analysis. The kurtosis and skewness values of the variable were not between -1 and +1 (Tabachnick & Fidell, 2015), while Kolmogorov Smirnov and Shapiro Wilks values were shown to be significant at the .05 level. For this reason, Mann-Whitney U, a non-parametric test, was used while performing the difference analysis. The findings obtained from the analysis are given in Table 6.

Table 6. Mann Whitney U Test, in Which Potential Content Standards Are Examined According to The Q Value Category

Variable	Group	N	Rank Average	Rank Sum	U	Z	p
Potential Content Standard	Q1	400	455.0	182000.0	58200.0	-7.729	.001
	Q4	400	346.0	138400.0			

Table 6 shows that the content standards of the titles of Q1 journals and Q4 journals are significantly different. When the mean rank of the journals in the Q1 category (455.0) and the mean rank of the journals in the Q4 category (346.0) were examined, it was seen that the significant difference was in favor of the Q1 category. As a result of these findings, it is possible to interpret that the article titles in the journals in the Q1 category are more appropriate in terms of reflecting the potential content standard.

5. Do the potential content standards of titles differ significantly according to the journals?

Kruskal-Wallis H test was used to determine whether there is a difference between the journals according to the potential content standards of the title. A non-parametric test was preferred since the assumptions specific to parametric tests were not met. The findings obtained from the test are given in Table 7.

Table 7. Kruskal-Wallis H Test, in Which Potential Content Standards Are Examined According to The Journals

Variable	n	Groups	Mean Rank	H Value	df	p
Potential	200	Review of Educational Research	541.00			
Standards	200	Educational Researcher	369.00	228.7	3	.00
	200	Pedagogy	249.00			
	200	Education and Science	443.00			

Table 7 shows that the p-value is significant at the .05 level as a result of the Kruskal-Wallis H test. According to these results, there is a significant difference between the four journals' provision of potential title content standards at 99% confidence interval. When the mean value of the groups in the combined ranking is analyzed, it is seen that the values are not close to each other. In this context, Dunn's test formula was applied to examine which groups are significantly different (Dinno, 2015).

According to the Dunn test, a significant difference was found between all groups. Review of Educational Research is significantly different from Educational Researcher, Pedagogy and Education and Science at .00 level (1 >2 z=8.61 p=.00, 1>3 z=14.6 p=00, 1>4 z=4.9 p=.00). Education and Science is significantly different from Educational Researcher and Pedagogy (4>3 z=9.7 p=.00, 4>2 z=3.7 p=.00). Finally, there was a significant difference between Educational Researcher and Pedagogy in favor of Educational Researcher (2>3, z=6.0, p=.00).

6. Is there a relationship between the impact factor, the number of words and the potential content standards of the examined titles?

The sixth research question was answered by using relational analysis. The titles analyzed in the study were evaluated in terms of purpose, population sample, and method expressed as potential title content standards. Point Biserial Correlation was used for the potential title content standard, impact factor and the number of the words. The results obtained are displayed in Table 8.

Table 8. The Correlation Between the Variables

The Variables	1.	2.	3.
1. Potential Content Standard	-	.348**	. 330**
2. Impact Factor	.348**	-	.072*
3. Number of Words	.330**	.072*	-

As seen in Table 8, there is a moderately positive (rpb =.348**) significant relationship between the potential content standard of the titles and the impact factor. As the potential title standards increase, the impact factor of journal articles increases due to a moderate correlation. In terms of reflecting the title, a positive (rpb =.330**) moderate relationship was found between word count and potential content standard. The high word count indicates that the titles are above the potential standards in terms of reflecting the content. As for the correlation between the impact factor and word count, a weak positive relationship (rpb =.072*) was fo und. However, the increase in the impact factor is significantly correlated with an increase in word count.

Discussion

The titles of Turkish and US origin journals in the Q1 and Q4 categories in The Web of Science database were analyzed in this study. In this part of the article, the results related to the format and content features of the titles were exhibited and the variables related to the title were defined. The results were discussed on the basis of previous studies.

