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DEVELOPMENT OF A DATABASE OF DIGITAL MULTICULTURAL CONTENT AND APPLICATION IN JOURNALISM LESSONS

Abstract: The development of digital technologies stimulates changes in the field of education, including for students of the educational programs «Digital Journalism» and «Media Technologies». This paper presents the practice of using a database of digital multicultural content in journalism lessons. The relevance of this scientific publication is due to the need to integrate digital technologies into the educational process and the development of students' skills in working with programming languages. The importance of using such content is described by the modern realities of the educational system, when all members of the academic community are involved in the process of forming national identity within the country and global globalization. Kazakhstan's conditions demonstrate the penetration of cultures of various ethnic groups, religions, which is the reality of modern teachers and students. The author offers a model for creating a database of digital multicultural content. To do this, the multicultural content of three TV channels and online publications posted on digital services is being studied. The design and structuring of web portals, interfaces, and content are studied. The author conducts quantitative and qualitative research of media materials. A parallel is drawn between the amount of digital content published on television and on Internet resources. Through lexical and compositional analysis, trends and issues of digital multicultural content are identified. The information obtained during the study was organized into a database in the PostgreSQL programming language. As an experiment, the use of the database was tested in journalism lessons when performing exercises and conducting mini-studies. At the end of the training course, a survey of students was conducted on the effectiveness of using databases in the classroom. The students' answers are analyzed and presented in a generalized form. The methodological methods of working with students described and analyzed in this article are important material for the development of the educational goals of future journalists.

Keywords: digital journalism, multicultural content, database, television, journalistic education, internet representation, format, media, network technologies, content analysis.

Introduction

Digital journalism is a new direction of journalism, which is a hybrid of traditional journalism, transforming into a digital format, and new media, initially based in the Internet space. In today's hybrid media environment new content creators challenge the status of professionally produced journalism and blur the lines between professional and non-professional content [1]. Astana IT University has been preparing bachelors in the educational program "Digital Journalism" since 2020. The purpose of this educational program is to train highly qualified employees in the media sphere for the Kazakhstani and foreign labor markets [2]. An important component of the educational process is the educational environment. In Kazakhstan, the educational environment is represented by a unique multicultural symbiosis. This is manifested in the policy of trilingualism, multi-confessionalism, multiculturalism and unique national code. It focuses on the stability that identifies the formation of the nation, its history, socio-political status, and cultural phenomenon. Thus, the national code, established in the cognition of people, has formed [3]. A modern Kazakhstani student has combined the values and traditions of the East, as well as the trends and technology of the West.

The studying of digital journalists includes the development of modern technological solutions, new media technologies, the study of the transformation of traditional media and the formation of a multicultural personality of the student.

In the classroom, students study adaptation of traditional media to new realities and its moving into the Internet space. The progressive development of mankind has ensured the emergence and development of newspapers, radio and television, and with the advent and spread of the Internet – the creation of online media and the transition of traditional media into digital format.

The use of digital content in the educational process makes lessons creative, and allows you to implement the principles of developmental learning. The learning process is activated, the pace of the lesson increases, and the volume of independent and individual work of students increases. Teachers have the opportunity to select the necessary material in accordance with the lesson, and present it vividly, clearly and accessible [4].

The use of digital content in the classroom increases students' motivation for the learning process, the teacher creates conditions for the effective manifestation of fundamental patterns of thinking, for students to acquire means of cognition and research, and optimizes the cognitive process.

Within the framework of the disciplines "Information and Digital Literacy" and "Digital Journalism", research was conducted on the analysis of the transition of television channels of Kazakhstan to the digital space and the study of their content, as well as a comparison of quantitative indicators of the popularity of traditional and digital media.

For example, the topic of the multicultural diversity of Kazakhstan was chosen, since this topic is very relevant in the world due to the problems of national identity formation and widespread globalization faced by all states of the planet. The main newsmaker on this topic is the Assembly of the People of Kazakhstan. The Assembly is a constitutional body, is a socio-political institution for the harmonization of interethnic relations and social harmony, a key instrument for the implementation of state ethnopolitics [5]. Today, all structural units of the APK face the task of filling their activities with new content, the main basis of which can be the introduction of information and communication technologies and modern solutions in their activities, and the creation of multimedia digital content.

Model and research methodology

The relevance of this work is due to the need to integrate digital technologies into the educational process and the development of students' skills in working with programming languages.

The purpose of the research is to create a database of digital multicultural content for use in journalism lessons. The objectives of the research are to conduct qualitative and quantitative content analysis, identify trends and issues of digital multicultural content, and test the use of IT products (databases) in the educational process of future journalists.

The theoretical and methodological basis of the study was the work of domestic and foreign scientists on the use of databases in journalism, and the study of digital multicultural content.

The scientific novelty lies in the little-studied topic of digital multicultural content and its integration as an IT product into the educational process.

As a scientific experiment for a structured approach to conducting this research, a model for creating databases of digital multicultural content and their application in journalism lessons is proposed.

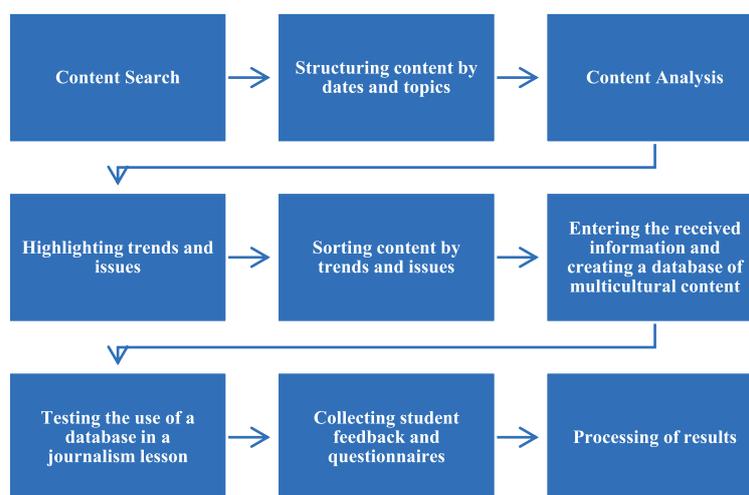


Figure 1. Model for creating databases of digital multicultural content and their application in journalism lessons

This model is a theorem describing the process of creating and applying databases of digital multicultural content in the educational process of future journalists. The model is built taking into account the complexity of extracting data from journalistic materials. So, the first stage of the model includes content search, content structuring by dates and topics, and content analysis. At this stage, it is supposed to select materials and highlight the most important information according to the data mining protocol (Figure 1). The second stage of the model includes the identification of trends and issues of multicultural content and their comparison in the context of qualitative and quantitative study of materials. Then the content is sorted according to the topic, a structured database is created, which, based on the previously received information, makes it possible to display the content in the order determined by the user (sorting by grammatical, lexical, legal errors, tautologies, publication date, etc.). The final stage is testing the use of the database in a journalism lesson, collecting student feedback and questionnaires, processing the results. Within the framework of this model, the practical application of the database makes it possible to study the impact of an IT product on students' academic performance and motivation to study, which is confirmed in the results of the application of empirical research methods. This will make it possible to track the success of the developed database and its applicability in the educational process.

Methods:

- 1) Geographical coverage of the database

In the research, we aimed to compile a database on the coverage of regional media content on the example of the North Kazakhstan region. The news in Kazakh, Russian and English languages were studied and publications of online media and television were covered.

2) Temporal coverage of the database

The focus is on articles and television stories published online between 2017 and 2021. Thus, the time span of our research mainly covered the development of online journalism and the parallel dissemination of news through social media platforms.

3) Data mining protocol

We adapted the methodology of Mamola et al. [6] to receive news articles and television stories related to the subject of multicultural content. To ensure that different authors responsible for different media and languages followed an unambiguous data mining strategy, we started by preparing a common protocol for creating a database (Table 1).

Table 1. Protocol for creating a database

Process name	Stages		
Selection	Keywords. Does the article or story relate to multicultural content? 1 = yes; 0 = no. (keywords "ethnos", "culture", "nation", "traditions", "Assembly of the People of Kazakhstan")	Assigning an identifier to each news item ("N_1", "N_2", etc.).	URL. Link to online news.
Entering of general information	Language. The language used in the news.	Date of publication. y= year; m = month; d = day.	The title. The title of the article.
Searching for errors	Lexical_error. Does the article contain lexical errors? 1 = yes; 0 = no.	Grammatical_errors. Does the news contain grammatical errors? 1 = yes; 0 = no.	Compositional_error. Does the news contain compositional errors? 1 = yes; 0 = no.