Formal Assessment

In the data obtained for the sentence structure of the titles examined, it is detected that there is a tendency to use classical titles in Türkiye-origin journals, while it has been spotted that titles with colons are more commonly preferred in journals originating from the USA. Dillon (1981) found a negative correlation between the use of colons and journal status. Dillon's (1981) findings do not overlap with our study in terms of the frequent use of the colon by journals in the Q1 category. Diers and Downs (1994) reported that the use of colons in the article titles of prestigious journals increased dramatically. Hallock and Bennett (2021) also propounded in his study that long titles containing colons attract readers' attention more than short titles. It was observed that the popularity of punctuation marks increased in current article titles. However, the finding that the use of colon is not common in the Türkiye-origin journal Education and Science indicates that there may be country-based differences in this regard.

It is noteworthy that question titles are not preferred much in the results obtained from the study. Ball (2009) identified that the use of question titles has increased in the last 40 years, and Jamali and Nikzad (2011), and Paiva et al. (2012) found that question titles were downloaded more, but they tended to be cited less. Méndez et al. (2014), in their study on article titles published between 1998 and 2012, underlined the fact that the number of question titles is lower than other title types. Hallock and Bennett (2021), on the other hand, emphasized in his study with students that question titles attract the attention of students more. Although the number of question titles has increased recently, it has been discovered that their tendency to get citations is low. Although these titles are eye-catching, they may not be preferred because they fail to reflect the components of the article. The findings of the study show that question titles are used less than other types of headings.

Another conclusion reached in the study is that using prepositions and conjunctions is common in the titles analyzed. Anthony (2001) mentioned that the use of prepositions is an effective structure in terms of expressing relations in the title and in terms of functionality in interdisciplinary studies. Cheng et al. (2012) also emphasised the frequency of compound and prepositional phrases in their study on the titles of applied linguistics articles. The prepositional and conjunctive structures in the headings analyzed under formal evaluation help to connect the concepts reflecting the content of the article. In this context, it could be put forward that the researcher's use of prepositions or conjunctions in the title of the article may also enable him to write a qualified title.

It has been observed that abbreviations are generally not included in the journals reviewed. It has been noted that the use of abbreviations is relatively higher in Educational Researcher journal. Day (1996) highlights that the use of abbreviations in the title should be avoided. Hallock and Bennett (2021) also indicated that students do not prefer to read titles with abbreviations. In this context, the fact that abbreviations are not generally preferred in the titles reflects that the titles are successful in terms of formal.

In the studies conducted on the word count of titles, it was observed that titles with 8, 9, 11 and 13 words were preferred more. It was also determined that the average word count was between 10 and 14. It was also found that the minimum and maximum values of the word count were similar except for Pedagogy journal. Paiva et al. (2012) state that short titles can get straight to the point and avoid confusing the reader, while Hallock and Bennett (2021) states that longer titles have more space to express the content of the article. Li & Xu (2019) also stated that the trend towards long and compound titles has increased in the last 40 years. Jiang and Hyland (2023) examined the changes in article titles over the last 60 years and found that title length has increased significantly. Deniz and Karagöl (2016)

found that the titles of the theses ranged from 3 words to 27 words in their study, in which they examined the titles of postgraduate theses written in the field of educational sciences. Cianflone (2012), Méndez et al. (2014), Xiang and Li (2020), and Hallock and Bennett (2021) also emphasized the increase in the use of long and compound-structured titles in recent years. It has been observed that Education and Science is the journal that gives the most space to titles over 15 words in word count. It was also concluded that Education and Science is one of the most successful journals in reflecting the content. This finding was also confirmed in the correlation analysis.

Contextual Assessment

The titles examined in the research were evaluated as being above or below the determined potential standards based on ranking the purpose, method and sample components related to the content. In the study, it was found that there were few titles that did not include the subject and purpose of the research. Manten and Greenhalgh (1977) emphasized that the titles should start with an important word or phrase, if possible, mention the experimental material, if any, specify what was measured and reflect the clue about the purpose of the study in the title. Aziz (1974) stated that maximum amount of information should be given with minimum number of words in titles. A good research paper title, according to Swales and Feak (2004), should clarify the topic and scope of the study for the reader in the specified field. In this direction, it has been determined that a title should reflect the purpose and subject.