4) Empirical method

After the introduction of the database of digital multicultural content into the educational process, a survey of students was conducted in order to find out its effectiveness. They were asked the question "How did the introduction of a database of digital multicultural content affect the journalism lesson?"

Main part

Following the model (Figure 1), the content was searched, structured by dates and topics, as well as content analysis. The content of three Kazakhstani TV channels located in the North Kazakhstan region was selected for study: the Republican TV and Radio Corporation "Kazakhstan", the Municipal TV and Radio Channel "MTRK" and the commercial TV channel "First North".

The analysis of the websites of these TV channels was carried out: www.petropavltv.kz, www.mtrk.kz, www.1severnij.kz. On the websites of the TV channels "QYZYLJAR" and "MTRK", the news feed is divided into categories. On the first web resource, the theme of the Assembly of the People of Kazakhstan is placed in the sections "Society", "Culture", there is also a tab "Year of the Assembly". The Internet portal of the Municipal TV and Radio Channel publishes materials related to the topic analyzed in the sections "20 good deeds", "Charity", "Society",

“Children/youth”. There is no such division on the website of the TV channel “First North” [7].

If the TV channels “MTRK” and “First Northern” specialize more in news content and have only 2-3 programs of an informational and analytical nature, then the TV channel “QYZYLJAR” has a number of creative projects, including those related to the topic of interethnic and interfaith harmony and the activities of the APK. These include the following television programs: “Dostyk kopiri” and “Bridge of Friendship”, “Rukhaniyat” and “Peace and Harmony”, “Ulagat”, “Rukhani kazyna”.

In order to conduct a quantitative analysis of the content of TV channels, the information of the Assembly of People of Kazakhstan of the North Kazakhstan region was used, where multicultural content materials published in regional and republican media are constantly monitored (Table 2).

Table 2. Number of digital multicultural content produced by three TV channels and Internet resources (2018-2020)

Quarter/ Year	2018		2019		2020	
Media	TV	Internet	TV	Internet	TV	Internet
1 quarter	113	37	49	192	52	195
2 quarter	52	184	52	184	48	212
3 quarter	46	155	46	155	20	707
4 quarter	54	168	102	193	20	720
TOTAL	265	544	249	724	140	1834

Information for 2017 is presented in the form of a generalized indicator. From the «Information and analytical report on the activities of the North Kazakhstan Regional Assembly of the People of Kazakhstan for 2017»: «In total, in 2017, more than 200 videos were published on regional and city TV channels (MTRK, First Northern, Qyzyljar) through the North Kazakhstan Regional Assembly of the People of Kazakhstan» [8].

The presented data make it possible to conduct a comparative analysis of the amount of digital multicultural content produced by television channels and Internet resources.

The dynamics of the amount of digital multicultural content produced by TV channels is as follows: in 2018, the indicator increased by 65 materials compared to the previous one, which is 25%, but for unknown reasons decreased in 2019 by 14 positions or 6% (Figure 2). 2020 completely reduced the indicators of multicultural content by 44%. The reason for this was the global pandemic due to the spread of the new coronavirus infection COVID-19 and the quarantine and restrictive measures introduced. This demonstrates the damage caused by the pandemic, including in the sphere of activity of ethnopolitics, expressed by a decrease in the social activity of society [9].

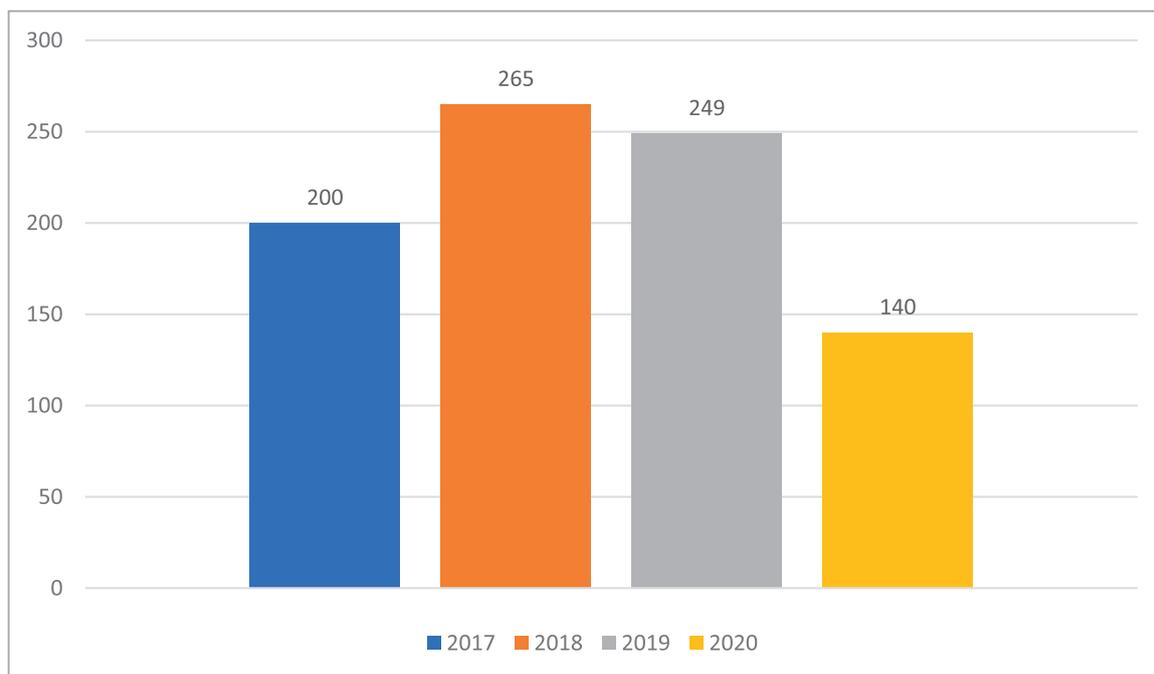


Figure 2. Comparative analysis of indicators of digital multicultural content produced by TV channels (2017-2020).

According to the presented data (Table 2), the analysis of the amount of digital multicultural content produced by TV channels for the first quarter of 2018, 2019, and 2020 was carried out. Even despite the abundance of memorable and festive days in this period of time (March 1 is the Day of Gratitude and the Day of Formation of the Assembly of People of Kazakhstan, March 22 is Nauryz), every year there is a tendency to reduce the number of journalistic materials related to multicultural topics (Figure 3).

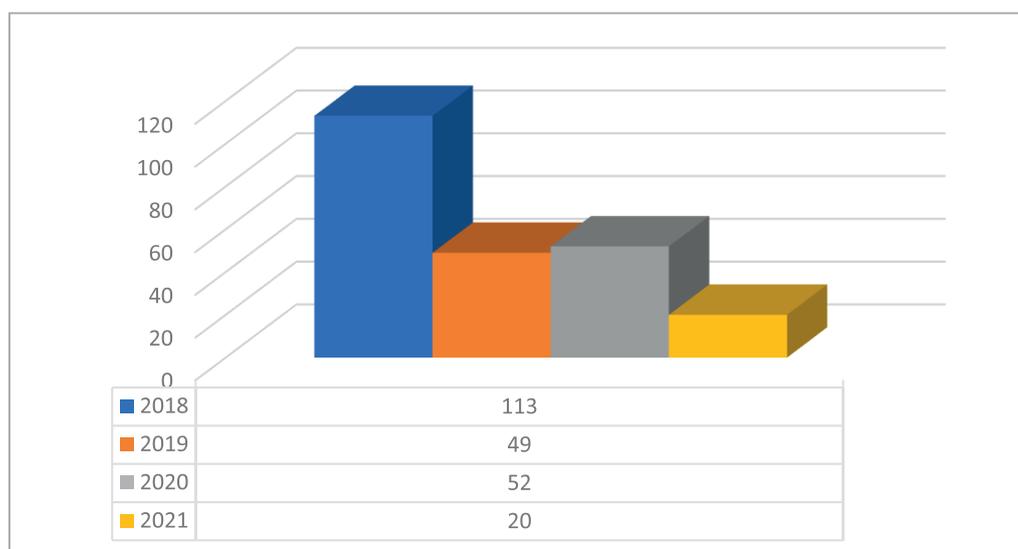


Figure 3. Comparative analysis of the amount of digital multicultural content produced by TV channels, using the example of the situation for the 1st quarter (2017-2021).