When writing a title for a research article, it is essential to reflect the subject and purpose of the study as well as its methodology. The method section provides details about how research is conducted (Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz, & Demirel, 2017). Hartley (2007), in his study, reviewed titles under 12 types and clarified them with examples. In the light of this information, the content's reflection on the title was examined by looking at to what extent the purpose, method and sampling are given within the title. The study noticed that the words in the titles generally implied the research method, and the method was not specified word by word. This could be because the selected words have a sufficient tendency to imply the method. For instance, while it can be inferred that studies with the words such as 'review, experience, compilation' have a qualitative tendency, studies with the words such as "relationship, effect, and prediction" tend to be quantitative. Creswell (2017) considered title writing as a cornerstone in research and in writing titles related to mixed methods, out of titles with qualitative tendencies such as 'exploration and meaning' and out of quantitative ones such as 'relation, correlation, explanation,' he proposed selecting a title in which both tendencies are implied or writing a kind of direct statement such as 'a mixed method study'. In addition, according to Creswell and Clark (2014), in qualitative research, content such as participants and where the research was conducted can be included, literary arts and word games can also be used, while in quantitative research, only important variables can be included and word games are not used. Since both methods are used in the mixed method, it should be implied that the qualitative and quantitative methods are used together.

The differences in the research methods in terms of their underlying philosophy are also reflected in the general structure of the article. Therefore, it is natural to see differences in the titles of the articles depending on the tendencies of the methods. In this sense, when the titles are analyzed, it is seen that 424 of the 800 titles reflect the method section and 346 do not. When analyzed based on journals, it is noticeable that there are significant differences. Review of Educational Research and Education and Science were found to be the most successful journals in terms of reflecting the method in the titles of the articles. Review of Educational Research has a high number of meta-analysis articles. It was observed that the authors presented methodological details by using the words "meta analysis" and "systematic analysis" in the titles. It is seen that the journal Education and Science focuses on applied studies in its purpose and scope. For this reason, the authors needed to write more information such as purpose, method and sample and used long titles.

In Educational Researcher, the number of titles reflecting and not reflecting the method is half and half. On the other hand, it is noteworthy that most articles in Pedagogy do not include the purpose, method and sample information in the title. On the contrary, in the titles of most articles in other

journals, the purpose, method and sample information were clearly stated or intuited. This situation was associated with the purpose and scope of the journal. Compared to other journals, Pedagogy is a journal that includes more articles on philosophical and general educational issues. Therefore, the authors used even one-word titles and preferred short and general titles.

Kerans et al. (2020) concluded that the content features of the titles differed with regard to the journals. In the context of the present research, it was seen that the titles differed in terms of reflecting the content according to the journals in which they were published. In this context, it can be stated that our study in the field of education has reached similar results to those by Kerans et al. (2020) in the field of health.

Statistical Assessment

In the final stage of the study, the results obtained descriptively were statistically evaluated. Variables associated with the potential content standards of the title were analyzed using correlation analysis. Difference analyses was performed for journals and quartiles. As a result of the difference analysis according to the Q value, a significant difference was found in favor of Q1. According to journals, the difference analysis showed a significant difference, too. Dunn's test showed that this difference was between all journals. Statistical validity was provided regarding the effect of journal standards on article titles.

The correlation discovered between the impact factor and the compliance of the titles with the potential content standards gives the result that the articles published in the journals with a high impact factor are closer to meeting the title standards. The extent to which the title reflects the content was related to the popularity of the articles. The correlation between the impact factor and the compliance of titles with potential content standards suggests that articles published in high-impact journals are closer to meeting title standards. However, differences between journals should not be ignored here. Review of Educational Researcher in Q1 comes closest to meeting the title standards, but most articles in Educational Researcher, also in Q1, do not meet these standards. It should be added that Education and Science in Q4 was successful in meeting the title standards, but only 16 titles out of 200 in Pedagogy were found to be successful (Tables 4 and 5).

A linear relationship was found between word count, one of the formal features of the title, and compliance with content standards. The increase in word count increased the quality of the title in terms of reflecting the content of the article. In the literature, there is no study on the relationship between the reflection of the content of the article in the title and the word count. However, we can state that a large number of words can provide an advantage in conveying the structures in the content. This advantage can be useful in promoting the article and increasing interest in the article (Hyland & Zou, 2022).