At the same time, from the statistics tables above, the increasing dynamics of the growth of multicultural content on Internet resources has been noticed. If the number of television

materials in the context of the first quarters for 4 years shows a negative trend, then the coverage of this topic in web publications exceeds the television figures by at least 3 times, and in 2021 - by 25 times.

When comparing the final figures for 2018-2020, the progress of the number of publications in online publications was noticed. Already in the 1st quarter of 2021, this indicator almost reached the level of the whole of 2018 and amounted to more than a third of the indicator of 2020.

This correlation demonstrates the growing popularity of web resources and, accordingly, the greater orientation of users themselves to this type of media. In addition, such a serious difference in indicators between regional TV and Internet resources can be explained by the large number of the latter, as well as the availability of the APK's own web resources.

The greatest decrease in the number of multicultural content television materials is observed in the period from 2019 to 2020, while at the same time the number of publications posted in online media increases almost 2.5 times. This is due to the transition of many events of the Assembly of People of Kazakhstan to an online format without the full-time presence of its participants, which complicates the work of television media. Because to create a full-fledged video, a "live" picture, an event, and visual elements are required, whereas for publication on a web resource, only a screenshot from the ZOOM video conferencing application that became popular during the coronavirus pandemic or an image created in a graphic editor is enough.

In the course of the study, a qualitative analysis of the materials of digital multicultural content was carried out. Materials on the sessions of the Assembly of People of Kazakhstan, charity ball, the tradition of "Korisu kuni", the celebration of the Day of Unity of the People of Kazakhstan were studied.

Based on the lexical and compositional analysis of digital multicultural content, we have identified the following trends:

1. Eventfulness of video materials. Most of them tell us about the events held by the Assembly of the People of Kazakhstan and ethno-cultural associations, superficially and dryly describing the course of the events.

2. Lack of depth of study of issues. Some plots, being eventful, do not carry a semantic load. The background and details are not described. The texts are replete with general phrases and an enumeration of what happened. In fact, the plot has only an informative function.

3. Templating. Many plots were very similar in structure. They also noticed the same sequence of presentation of facts, sometimes with similar phrases and expressions. In synchronons on all three TV channels, the same people may appear in the story about the same event, often with the same or very similar speeches. This discourages the viewer's interest in watching the news and prevents a full understanding of the picture of the event.

4. Illiteracy of journalists. The authors of the materials make grammatical, lexical and speech errors in their plots. In the analyzed materials, correspondents made grammatical mistakes in words, used words that do not fit the meaning ("diversity of nations", "apogee of the event"). There are cases of incorrect transcription of words of the Kazakh language ("Mangelik el" - "Mangilik El", "boursaki" - "bauyrsak"). Correspondents do not know the terminology related to the activities of the Assembly of People of Kazakhstan, and as a result of which they make lexical mistakes.

5. The use of ethnonyms. Words that have a national identity have their own name in the language of the people from where this word originates. It is this word that fits the meaning in the plot for a more accurate description of it. Journalists actively used ethnonyms, thereby transmitting national images of ethnic groups living in Kazakhstan. In the texts, borrowed words from the Kazakh language are used in an informative and in the function of expressing ethno-cultural realities [10].

6. The abundance of words that are the means of artistic expression. Epithets, metaphors and hyperbole are most often found in texts. It is important to note that they all have a stable national color. Thus, the expression “under a single shanyrak” repeatedly occurs in the texts of the plots, performing two functions at once - metaphor and ethnonym. The expression “rich dastarkhan” is widespread. Here the word “dastarkhan”, meaning a tablecloth used during a meal or a set table, is used as a synonym for the phrase “set table”.

7. Tautologies. In the analyzed stories, the most common mistakes made by journalists are tautologies. In one sentence or paragraph, the most common use of the same-root words “ethnos” and “ethno-cultural”, “North Kazakhstan region” and “North Kazakhstan Regional Assembly of the People of Kazakhstan”, “nationality” and “national”, etc.

8. Professional mistakes. The same facts are repeated in the texts of journalists and synchrons of interviewees. There are cases when the logic of frame construction is violated (video and text are not related in meaning).

9. Journalists actively use descriptive series and television means of expression: they talk about rituals, traditions of ethnic groups, give backlashes (fragments) of events, impose intershums, etc. Due to this, when viewing these videos, the viewer has an atmosphere of “presence”. At the same time, correspondents actively used historical facts, told about the prehistory of the holidays.

10. Legal illiteracy of journalists. In the materials of journalists, the spelling of the word “Assembly” is sometimes with a capital, then with a small letter. In addition, there are two variants of the spelling of the name of the regional structure of the APK: “North Kazakhstan Regional Assembly of the People of Kazakhstan” or “Assembly of the People of Kazakhstan of the North Kazakhstan region”. However, according to Article 8 of the Law of the Republic of Kazakhstan “On the Assembly of the People of Kazakhstan” dated October 20, 2008 N 70-IV, “The structure of the Assembly consists of the Assembly Session, the Assembly Council, the Staff (Secretariat) Assemblies, assemblies of regions (cities of republican significance, capitals)”, i.e. the correct spelling is “Assembly of the people of Kazakhstan of the North Kazakhstan region”, where the word “assembly” is written with a small letter.

Based on the results of qualitative and quantitative analysis of digital multicultural content, a list of materials containing errors was created. These materials are used as training materials for conducting research and performing exercises in journalism lessons for students of the educational program “Media Technologies”. To simplify the information processing process, a database of multicultural content materials written in the PostgreSQL programming language was created (Figure 4).

Current information technologies generate large amounts of data for management or further analysis, storing it in NoSQL databases which provide horizontal scaling and high performance, supporting many read/write operations per second. NoSQL column-oriented databases, such as Cassandra and HBase, are usually modelled following a query-driven approach, resulting in denormalized databases where the same data can be repeated in several tables. In this regard, the PostgreSQL object-relational database management system programming language was chosen. The fundamental characteristic of an object-relational database is the support of user objects and their behavior, including data types, functions, operations, domains and indexes [11].

An example of creating such databases of thematic content can be a Global database of online newspaper articles about spiders and spider bites. In total, it contains 5,348 unique news articles from 81 countries in 40 languages [6].

```

1 CREATE OR REPLACE procedure get_year_gap()
2 LANGUAGE plpgsql
3 AS $$
4 DECLARE
5     sources varchar;
6     author_name varchar;
7     title varchar;
8     description text;
9     year_count int;
10 BEGIN
11     SELECT site, author, article_title, article_description, EXTRACT (YEAR FROM age (Cast (article_date AS DATE))) AS ayear,
12           CASE
13             WHEN EXTRACT (YEAR FROM age (Cast (article_date AS DATE))) BETWEEN 0 AND 1 THEN 'new'
14             WHEN EXTRACT (YEAR FROM age (Cast (article_date AS DATE))) BETWEEN 1 AND 3 THEN 'recent'
15             WHEN EXTRACT (YEAR FROM age (Cast (article_date AS DATE))) > 3 THEN 'old'
16           END "Year gap"
17     INTO sources, author_name, title, description, year_count
18     FROM Article;
19 END;$$
20
21 call get_year_gap();
  
```

Figure 4. SQL script of a database of digital multicultural content.

In this database, functions have been created that allow sorting all materials of multicultural content by year, site, author's name, title, publication date. The procedure sorts the records into three (new, recent and old).

```

1 CREATE OR REPLACE FUNCTION get_article_by_year(first_year int, second_year int)
2 RETURNS TABLE (source char, author_name char, title char, publication date)
3 AS $$
4 BEGIN
5 RETURN QUERY
6     SELECT site, author, article_title, article_date
7     FROM Article
8     WHERE EXTRACT (YEAR FROM age (Cast (article_date AS DATE))) BETWEEN first_year AND second_year
9     ORDER BY article_date ASC;
10 RETURN;
11 EXCEPTION
12 WHEN no_data_found THEN
13     RAISE notice 'Please, try again! Year limit between % and % is not accessible', first_year, second_year;
14 END;
15 $$ LANGUAGE plpgsql;
  