It was concluded that there is a linear relationship between the impact factor of the journals and the word count of the titles. Based on the findings regarding impact factor and word count for potential content standards, attention should be drawn to the success of prestigious journals' title choices in terms of reflecting content. Habibzadeh and Yadollahie (2010), in their study evaluating the word count and citation status in 9031 titles with linear regression, stated that longer titles received more citations and this result was more pronounced in journals with high impact factors.

It has been reported in the literature that articles with longer titles and colons receive more citations than articles with shorter titles (Buter & van Raan, 2011; Falahati et al., 2015; Jacques & Sebire, 2010). The results obtained within the scope of our study also support the long article titles. Nair and Gibbert (2016), on the other hand, concluded that length (Mohebbi & Douzandega, 2017; Rostami et al., 2014), context and linguistic attributes have no relationship with the number of citations. On the other hand, Jamali and Nikzad (2011) and Paiva et al. (2012), concluded that articles with long titles were cited less frequently than articles with short titles. It could be interpreted that different results are obtained due to the preferred sample and date range. Nevertheless, based on the finding that articles with long titles are more successful in reflecting the content, it can be declared that such titles serve to attain more to-the-point results in the literature review. In this context, it can be argued that articles with longer titles have more citation potential.

Conclusion

Within the scope of this research, the titles of articles from five international journals in the field of education were examined in terms of formal and contextual features, and the findings were interpreted. The most striking result reached by the end of the study is related to the number of words in titles. In addition, it was found that the titles of Review of Educational Research journal in the Q1 category with a high impact factor were more successful in reflecting the content of the article and that this journal tended to exceed the 15-word limit. In this sense, it is predicted that researchers' exceeding the 15-word-limit where they find it necessary will provide them convenience in writing titles. Therefore, researchers can benefit from keywords and concepts in their fields of study to reflect the essence and the particulars of their research.

This study provides a framework as a recommendation text for researchers to write an appropriate title for their articles. In the literature review, the title is the first structure encountered in the articles. In sense, it is thought that setting a framework will contribute to the field. In addition, it is thought that the content presented in this study may guide reviewers to take serious roles in various journals in the process of evaluating research titles. Even so, there are some limitations within the scope of the research. The number of titles analyzed was limited to 800. All those titles were selected from the papers published between 2016 and 2023. Also, since the recently written articles were analyzed, statistical analysis according to the number of citations was not considered appropriate, so the impact factor values of the journals were discussed.

Suggestions

Setting out from the results of this study, the following suggestions on how to write appropriate article titles can be made:

- More detailed information about the study can be given by using colons in the titles.
- Abbreviations are to be avoided in the title.
- With the use of prepositions or conjunctions, the title can be made more flowing.
- Journals should be more flexible about the word count of the title so that the titles are descriptive enough.
- The subject or purpose of the research are to be emphasized in the title.
- Understanding the methodology of the study from the title can facilitate the work of researchers conducting a literature review.
- The sample of the research should be understood from the title.
- Paying attention to the above-mentioned issues in title writing can be a start in establishing a standard for title writing in the field of Educational Sciences.

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Appendices

Tittle Assessment Form

JOURNAL	Name of the Journal	
	Apa-ref	
	Impact factor	
	Q no	
ARTICLE INFORMATION	Title	
	Year	
FORMAL FEATURES OF THE TITLE	Journal	
	Türkiye: 1	
	USA: 2	
	Sentence structure:	Lewinson and
	Colon title: 1	Hartley, 2005;
	Question title: 2	Ufuk 2017
	Classical title: 3	
	Used abbreviations: 1	Galanis, 2013
	No abbreviations: 2	
	Used prepositions-conjunctions: 1	Cheng et al., 2012
	No prepositions-conjunctions: 2	
	Key words	
CONTENT COMPATIBILITY OF THE TITLE	The subject/purpose of the article is not ıncluded: 1	Ortinau, 2011
	The subject/purpose of the article is directly ıncluded: 2	
	The research method was not specified at all: 1	Ecarnot et al., 2015
	The research method was ımplied in the title :2	
	The research method was specified on a word by word basis: 3	
	The universe/sample was not specified at all: 1	Ecarnot et al., 2015
	The universe/sample was ımplied in the title :2	
	The universe/sample was specified on a word by word basis: 3	
CONTENT COMPATIBILITY OF THE TITLE (CONTINUOS)	Total Score	
GENERAL ASSESSMENT	REFLECTIVE COMMENTS	