```

source character	author_name character	title character	publication date
1 https://mtrk.kz/ ...	Жансулу Тастемирова	День единства народа Каза...	2018-05-01
2 https://mtrk.kz/ ...	Жансулу Тастемирова	1 мая - День единства наро...	2018-05-01
3 https://www.you...	Анжелика Воронина	Праздничный концерт в чес...	2018-05-02
4 https://mtrk.kz/ ...	Анна Жицкая	Третий благотворительный ...	2018-05-16
5 https://www.you...	Татьяна Величина	Вся красота и прелести трет...	2018-05-17
6 petropavltv.kz ...	Кирилл ПОТЕМКИН	ПРОГРЕССИВНАЯ МОЛОДЕ...	2018-11-01
7 petropavltv.kz ...	[...] Анастасия ДРОНЯК	[...] НЕОБЫЧНЫЙ УРОК ПО ...	2018-11-16
8 petropavltv.kz ...	--	[...] ПРИОРИТЕТНЫЕ НАПРА...	2018-11-19
9 petropavltv.kz ...	[...] Зайра ДЖАКУПОВА	[...] СЕМЬ ГРАНЕЙ ВЕЛИКОЙ...	2018-11-21
10 https://mtrk.kz/ ...	Татьяна Ясельская	Керісу күні отменили в обла...	2019-03-14
11 https://www.inst...	Вероника Яковлева	Празднование Керісу күні. ...	2019-03-15
12 https://www.you...	Татьяна Величина	14 марта начался Наурыз и ...	2019-03-18
13 petropavltv.kz ...	Кирилл ПОТЕМКИН	[...] К ПАТРИОТИЗМУ С МАЛ...	2019-11-22
14 petropavltv.kz ...	Айман КУЗЕМБАЕВА	ИГРА ВЕСЕЛЫХ И НАХОДЧИ...	2019-11-25
15 petropavltv.kz ...	--	ПРОШЁЛ КОНЦЕРТ КЮ ДНЮ...	2019-11-27
16 petropavltv.kz ...	--	[...] ЕДИНЫЙ ОБЩЕРЕСПУБ...	2019-11-29
17 petropavltv.kz ...	[...] Наталья АИТОВА	[...] ЗАСЕДАНИЕ ОБЛАСТНО...	2020-11-04
18 petropavltv.kz ...	--	[...] ПРЕЗИДЕНТ ПРИНЯЛ ГЛ...	2020-11-10
19 petropavltv.kz ...	Наталья АИТОВА	[...] ОБЛАСТНОЙ ФОРУМ МО...	2020-11-25
20 petropavltv.kz ...	--	Н.Нигматулин выступил на ...	2020-11-30

Figure 5. The type of table obtained from the database of digital multicultural content.

One of the most salient points to consider when evaluating the importance of the creation and use of databases in the classroom is their ability to be revisited throughout the year.

Creating a database of any kind requires students to critically think from the very beginning. Maintaining that same database requires students to revisit those initial levels of thought and move to a higher plane of thought. It enables students to reach higher levels of thinking as students:

- 1) identify unique characteristics of the data;
- 2) find qualities of the data to compare and contrast; and
- 3) take that same data and rank the importance of that data for themselves.

It is safe to say that this type of learning event connects nicely with Bloom's Taxonomy [12].

The database of digital multicultural content was introduced into the educational process of students of the educational program "Media Technologies" in the 3rd trimester of the 2021-2022 academic year. The main goal is the application of knowledge previously acquired in the framework of training (the discipline "Database Management System") and digitalization of the educational process in the discipline "Digital Journalism", increasing the interest and motivation of students to study.

After using the database of digital multicultural content, a survey of students was conducted in the classroom. 36 students of the 2nd year of the educational program "Media Technologies" took part in the survey via Google Forms.

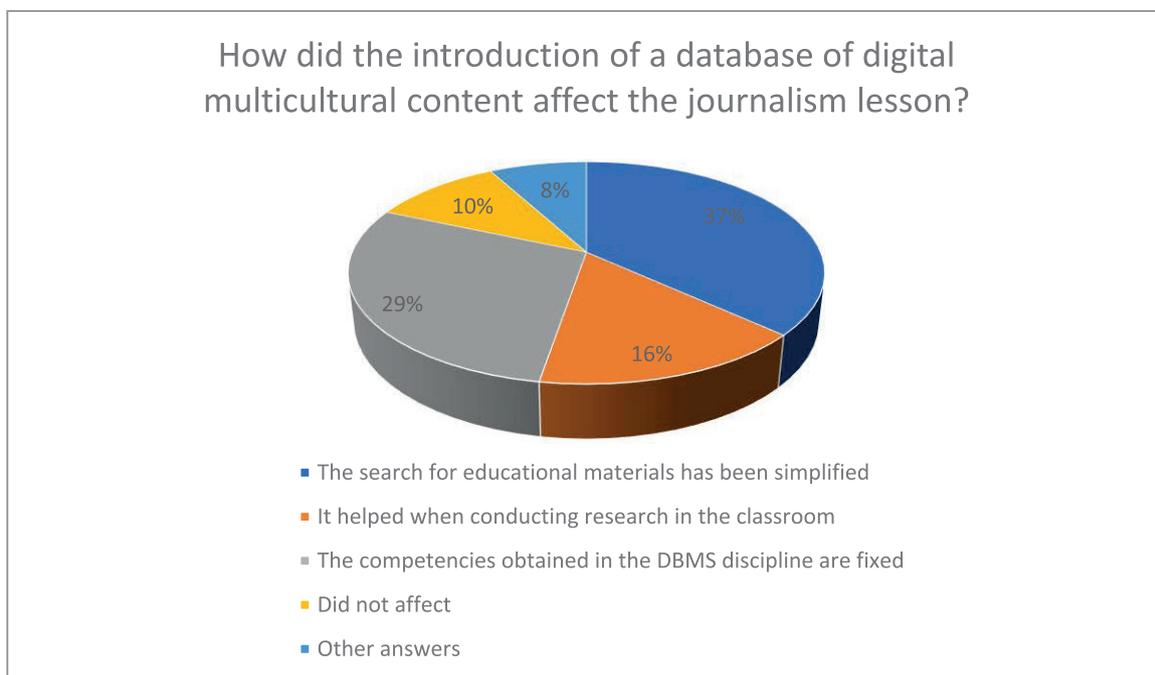


Figure 6. Results of survey

14 respondents noted that the database has simplified the search for educational materials. 6 students answered that the database allowed conducting mini-studies of digital multicultural content during classes. 11 respondents believe that through the use of the database in journalism lessons, they were able to consolidate the competencies acquired in the discipline "Database Management System".

3 respondents chose "Other", where they expressed the opinion that the introduction of the database improved their information structuring skills, allowed them to restore programming languages in memory and not store big data, have access to them anywhere and at any time.

In general, according to the results of the survey, it became known that the use of a database of digital multicultural content in the classroom proved to be effective. The study of the content itself made it possible to improve the research skills of students, integrate IT technologies into the educational process of the discipline "Digital Journalism".

Conclusion

The proposed model of creating databases of digital multicultural content and their application in journalism lessons has demonstrated its viability and viability. Following the model, the protocol is used to create a database, then the content analysis is carried out.

The task facing future digital journalists is to provide competent coverage of society's problems using the capabilities of information and communication technologies. The results of this study demonstrate the need to use real cases and materials of current journalists in the process of training future journalists. This article, which was the result of a joint study with students, demonstrates a high practical effect.

The content research was divided into 2 parts: quantitative and qualitative. A comparative analysis of the amount of digital multicultural content demonstrated a gradual decline in the popularity of television content and an increase in the number of materials produced by Internet resources. Among the main reasons are the widespread development of online services, their accessibility, ease and comfort of use, the speed of information placement, the transition of work to an online format in connection with the global COVID-19 pandemic. Lexical and compositional analysis of digital multicultural content showed the main problems and tendentiousness of the studied journalistic materials in the form of templates, violations of the norms of literary language and legal illiteracy of journalists.

The database of digital multicultural content has been introduced into the educational process and has shown its effectiveness. According to the results of the survey of students, this allowed to consolidate previously acquired knowledge, simplify the search for educational materials and integrate IT and journalism education. Thus, the students studied digital content, its features, conducted a study from the multicultural characteristics of Kazakhstan, studied the process of conducting research, writing journalistic materials and increased the level of professional and digital literacy.

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